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Vital Politics and Anticipatory Practice of HIV Treatment as Prevention: The Discursive Work of the Biomedicalization of HIV Prevention

by

Karen Christine Lloyd

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Sociology

[redacted]

Acknowledgments and Dedications

When I was about 12 years old, I declared that one day I would grow up and become a “professor.” I am not really sure I knew what that meant (honestly, I am still not sure I entirely do), but I was sure it somehow involved living in a hut in the middle of the rainforest (at the time, my chosen field of study was rainforest ecology). I am sure this must have sounded like a strange proclamation by a pre-teen, but the one person who always cheered me on, supported me and helped to pick me up when I stumbled and fell down along the path to getting closer to achieving this strange and crazy dream has been my Mom. As a single parent for the better part of my childhood, she worked hard, commuted long distances, picked up second jobs, all so that I could go to the best and most nurturing schools she could find. She was there for every school field trip, every school concert, every awards ceremony, letting me know how proud she was of me. The times when I abruptly changed direction in life or had no idea which direction to go, but knew it wasn’t the one I’d been headed towards (and there were many of these times!), she stuck with me, gave me space, and let me have the time to figure out what’s next, even when my “what’s next” sounded crazy too. She always trusted that eventually I would figure it all out. Over the years, she - along with my stepdad, Thad - have been my greatest cheerleaders and provided the major source of funding for this research, helping to make it possible for me to do the work that I have done and to develop myself professionally. Without both of them, but especially without her love, support, encouragement and the value she placed both in my education and also my dreams, none of this would have been possible. Thank you, Mom. I love you and am so grateful for you. I only hope I can do for Josie what you have so selflessly done for me.

My grandmother, Josephine Bennett (after whom my daughter is named), and my grandfather, Jean Bennett, both hold a very special place for me in this story. They were there to care for me when I was younger to make it possible for my mom to work as hard as she did to provide me with all the opportunities that I had. They also instilled in me a love for the outdoors, play and creativity, and created the sort of childhood that allowed me the freedom to play and explore and develop my own interests and natural curiosity for the world. Like my mom, they also taught me a lot about love and the comfort of a family. They are no longer here today, but I have no doubt they are looking down on me and smiling. I hope they would be proud of all I have done so far.

I have also been very lucky to have some incredible, supportive teachers in my life, who not only taught me knowledge, but taught me how to fight for what matters and who have always fought my corner when I wasn’t sure I could myself. They have rescued me when I did stupid things like getting stranded because I overslept and got off the train at the wrong station far from home. They have listened to me when I cried in their classrooms and in their living rooms, even when it was just because I got a B in Statistics. They taught me that learning can be fun and just part of growing and changing, that maybe I shouldn’t always be so serious; there are also more important things in life than school. They have also always taught me to believe in myself. And I realize now they probably did when I didn’t. Thank you especially to Evan McGrath, who probably officially taught me about 2 years of high school Latin simply because Latin class was during my free period and I always managed to turn up in the middle of it with some sort of crisis. And to Alan Horowitz, who ignited my love for Sociology and also my hope that one day I might be the sort of teacher for others that he was for me.

In the seven years that I have been a student at UCSF, I have also been blessed to have been surrounded by the support of some brilliant, nurturing and patient mentors, and without them, this dissertation would never have been finished. Thank you to Shari Dworkin, who has been a guiding light for me from the very first time we ever spoke nearly eight years ago as I sat on an upturned bucket in my bathroom in my flat in India, trying to block out the noise from the street and the temple next door, so I could sound professional in my interview with her. She has been the steady buoy in rough seas throughout my time here, offering me re-direction when I needed it, but more importantly, encouragement when she felt I was on the right path. She gave me space when I needed it, but also kept me *going* and sometimes it was that *going* towards the endpoint that has been the hardest part. Her sense of focus and direction have been invaluable. Thank you also to my other committee members, to Janet Shim and to Janet Myers. Janet Shim has taught me a lot about how to be a sociologist by example, how to ask questions, how to expand my thinking about my own work, and also how to be a supportive and reflective teacher. Janet Myers took a chance on me and offered me my very first job in San Francisco, working with her as a research assistant at the Center for AIDS Prevention Studies (CAPS). She also did so, quite bravely, and sight unseen, without ever meeting me, because I emailed her and somehow convinced her I could provide half decent research support and had a passion for the work she was doing. She taught me a lot about how to be apart of a research team, how to mentor a young researcher, and why social research on HIV and AIDS continues to matter so much. Together, both individually and collectively, you have all supported me, pushed me, inspired me through these past few - sometimes quite painful - years of dissertation work. You have also taught me more than I can say about trusting in what I am capable of and believing in the value of the work that I do.

It is also with tremendous gratitude that I also acknowledge the very special role that Adele Clarke has played in my life and my work these past seven years. Adele has not only ignited the fire in me for doing qualitative research, but also for hopefully one day teaching qualitative research methods. Her guidance throughout my time at UCSF is hard to describe in words, but she has taught me about being the kind of sociologist, teacher and mentor that I hope to be one day. She formally mentored me through my TAE, but perhaps most importantly, she continued to informally mentor me throughout the dissertation phase of my work, often sending me newspaper clippings, journal articles, and lots of encouragement and inspiration. Her little notes always had a way of arriving in my mailbox in those weeks when I wanted to give up and felt like I would *never* finish this thing. They were like water in the desert. Adele, you always got me going again when my energy and enthusiasm flagged. I am so grateful to have had you along for this journey.

To my participants, whose honesty, openness and support for this project made it possible, thank you. Your trust in me, cups of coffee, pots of tea, offers of further reading and professional connection-making made this journey not only happen, but forced me to learn so many things that I didn't even *know* I didn't know along the way. I only hope I've done justice to your stories.

And to my husband, Tim, who has seen me through this from the beginning, who was there to celebrate that first exciting interview with Shari, who made the long trips back and forth from the UK to San Francisco so that we could be together, who poured me wine to celebrate all the little triumphs along the way, and even more wine on the days I just needed to cry and scream about it all, and who always knew it would all be just fine, that I would make it to this day, even when I didn't. Thank you. Your love and your respect for me, from the very beginning, and your support and devotion to me in achieving this dream nourished me. For all the times you have stepped up and done whatever, from fixing all the things I managed to break, to keeping our house and our family going when I needed you to be both me *and* you, to just getting up and doing what needed to be done when I couldn't manage to do it anymore, thank you. Without you, your love, your faith in me, and your support, none of this would have ever been possible. I am so grateful to have you as my partner, as my co-parent, and as my best friend. I love you so much.

I began down this path of doing HIV work because I have been incredibly blessed to have had many special people in my life who are themselves living with HIV and they have each touched my life in immeasurable ways. I have known each of you in very different capacities and very different circumstances, some only for a month, others for most of my life. The myriad ways you have touched my life and met me along the path on this one small journey in my own life, not only made this journey possible, but it has made it worth it. You are the reason I do this, and this dissertation is in part dedicated to you.

And finally, to my daughter, Josie. I am who I am because of you. And I was able to do all of this because you have been the force that keeps me going even when I didn't think I could. One day earlier this year, when finishing this dissertation and finally graduating seemed still so far away, when I was at the peak of my doubts, you got sick. I remember sitting in our hallway at the top of the stairs, holding you, smelling of vomit, and thinking, "I'll never finish now. *How* will I ever do it?" It's because of you. You have become not the why, not necessarily the answer to the question of *why* reaching this day mattered so much, though you are also that; you have become the answer to the *how.* I did it because of you. Because you made me realize I had strength and courage and devotion in me that I had not even realized until I had you. I have been very fortunate to have strong, successful, loving women as role models in my life, including your Gram, who have shown me how to both mother and also have a successful career. I hope you will one day look back and see in me what I see in them and will be able craft your own path in life along these capillaries of strength and courage and devotion. I hope you will be proud of me. I hope you will know how much it matters to believe in yourself and what you can achieve. I hope you will know how important it is to create and nurture that force within your life that becomes both the why and also the how. Without that, without you, and without the support of everyone who has made it possible for me to follow my dreams while also being a mother to you, this would not have been possible. So this is also for you, because it *is* because of you.

Abstract

HIV treatment as prevention is an emerging biomedical prevention approach that seeks to utilize routine HIV testing, linkage to and engagement in HIV care, and the consumption of antiretrovirals in order to suppress individuals' viral loads, greatly reducing or eliminating the risk of onward transmission of HIV. Drawing on interviews with HIV scientists, policymakers, clinicians, and leaders in HIV community advocacy, ethnographic field work at three global HIV scientific meetings, and extant narrative, visual and material data, this multi-sited study explores the emerging professional discourses that are co-constitutive of HIV treatment as prevention. Through an inductive process of data collection and analysis, four broad analytic problem spaces emerged: the reconfiguring of HIV risk discourses through pharmacological non-infectiousness, the transformations in biomedical surveillance practices as well as subjectivities via a prioritization of viral suppression and viral load monitoring, and the construction of antiretrovirals themselves as technoscientific 'things' which both potentiate and disrupt their own use as prevention technologies, in particular, via an anticipatory orientation to the future. This project contributes to work on biomedicalization, particularly on theorizing about transformations of risk and surveillance practices, subjectivity and forms of biomedical citizenships, as well as work on anticipation, notably on the creative effect of biomedical technologies and imagined futures.

Table of Contents

Appendices

List of Figures

Statement of the Problem

> *In 2000, at the International AIDS Conference in Durban, Dr. Anthony Fauci, the director of the National Institute of Allergies and Infectious Diseases, questioned the viability of lifetime antiretroviral treatment. He said '...prolonged courses of continuous HAART are not an option for most HIV-infected individuals...With current drugs, it is almost certainly not feasible to have people on therapy for an indefinite period of time.' - "Medical Ethics and the Rights of People with HIV Under Assault" Sean Strub, Poz Blogs, 28th of April 2010*

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> *On 1 December [2011], George Washington University in Washington, D.C., hosted 'The Beginning of the End of AIDS,' a splashy World AIDS Day event that featured three U.S. presidents, business magnates, and rock stars. The catalyst that brought them together was something Anthony Fauci, the top U.S. government HIV/AIDS scientist, told the crowd even one year ago would have seemed 'wishful thinking': a clinical trial dubbed HPTN 052 and its 'astounding' result.*
>
> *HIV/AIDS researchers have long debated whether antiretroviral drugs (ARVs) used to treat HIV-infected people might have a double benefit and cut transmission rates. To some it was obvious: ARVs reduce HIV levels, so individuals should be less infectious. Skeptics contended that this was unproven. Indeed, a consensus statement issued by the Swiss Federal Commission for HIV/AIDS in 2008 that said effective ARV treatment could virtually stop heterosexual transmission was denounced as 'appalling,' 'inconclusive and irresponsible,' 'dangerous,' and 'misleading.' The Joint United Nations Programme on HIV/AIDS and the World Health Organization also responded with alarm, urging people to continue using condoms and stressing that semen or vaginal secretions might harbor the virus even when blood tests showed no trace of it. 'More research is needed to determine the degree to which the viral load in blood predicts the risk of HIV transmission,' they cautioned.*
>
> *Then in May of this year, the 052 clinical trial conducted by the HIV Prevention Trials Network reported that ARVs reduced the risk of heterosexual transmission by 96%. 'Now we have absolute, confirmed data,' said Fauci at an AIDS conference this summer in Rome where researchers first presented the HPTN 052 data in detail. Fauci, who heads the U.S. National Institute of Allergy and Infectious Diseases—the main funder of the $73 million trial — said the challenge now was to apply the results. 'We just need to take that data and run with it,' he said. 'The idea of the tension between treatment and prevention, we should just forget about it and just put it behind us, because treatment is prevention.' - Science, "Breakthrough of the Year: HIV Treatment as Prevention," 23rd of December 2011*

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What has now come to be known as 'HIV treatment as prevention' is an HIV biomedical prevention approach grounded in the basic epidemiological principle that fewer viruses circulating in a community, achieved via adherence to a regimen of antiretroviral treatment, means fewer people in that community are likely to become newly infected. It advocates the use of antiretroviral therapy, consumed daily by people living with HIV to suppress the level of HIV virus in their bodies to such a low level that it cannot even be detected through viral assays, and to do so *for the protection of the broader public.* This is a radical departure, historically, from the use of antiretrovirals as as clinical tools for slowing disease progression and improving survival of the individual. The term HIV treatment as prevention itself, sometimes called 'Test and Treat' or 'Seek and Treat,' was first conceptualized with the publication of a paper theorizing the possibility of using antiretrovirals preventatively at the population level published in the *Lancet* by Dr. Julio Montaner and his colleagues in 2006. This publication was followed up with the development of a mathematical model (Granich et al. 2009) and the release of the interim data from the HIV Prevention Trials Network 052 study (Cohen et al. 2011) referenced in the excerpt above, the only randomized trial of the prevention effects of antiretroviral treatment. The findings of the HPTN 052 study were so 'game changing' that it led to *Science* declaring HIV treatment as prevention its 'Breakthrough of the Year' in December of 2011. In 2014, the Joint United Nations Programme on HIV/AIDS (UNAIDS) unveiled its 90-90-90 target, which aims to achieve the population level goal of testing and diagnosing at least 90% of all individuals living with HIV globally, then initiating at least 90% of those who test positive on antiretroviral treatment with the end goal being that 90% of those on treatment will be virally suppressed, that is, no longer infectious, by 2020. The long term aim of the UNAIDS' 90-90-90 target is to achieve "nothing less than the end of the AIDS epidemic by 2030" (UNAIDSa 2014:1).

'HIV treatment as prevention,' that is, the practice of using antiretrovirals preventively to render persons living with HIV who consume them no longer infectious to others, is underpinned historically by the long-standing practice of using antiretrovirals to prevent mother-to-child transmission of HIV (Mofenson et al. 1999; Shapiro et al. 2010; Sperling et al. 1996; Townsend et al. 2008) and for post-exposure prophylaxis after both sexual (Praca Onze Study Team 2004) and occupational exposures (Cardo, Culver, Ciesielski et al. 1997). It has also emerged contemporaneously with the practice of using antiretrovirals for *pre*-exposure prophylaxis, that is, the use of a daily pill, much like the birth control pill, to prevent acquisition of HIV by those who are HIV-negative (Grant et al. 2010). The idea of HIV treatment as prevention has been heralded as a paradigm shift - as a "game changer" (J. Cohen 2011) - in the pharmaceutical prevention of HIV, particularly in the wake of growing disillusionment with traditional HIV prevention approaches. Yet the broader use of antiretrovirals for prevention purposes has also been met with critiques that it may increase drug resistance (Sood et al. 2013), risk human rights abuses (Clayton 2012), and complicate medical ethics (Krellenstein & Strub 2012), among others.

As the excerpts above allude to, the discourses deployed in arenas of HIV prevention and treatment globally have shifted considerably since the earliest days of combination antiretroviral therapy; at that time, concerns about toxicities and the safety of long-term use dominated. I argue that there now exists a highly anticipatory orientation to the future, one which holds the potential to bring about the so-called 'End of AIDS' via the promise of the biomedical prevention of HIV. I was initially drawn to an empirical interest in HIV treatment as prevention because of my own doubts about both the biomedical utility and safety of this approach, including concerns it could lead to increased drug resistance, as well as my concerns about the objectification of people living with HIV as disease vectors. Throughout the two years I have been working on this project, I have engaged with both professionals whose work involves making sense of the emerging use of biomedical prevention tools as well as people living with HIV who are themselves on treatment and relying on viral suppression as a prevention tool. As a result of these experiences in the field, I have also come to be embrace some of the excitement and optimism for how treatment as prevention is creating new possibilities for what it means to live with HIV.

When I initially designed this project, my goal was to trace the emergence of HIV treatment as prevention as a set of scientific discourses, seeking to understand its roots, its travels, its key institutional and individual actors, and its implications for constructions of HIV as a virus and of the people it infects and affects, as well as for HIV prevention and treatment policy, more broadly. I pointedly sought to frame my research questions so as to highlight the displacements in discourse on HIV as a result of treatment as prevention, as well as the resistances and counter-discourses to it that are circulating within the scientific, policy and practice arenas. As such, the research questions which guided my inquiry were:

(1) How and from where did HIV treatment as prevention discourses emerge? Why did this prevention strategy assume such prominence when it did?

(2) Who are the primary institutional and individual actors both advocating and critiquing these strategies? Who stands to benefit from HIV treatment as prevention, and who will be left out if, or when, this 'tide' finally does 'turn'?

(3) What other discourses are neglected, abandoned or de-legitimized by the discourse around HIV treatment as prevention? In other words, what happened to all the arguments, long made, that treatment alone would never be enough to bring about the 'End of AIDS'? Further, what counter-discourses and other forms of resistance have arisen in response to HIV treatment as prevention?

(4) What do these discourses tell us about broader transformations both in biomedicine itself and in approaches to global health? In contrast, in what ways do these larger macro-social transformations inform our understanding of HIV treatment as prevention?

(5) What are the perceived implications of the priorities or silences produced in discourses of HIV treatment as prevention for the production of new subjectivities, bodies, and biosocial communities? What kinds of identities and communities are brought into focus within the scientific and policy arenas by such discourses? What kinds of identities and communities are rendered less visible or even invisible?

These guiding research questions drew me along an analytic path that, using the constant comparative method and moving between field sites, interviews, data, memos, and back into the field, led me to formulate more questions and to refine my analytic interests in HIV treatment as prevention, particularly as the science and practice of HIV biomedical prevention has itself rapidly developed over these past several years. Guided by my initial research questions, the analysis I present here follows four distinct but interconnected analytic threads.

First, I explore how HIV risk is being re-configured via HIV treatment as prevention, particularly via modes of intervention which focus on biomedical risk as opposed to sexual risk, with an engagement in HIV biomedicine (being tested for HIV, engaged in regular HIV specialist care, compliant with treatment and virally suppressed) increasingly coming to be the modes of subjectification by persons living with HIV can *and must* entrepreneurially re-fashion themselves as healthy, disciplined, responsible, risk-averting subjects. I particularly emphasize how risk functions symbolically as a boundary maintenance device, policing symbolic borders and pointing out moral transgressions, and potentially troubling the boundaries between 'healthy, responsible selves' and 'diseased, irresponsible others.'

I then explore the construction of 'being undetectable' as an emergent technoscientific identity (Clarke, Mamo, Fosket, Fishman & Shim 2010; see also Clarke et al. 2003), one which comes to shape both the formation of biosocial communities and also the basis for claims-making to emergent forms of biomedical citizenships. I argue that 'being undetectable' is one among many modes of subjectification by which the 'truth discourses' of HIV treatment as prevention are engaged in the disciplining of biomedical subjects and the regulation of populations.

I then draw on this analysis of subjectivity, as well as that on risk, to posit that the emergence of HIV treatment as prevention has been co-constitutive of a number of transformations in the techniques of biomedical surveillance of people living with HIV, critically, via the shifting techniques of viral visualization. I assert that the shifting disciplining gaze from the level of the clinic and the molar body to that of the viral gaze, made possible by techniques of viral visualization, have transformed the problem spaces of HIV prevention. Increasingly, the practices of HIV prevention, via treatment as prevention and other biomedical prevention approaches, are being re-shaped from a concern with *control over* disease progression and immune function to a focus on *transformations of* bodies from 'the inside out' via pharmaceutical means.

Lastly, I explore how antiretrovirals themselves as technoscientific 'things' of material and discursive significance are constructed as both potentiating and also disrupting their use as prevention technologies as part of HIV treatment as prevention, via a highly anticipatory orientation to the future. I explore how constructions of antiretrovirals via treatment as prevention are being made up through processes of *abduction*, a tacking back and forth between the present, the past and highly anticipated, yet uncertain, futures, and engaging with *possibility* in very material ways. I posit HIV treatment as prevention and also the 'End of AIDS' as exemplary sites for theoretical work on anticipatory practice.

My analysis in the chapters to follow seeks to contribute to theoretical work on Clarke and colleagues (2010) conceptualization of biomedicalization as well as Nikolas Rose's (2007) work on vital politics and somatic ethics, with a particular focus on risk, surveillance, and subjectivity. In addition, I contribute to theorizing in the area of anticipation via biomedicine and technoscience, drawing on the work of Adams, Murphy and Clarke (2009), as I situate HIV treatment as prevention as a regime of anticipation, one in which antiretrovirals as well as viral load technologies are constructed as creating the conditions of possibility for imagined futures, including the heralding in of the 'End of AIDS.'

HIV Treatment as Prevention: A Substantive Background

In December of 2011, following the release of the interim results of the first and only clinical trial of the use of antiretrovirals preventatively in people living with HIV in May of that year and in the wake of a momentous World AIDS Day event on December 1st held at George Washington University called ‘The Beginning of the End of AIDS’, *Science* magazine named HIV treatment as prevention as its ‘breakthrough of the year’ (J. Cohen 2011). HIV treatment as prevention is an emerging biomedical prevention approach that seeks to utilize routine HIV testing, linkage to and engagement in care, and the consumption of antiretrovirals in order to suppress individuals’ viral loads, greatly reducing or eliminating the risk of onward transmission of HIV, as well as, ideally, improving the health and wellbeing of the individual. Though HIV treatment as prevention as a scientific concept has its roots in the use of antiretrovirals to prevent mother-to-child transmission (Mofenson et al. 1999; Shapiro et al. 2010; Sperling et al. 1996; Townsend et al. 2008) and also for post-exposure prophylaxis after both sexual (Praca Onza Study Team 2004) and occupational exposures (Cardo et al. 1997), it was first conceptualized in its present form in a concept paper by Dr. Julio Montaner in 2006, which was followed several years later by the publication of a generalized epidemic mathematical model by Granich and colleagues in 2009 that predicted the achievement of a point of theoretical elimination of HIV through routine HIV testing and universal antiretroviral treatment.

In advance of the 2012 International AIDS Conference in Washington, DC, the interim results of the HIV Prevention Trials Network (HPTN) 052 Study were made public, demonstrating a 96% reduction in transmission among heterosexual serodifferent couples and no linked transmissions between couples in which the HIV-positive partner was virally suppressed, that is, having an HIV viral load below the point of detection by viral assay technologies (Cohen 2011). Framed as offering up proof of Montaner’s (2006) concept of treatment as prevention, the HPTN 052 Study, along with the findings of several observational studies of the clinical and prevention benefits of early antiretroviral initiation published in the years since, have catalyzed a paradigm shift within the fields of HIV treatment and prevention: a movement from HIV treatment and prevention to HIV treatment *is* prevention. As Wilson (2012:1) asserts, "We are now in an era where the secondary benefit of ART is being considered as potentially the primary public health approach to controlling HIV epidemics." HIV treatment as prevention has been described as both "the key to an AIDS-free generation" (Hull and Montaner 2013:S95) and also as unrealistic, overly simplistic and at worst unethical and potentially dangerous (Strub 2010; Krellenstein & Strub 2012).

In this chapter, I provide a historical perspective on the emergence of HIV treatment as prevention as a scientific idea and as a policy approach, while also highlighting the eddies, backflows and critiques of this biomedical HIV prevention strategy. I seek to provide a snapshot of the substantive literature on treatment as prevention to date, attempting to capture this ever-moving target, in order to build a foundation for the analytic discussion in the chapters that follow.

The Emerging Concept of Treatment as Prevention

The first evidence for the association between antiretroviral use and the reduced risk of onward heterosexual transmission of HIV emerged shortly after the introduction of combination therapy in the late 1990s (Castilla et al. 2005; Sullivan et al. 2009). The foundation for what we would today call HIV treatment as prevention can be found in the long-standing practice of using antiretrovirals to prevent mother-to-child transmission of HIV during pregnancy, birth and breastfeeding in both resource-rich and resource-poor settings (Shapiro et al. 2010; Townsend et al. 2008). Specifically, this includes several studies that have linked maternal viral load and the reduced risk of vertical transmission (Mofenson et al. 1999; Sperling et al. 1996). The concept of HIV treatment as prevention as a generalized population level prevention strategy is widely considered to have been first conceptualized in the scientific literature with the publication of Julio Montaner's (2006) article, "The Case for Expanding Access to Highly Active Antiretroviral Therapy to Curb the Growth of the HIV Epidemic" in the *Lancet.* While not using the term "treatment as prevention" at the time, Montaner and his colleagues laid out an argument for the benefits of a *prevention-centered*, rather than strictly patient-centered, antiretroviral approach by relying on evidence of biological plausibility, individual effects of treatment on the prevention of mother-to-child transmission, and data from observational cohorts and ecological studies of treatment scale-up.

While acknowledging the bioethical complexities of utilizing a pharmaceutical designed for the production of clinical, rather than population-level, outcomes for prevention purposes and also concerns about the development of drug resistance, Montaner and colleagues (2006) asserted that the status quo prevention approach - traditional behavioral and structural interventions alone - were not sustainable and would not be sufficient to control the future expansion of the HIV epidemic in the absence of biomedical prevention. This paper offered an initial rallying call for a prevention-focused approach to antiretroviral treatment use, an approach that would in time come to be coined "HIV treatment as prevention." It also effectively staked a claim on the concept of "treatment as prevention" on behalf of Montaner's British Columbia Centre for Excellence in HIV/AIDS, based in Vancouver, which has been propelled into the spotlight, along with Montaner, as key individual and collective actors in the emergence and increasing prominence of treatment as prevention in global HIV prevention discourses. Of note, the term, "treatment as prevention" has been personally trademarked by Dr. Julio Montaner himself via a registered trademark application filed in Canada on December 21, 2011, two days in advance of the publication of the *Science* magazine 'Breakthrough of the Year' announcement on December 23rd of that year.

Early Mathematical Modeling of HIV Treatment as Prevention

In 2009, the first mathematical model of the implementation of HIV treatment as prevention was published by Reuben Granich and colleagues in a paper titled, "Universal Voluntary HIV Testing with Immediate Antiretroviral Therapy as a Strategy of Elimination of HIV Transmission: A Mathematical Model," in the *Lancet*. These authors present evidence for the potential theoretical 'elimination' of HIV through the use of a universal voluntary HIV testing strategy followed by immediate initiation of antiretroviral treatment among those who test positive, a finding later also predicted in a model by Holtgrave (2010). According to Granich and colleagues, structural and behavioral as well as other biomedical HIV prevention strategies, such as vaginal microbicides and medical male circumcision, alone have had limited effect in curbing the progression of the HIV epidemic. Instead, they argued that the most effective approach to HIV control would be to develop a coordinated approach aimed specifically at acting on the case reproduction number (R_0), which is “the number of secondary infections resulting from one primary infection in an otherwise susceptible population” (Granich et al. 2009:49), such that this would be reduced to a level below $R_0=1$.

In layperson’s terms, such an approach would mean reducing the rate of transmission at the population level to a tipping point at which each individual living with HIV passes the virus on to less than one other person, when measured as a population average, in the course of their lifetime with HIV. According to the Granich model, it would be possible to achieve this tipping point where R_0 is less than 1 through the implementation of a universal voluntary HIV testing program involving the routine testing of all individuals age 15 and over once per year for life followed by immediate initiation of antiretroviral therapy for those who test positive in a hypothetical generalized heterosexual epidemic setting. The outcome of such an approach, modeled using epidemic data from South Africa as a test case, would be a rapid decrease in AIDS mortality and the movement from a generalized into a concentrated epidemic, with the potential for theoretical ‘elimination,’ defined as less than 1 infection per 1000 persons per year, within 10 years of implementation.

This strategy, which they described as the ‘Test and Treat’ approach, poses a number of challenges in its hypothetical formulation by Granich and colleagues (2009), including those raised by the authors themselves. They acknowledged in their original paper that such an approach would be both costly and labor intensive to implement, requiring a significant front-loading of investment at scale up. It would require a sustainable supply of diagnostic materials and both first and second-line antiretrovirals. It would also raise the potential for human rights violations, including coercion into testing and treatment. Nonetheless, the authors assert that such a strategy would also present a number of programmatic advantages, including reducing the need for expensive and often inaccessible CD4 and viral load testing to determine the appropriate time to initiate therapy, and improving the pharmaceutical supply chain, particularly to otherwise resource-limited settings. Ultimately, they argued that it could lead to an overall reduction in HIV morbidity that would significantly reduce the burden on already strained health care infrastructure in certain settings. Through cost-effectiveness modeling they found that long-term cost-savings would accrue through averted infections despite initial foregrounding of investment in expanding HIV care and treatment, a finding also supported by modeling of a more concentrated epidemic scenario in British Columbia by Johnston et al. (2010). Though the Granich model is widely perceived as the foundational modeling work which pushed HIV treatment as prevention onto the global scientific stage(s), this model, as well as those subsequently published by other scholars, has also been critiqued for its in-built assumptions about idealized human behavior and the structural conditions supporting HIV care and treatment, a critique that will be taken up later in this chapter.

Proof of Concept for HIV Treatment as Prevention: The HPTN 052 Trial

Since the advent of the era of highly active antiretroviral, or combination, therapy in the 1990s, a number of ecologic studies have demonstrated an association between antiretroviral uptake and reduced HIV incidence (Das et al. 2010; Middlekoop et al. 2011; Montaner et al. 2010), and other analyses have specifically reported an association between lower viral load and reduced infectiousness (Anglemyer et al. 2011; Attia et al. 2009). Of particular importance is Thomas Quinn's (2000) paper from the Rakai observational cohort on the relationship between serum viral load and sexual transmission, a seminal publication discussed in depth by many of the clinical scientists I interviewed. However, the first - and only - placebo-controlled randomized clinical trial of the impact of antiretroviral treatment on the individual risk of onward (hetero)sexual transmission is the HIV Prevention Trials Network (HPTN) 052 Study (Cohen et al. 2011).

The HPTN 052 is a multi-country randomized clinical trial of early versus delayed initiation of antiretroviral therapy among stable heterosexual serodifferent couples across thirteen sites in nine countries. These countries included five in Sub-Saharan Africa (Botswana, Kenya, Malawi, South Africa and Zimbabwe), as well as sites in India, Thailand, Brazil and the U.S. Those randomized to the early treatment arm received antiretroviral therapy from the point of enrollment in the study along with standard primary care, whereas those in the delayed therapy arm received only primary care until their CD4 cell counts dropped below a threshold of 200-250 or the development of an AIDS-defining illness. The study sought to understand both the magnitude of the effects of antiretroviral treatment on transmission and also the durability of these effects. Findings from this study showed that early initiation of therapy significantly reduced sexual transmission of HIV between heterosexual partners. In fact, based on early reports on study outcomes, sexual transmission was found to be reduced by 96% by early initiation of antiretroviral therapy compared to delayed therapy, with only one linked transmission occurring in the first 3 months after initiating treatment, later hypothesized to have occurred before viral load was sufficiently suppressed. Early initiation of antiretroviral treatment was also found to significantly reduce the risk of adverse clinical events, such as the onset of a serious opportunistic infection or death. The authors hypothesized that the suppression of viral copies in genital secretions is the primary biologic mechanism by which transmission was reduced in this sample.

These findings reported by Cohen and colleagues in 2011, however, are based only on a median of 1.7 years of follow-up. On April 28, 2011, the study's data and safety monitoring board recommended that randomization in the study be halted on the basis of the interim analysis showing a 96% reduction in transmission in the early treatment group and that all participants be offered antiretroviral treatment. These initial findings were then released, being presented by the lead investigator at the International AIDS Society's Conference on HIV Pathogenesis and Treatment in July of 2011, which was then followed by the above cited publication (Cohen et al. 2011) in the *New England Journal of Medicine* in August of that year. In December of 2011, *Science* named HIV treatment as prevention as its "Breakthrough of the

Year…[b]ecause of HPTN 052's profound implications for the future response to the AIDS epidemic," referencing the HPTN 052 study as a "game changer" (J. Cohen 2011:1628).

The HPTN 052 trial was continued through 2015 with all participants being offered treatment in order to evaluate the durability of the effect on transmission as well as to monitor for clinical events. As reported at the IAS Conference in 2015 and published in full by Cohen and colleagues (2016), there have been a further 9 linked transmissions, all occurring either before treatment was initiated, in the early stage of treatment before viral suppression had been achieved, or in instances of virological failure while on antiretrovirals. There have been no linked transmissions between couples where the HIV-positive partner had a sustained undetectable viral load - a finding that HIV i-base, a treatment information and advocacy organization, described in a report in their HIV Treatment Bulletin as "impressive" (Collins 2015). Nonetheless, the HPTN 052 Study Group has been criticized by HIV advocates for not being entirely forthcoming in reporting data on the development of drug resistance and virological failure among its study population, both of which are issues of concern for the long-term ramifications of early treatment initiation (Collins 2015).

The enthusiasm for the findings of the HPTN 052 Study results have also been tempered by concerns over its generalizability beyond those in stable heterosexual relationships, concerns often raised by participants in the present project during research interviews. These concerns related specifically to whether the preventative effects of viral suppression would hold in casual or non-monogamous relationships, and among men who have sex with men or other relationships where condom-less anal sex is a common practice, as well as among injecting drug users. Though the PEPFAR Scientific Advisory Board concluded that the preventative effects of early treatment could be considered to apply broadly to all heterosexual relationships, including transactional or casual ones, and the World Health Organization concluded that it is plausible to assume that these benefits are also extended to men who have sex with men having condom-less anal sex, data on the generalizability of the findings of HPTN 052 continue to be, according to the study authors themselves, "lacking" despite the fact that “another randomized clinical trial to assess this question is not likely to be undertaken” for ethical reasons (Cohen 2012:1442).

The PARTNER Study

Despite providing the only randomized clinical trial data on which the strategy of HIV treatment as prevention has been based, the HPTN 052 study focused largely on heterosexual couples (97%), engaging in primarily vaginal sex, who may or may not have been using condoms during the study period. In contrast, the PARTNER study is an international observational prospective study following both heterosexual and men who have sex with men (MSM) serodifferent couples who report having condom-less sex (at least one instance of condom-less vaginal or anal penetrative sex in the month prior to entering the study), in which the HIV-positive partner has a known viral load of less than 200 copies per ml at the start of the study.

The preliminary results of the PARTNER Study (Rodger et al. 2014) were first reported at the Conference on Retroviruses and Opportunistic Infections (CROI) in March of 2014 in a paper titled “HIV Transmission Risk Through Condomless Sex If HIV+ Partner on Suppressive ART: PARTNER Study.” The authors reported no phylogenically linked HIV transmissions in couples where the HIV-positive partner had a suppressed viral load. These results reported at CROI were preliminary ones, however, and follow-up is ongoing, with the authors cautioning that uncertainty remains over the durability of these findings over time, particularly for MSM, and for couples where the negative partner reported condom-less receptive anal sex. Nonetheless, the significance of the PARTNER Study to the developing legitimacy of the strategy of HIV treatment as prevention is that it provides what is perceived to be more ‘real world’ data outside of the relatively controlled environment of the clinical trial on the preventative effects of viral suppression on the reduction of sexual transmission, and specifically data that can be generalized to a broader population of people living with HIV, including MSM. Further, the PARTNER Study involved participants who reported to not routinely use condoms and included detailed surveys of sexual behavior, allowing for a more contextualized understanding of residual risk (Collins 2014).

The START Study

The Strategic Timing of Antiretroviral Treatment (START) Study is a global multi-site randomized clinical trial to determine the *individual* risks and benefits of early versus delayed antiretroviral treatment. Individuals who participated in the START Study were all treatment naive (had never previously taken antiretroviral therapy) and had CD4 counts above 500 at the start of the trial. They were randomized to two study arms: those who began treatment immediately with a CD4 count above 500 and those for whom treatment initiation was deferred until their CD4 count dropped below 350. On May 15, 2015, much like the HPTN 052 Study, the data and safety monitoring board decided, on the basis of the interim analysis, to halt randomization in the study and to offer antiretroviral treatment to all study participants. This decision was made on the basis of the finding that early antiretroviral initiation provided net benefits compared to deferring treatment initiation based on analysis of the primary composite endpoint of the occurrence of any serious AIDS-related event, serious non-AIDS-related event, or death from any cause. Though the overall risk of a serious event was low, early treatment more than halved that risk, and it did so with no additional risk of adverse effects during the study period (a mean follow-up period of 3 years). The authors conclude that “[o]ur result indicates that antiretroviral therapy should be recommended for patients in whom HIV has been diagnosed regardless of the CD4+ count” (INSIGHT START Study Group 2015:804).

The significance of the START Study to the emerging discourses of HIV treatment as prevention is that it provided the much-anticipated clinical trial evidence that early or immediate treatment initiation was safe and beneficial *for the individual*. While the HPTN 052 Study made the case for earlier or immediate treatment initiation to benefit population health and to reduce onward transmission to sexual partners, considerable resistance to treatment as prevention remained because of outstanding concerns of whether it might prove detrimental to individual health to start treatment at higher CD4 counts. These unanswered questions raised a number of bioethical quandaries about the balance between individual risk and population benefit in the early debates about HIV treatment as prevention. The START Study findings have since been utilized to make the case that early or immediate treatment is good for prevention *and* also good for individual health. The release of the preliminary findings of the START Study in May of 2015 triggered a chain of events that have led to the increasing abandonment of CD4 thresholds in treatment guidelines, notably by the World Health Organization in September 2015 (WHO 2015), and the broader deployment of the idea that all people living with HIV should be offered antiretroviral treatment from the moment of diagnosis.

Emerging Scientific Intensification of Interest in the Biomedical Prevention of HIV

The publication of the Granich (2009) model followed by the interim results of the HPTN 052 Study (Cohen el. 2011) was so ground-breaking that there has since been an overwhelming response within the intersecting social worlds of HIV science, care, and treatment, as well as a growing popular interest in treatment as prevention, concerns about ‘real world’ effectiveness and bioethical and human rights qualms notwithstanding. This is evidenced by the increasing attention paid to treatment as prevention in scientific publishing, as well as in the lay press, and the convening of several global scientific meetings taking an exclusive focus on treatment as prevention and the use of antiretrovirals for prevention.

Of particular note are the proliferation of scientific meetings focused specifically on treatment as prevention or the use of antiretrovirals for prevention. Since 2011, the British Columbia Centre for Excellence in HIV/AIDS, headed by Dr. Julio Montaner, who wrote the 2006 article making the case for the concept of treatment as prevention, has convened an annual International HIV Treatment as Prevention Workshop. This four-day meeting “brings academic, policy, industry, and community representatives together to review and discuss research and policy progress in the field of HIV ‘Treatment as Prevention.’” (International Treatment as Prevention Worksop 2016). It was held in Vancouver, BC in April of each year from 2011 until 2014. In July 2015, the BC Centre hosted the International AIDS Society’s (IAS) Conference on HIV Pathogenesis, Treatment and Prevention (notably known, until 2015, as simply the

Conference on HIV Pathogenesis and Treatment), and in this year, the Workshop was linked to this broader global scientific forum, serving as a pre-conference to IAS 2015.

Similarly, in 2016, the previously Vancouver-based International Treatment as Prevention Workshop, having been re-named the UN 90-90-90 Target Workshop, solidified this linkage with the International AIDS Society by again serving as a pre-conference to the International AIDS Conference held in Durban, South Africa. Since its first convening in 2011, the workshop has continually been hosted by the BC Centre for Excellence in HIV/AIDS, and has been variously co-hosted or co-sponsored by the International AIDS Society, UNAIDS, the World Health Organization, PEPFAR, the Global Fund, the U.S. National Institute of Drug Abuse, and the Bill and Melinda Gates Foundation, among others, and numerous industry sponsors such as Gilead Sciences, Bristol-Myers Squibb, Merck, ViiV Healthcare (all manufacturers of antiretrovirals) and diagnostic technology manufacturers, such as BioLytical.

Further, since 2012, the International Association of Providers of AIDS Care (IAPAC), in partnership with the British HIV Association (BHIVA), has convened an annual two-day Controlling the Epidemic with Antiretrovirals Summit focused both on treatment as prevention and pre-exposure prophylaxis. The International Association of Providers of AIDS Care (IAPAC) is a not-for-profit professional membership body which represents over 20,000 clinicians globally who provide HIV treatment, prevention, and other related care. The British HIV Association is a charitable professional membership body representing UK providers of HIV care. It also serves as an advisory body drafting treatment and other HIV care guidelines within the UK, which inform the commissioning of NHS services related to HIV prevention, care and treatment. The Controlling the Epidemic with Antiretrovirals Summit has been held annually since 2012 in London, with the exception of the 2015 Summit which was held in Paris to coincide with the ceremonial signing of the Paris Declaration by the Mayor of the 4th Arrondissement, pledging her commitment to the UNAIDS 90-90-90 targets to end AIDS.

The emergence of scientific interest in HIV treatment as prevention is also evident in the proliferation of papers published in scientific and medical journals on the topic. A search of the

PubMed database reveals that the first published paper specifically using the term “HIV Treatment as Prevention” either in its title or abstract was published in January of 2010, notably the year after the publication of Granich’s and colleagues’ (2009) mathematical model and the year prior to the release of the interim results of the HPTN 052 study (Cohen et al. 2011). Six further papers on treatment as prevention followed that year. Interestingly, the papers published in 2010 in large part seem to be responding to the growing interest in treatment as prevention coming on the tail of the Swiss Statement (Vernazza, Hirschel, Bernasconi, & Flepp 2008), to be discussed shortly, the publication of the Granich model (2009), and tackling questions of its plausibility and acceptability as a prevention strategy. Titles include: “HIV treatment as prevention and ‘the Swiss statement’: in for a dime, in for a dollar?” (Cohen 2010), “HIV treatment as prevention. The jury's still out, but current data seem to support the theory that ART use reduces the likelihood of HIV transmission” (del Rosa 2010), and “HIV treatment as prevention: to be or not to be?” (Cohen 2010). In 2011, the year that the interim results of the HPTN 052 study were published, a further six papers appear in the PubMed database and with a notable turn in discourse, from one of questioning to one of increasing enthusiasm as well as growing certainty about the plausibility and efficacy of treatment as prevention. These papers include the announcement in *Science* that HIV treatment as prevention had been named the ‘Breakthrough of the Year’ (J. Cohen 2011), an editorial in the *Lancet* referencing the release of the interim results of the HPTN 052 study titled “HIV treatment as prevention—it works” (Lancet 2011), as well as another co-authored by Julio Montaner, titled “Treatment as prevention: preparing the way” (Williams et al. 2011).

Also, in 2011, came the first efforts to offer up social scientific critique of treatment as prevention with the publication of Vinh-Kim Nguyen and colleagues’ (2010) paper, “Remedicalizing an epidemic: from HIV treatment as prevention to HIV treatment is prevention” in the journal *AIDS*. In the years that have followed, interest in treatment as prevention in scientific and medical journals has proliferated and then stabilized, with twenty-one papers published in 2012, sixteen in 2013, twenty-six in 2014 and nineteen in 2015. It remains to be seen how the release of the START trial interim results in May of 2015 will impact on the use of the term “HIV treatment as prevention” in the scientific and medical arenas, given that early treatment is no longer justifiable on purely preventative grounds, but is increasingly also framed as best for individual health.

Translating Treatment as Prevention into Action: Plans, Strategies, Guidelines

Beyond the explosion of scientific and popular press articles and the emerging focus on HIV treatment as prevention in the organization of scientific meetings on the topic, it is also important to note the ways in which the idea of pharmaceutical prevention of HIV as modeled by Granich and colleagues (2009) and demonstrated by Cohen and colleagues (2011) in the early findings of HPTN 052 has already diffused into policy and practice, however unevenly, in various settings globally. In January 2008, the Swiss National AIDS Commission released a statement, which has now come to be known as the ‘Swiss Statement,’ based upon the scientific evidence available at the time, and notably prior to the release of the interim findings of the HPTN 052 trial, on the effect of viral suppression achieved via antiretroviral treatment on the individual risk of sexual transmission. This statement asserted that "An HIV-infected person on antiretroviral therapy with completely suppressed viremia (‘effective ART’) is not sexually infectious, i.e. cannot transmit HIV through sexual contact” (Vernazza et al. 2008) assuming three conditions were met: (1) the individual is adherent to antiretroviral treatment with regular monitoring by their physician, (2) their viral load has been suppressed to an undetectable level (defined as less than 40 copies per ml) for at least six months, and (3) they are free of other sexually transmitted infections which might facilitate HIV transmission. The statement of the Swiss National AIDS Commission was intended to inform clinical practice in Switzerland and offer reassurance to patients who were in mutually monogamous relationships, particularly heterosexual couples who wished to conceive naturally without a reliance on reproductive technologies, as well as to challenge the overly broad criminalization of HIV exposure (Edwin Bernard, personal communication). However, it has also come to be considered the first formal clinical recommendation on the use of HIV treatment as prevention.

Within the U.S., both San Francisco and New York City, as well as New York State, have been on the forefront of driving an agenda for earlier antiretroviral therapy initiation with the aim of curbing, if not, 'ending' the HIV epidemic. Beginning in 2010, Ward 86 at San Francisco General Hospital launched a universal treatment program that offered antiretrovirals to every person who tested positive from the day of diagnosis, driven by the argument that as a chronic inflammatory condition, controlling the progression of HIV disease well before AIDS-related symptoms appear benefits individual health and could also prevent onward transmission (Davis 2012). Of note, the initiation of this program, one which has since developed into San Francisco's Getting to Zero campaign, a three-pronged biomedical prevention and care initiative focused on expansion of access to pre-exposure prophylaxis, rapid same-day initiation of antiretrovirals upon diagnosis, and retention in care efforts, took place prior to the release of the interim results of the HPTN 052 trial, the only clinical trial testing the individual level effect of treatment on onward transmission, which did not take place until a year later. Following on San Francisco's heels, in December of 2011, New York City developed its own universal treatment initiative (Davis 2012) and in June of 2014, Governor Andrew Cuomo announced his Blueprint to End the AIDS Epidemic in New York State. Cuomo's three point plan "(1) identifies persons with HIV who remain undiagnosed and links them to health care. (2) links and retains persons diagnosed with HIV in health care to maximize virus suppression so they remain healthy and prevent further transmission. [and] (3) facilitates access to Pre-Exposure Prophylaxis (PrEP) for high-risk persons to keep them HIV negative." (New York State Department of Health 2016). In each of these city and state-wide efforts, the use of treatment as prevention to protect the community fundamentally undergirds intervention efforts.

In March of 2012, the U.S. Department of Health and Human Services revised their treatment guidelines to recommend treatment initiation for all individuals at risk of transmitting HIV to sexual partners. In February 2013, the U.S. Guidelines for the Use of Antiretroviral Agents in HIV-1 Infected Adults and Adolescents published by the U.S. Department of Health and Human Services were updated to state that "effective treatment of HIV-infected individuals with ART is highly effective at preventing transmission to sexual partners" (NIH 2014:15). In this way, from 2012, the U.S. has recommended de facto treatment as prevention, that is, the recommendation to initiate treatment for anyone who may potentially pose a risk of transmission to another, even if considerable barriers remain in access and affordability of treatment for all, and particularly the most economically and socially vulnerable Americans. In July of 2015, the U.S. National HIV/AIDS Strategy (NHAS), a five year plan for addressing HIV care and prevention which was first released by President Barack Obama in 2010, was updated to reflect the shift towards biomedical prevention, specifically treatment as prevention, but also the use of pre-exposure prophylaxis (Office of National AIDS Policy 2015). A downloadable PDF resource available on the Office of National AIDS Policy's NHAS website (2016) called "5 Major Changes Since 2010" states "Our prevention toolkit has expanded…Treatment as Prevention. The risk of transmitting HIV is reduced by 96% in those who start treatment early." No changes to behavioral or structural prevention strategies are noted in this resource. Treatment as prevention is now also forming a core component of HIV prevention strategies in several other settings, including in British Columbia driven by work of Dr. Julio Montaner and the Centre for Excellence in HIV/AIDS, followed by China in 2011 and Brazil and France in 2013 (British Columbia Centre for Excellence in HIV/AIDS 2013).

In July of 2014, in conjunction with the 20th International AIDS Conference in Melbourne, Australia, the Joint United Nations Programme on HIV/AIDS (UNAIDS) announced the 90-90-90 target, "an ambitious treatment target to help end the AIDS epidemic," stating that "the aim in the post-2015 era is nothing less than the end of the AIDS epidemic by 2030" (UNAIDS 2014a: 1). Through a process of global stakeholder consultations, this new target seeks to diagnose 90% of all persons living with HIV globally, to achieve 90% antiretroviral treatment uptake from among those who are diagnosed, and for 90% of those on treatment to be virally suppressed by 2020. This will result in a 72% rate of viral suppression among all those living with HIV globally, meaning then that the vast majority of people living with HIV will be non-infectious, with only

28% remaining virally un-suppressed, including among those the 10% of people with active HIV infection who remain undiagnosed.

The 90-90-90 target is now the driver of global HIV care, treatment and prevention approaches, bolstered in September of 2015 by the update to the World Health Organization's (2015) "Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV." This WHO Guideline Update, released on September 30, 2015, a day in advance of the Controlling the Epidemic with Antiretrovirals Summit organized by the International Association of Providers of AIDS Care (IAPAC) in Paris, France, did away with CD4 thresholds for treatment initiation, while continuing to prioritize immediate treatment for those with CD4 counts below 350 or with symptomatic HIV. This update to the WHO guideline was largely made in response to the May 2015 release of the interim results of the START study, which offered evidence that earlier initiation of antiretroviral treatment offered clinical benefits to the individual and posed no additional short-term risks over delayed initiation (INSIGHT START Study Group 2015). Of note, with the exception of the WHO Guideline Update, all other revisions of recommendations on earlier treatment initiation discussed here took place prior to the release of clinical trial data on the individual level risks and benefits of early versus delayed treatment.

In contrast to the enthusiasm of the U.S., British Columbia, France, Brazil and even China for the early initiation of antiretroviral treatment with the aim of curbing transmission, the United Kingdom has, on the books at least, retained its CD4 threshold of 350 as a guideline for starting treatment within the British National Health Service. The British HIV/AIDS Association (BHIVA) is the professional membership body for HIV clinicians which advises the NHS on commissioning for HIV prevention, care and treatment services. That is, BHIVA members, who generally are themselves HIV specialist clinicians along with community members, draft evidence-based recommendations for NHS commissioning of services for HIV. The NHS is not required to accept the recommendations of BHIVA, though it largely does; a recent exception being the debate over publicly-funded pre-exposure prophylaxis in the UK, which was only enforced by an August 2016 high court ruling against NHS England's attempts to block public provision of PrEP, a case that was brought to the court by the National AIDS Trust (Boseley 2016).

In January 2013, BHIVA and the Expert Advisory Group on AIDS (EAGA) in the “Position statement on the use of antiretroviral therapy to reduce HIV transmission” stated that there was not yet sufficient evidence of an individual benefit to starting treatment with a CD4 count above 350, yet “[w]ith the level of evidence available, it is recommended that health care professionals discuss with all people living with HIV the impact of ART on the risk of viral transmission to sexual partners. For those not yet taking ART and wishing to reduce the risk of transmission, the possibility of starting ART for this purpose should be discussed.” (2013:1-2). In effect, this position statement sought to acknowledge the lack of clinical evidence for starting antiretroviral treatment at higher CD4 counts, with the aim of preventing additional individual health risk to patients, while at the same time, acknowledging that the prevention of onward transmission to partners is itself an *individual level benefit* that many patients would likely wish to reap from starting treatment. The BHIVA guidelines sought to support clinicians to have patient-centered discussions of initiating treatment for prevention purposes.

In September 2015, the updated “British HIV Association guidelines for the treatment of HIV-1-positive adults with antiretroviral therapy” for the first time, in response to the release of the START study results in May of that year, recommended the discontinuation of the use of CD4 thresholds in guiding treatment initiation within the NHS. Despite this recommendation, in 2016, NHS Commissioners continue to abide by a CD4 threshold of 350, while at the same time, commissioning treatment as prevention when, through a conversation between the clinician and the patient, among other things, the clinician has determined that there is a significant risk of transmission to the patient’s partner(s). This, in effect, makes treatment as prevention available to all NHS patients when the argument can be made that the individual patient needs treatment for public health rather than for clinical reasons. A February 2016 HIV Treatment Bulletin on treatment as prevention, published by i-base, a UK treatment advocacy and information organization, asserts that “Luckily, the NHS allows sufficient flexibility for ART to now be prescribed to all HIV positive people using the TasP policy, irrespective of the current risk of transmission," (Collins 2016), effectively overcoming the technical discrepancy between BHIVA recommendations and NHS Commissioning, at least practically if not rhetorically.

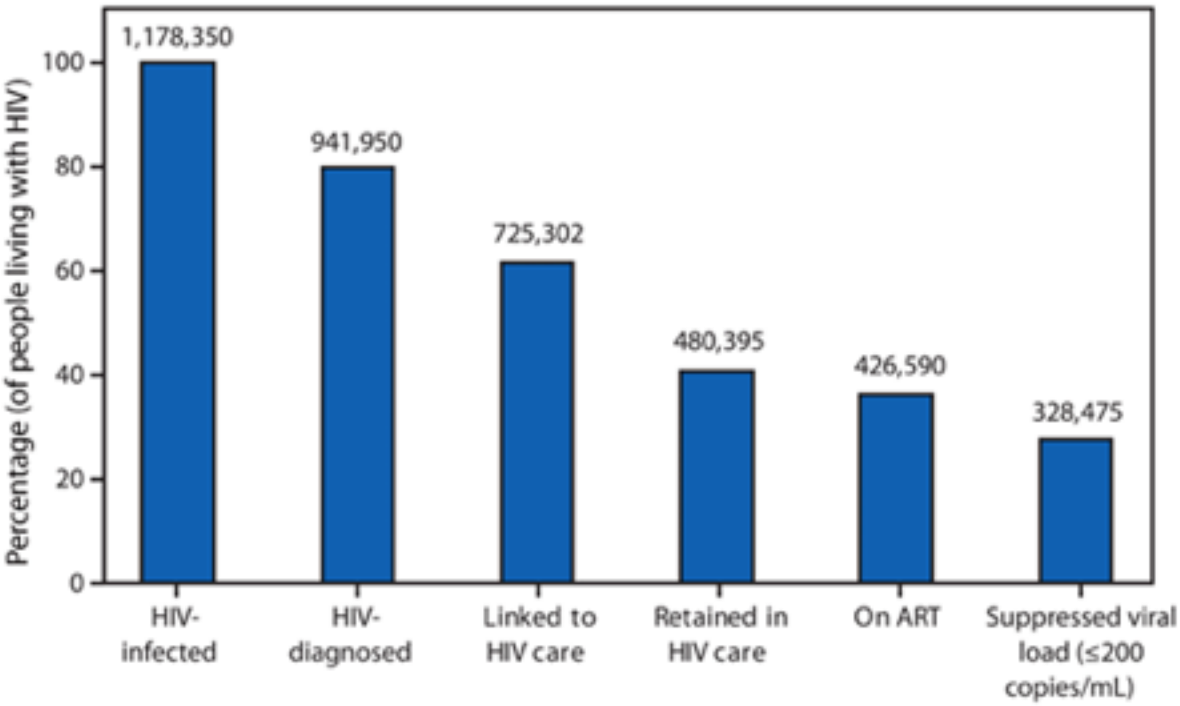
Implementation of Treatment as Prevention and the HIV Care Continuum

Hull and colleagues (2012:579) argue that treatment as prevention has now been "embraced" as a prevention strategy - along with a shift in discourse away from questions of 'if' to questions of 'how?' - with a scientific focus on optimal implementation of treatment as prevention. The success of the implementation of treatment as prevention is framed and visualized as a matter of the 'optimization' of the HIV care continuum (sometimes called the HIV care cascade or treatment cascade), the sequential series of steps from identification of persons living with HIV via diagnostic testing, through linkage to and retention in HIV care, the initiation of and adherence to antiretroviral treatment, to sustained viral suppression (Gardner, McLees, Steiner, del Rio & Burman 2011). Further, as the British Columbia Centre for Excellence in HIV/AIDS (2016) describes, "The HIV Cascade of Care (also known as Care Continuum) provides a framework for service providers and policymakers to measure progress according to steps in the delivery of HIV treatment and care. It allows us to assess development towards HIV prevention and care goals, identifying gaps in sustained patient care". The figure below is an example of the HIV care continuum for the U.S. in 2011, adapted by Wilton and Broeckaert (2013), from the CDC's Morbidity and Mortality Weekly Report for December 2, 2011.

The development of the concept of the HIV care continuum or care cascade is generally attributed to its elaboration in a paper by Gardner and colleagues (2011) called "The Spectrum of Engagement in HIV Care and its Relevance to Test-and-Treat Strategies for Prevention of HIV Infection" published in the journal, *Clinical Infectious Diseases*. The HIV care continuum offers a standardized visual frame by which to quantify engagement in the presumed sequential stages of HIV care from diagnosis through to the achievement of sustained viral suppression. It also serves as a standardized means of visualizing where gaps in the movement through care to viral suppression may be occurring and where intervention efforts might be intensified.

According to Gardner and colleagues (2011:793), “For individuals with human immunodeficiency virus (HIV) infection to fully benefit from potent combination antiretroviral therapy, they need to know that they are HIV infected, be engaged in regular HIV care, and receive and adhere to effective antiretroviral therapy.” In response to the emergence of the HIV care continuum as a means of framing the implementation of treatment as prevention, President Obama established the HIV Care Continuum Initiative which has directed the prioritization of the continuum through the implementation of the U.S. National HIV/AIDS Strategy, most recently updated in 2015 (Office of National AIDS Policy 2015). The care continuum or care cascade has become the common standardized format for the presentation of findings on treatment as prevention in scientific and policy meetings, with each country, county, city and even many

Figure 1. Engagement in the HIV Treatment Cascade in the United States



Source: Adapted from the Centers for Disease Control and Prevention -- *Morbidity and Mortality Weekly Report*, December 2nd, 2011.

Figure 1. Engagement in the HIV Treatment Cascade, excerpted from Gardener et al. 2011

institutions seeking to produce and present their own ‘cascade’ data as a means of demonstrating implementation success or challenges.

This chapter provides an historical snapshot of the emergence of treatment as prevention in order to support the empirical work that follows and therefore cannot explore in-depth the broadening literature on the implementation science of treatment as prevention. With that said, it is important to note the critical gaps in the HIV care continuum across some of the geographical settings discussed in this analysis. Treatment as prevention is, of course, not simply about scale up of the use of antiretroviral treatment. As an alternative term often used to describe treatment as prevention, ‘Seek and Treat,’ highlights, it is fundamentally concerned with the identification of persons living with HIV who are as yet undiagnosed, followed by their subsequent engagement in HIV care and treatment which leads to sustained viral suppression (Hull & Montaner 2013). In an analysis of surveillance data on men who have sex with men in the UK, one of the largest sub-populations affected by HIV nationally, an estimated 26% of MSM living with HIV remained undiagnosed in 2010 (Brown, Gill & Delpech 2013), a finding which echoes that for the UK population as a whole (Peabody 2013). This estimate has improved to 17% in 2014, according to Public Health England surveillance data (Yin et al. 2014). In the U.S. in 2011, approximately 14% of persons living with HIV were as yet undiagnosed (Bradley et al. 2011). In contrast, in South Africa, a recent analysis reported a significant undiagnosed population, with roughly 25% of women and 52% of men living with HIV unaware of their HIV status (Lippman et al. 2016).

Further, as much as 50% of people living with HIV in the U.S. are not engaged in HIV care (Burns, Dieffenbach & Vermund 2010) and drawing on data from National HIV Surveillance System and the Medical Monitoring Project, the CDC estimated this percentage to be as high as 60% in 2011 (Bradley et al. 2011). According to Public Health England, 2012 surveillance data estimate that a promising 97% of people diagnosed with HIV were linked with HIV specialist care within 3 months after diagnosis and 95% of people living with HIV were retained in care from year to year (NAM AIDSmap 2014). In contrast, Lippman and colleagues (2016) report than in South Africa, approximately 33% of men and 58% of women were retained in HIV care. Lack of engagement in or attrition from HIV care is framed as in part due to lack of health insurance, particularly in the U.S., substance abuse, poverty, homelessness and mental health issues (Losina et al. 2010; Ulett et al. 2009)

At the 'end' of the HIV care cascade, Gardener and colleague's (2011) estimated that only 19% of all those living with HIV in the U.S. had achieved sustained viral suppression. The CDC in 2011 estimated that approximately 30% had achieved viral suppression (CDC 2011). In 2014, Public Health England estimated that 70% of all people in the UK living with HIV, both diagnosed and undiagnosed, were virally suppressed, which is approaching the UNAIDS 90-90-90 target of 72% (UNAIDSa 2014). Drawing on 2012 surveillance data in South Africa, Takuva and colleagues (2015) found that while 73% of persons living with HIV on antiretroviral treatment were virally suppressed, engagement in HIV care was poor, particularly among men, with only 25% of the total population of those living with HIV virally suppressed. High levels of social isolation and perceived stigma, disengagement or inconsistent engagement in care, lack of access to single-tablet regimens, and virological failure were identified by these authors as factors associated with failure to achieve an undetectable viral load (Rangarajan et al. 2016).

Hull and colleagues (2012) assert that interventions to improve care cascade optimization, that is, to improve the movement of individuals living with HIV from timely diagnosis onto treatment and to a state of sustained viral suppression, must not only be adapted to local conditions and epidemics, but must also address social and structural vulnerabilities, such as stigma and discrimination, poor access to health care and other supportive services, substance use, poverty, homelessness and unstable housing, food insecurity and mental health needs. A shift from opt-in to opt-out HIV testing has been effective in improving uptake of diagnostic testing (Montoy et al. 2016), suggesting that a move to routine testing with verbal rather than written consent may improve testing rates. Knight and colleagues (2016) focus on health and treatment literacy as a gap in cascade optimization, recommending interventions to facilitate clinical communication about treatment and its prevention benefits as well as the risks of starting treatment. Further, intensive case management has been described as a strategy for intervention on the barriers to linkage and engagement in care (Gardener et al. 2005), as have other strategies such as directly observed therapy, the use of peer navigators and cell phone messaging reminders (Hull et al. 2012).

Critiques of and Resistances to HIV Treatment as Prevention

While HIV treatment as prevention has been described as “the key to an AIDS-free generation” (Hull and Montaner 2013:S95), it has also faced considerable critique. Here I will discuss several threads of critique, ranging from those on biomedical grounds, largely due to concerns that it will hasten the emergence of drug resistant viruses, to those founded on human rights.

One fundamental trajectory of biomedical critique of HIV treatment as prevention has been a concern that earlier treatment initiation, with antiretrovirals started immediately upon diagnosis and taken for life, will over time lead to the development of severe, potentially cumulative, side effects and the development of drug resistance. Deeks and Phillips (2009) argue that antiretroviral use is associated with lower incidence of non-AIDS related morbidities and mortality, particularly that related to cardiovascular, kidney disease, certain cancers, though they found that systemic inflammation can remain high even on long-term treatment. On the other hand, Haire and Kaldor (2013) caution that earlier treatment initiation has the potential to increase long-term side effects, most notably reduced bone density and kidney damage. These authors also caution that starting treatment earlier and experiencing a longer life of treatment consumption may produce greater opportunities for the development of viral resistance. Based on a mathematical model of treatment as prevention among a population of men who have sex with men (MSM) in Los Angeles County, Sood and colleagues (2013) found that, although scale up of HIV treatment as prevention did have the intended effects of significantly reducing new infections by 34% and AIDS mortality by 19%, it also nearly doubled the prevalence of drug resistance in this population. The World Health Organization itself has predicted that, even with appropriate adherence and prescribing practices, the expansion of antiretroviral treatment will likely increase drug resistance, at least in the short-term (World Health Organization 2012). Whether this will have a long-lasting deleterious impact on the preventative effects of treatment is unknown.

Others have critiqued the methodological underpinnings of the scientific evidence for HIV treatment as prevention, particularly on the grounds that critical policy and practice decisions are being made based on what some perceive to be overly optimistic modeling assumptions or limited evidence of the ‘real world’ effectiveness of treatment as prevention. For example, some have questioned the inflated or overly optimistic projections of the population effect of earlier treatment and viral suppression on incidence, citing other models with less promising findings than that of Granich and colleagues (2009). Based on a review of mathematical modeling of the impact of treatment as prevention in resource-rich settings, Paquette and colleagues found wide-ranging variation in predicted outcomes of treatment rates on HIV incidence depending upon the specific built-in assumptions of the models. The predicted effects ranged from no decrease in HIV incidence (Hoare et al. 2008) to as much as 76% of infections averted (Charlebois et al. 2011). Holtgrave and colleagues (2010) assert that even with improvements in both sero-awareness and improved treatment coverage, there is still little evidence that such an approach of universal voluntary testing and immediate treatment will produce the desired effects as modeled by Granich and colleagues. This is because, they argue, the Granich model does not adequately account for a small, but significant degree of high risk sexual behavior even after testing, nor for the fact that not all individuals will adhere successfully to treatment so as to reduce the case reproduction rate sufficiently.

Drawing on an analysis of ‘natural experiments’ of treatment as prevention, that is, surveillance data from settings that have already attained high levels of treatment uptake and viral suppression among populations living with HIV, Wilson (2012) argues that HIV incidence in these settings remains stable or is increasing. Jin and colleagues (2012) echo these findings in an analysis of Australian data on men living with HIV. These authors assert that though there were high levels of treatment and viral suppression within this population, the per-contact probability of transmission remained similar to earlier estimates from pre-HAART developed country settings. Wilson (2012) posits that the findings from these ‘natural experiments’ in resource-rich settings with concentrated epidemics may be explained by changes in sexual risk behavior, such as risk compensation or condom fatigue, heightened barriers to care and treatment access for particularly marginalized groups, and the migration of people living with HIV from higher prevalence settings. He also posits that other factors such as the reduced impact of viral suppression on transmission for other than heterosexual modes of transmission (e.g. condom-less anal sex among MSM or injecting drug use) as well as increasing HIV prevalence as people living with HIV live longer lives rather than dying prematurely.

Further, Truong and colleagues (2006) argue that, where stabilization has been seen in incidence rates among MSM in San Francisco, it may not necessarily be associated with the preventative effects of treatment, but better explained by changes in seroadaptive practices, particularly serosorting, and increased awareness of HIV status among those who are living with HIV. Recent modeling of the impact of risk compensation on the effect of treatment on prevention of onward transmission in heterosexual couples, drawing on the TEMPRANO Study, found, however, that the preventative effect of earlier antiretroviral therapy remains significant for all but the most extreme increases in sexual risk behavior (Kévin et al. 2016) These findings from ‘natural experiments’ in British Columbia, San Francisco, France and Australia do not discredit Granich and colleagues (2009) model, but they do offer a caution in its broad application outside of a generalized, heterosexual high prevalence epidemic setting. In such settings, the impact of routine annual HIV testing and immediate treatment on transmission rates may be less than than predicted based upon Granich et al.’s assumptions, findings also echoed by Brown and colleagues (2013).

Others have specifically critiqued the enthusiasm surrounding the release of the interim results of the HPTN 052 study (Cohen et al. 2011) and the claim echoed around the world by the publication of the Science “Breakthrough of the Year” article (J. Cohen 2011) that antiretroviral treatment leads to a 96% reduction in the risk of heterosexual transmission. These critiques tend to focus on the distinction between the efficacy of an intervention in a relatively controlled clinical trial setting and its ‘real world’ effectiveness outside of the clinical trial. For example, in a retrospective case study of serodifferent heterosexual couples in rural China, Lu Wang and colleagues (2010) found no significant difference in rates of seroconversion between couples in which the partner living with HIV was on antiretroviral treatment and those couples in which this partner was not on treatment. Of note, little is known in this study about viral suppression or treatment adherence, with the authors emphasizing that these findings support the importance of clinical and virological monitoring in the implementation of treatment as prevention approaches. Birungi and colleagues (2015) report similar findings from an observational study of serodifferent heterosexual couples in rural Uganda. Dieffenbach (2012) raises several concerns about the real world effectiveness of treatment as prevention, including the long-term sustainability of the prevention effect as well as the effect of route of transmission on likelihood of transmission. The latter is particularly notable given that the HPTN 052 study interim analysis included only heterosexual couples, leaving open the question of whether the effect of treatment on prevention may be more muted in MSM or injecting drug users, or in those engaging in more casual or transactional encounters. While the findings of the PARTNER study (Rodger et al. 2014) have alleviated some of the critique of the HPTN 052 study for offering little evidence of treatment as prevention in MSM, the questions remain about the long-term, real world sustainability of the effect of treatment as prevention. The HPTN 071 (PopART) study, an ongoing three-arm cluster randomized trial of the population level impact of universal HIV testing with immediate antiretroviral treatment in South Africa and Zambia, seeks to answer some of these questions, particularly whether treatment as prevention as an intervention can be effectively delivered to scale in resource-constrained settings and if it is both effective, as well as cost-effective, at the community level (Hayes et al. 2014).

Treatment as prevention has also been critiqued for offering an overly narrow, biomedical solution to what is framed as a social problem that requires both biomedical and broadly structural solutions, a critique which echoes the work of McKinlay (1975) and Farmer

(1999). Adam (2011:5) frames this perspective in arguing that “biomedical prevention technologies are also social interventions, whether that is explicitly recognised or not” and as such, they not only intervene on social, economic and political conditions, but these structural aspects of biomedical interventions must be accounted for when framing the implications of biomedical prevention approaches, such as treatment as prevention. Drawing on surveillance data from Jamaica and Barbados, Barrow and Barrow (2015) argue that treatment as prevention must be implemented as part of broader approach to combination prevention that addresses not only biomedical, but also behavioral and structural factors in HIV prevention, including stigma and discrimination, gender inequality and gender-based violence, and other social and economic inequalities, including health care resource constraints. They caution that a narrowing focus on biomedicalized approaches to HIV prevention risks undermining the broader goals of health and human rights. They emphasize the need for a continued “[r]ethinking [of] HIV & AIDS from personal risk to social vulnerability” (Barrow & Barrow 2015) while acknowledging that tending to social and structural barriers to prevention has often seemed outside of the remit of HIV care and treatment. In fact, treatment as prevention may be appealing precisely because is appears on the surface to be removed from the complexity and enormity of grappling with structural or behavioral change. It appears to present a biomedical solution to a biomedical problem. According to Barrow and Barrow (2015:83, italics added), “Although neither a cure nor a vaccine, the potential of TasP is far-reaching. The appeal lies in its simple logic and apparent ease of implementation. All that is required is the extension of what is already in place, that is, the upscale of testing and treatment. The tension between HIV treatment and prevention disappears as treatment *becomes* prevention.”

Within this critical perspective on treatment as prevention also lies a call to design a broader combination prevention approach, which draws on the strength of the evidence for treatment as prevention while not neglecting the social, behavioral, economic and political aspects of HIV prevention. According to O’Bryne and MacPherson (2016:199-200), “The variability in data supporting or undermining treatment as prevention is likely rooted in the fact that HIV transmission is simultaneously influenced by several factors, not all of which may be present (or present to the same degree) in every sexual encounter.” That is, HIV transmission is multifactorial, and socially, biologically, and pharmacologically situated (for example, not all regimens work equally well at producing viral suppression and some may work more or less well in different bodies). Treatment adherence practices, the presence of other sexually transmitted infections, themselves social as well as biomedical phenomena, sexual practices, and access to and engagement in health care, broadly speaking, may impact on the effectiveness of treatment as prevention.

These arguments are supported by findings which demonstrate differences in the outcomes of treatment as prevention across populations, differences which these authors argue may be explained by structural vulnerabilities which predispose some to not only poorer outcomes, but poorer access to health care, treatment and the social supports which bolster its success. In a study of the operationalization of treatment as prevention in Los Angeles County, Sayles and colleagues (2012) found that despite high treatment coverage in their sample population of persons living with HIV receiving Ryan White-funded care, a considerable percentage (27%) who were taking antiretrovirals failed to achieve sustained viral suppression, leading to suboptimal outcomes for the use of treatment as prevention. Women were less likely than men to achieve sustained viral suppression, which is consistent with previous studies which demonstrated that women have poorer outcomes related to antiretroviral access, early discontinuation, and other clinical outcomes related to treatment use relative to men (Gebo et al. 2005; Pence et al. 2008). Similarly, African Americans were less likely than Whites, Latinos and Asians to achieved sustained viral suppression, a finding which is consistent with other analyses demonstrating that African Americans relative to Whites tend to have poorer HIV care and treatment outcomes (Gebo et al. 2005; Giordano et al. 2010; Lillie-Blanton et al. 2005; Pence et al. 2008; Wohl et al. 2011). Those with complex social histories, including recent substance use and incarceration, as well as youth were also less likely achieve viral suppression.

Sayles and colleagues (2012) notwithstanding, there have been considerable silences on the gendered and racialized nature of the power dynamics at play both in the scientific literature and discourse on treatment as prevention. There are notable differences in the experiences of HIV testing for women and men, with much of this literature neglecting the fact that women often access testing, whether entirely voluntarily or not, during pregnancy as part of their antenatal care, potentially a time of particular social, physical and emotional vulnerability. Globally, unique barriers to testing have been found to exist for women, including stigma, fear of partner's reaction, fear of violence, and low levels of decision-making power within relationships (Maman et al. 2001). Similar barriers may complicate women's engagement with care and in particular their initiation and adherence to treatment, including shame, guilt and embarrassment, fear of family or partner finding out, inability to take medication openly at home, family responsibilities, lack of social support and community-level stigma (Messer et al. 2013; Sayles, Wong, & Cunningham 2006). Historically, women in North America have been found to significantly underuse antiretrovirals relative to men (Mocroft, Gill, Davidson, & Phillips 2000; Shapiro, Morton & McCaffrey, et al. 2000). Messer and colleagues echo some of my own unpublished research findings (Lloyd, N.d.) that often women have more pressing things going on – managing households, managing other chronic conditions, maintaining sobriety and mere survival – than being HIV-positive, meaning that HIV treatment initiation and adherence may not be their most pressing concern, a particular challenge to a prevention approach underpinned by treatment initiation immediately upon diagnosis. Further, some of these barriers may be particularly notable for women of color (Messer et al. 2013).

In addition, the transnational nature of the research that has been conducted on HIV treatment as prevention thus far, when laid alongside the racial silences around who is being studied, where, and why, raises important questions of both race and colonialism. It is notable that Granich and colleagues' (2009) mathematical model that kickstarted the global interest in HIV treatment as prevention is based on a South African test case. Further, the only randomized clinical trial data on the efficacy of the use of antiretrovirals in preventing the sexual transmission of HIV has been from the HPTN 052 Study, which was largely based at sites in sub-Saharan Africa and in Asia. However, while treatment as prevention has since been scaled up with gusto in resource-rich settings such as San Francisco, New York, Vancouver, as well as in France and Brazil, there has been slower movement and less political will to implement it broadly in those regions where treatment as prevention was first tested. In fact, considerable disparities exists even within the U.S., particularly for those in communities who are the most socially and economically marginalized (Pellowski, Kalichman, Matthews & Adler 2014).

As of 2015, less than half (46%) of persons living with HIV globally had access to antiretroviral treatment (UNAIDS 2016). In many of these settings, huge challenges remain to rolling out treatment *as treatment*, particularly where there has been chronic under-resourcing of health care systems, poor training and retention of health care workers, poor capacity for monitoring drug resistance, and interrupted and poorly sustainable antiretroviral supply chains, particularly of the most modern and effective drug regimens (Loewenson & McCoy 2004). Scale up of viral load testing, particularly in many low and middle-income countries, has so far also been slow. As of 2013, only 23% of the global need for viral load technologies was being sufficiently met, with this estimate predicted to improve to only 46% by 2019, notably the year before UNAIDS aims to have achieved 90% viral suppression among those on treatment globally (UNAIDS 2014a). Sayles and colleagues (2012) argued the disparities in treatment access and outcomes, particularly across gender and race, demonstrate the critical importance of comprehensive, targeted interventions addressing the complex social needs of these marginalized populations in the implementation of localized treatment as prevention approaches.

Other scholars emphasize the importance of not enabling the displacement of behavioral interventions in the rush to scale up biomedical ones, particularly in light of concerns about risk compensation, even if largely unfounded, risks of sexually transmitted infections, and the behavioral elements of treatment adherence. The belief in the preventative effects of antiretroviral treatment has been associated with increased sexual risk behaviors (Crepaz et al.

2006; Kalichman et al. 2011); whether this so-called ‘risk compensation’ is productive of increases in actual onward transmission of HIV remains uncertain. Young and colleagues (2013) found, in a qualitative study of communities affected by HIV in Scotland, that a number of behavioral factors may both impede as well as facilitate the acceptability of treatment as prevention. Their identified barriers to treatment as prevention acceptability include inequalities in treatment literacy, the perceived increased risks of sexually transmitted infections with a sole reliance on treatment as prevention, the burden of treatment taking, and structural constraints, such as the overly broad criminalization of HIV exposure that is out of touch with advances in biomedical prevention. These perceived barriers to the acceptability of treatment as prevention are ones that may require treatment support and other forms of supportive services, precisely the community-driven, often peer-led forms of support which are threatened with defunding in the shift to biomedical prevention.

Further, Knight and colleagues (2016) raise concerns that treatment as prevention approaches, in prioritizing the person living with HIV as the primary agent responsible for prevention, leave HIV-negative individuals out of the prevention conversation, taking away from rather than enhancing their agency to engage in risk reduction practices, a notable finding from their qualitative study of young men’s perspectives on treatment as prevention in Vancouver. On the contrary, Jones and Hecht (2012) cautioned in a presentation at the 2012 International AIDS Conference in Washington, DC, just on the cusp of the emerging enthusiasm for treatment as prevention, that it may risk ignoring the needs of long-term survivors of HIV, particularly those who have done well managing life with HIV and adhering to treatment, for social and behavioral support.

Perhaps the most strongly worded critiques of treatment as prevention have come from those who have critiqued it through a leveraging of human rights discourses, particularly for the negative impacts it may have on the rights to dignity, autonomy, privacy and freedom from discrimination (Clayton, Mabote & Hikuam 2012). This is especially so in light of the push towards a strategy that advocates the consumption of pharmaceuticals not strictly for individual benefit but also, and perhaps primarily in some cases, for the common good (Garnett & Baggaley 2009; Krellenstein & Strub 2012). Garnett and Baggaley (2009:10, italics added) have queried, “If we could eliminate HIV this way *would* we, given the will needed, and *should* we, given the conflict between utilitarianism and individualism inherent in this strategy?” HIV treatment as prevention approaches have been critiqued for running the risk of viewing persons living with HIV, particularly those who are not ready or are unwilling to begin antiretroviral treatment, as disease vectors rather than as humans with social rights to choose when/if to initiate treatment (e.g., Jones & Hecht 2012).

Michaela Clayton (2012), working with the AIDS and Rights Alliance of Southern Africa (ARASA), argues that while there are on-paper commitments and funding mechanisms in place, such as the President’s Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria, the fallout from the global economic crisis and declining donor commitments have meant that it is increasingly difficult to close gaps in treatment access where they already exist. Above and beyond these challenges in basic access to services and treatment, the realities of stigma and discrimination make it even more difficult to close these gaps, particularly in locales that have criminalized same-sex behavior, sex work and/or injecting drug use, or where laws require mandatory disclosure of HIV status to sexual partners. These policies not only encourage stigmatization and harassment by law enforcement of people living with HIV or ‘at risk’ for it, but in fact, they place individuals at heightened risk for HIV to begin with. Clayton makes the argument that the existence of stigma and discrimination towards people who engage in these ‘risk behaviors’ already acts as a barrier for them engaging with services aimed at the primary prevention of HIV. Further, the experience of stigma and discrimination may become a double burden when individuals, who discover themselves to be HIV-positive, are compelled to access and initiate treatment for preventative purposes, without a full accounting of the impact it may have on their experience of further discrimination and stigma, particularly if accessing this care and treatment ‘outs’ them as gay, bisexual or transgendered, as HIV-positive, as a drug user, etc.

Clayton (2012) asserts that if treatment as prevention is going to be successful, human rights perspectives must be at the center of the effort, including key socio-structural interventions, such as the reform of discriminatory laws and the strengthening of community capacity to stake claims to human rights. Both national laws and treatment as prevention implementation policies must prioritize the protection of individual rights to autonomy, confidentiality and privacy, and must have guidelines in place that foster treatment initiation when it is best for the individual, rather than prioritizing an approach to treatment initiation that works solely towards the goal of meeting population level objectives. She argues that program planners must make sure that both a consistent supply of a wide variety of first, second and third-line antiretrovirals are accessible and affordable for all in the process of encouraging wider treatment initiation, so that all people living with HIV have sustainable access to the medicines that are best and safest for them (Clayton 2012). Other scholars also point to the ethical challenges posed by the idea of HIV treatment as prevention for providers, arguing that the policy recommendation to encourage all patients to initiate treatment immediately after testing positive for HIV in the absence of *clinical need* may infringe on critical ethical principles by which all physicians ought to practice, including the principles of beneficence, of prima non nocere (first, do no harm), and of patient autonomy. (Krellenstein & Strub 2012) This argument specifically points to the importance of the inclusion of providers as key research informants in the present project.

These critical human rights perspectives on treatment as prevention generally seek not to discredit treatment as prevention, or biomedical prevention broadly speaking, but to assert the primacy of human rights concerns in the deployment of treatment as prevention policy and practice and to fortify this rights-based agenda against displacement by a frame prioritizing a narrow, technological solution. In this light, Cameron and Godwin (2014:202) argue that “[a] refocusing of prevention priorities on individual responsibilities to ‘test and treat’ without regard to the legal and human rights context is…problematic,” and not the least because it risks “distracting policymakers, community activists, and HIV organizations from the imperative to address complex unresolved legal and human rights issues that disempower communities and disable effective HIV strategy" (204), including, these authors assert, the decriminalization of sex work and HIV exposure. Further, they express concern that antiretroviral treatment in the guise of treatment as prevention may come to be part of broader tactics of regulating populations framed as public health threats, such as sex workers or injecting drug users, or for managing those who are otherwise 'non-compliant' with prevention expectations. These are concerns that were also echoed by research participants in the present study.

Importantly, however, and not widely cited in the literature on human rights implications of treatment as prevention are the human rights advances that might be achieved as a result of the broader public knowledge of the non-infectiousness of people living with HIV who are virally suppressed as a result of antiretroviral use. These include the rights to non-discrimination based on infection status, the right to a family life via the reproductive options made more widely available when natural conception comes to carry low risk of transmission, and various occupational rights (Bernard, personal communication). In the UK, the broadening of occupational rights as a result of the developing science around treatment as prevention is reflected in recent changes in guidance on the risks of occupational exposures, which had previously restricted health care workers living with HIV from practicing exposure prone procedures, most notably among surgeons, dentists and midwives (National AIDS Trust 2013).

Conclusion

In this chapter, I sought to offer a substantive background on the historical emergence of HIV treatment as prevention starting from the earliest uses of antiretrovirals preventively to avert mother-to-child transmission and as post-exposure prophylaxis. I then explored its conceptualization by Dr. Julio Montaner (2006) and trialling by Cohen and colleagues (2011), through to its announcement as the *Science* 'Breakthrough of the Year' in 2011, and beyond to the various critiques and resistances to its application in 'real world' settings. The goal of this chapter is to offer a broad foundation for my analysis of both the anticipatory enthusiasm for the 'End of AIDS' via biomedical prevention and also the discursive resistances and very material ways in which I argue the biomedicalization of HIV prevention is deeply stratified. What is largely missing from this substantive history of HIV treatment as prevention is a social scientific perspective that explores the social worlds of HIV professionals wrangling with how to make sense of treatment as prevention for the work that they do and particularly for its impact on the people and communities living with and affected by HIV with whom they work. My goal for this project is to do just that, while drawing on the extant discourses with which these professionals engage in the course of doing their work, informing both the social scientific literature on HIV biomedical prevention, as well as contributing to the sociological literature, particularly that on risk, surveillance, subjectivity, and anticipation.

Theoretical Foundations

Here I explore several distinct but interweaving theoretical perspectives that offer up a scholarly foundation for my analysis of the discursive work of HIV treatment as prevention. I begin with a discussion of Foucauldian perspectives on biopower, governmentality, and especially technologies of the self. These ideas underpin much of the later theoretical work I explore, as well as the trajectory of my own empirical analysis, particularly that focused on subjectivity and practices and consequences of the self-governance of health and risk via HIV treatment as prevention. Building on this review of Foucault, I then turn to critical theoretical perspectives on risk, notably the work of Mary Douglas (1966/1969; 1985) and Crawford (1994), for what they contribute to the social construction of risk, and analysis of risk as a boundary maintaining device. I also draw on the work of Petersen and Lupton (1996) in conversation with these critical perspectives on risk, for what they lend to scholarly work on risk, morality and subjectivity via their elaboration of the emerging discourses of the so-called ‘new’ public health.

I then turn towards a discussion of theoretical scholarship on the ongoing transformations taking place within present day biomedicine. The distinct yet related work around Clarke and colleagues’ (2010) biomedicalization theory and Nikolas Rose’s (2007) vital politics and somatic ethics. I also explore the concepts of biological (Rose and Novas 2004; Rose 2007; Petryna 2004) and other forms of biomedicalized/pharmaceutical citizenships (Barry, Osborne & Rose 1996; Colvin, Robins & Leavens 2010; Ecks 2005) and biosociality (Rabinow 1992; 2005). These perspectives provide a broad theoretical foundation for my empirical analysis of how the broader transformations unfolding within biomedicine are constituting and constituted by the emerging discourses of HIV treatment as prevention. More specifically, I will draw on this work on the ongoing transformations within present day biomedicine in order to argue for HIV treatment as prevention as an empirical exemplar of biomedicalization and to situate the re-configuring of HIV risk and biomedical surveillance discourses as co-constitutive of these transformations.

Lastly, drawing on Clarke and colleagues (2010) and also Rose (2007), I will explore the work of Adams, Murphy and Clarke (2009) on anticipatory regimes in order to situate HIV treatment as prevention discursively as part of a politics of temporality and affect that is seeking to herald in the imagined future of the 'End of AIDS' within an evolving and hopeful present, yet one that must continually wrangle with uncertainty, the antiretroviral 'baggage' of the past, and the very real material stratification of the fruits of biomedicine. I specifically rely on Adams and colleagues theorizing on anticipation in order to discursively situate antiretroviral technologies, as they engage in this politics of temporality and affect, as material 'things' which both potentiate and disrupt their imagined possibilities as prevention technologies.

Foucauldian Perspectives on Biopower, Governmentality and Technologies of the Self

Biopower. Foucault (1984) argues that in classical times, the sovereign exercised power by exercising his right to take life or to let live. In contrast, in the modern West, more diffuse mechanisms of power are manifest in "the right of the social body to ensure, maintain or develop its life…a power that exerts a positive influence on life, that endeavors to administer, optimize, and multiply it, subjecting it to precise controls and comprehensive regulations" (Foucault 1984:259). The modern era becomes organized around ways to intervene on life itself – to make live. In his classical text on biopower, Foucault develops a bipolar conception of power over life. At one pole, an anatomo-politics of the body focuses more on the individual body, as if a machine, seeking to discipline it and integrate it into broader efficient systems in which biopower is exercised. At the other pole, a bio-politics of the population focuses on the population or social body itself and its vital processes (birth, health, morbidity, death), seeking to regulate and control them for the betterment of the species as a whole.

Foucault asserts that the outcome of such relations of power centered on the disciplining of bodies and the management of life itself is the emergence of a "normalizing society" (Foucault 1984:266), where the norm comes to operate as a regulatory function with a whole host of mechanisms and apparatuses to support it in its organization and optimization of life itself. In such a society, elevating and maintaining the health of the population, manifested in part through the disciplining of individual bodies, thus comes to be a key political objective. Foucault's bipolar conception of power over life is taken up by Race (2001) who argues that viral load testing is a (bio)technological practice that links the management of the individual to the management of the health of the population. By signifying not only the trajectory of HIV disease progression and the degree of pharmaceutical compliance and self-governance, but also individual infectiousness and population level HIV risk (for example, through calculations of viral suppression rates and community viral load), viral load testing as a (bio)technological practice links Foucault's conceptions of anatomo-politics and biopolitics.

In their theoretical exploration, Rabinow and Rose (2006) assert that there has been little recent elaboration of Foucault's conception of biopower. To attend to this gap, the authors formulate a contemporary concept of biopower that they argue consists of at least three key elements: (1) one or more truth discourses related to human or biological life along with an assortment of experts or authorities who pronounce such truths; (2) strategies for intervention (via these truth discourses) at the population or collective level, including at the level of biosocial communities; and (3) modes of subjectification by which individuals come to work upon themselves under the authority of experts and possibly population level interventions, for the betterment of their own life/health, or that of their family, community, or the population as a whole. The authors utilize this conception of biopower, and contemporary explorations of race, reproduction and genomic medicine, to assert that contemporary formations of biopower are not fundamentally about domination, exploitation, or the power to threaten or actually take a life, but in fact, operate in the realm of vitality itself, which "have life, not death, as their telos" (Rabinow & Rose 2006:203); they are concerned with 'making live'. This, they argue, does not mean that biopower does not operate in the politics of 'letting die' – particularly, in the face of glaring health inequalities – but that 'letting die' is not the same as 'making die.'

Rabinow and Rose also emphasize that Foucault focused his historical analyses on sexuality partly because it linked his ideas of anatomo-politics of the individual body and the biopolitics of the population. The same could be said of HIV treatment as prevention, which might also be considered “a biopolitical space par excellence” (Rabinow & Rose 2006:208). The anatomo-political aspects of treatment as prevention are made visible via techniques for the disciplining of the individual body, specifically through pharmaceutical consumption, viral load monitoring, and heightened surveillance of virological failure. At the same time, the population level biopolitics of surveillance medicine (Armstrong 1995), including its emphasis on surveilling population viral suppression rates, and the deployment of population targets for ‘Ending AIDS,’ such as UNAIDS’ 90-90-90 target, are framed as achievable via community-based but individuated practices. For this reason, the theoretical concept of biopower is meaningful to the substantive exploration at hand to the extent that it helps us to “establish links between the molecular and the molar, linking the aspiration of the individual to be cured to the management of the health status of the population as a whole” (Rabinow & Rose 2006:212). It also forms a critical theoretical foundation for much of the later theoretical perspectives explored in this chapter.

Governmentality. Foucault (2008) developed the concept of governmentality to signal the emergence of a new form of social regulation that relied on a changing conception of citizens as populations requiring management, and both the individual and the population as variables for rational calculation and intervention (Lupton 1999). It relies on surveillance as a means for monitoring populations and collecting data on individuals and groups to form key variables, the production and dissemination of expert knowledges, and the idea of normalization, through which the norm itself was constructed and by which populations and bodies could be measured and thus intervened upon, including through technologies of self-governance. Foucault’s (1984) concept of biopower underpins the concept of governmentality, which involves an elaboration of two types of governance: various practices of external institutional forms of governance, including via the institution of biomedicine, and technologies of the self, one of a number of technologies, by which Foucault theorized individuals’ come to work upon and produce knowledge about themselves as subjects.

Turner (1997:xiii) describes governmentality as “a mechanism for regulating and controlling populations through an apparatus of security” and thus “a system of power which articulated the triangular relationship between sovereignty, discipline and government.” Governmentality, which Foucault argues emerged in the 18th century, was the foundation upon which the rational administrative state was built. This concept also helps to link the more macro aspects of Foucault’s work to his analysis of the localized, diffuse, micro processes by which power operates. Governmentality operates as “a regime which links self-subjection with societal regulation” (Turner 1997:xv). In contrast to earlier political strategies, which depended more fully on direct coercion of citizenry, governmentality as a means of social control and political governance functions primarily through more subtle means of garnering the voluntary compliance of self-regulating, active individuals (Lupton 1999).

Through his development of the history of governmentality, Foucault seeks to show “how the modern sovereign state and the modern autonomous individual co-determine each other’s emergence” (Lemke 2002). In fact, Lemke (2002:2) posits that it is governmentality which forms the “missing link” between Foucault’s seemingly divergent work on the genealogy of the state and the genealogy of the subject. Governmentality is a concept by which Foucault is able to connect these two concerns, “to analyze the connections between what he called technologies of the self and technologies of domination, the constitution of the subject and the formation of the state” (Lemke 2002:2). As such, governmentality involves two types of governance, technologies of the self, and technologies of domination, or more institutional forms of government, via, for example, the police, military, schools and biomedical institutions such as the hospital or clinic. In the realm of HIV treatment as prevention, I would argue that technologies of domination are most visible in the criminalization of HIV exposure and transmission, whereby persons living with HIV come to be regulated via the institutions of the criminal justice system and the prison, or via biomedicine through the deployment of practices of mandatory HIV testing as, for example, has recently occurred in Greece (Artavia 2013).

Of more theoretical interest to the analytic work at hand, however, is how the link between the management of, and at times the domination of or even violence towards, the citizenry and techniques of self-governance allow for the efficient ‘conduct of conduct’ (Foucault 1982), that is, the disciplining of rational, self-regulating individuals via their own self-actualizing free will as part of a broader neoliberal rationality. Foucault (1993:203-204) asserts that one,

> has to take into account the points where technologies of domination of individuals over one another have recourse to processes by which the individual acts upon himself. And conversely, [one] has to take into account the points where the techniques of the self are integrated into structures of coercion and domination. The contact point, where the individuals are driven by others is tied to the way they conduct themselves, is what we can call, I think government. Governing people, in the broad meaning of the word, governing people is not a way to force people to do what the governor wants; it is always a versatile equilibrium, with complementarity and conflicts between techniques which assure coercion and processes through which the self is constructed or modified by himself [or herself].

By this, Foucault means that the techniques by which individuals come to conduct themselves, transform themselves themselves, make themselves better, more healthy, more responsible, less risky, are what Foucault (1994) calls ‘technologies of the self’.

‘*Technologies of the Self’ and Subjectification.* Foucault (1988) proposes various technologies, or techniques by which individuals come to understand and produce knowledge about themselves. These include: technologies of production, technologies of sign systems, technologies of power, and technologies of the self, which involve those practices by which individuals care for, work on and transform themselves, including their health. Technologies of the self, according to Foucault (1988:18), are those practices

> which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and ways of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection or immortality.

Of critical importance here is Foucault’s emphasis on free choice and the self-regulating, active engagement of individuals in their own governance of themselves, their bodies, and their minds in the context of broader rationality of the modern neoliberal state. Technologies of the self are particularly important for underpinning theoretical work on individual engagement with biomedicine as a social institution because, as Crawford (1994:1352) asserts, “like other forms of disciplinary power, medical-moral control in the name of health relied, in large part, and continues to rely, on the self-observing, self-regulating practices of the individual pursing aims of self-enhancement.” More specifically, technologies of the self are processes of subjectification, that is, they are techniques that are engaged in producing the subject, of creating subjectivity, or a socially constructed sense of self-identity or knowledge of the self. The self as a subject is produced via discourse, via the use of language and meaning making.

As such, a theoretical focus on technologies of the self and on the concept of subjectification is particularly important for the analytic work that follows as I demonstrate how the discourses constitutive of and constituted by HIV treatment as prevention are engaged in the production of selves - people living with HIV and others - as subjects grappling with how to construct their identities, their behaviors, their practices of self-governance, and their beliefs about the drugs they consume and the biotechnologies they engage with. HIV treatment as prevention is perhaps a truth discourse *par excellence*, specifically because of its engagement with existing and emergent discourses of contagion, biomedical and pharmaceutical subjectification, and constructions of risk, morality and responsibility for governing one’s potentially infectious body. For Lester (1997), Foucault’s concept of technologies of the self offers up a theoretical means of bridging the gap between the ‘inside’ of the body and the ‘outside,’ a gap that HIV treatment as prevention itself is actively seeking to bridge, re-shape, re-configure.

Critical Theoretical Perspectives on Risk: Blame, Morality and the ‘New’ Public Health

According to Lupton (1999), the idea of risk, as it developed in the post-Enlightenment era, relies on modernist ideals of social progress and social order, as well as the belief that objective, calculated knowledge of the modern world can be discovered through scientific processes and rational thought. Inherent in most forms of risk thinking today is the belief that uncertainty can be rendered calculable and manageable through rational scientific approaches. Lupton (1999) explores the multiple historical influences on the proliferation of risk-related thought, including the increasing prominence of scientific thought in attending to biological, political and social problems of all varieties, the emergence of probability statistics, and the development of computer technologies involved in the calculation of such probabilities, among others. In what follows, I explore several critical theoretical threads on risk and risk thinking, including cultural and symbolic theories of risk, which explore how risk functions symbolically in boundary maintenance (Crawford 1994; Douglas 1966/1969; 1985), and also Petersen and Lupton's (1996) work on the emergence of a 'new' public health in the age of risk. I conclude by exploring theoretical work on how risk can be experienced subjectively and how risk comes to be embodied through engagement with screening and monitoring technologies themselves (Howson 1998; Race 2001).

Cultural and Symbolic Perspectives on Risk: Risk as a Boundary-Maintaining Device. The cultural/symbolic approach to risk emerged in large part from the work of cultural anthropologist Mary Douglas (1966/1969; 1985). It concerns how risk functions as a boundary maintaining device between the healthy/pure Self and the unhealthy/polluted Other, as well as how the material body is utilized symbolically within risk discourses. For Douglas, risk functions as a way to deal with danger, pollution and Otherness within modern Western societies. She is especially critical of cognitive approaches to risk that prioritize individual cognition and choice over cultural and symbolic explanations. Douglas's perspective sees risk as a socially constructed response to 'real' dangers present out there in the world, but her particular interest is in why some of these dangers come to be politicized as risks, particularly in the assigning of blame, while others do not. Douglas (1985), in particular, explores risk, not only as a sense of anxiety or uncertainty about danger, but as a way of calling out responsibility for a transgression and of culturally positing the directionality of blame. From this perspective, Lupton (1999:45) argues that "'risk' may be understood as the cultural response to transgression: the outcome of breaking a taboo, crossing a boundary, committing a sin." Thus, through notions of pollution, boundary maintenance, and blame, the cultural/symbolic perspective attends particularly well to notions of Otherness, to boundary crossing and to moral constructions of non-compliance, areas of theoretical interest that will inform my empirical work on the re-configuring of HIV risk discourses.

Crawford (1994)'s work on boundary maintenance and healthy and unhealthy selves in relation to HIV/AIDS speaks particularly well to the symbolic function of risk. He argues that the HIV/AIDS epidemic offers one lens through which to explore late 20th century intrapersonal and interpersonal constructions of selves in relation to health. This is in part because 'identity work' which involves "protecting or reformulating self boundaries, reinforcing images or reimagining the other" (Crawford 1994:1348) is inherently involved in responding to stigma and in reinforcing boundaries between selves and 'infected others.' He asserts that health as a concept is critical in making sense of identity in the late 20th century. This is largely because since the 1970s health itself has become "crucial terrain on which contemporary, personal identity is fashioned" (Crawford 1994:1348). The 'healthy self,' constructed as it is both biologically and metaphorically, emerged out of the 18th century conceptions of health as a personal social project, a particularly middle-class project of self-fulfillment in contrast to earlier conceptions of health as simply a matter of fortune and a subsequent outcome of good living. Increasingly, as health becomes a technoscientific imperative (Clarke et al. 2010; Rose 2007; Petersen & Lupton 1996), and a particularly important aspect of Western middle-class consumer identity, Crawford (1994:1356) argues that, "Health has become the expression of a technological dream and serious illness has increasingly become the shadow world of that dream."

In contrast, the 'unhealthy self,' according to Crawford (1994), works as the symbolic negation of the normal, healthy self. It sets illness outside of the normal self and in turn reinforces the boundaries that construct the 'healthy self' as responsible, disciplined and in control. The 'diseased other' functions to be self-assuaging – as a means of coping with internalized vulnerabilities – while also answering to the logic of 'why them?' and 'why not us?' The 'unhealthy self' as a signifier of the Other's blameworthiness and irresponsibility can work through stigmatization practices to build and sustain social boundaries between the 'us' and the 'them.' At the same time, the existence of the 'unhealthy other' troubles our perceptions of the effectiveness of biomedicine and the hope inherent in technology, since neither biomedicine nor its technological developments can stave off ill health (or risk) indefinitely, nor for everyone. This is made even more complex by the risk categories developed by biomedicine and the ways in which risk draws illness closer and closer to health through the construction of the ‘at risk’ or ‘pre-diseased.’ These vulnerabilities are revealed and fended off through further construction of the sick as complicit in their illnesses for not managing risk appropriately. Stigmatization of ‘diseased’ individuals and social groups is able to emerge as a means of coping with the ‘border anxiety’ and uncertainty that they force the healthy to confront. This also serves the existing social order in that it allows for anxieties about the social system to be deflected to individual ‘diseased’ bodies.

The ‘New’ Public Health as a Moral Enterprise in the Age of Risk. Petersen and Lupton (1996), in their book, “The New Public Health: Health and Self in the Age of Risk,” argue that a ‘new’ public health which has at its core a conception of health as a moral enterprise has emerged in contemporary neoliberal, largely ‘Western’ societies. While the so-called ‘old’ public health of the 19th century concerned itself strictly with the containment of filth and contagion (something I will also argue is an element of present day approaches to population health, albeit in highly technoscientific ways), the new public health is largely preoccupied with health over disease, with the governance of lifestyle rather than only infectious agents, and with the elaboration of and intervention on individual and population level risk.

This framing of the ‘new’ public health includes at its foundation a number of assertions that lend themselves to theorizing on HIV treatment as prevention. These include the emergence of health, at both the individual and collective levels, as a key moral value with individual citizen subjects charged with the moral duty to entrepreneurially engage with these values and fashion their lives according to them, so as to improve the health of population as a whole and to reduce their risks of harm to that society. Much like present day risk thinking (Lupton 1999), the conception of health as an individual and collective moral imperative is founded in the post-Enlightenment modernist tradition with its beliefs in scientific progress, technico-rational administrative solutions to problems, and is driven by expert systems of knowledge production. Notably, this new public health is "idealistic and progressionist" (Petersen & Lupton 1996: 2), steeped in rationalist beliefs about scientific advancement and social progress, about rational calculation of risk based upon population level surveillance practices, as "a means of countering the fear engendered by illness, disease and death, seeking to establish and maintain order in the face of the disorder of ill bodies" (Petersen & Lupton 1996: 6). As a fundamentally modernist, rational enterprise, the new public health utilizes health and (bio)medical expertise in the formation and deployment of 'truths' about how to live healthfully and avert risk, which are co-constitutive of relations of power/knowledge that Petersen and Lupton (1996) argue have often been left unexamined, even by social scientists.

Here, Petersen and Lupton (1996) lean on the work of Foucault (2008) on governmentality, the techniques by which individuals, via systems of expertise including public health and (bio)medicine, come to self-govern, making the 'right' and 'healthy' choices guided by trusted experts, so as to achieve the aims of the state. They argue that this means of governing at a distance, is a critical objective of neoliberal governance with its emphasis on the devolution of public services and the intensification of emphasis on personal responsibility. According to Petersen and Lupton (1996:11) and drawing on the work of Rose and Miller (1992), "[p]ersonal autonomy, therefore, is not antithetical to political power, but rather is part of its exercise since power operates most effectively when subjects actively participate in the process of governance." As Petersen and Lupton (1996:70) go on to assert, "Through the new public health discourses (among others), external imperatives are internalized as private interests." As such, the self of the new public health is the *entrepreneurial self*, "the self who is expected to live life in a prudent, calculating way, and to be ever-vigilant of risks" (Petersen & Lupton 1996:xiii). The healthy body, in this way, is "an increasingly important signifier of moral worth, a mark of distinction" (25) and it is tied up with constructions of the virtues of self-control, self-discipline and will power. It is also, drawing on Douglas (1966/1969, 1985) and Crawford (1994), a site for the policing of boundaries between the healthy and unhealthy, the disciplined and the reckless, the responsible and the irresponsible, with considerable social and even legal consequences for those who fail to appropriately self-govern.

Petersen and Lupton (1996) argue that the ‘truths’ about this rational, health-optimizing, risk-reducing citizen subject are produced through epidemiological expertise, and through the application of statistical population level knowledge about risk, risk factors and ‘risky’ and ‘at risk’ subjects. In this way, through surveillance and statistical practices, social life comes to be rendered calculable, rationalized, more orderly, often through the organization of knowledge about the population in the form of reports, charts, graphs, and other narrative and visual forms, and increasingly, as Clarke and colleagues (2010), argue through the use of sophisticated computer and information technologies. Specifically, risk itself, following in the traditions of the cultural/symbolic perspectives, is socially constructed, always political rather than purely objective and scientifically neutral, and inevitably involves moral judgements. As dangers and hazards come to be socially constructed as ‘risks’, public health and (bio)medical experts become engaged in the production of new norms of behavior for individuals and communities to avoid or practice to reduce these risks. This potentially calls into being new expectations for self-governance of the body, new kinds of identities related to health and risk, and also new techniques for intervening on those who do not heed the moral imperative for risk governance.

The concept of the ‘healthy self,’ much like that described by Crawford (1994), links up with the conception of the ‘healthy citizen.’ Petersen and Lupton (1996:xiv) argue that “[h]ealth is viewed as an unstable property, something to be constantly worked on. It is in the process of working on the self, and of demonstrating the capacity for self-control of the body and its emotions, that one constitutes oneself as a dutiful citizen, and hence governable.” Individuals as citizen subjects come to understand themselves as citizens via the moral imperative to work on the self, to protect the self as well as others from harm, to live a healthy lifestyle and participate in the production of a healthy community. Via the new public health, health is a project to always be worked on and the consumption of health-related products, including pharmaceuticals and biomedical technologies, is critical to the work of fashioning health and avoiding risk. Petersen and Lupton (1996) argue that in present day neoliberal consumerist societies, consumption has also become a critical imperative for the construction of self-identity. What we eat or do not eat, what pills we take or do not take, what we buy in order to fashion ourselves into the best possible healthy self, becomes a primary means of making up healthy citizen subjects. “The ‘free’ individual is conceptualized as the individual who possesses the maximum capacity to acquire goods, and consumption is a major source of meaning and moral values in everyday life.” (Petersen & Lupton 1996:67)

Further, Petersen and Lupton (1996) assert that the neoliberal citizen subject is bounded by the norms of collective participation, by a collection of social rights, but also social obligations, a duty to participate, which citizens are to take upon themselves voluntarily and dutifully without the need for overt coercion by the state. In modern Western society, the pursuit of good health and one’s personal responsibility for it is deemed a duty of the subject *qua* citizen, even when health itself or access to health care is not necessarily a social right. To be healthy means to be able to fulfill one’s collective responsibilities in the workplace, in the family, in the broader community, to not be an undue economic burden, to contribute to the nation’s prosperity, and to limit the risk of harm to others and the community at large. In fact, Petersen and Lupton, drawing on the work of Scott and Williams (1991), argue that “[m]anaging their own relationship to risk has become an important means by which individual can express their ethical selves and fulfill their responsibilities and obligations as ‘good citizens’.” That is, to pursue good health and to fashion oneself as a healthy subject *qua* citizen is not only agentic, active rather than passive, but it is *ethical.* It is about the pursuit not only of health, but of morality. To be a healthy citizen is also to be a good and moral citizen who takes care not only of one’s own health, but that of others. Those who do not willingly and voluntarily fulfill these moral obligations of citizenship may face penalties for their non-compliance, including as Foucault (1993) argued, via heightened forms of traditional institutional surveillance.

The concept of citizenship, however, Petersen and Lupton (1996) note, exudes a certain sense of equality, a commonness of purpose and commitment that belies the inequalities in access to the fruits of citizenship rights, or the extent to which different bodies are governed differently, for example, the gendered nature of the governing of ‘healthy’ subjects, or the extent to which in HIV prevention practices, for example, gay men’s and pregnant women’s bodies have been uniquely scrutinized as sites in need of heightened institutional control and public health intervention. Petersen and Lupton (1996) argue that the new public health is founded on a discourse of a duty to participate, one deeply entrenched in the neoliberal conception of participatory democracy. Yet individuals can and do resist the efforts to regulate them, their bodies, their risk to others by refusing to participate, by resisting the moral obligations of citizenship, though often at certain costs for non-engagement or non-compliance.

The work of Petersen and Lupton (1996) is meaningful for the present project because of how it attends to the ways that the health of individuals as well as the health of the population is constructed as a moral enterprise. Living healthfully and averting risk to the self and others has become a moral imperative, the way to live as an ethical subject in present day Western neoliberal societies. Their work is also meaningful for bringing much of Foucault’s scholarly work into an application on present day power/knowledge systems of public health, including how modern day subjectivity can come to be produced through the pursuit of health and the avoidance of risk. It also links up notions of the obligation to protect the health of the population with social rights to health and conceptions of citizenships, which will be explored further shortly.

Embodied Risk, Subjectivity and Engagement with Biomedical Monitoring. Using her qualitative work on women’s experiences of cervical screening as an empirical base, Howson (1998) critiques much of the scholarly theoretical work on risk for overemphasizing the rational, calculating, autonomous individual and the importance of cognition in risk thinking, at the expense of more subjective, embodied experiences of risk. She argues that prevention practices themselves can also contribute to individuals’ conceptualizations of risk. In some cases, the side effects of screening - and in the case of her empirical work on cervical exams, bleeding or pain, for example - or simply the experience of coming under the lens of surveillance can impact individuals’ subjective categorizations of themselves as ‘at-risk’ or as ‘risky.’ She asserts that subjectivity and embodiment of risk deserve more scholarly attention, particularly through work that seeks to link individuals' lived experiences of subjective, embodied risk to the biomedical practices that are engaged with in shaping them, such as undergoing routine screening and monitoring for risk. Further, Howson highlights how framing risk as embodied, subjective, and everyday opens up a much needed critical space around risk conceptions, practices and experiences, particularly those that run counter to technoscientific and expert discourses on risk, such as that around the lived experience of CD4 count monitoring given the increasing prioritization of viral load monitoring, which I discuss later in this dissertation. Her work also queries the possibilities for the experience of subjective and embodied risk in those settings where risk discourses may be bound up with engagement with biomedical screening technologies, but where access to these technoscientific goods remains highly stratified, such as is presently the case with viral load monitoring in many resource-poor and/or otherwise marginalized communities.

Much like Howson (1998), Race (2001) argues that risk can be transformed and embodied via engagement with biomedical monitoring technologies. In his paper, "The Undetectable Crisis: Changing Technologies of Risk," Race argues that selves, bodies and (bio)medical technologies, - here, specifically, HIV diagnostic and viral load testing, as well as antiretrovirals - are mutually constitutive. The construction of social groups - gay men, injecting drug users, sex workers, hemophiliacs - as risk communities in the early years of HIV, and especially for gay men, was productive of a sense of collective crisis. Without an understanding of the etiology of AIDS, simply being part of the 'gay community' framed one as being at risk and/or posing a risk to others, at risk for acquiring or passing on 'GRID' or 'Gay Related Immune Deficiency.' With the development of HIV diagnostic testing, risk moved from the community into the body, marking a difference between those bodies that were afflicted and those that were not, with safer sex practices becoming less a cultural practice and more a technique for the avoidance of risk situated within bodies themselves. Race (2001) argues that risk came to be even more embodied, and in fact, withdrawn from the public realm of community and collective practices, more a matter tended to within the private space of the home or the clinic with the development of antiretrovirals in the mid-1990s.

With the emergence of antiretroviral technologies, taking care of the self became a matter of “viral containment” (Race 2001:185), an individuated practice of treatment consumption, one often taking place away from visible, public spaces, rendering the work of self-management of one’s HIV largely invisible, individuated, and private. This individualization and privatization of risk has occurred along with “a resurgence of blame discourses” (169), manifest in the increasing criminalization of HIV exposure and transmission, and calls for and the practice of mandatory testing, name-based reporting, and partner notification practices. In this same light, viral load testing becomes another technology, like diagnostic testing, and antiretrovirals, capable of signifying ‘truth’ and marking individuals as certain kinds of subjects. Race’s paper was published in 2001, well before treatment as prevention was formally conceptualized in the scientific literature, but his theorizing about viral load testing, and the ways in which it links up with the moral obligation to consume antiretrovirals, as a technological means by which ‘truth’ about bodies and about selves is produced, has critical implications for the findings of this analysis. Race (2001) argues that HIV does not so much become invisible in the post-collective crisis era of individuated management, but it becomes visible now in different ways and specifically through different techniques, a process I describe later in this dissertation as *viralization.*

The technologies of antiretrovirals and also, and especially, viral load testing are productive of new types of responsibilities for persons living with HIV, including the bringing into being of the ‘non-compliant’ and/or the ‘virally unsupressed’ subject and their framing as a source of risk and as a site of intervention, not only out of concerns for individual prognosis, but also and especially as a matter of public health (Race 2001). Accordint to Race (2001:177),

> The viral load test, performed quarterly by people with HIV, is a key technology through which the HIV-positive subject monitors their health and use of medicine. It positions the self in relation to an apocalyptic future, death, making this point present in the day-to-day regulation of practice. The modern HIV clinic works by means of an intense focus on the patient’s body, rendered in the form of (often computerized) numeric results gained from

> blood tests, through the reception and discussion of these, and through the revision of a number of domains of health and life in relation to them.

Theorizing the Transformations in Present Day Biomedicine

Next, I explore several theoretical threads engaging with the *bios* (life) in biomedicine, including the concept of biosocialit(ies) (Rabinow 1992; 2005), several interweaving but divergent perspectives on biological/biomedical citizenships, and both Clarke and colleagues' (2010) and Rose's (2007) work on the transformations, or 'mutations,' that are co-constitutive of present day biomedicine.

Biosocialit(ies). Emphasizing the social and ethical practices of life, through an empirical grounding in the history of the so-called new genetics and the Human Genome Initiative, Rabinow (1992; 2005) asserts the emergence of the idea of a new *bios*ociality. Whereas sociobiology is constructed around the idea of culture modeled on nature, biosociality is the idea that nature can be modeled on or stand as metaphor for culture; in other words, that we are moving into a time in which nature itself comes to be malleable and in fact, 'artificial' through cultural practices of intervention through science and technology. This not only calls into question the comfortable assumption of a nature/culture binary, but more important to my analytic purposes here, this intervention on and tinkering with nature has the potential to bring into being new collective and individual identities situated in these new truth discourses. Rabinow asserts that, "Such groups will have medical specialists, laboratories, narratives, traditions, and a heavy panoply of pastoral keepers to help them experience, share, intervene, and 'understand' their fate" (Rabinow 2005:188). In this sense, biosocialit(ies) can produce and give meaning, not only to material practices, but ethical, cultural and semiotic practices as new formations of individuals come to make sense of themselves in relation to these technoscientific knowledges of the self.

In their edited volume, Gibbon and Novas (2008) have demonstrated how Rabinow's (1992; 2005) concept of biosociality can be applied across a wide variety of practices, social actors, and sites. Biosociality as a concept has been a useful tool for exploring how truths brought into being through technoscientific practices come to shape collective and individual identities and forms of collective action and activism, for example, to stake collective claims to the use of biomedical knowledge and technologies. Further, the authors argue for the significance of biosociality in analyses of institutional actors, both state and private, and the salience of the new ways in which ‘novel’ truths are produced for wealth generation. Most significant to my empirical work is their discussion of biosociality as involved in the production of subjectivities and biosocial collectivities. Gibbon and Novas argue that “The creation of new opportunities for identifying with others who share a biological condition combined with the novel possibilities for acting upon disease has contributed to reshaping how patients organize themselves into groups and the kinds of activities that they undertake” (Gibbon & Novas 2008:2). However, the authors argue that science and technology are involved in the creation of biosocial identities and communities in localized, uneven and exclusionary ways, particularly transnationally.

Though both Gibbons and Novas (2008) and Rabinow (1992; 2005) are speaking specifically of genetic disease, these same concepts are readily applicable to more traditional conceptions of infectious disease, such as HIV. The concept of of biosocialit(ies) has been applied to empirical discussions of the formation of identities and also localized forms of collective activism and citizenships among people living with HIV in Brazil (Valle 2015), and other scholars have appealed to the concept while critically tracing the travels of antiretrovirals across borders and in locally specific ways, arguing that these drugs have been constitutive in the production of new kinds of subjectivities, new biosocial assemblages, and new forms of citizenship. Through ethnographic work in West Africa, Nguyen (2005, 2010) explores how the development of HIV care and support projects, particularly those focused on organizing empowerment and self-help groups for those living with HIV, produced new biosocial communities of persons living with HIV, and fashioned new identities.

Such groups fostered the development of what Nguyen (2005:131) calls confessional or narrative technologies, whereby individuals were encouraged to “come out” with their stories of life with HIV, and to take up “living positively” and “taking responsibility” for their lives with the virus. He argues that this re-fashioning of persons and identities in light of living openly with HIV can be seen as “an ethical project, a way of integrating being HIV positive in a moral order” (Nguyen 2005:131). These ethical projects, in the form of support, empowerment or self-help groups, offered a space for the making up of new kinds of subjectivities. Further, they also created new possibilities in light of the trickling in of antiretroviral treatment to these communities in West Africa. Mastering the arts of ‘living positively’ as a member of a biosocial community and of ‘telling a good story’ became the golden ticket for a chosen few to initially gain access to the limited availability of antiretrovirals. Nguyen’s work illustrates how micro-processes of producing subjectivities within biosocial communities engaged with the broader global political economy of antiretrovirals in grappling for survival in otherwise resource-limited circumstances.

The concept of biosocialit(ies), as articulated by Rabinow (1992; 2005), and further elaborated by Gibbons and Novas (2008) and others, informs my analysis of the production of subjectivities and biosocial communities, including new forms of biomedical citizenship, particularly in light of the transformations in discursive framings of risk and risky bodies, the reshaping of responsibilities for engagements with biomedicine and the consumption of pharmaceuticals, and the novel formations of individual and collective identities occurring via new biosocial categories such as ‘undetectable’, which I will argue are constituted by and constitutive of HIV treatment as prevention.

Biological Citizenship. Petryna (2004) explores the ways in which at risk communities are co-constructed with the emergence of a form of biological citizenship during and after the Chernobyl disaster, a time that “exemplifies a process wherein scientific knowability collapses and new maps and categories of entitlement emerged” (Petryna 2004:251). Here she describes a time not entirely unlike the early pre-ART years of the HIV/AIDS epidemic and perhaps also not unlike the present in light of the uncertainties and possibilities of the anticipated, yet not inevitable, ‘End of AIDS.’ Petryna’s conception of biological citizenship is defined as “a demand for, but limited access to, a form of social welfare based on medical, scientific, and legal criteria that recognize injury and compensate for it" (Petryna 2004:261); it is in fact "a specific knowledge, history, and category" (Petryna 2004:262). This is a form of citizenship in which affected or at-risk individuals come to make up emergent populations with novel claims to social, legal and medical entitlements. This claims-making involves not only a 'right to access' such entitlements, including pharmaceutical treatment, but also a 'right to know' one's risk status. In this way, "biology becomes a resource" (Petryna 2004:265) in such claims-making, but also in meaning making around identities as they are tied to the state.

Petryna makes the claim that biological citizenship is one frame through which one can make visible the interlocking relations between individuals, emergent communities, national and transnational scientific institutions and their constituent actors, as well as legal and bureaucratic apparatuses. In line with Rose (2007) and also Petersen and Lupton (1996), I argue that Petryna's (2004) conceptualization could also be taken one step further to assert that biological citizenship, like citizenship by birthright, entails not only rights, but also obligations. Such obligations come into greater relief when the concept is applied to HIV treatment as prevention, an arena wherein the 'right to know' and the 'right to access' treatment and other entitlements, such as the right to an undetectable viral load, may be intertwined with particular obligations, such as the obligation to be engaged with biomedicine and to consume pharmaceuticals that render one non-infectious. These forms of obligated or responsibilized self-governance are framed more fully by other theoretical conceptualizations, such as responsibilized citizenship (Barry et al. 1996; Colvin, Robins, & Leavens 2010), which I will discuss shortly.

Both Rose and Novas (2005) and Rose (2007) argue that while many citizenship projects throughout history have been built around biological ideals and presuppositions, conceptions of biological citizenship per se are being transformed and re-territorialized within the new vital politics both from above and from below and unevenly. This new active, engaged (and uniquely advanced liberal democratic) biological citizenship is both individualizing and collectivizing. It is individualizing to the extent that these new ways of 'making up citizens' involve not only new approaches to public scientific education and relations between medical experts and individuals, but also the creation of new languages around biomedicine and health, new spaces for health knowledge, and in turn, the production of new kinds of individual identities and relations to the self as a somatic individual. Yet, these forms of biological citizenship are also collectivizing to the extent that they involve the engagement of these individuals in groups and organizations as 'experiencers' of a condition or risk factor, as advocates or caregivers, and in the form of alliances with medical authorities and biomedical research. However, such collectivities, according to Rose, not only bring individuals into social relations with each other and into public arenas of knowledge production and contestation, but they also lie along side of individualizing tendencies. They make up "a new informed ethics of the self – a set of techniques for managing everyday life in relation to a condition, and in relation to expert knowledge" (Rose 2007:146), as well as new ethics of biological responsibility for active engagement with these techniques of self management, particularly in advanced liberal democracies.

Responsibilized Citizenship. Drawing on the work of Foucault (1988; 2008) and echoing that of Petersen and Lupton (1996), responsibilized citizenship (Barry, Osborne & Rose 1996) is a framing of neoliberal governmentality by which individual citizen-subjects are called on to take individual responsibility for working on and optimizing their health, particularly via responsible lifestyle and consumer choices. As Colvin and colleagues describe it, "The Thatcherite refrain, 'No more nanny state', captures this dimension of contemporary public health discourse" (Colvin, Robins & Leavens 2010:1180), whereby political 'nannying' is theorized to be increasingly replaced by governing at a distance via techniques of subjectification, responsibilization, and individualized expectations to entrepreneurially self-govern in relation to one's health and one's engagement with the apparatuses of public health and biomedicine. Responsibilized citizens are encouraged via techniques of neoliberal rationalities to come to assume an entrepreneurial responsibility for taking care of the self (for example, in caring for and optimizing one's individual health) that were once considered to be the responsibility of the state (Barry et al. 1996). Colvin and colleagues utilize the concept of responsibilized citizenship in their analysis of ethnographic data from their work with a support group for men living with HIV in South Africa. These authors suggest that localized enactments of responsibilized citizenship can go beyond techniques of individualized, entrepreneurial personal responsibility for optimizing one's own health, of 'caring for the self,' compelled, albeit at a distance, by neoliberal rationalities of self-governance. They also include taking responsibility for 'caring for the social,' of taking care of others, and in this case, particularly in ways that reflect and enact localized norms of masculinities, thus deploying but also reimagining discourses of responsibilized citizenship.

Pharmaceutical Citizenship. In contrast to biological citizenship, as defined by Petryna (2004) and Rose and Novas (2005), which aims to describe a relationship between the individual, the state and biomedicine wherein emergent communities come to make social, legal and biomedical claims against the state itself for access to limited social and biomedical entitlements, Ecks (2005) seeks to define pharmaceutical citizenship as a particular form of biological citizenship, one which he asserts engages a "friction" that exists "between the citizen-patient who is entitled to medicines because he or she is already a full citizen, and the not-yet-citizen patient, for whom the taking of medicines becomes a practice of becoming a full citizen." (Ecks 2005:241). In this way, Ecks (2005:239) posits what he calls "a peculiar relationship between marginality and pharmaceuticals" whereby otherwise marginalized 'citizen-patients' - who are marginalized specifically because of their lack of access to pharmaceuticals - come to make claims against the state for an entitlement to pharmaceuticals, but yet it is only through the taking of these medicines that said individuals come to be full, active, and thereby de-marginalized citizens in this society, and specifically a middle-class consumer society (Ecks 2005:239). Pharmaceutical citizenship, as Ecks frames it, centers not only on the claims-making of 'marginalized' individuals and emergent biocollectivities in asserting a right to access to pharmaceuticals, but also on the implications - and perhaps the obligations - of pharmaceutical consumption for citizenship rights. This is of particular theoretical significance given the assertion of the increasing pharmaceuticalization of global public health (Biehl 2007).

Here Ecks (2005) is drawing on ethnographic work on the marketing and consumption of antidepressants in Kolkata, India, but his framing of pharmaceutical citizenship is applied by Persson (2016) to theorize emergent framings of sexualities among HIV serodiscordant couples in Australia via HIV treatment as prevention. Drawing on interviews with people living with HIV and their HIV-negative partners, Persson asserts that the mobilization of discourses of treatment as prevention, particularly the concept of non-infectiousness achieved via antiretroviral consumption and adherence, is productive of reimaginings of serodiscordant sexuality that can ultimately can be liberating, de-marginalizing and in fact, transformative. That is, she seeks to posit that individuals can through the consumption of pharmaceuticals - here, antiretrovirals - work upon themselves to open up new possibilities and realize new imaginaries, both for subjectivity as well as for engagement with others, including in biosocial communities. On one hand, she asserts the potential for this framing of a form of pharmaceutical citizenship to counter critiques that biomedicalization is simply productive of new modes of governmentality and responsibilization, while simultaneously acknowledging the potential for modes of discipline to shift from marginalizing and stigmatizing sexual practices to obligating biomedical compliance with pharmaceutical consumption, and marginalizing those who cannot or will not engage in treatment consumption. As Persson and colleagues (Persson, Newman, Mao & de Wit 2016:14) assert,

> the use of HIV treatment is itself being normalized, giving rise to a new criterion for citizenship among people with HIV. The underbelly of these homogenizing tendencies is the power of pharmaceutical citizenship to become divisive by working to define *new margins* of inclusion and exclusion in relation to HIV: Who is ‘in’ and who is not, who is acting wisely and responsibly or not, and who is deemed a proper HIV citizen and who is consigned to the ‘difficult’ fringe’.

Drawing on his ethnographic work in Brazil, Biehl (2005:231) uses the term “technologies of invisibility” to describe the myriad techniques, practices and circumstances through which the most marginalized people living with HIV are made into “absent things” in the eyes of the Brazilian HIV/AIDS care system. Some individuals living with HIV in Biehl’s fieldwork were able to fashion themselves as “patient citizens,” taking upon themselves the autonomous responsibility and initiative for seeking out HIV testing, care and treatment in an often fragmented HIV care system, being compliant with the expectations of care and treatment, and rehabilitating themselves through engagement with Brazilian *casas de apoio*, or houses of support, where they went through a process of "social and medical regeneration" (232). Those "patient citizens" who were able to appropriately engage in care, treatment and rehabilitation were able to re-fashion themselves as newly re-born, "domesticated" (233), self-governing subjects within an emergent form of pharmaceutical governance available to them only because of their HIV status and their willingness to transform themselves. Those who could not or would not be "domesticated" (233) - those who remained at the margins, went back to the streets, were "non-compliant" - were made invisible to the medical and public health surveillance system, not even registered in death. Those who did re-fashion themselves appropriately within this new regime of pharmaceutical governance formed through these community-based houses of support a distinct 'biocommunity,' or biosocial community, in which "a selected group of poor and marginal diseased people have access to a novel social and biomedical inclusion. This citizenship is articulated through biotechnology, pastoral means, disciplinary practices of self-care, and monitored treatment. At work are new arts of extending life, of being medically treated, and of surviving economically as a diseased but cost-effective citizen" (Biehl 2005:234). That is, these institutions of surveillance and of self-surveillance offered up what Biehl (2005:235) calls a

> technical means of inclusion…While these people learn new scientific knowledge and navigate through new laboratories and treatment regimes, they constitute themselves as patient citizens and force their inclusion into a very sophisticated form of pharmaceutical governance.

This is also illustrative of the ways in which otherwise marginalized people can use, not only their biological status (as in the case of conceptions of biological citizenship), but specifically their knowledge of technologies and of (bio)medicine to make a claim to social and human rights.

Biomedicalization Theory. Clarke and colleagues (Clarke, Mamo, Fosket, Fishman & Shim 2010; see also Clarke et al. 2003) argue that the emergence and historical development of American medicine has occurred through a series of overlapping social transformations, from the rise of medicine in the 19th century and then widespread medicalization (Conrad &

Schneider 1980; Ehrenreich & Ehrenreich 1978; Zola 1972) beginning in the post-war era, from which has emerged a transformation to biomedicalization, largely since 1985. Biomedicalization as a concept describes "the increasingly complex, multisited, multidirectional processes of medicalization, both extended and reconstituted through the new social forms of highly technoscientific biomedicine" (Clarke et al. 2010:47). This shift from medicalization to biomedicalization is one that Clarke and colleagues distinguish as being one from control over biomedical phenomena to transformations of them, including, I argue in this analysis, transformations of the infectious body into the virally suppressed body. As such, biomedicalization theory, as elaborated by Clarke and colleagues, forms a critical scholarly foundation to my analysis of the emerging professional discourses around HIV treatment as prevention because it theoretically attends to the extension of biomedicine into health (in addition to illness and disease) though the development of new and expanded markets for pharmaceutical products among the 'at-risk' and the asymptomatic, a pharmacological reshaping of risk and surveillance, and the production of new individual and collective identities and biosocialities around technoscientific categories and practices.

Clarke and colleagues argue that processes of biomedicalization are transforming and re-organizing modern biomedicine in late/post modernity from the inside out by being manifest in five key "simultaneous, co-constitutive, and nonfungible" (Clarke et al. 2010:49) changes, often unfolding at the meso- or institutional level. These include: (1) a new, increasingly corporatized and privatized biopolitical economy around health, illness and life itself ("The Biomedical TechnoService Complex, Inc."), which through its sizable politico-economic power, frames the ways by which health, illness and social life can be thought of and acted upon; (2) a focus on health, risk and surveillance, through which health itself comes to constitute a new problem space in which risk and surveillance practices are co-constitutive; (3) the technoscientization of biomedicine via the increasingly technoscientific nature of practices and interventions; (4) transformations of knowledge production, distribution, and consumption; and (5) transformations of bodies and identities, including the making up of new kinds of technoscientific identities. These transformations in biomedicine can be seen as “analytics - lenses for pursuing research questions” (Clarke et al. 2010:26) and I discuss several, but not all, of these processes in more depth next, offering them up as changeable lenses through which to interrogate the discursive work of HIV treatment as prevention.

The focus on health, risk and surveillance. Health itself, in addition to disease and illness, has become an individual and collective project, something to work on, strive for, and imagine, and also a site for the enactment of personal moral responsibility. Clarke and colleagues assert the emergence of new conceptions of biomedical risk, particularly through the development and elaboration of risk factors for the maintenance of health and the optimization of bodies, and new practices of surveillance, including that of self-surveillance. In fact, they argue that “risk and surveillance mutually construct one another: Risks are calculated and assessed in order to rationalize surveillance, and through surveillance risks are conceptualized and standardized into ever more precise calculations and algorithms” (Clarke et al. 2010:63-64). In this way, both risk and surveillance practices, including and especially techniques of self-governance, come to be engaged in the construction and disciplining of biomedical subjects in novel ways. As the focus turns to health and pre-symptomatic risk in the era of biomedicalization, risk itself is coming to be constructed on a continuum (as a matter of degrees) rather than in a binary fashion (normal vs. pathological), wherein everyone comes to implicated in being ‘risky,’ ‘at risk,’ ‘pre-sick,’ or as yet ‘un-diagnosed’ (to borrow from the language of HIV diagnostics manufacturers). In this way, everyone comes to be intervene-able on, as bodies to be surveilled, worked upon, and transformed.

The expansion of risk and the re-framing of health itself as a problem space opens up possibilities and justifications for surveillance techniques, including particularly sophisticated biomedicalized forms of surveillance and expectations of surveillance both from within the self via techniques of self-governance, and via highly technoscientific tools through which the interior of the body can be visualized and surveilled. These involve techniques of surveillance that move outside of the traditional walls of the clinic or the provider-patient relationship into extra-clinical spaces, the community and the laboratory, echoing Armstrong's framing of 'surveillance medicine' (1995). At the same time, these also involve techniques of visualizing and surveilling that work from the "inside out" using increasingly sophisticated technoscientific means (Clark et al. 2010). In this way, biomedicalization, via extensions of risk into health and novel techniques of surveillance, constitutes a set of disciplining and normalizing practices.

Clarke and colleagues argue that the focus on health, risk and surveillance is accomplished via the development of standardized risk assessment tools and algorithms, often with the use of computers and large epidemiological data banks. These highly normalizing practices work by creating population level standards, which come to function at the individual level through an elaboration of personal risk factors. These practices bring risk, and in particular risk at the molecular (or viral) level, from the epidemiological into the personal in the form of clinical risk assessment, but perhaps more importantly for the analysis presented here, individual self-governance of risk. This elaboration of personal risk factors from epidemiological risk factors is accompanied by a moral imperative to know oneself and work upon oneself in the name of health. When everyone comes to be constructed as potentially risky or 'pre-risk,' then all individuals become obligated to act upon health, their own as well as that of others, as moral entrepreneurs. The personal moral responsibility for optimizing health via self-surveillance and engagement with the new discourses of risk reduction is perhaps nowhere made more visible than in instances of biomedical failure. As Boero (2010) has noted in her analysis of bariatric surgery, the failure of biomedicalized solutions does not often lead to broader social and structural explanations, but instead tends to remain at or return to the level of individualized rhetorics of personal responsibility and moral blame. The moral obligation to work upon oneself to reduce one's personal risk in the name of health is thus a technique through which the normalizing and disciplining of bodies is accomplished via biomedicalization.

The technoscientization of biomedicine. Clarke and colleagues (2010) assert that a key feature of the transforming nature of biomedicine is the increasing technoscientization of both its practices and its innovations. The technoscientization of biomedicine impacts not only its organization, but also the form and content of knowledge production, including the kinds of questions that are asked and the types of answers these questions make visible, as well as the means through which it can intervene. The authors note three areas in which the technoscientization of biomedicine is made highly visible: (1) computerization and data banking; (2) the molecularization and geneticization of biomedicine; and (3) medical technology design, development and distribution.

Clarke and colleagues argue that the technoscientization of biomedicine can be seen in the increasingly computer-dependent nature of organizations engaged in biomedicalization, so much so that computerization itself comes to be constitutive of this meso-level work, particularly through the use of individual electronic medical records, decision support technologies for care and treatment, and population level epidemiological data banks. Computerized medical records, particularly those increasingly linked across clinical spaces and feeding into surveillance reporting, and as well as the computerization of epidemiological surveillance data, and the obligations this data reporting places on clinical providers, laboratories and persons living with HIV, are shaping the engagements between biomedicine and people living with HIV. These innovations in computer technologies have the potential to open up new aspects of the self *qua* patient, as well as the clinical encounter, to surveillance and to place constraints on the kinds of knowledge made visible and viable in decisions about care and treatment compliance. In fact, I would argue that they make possible new forms of viral surveillance, whereby bodies can be surveilled from multiple sites via laboratory monitoring of blood. Further, the prominence of epidemiological data banks is made manifest in the construction of HIV risk at the population level, through calculations of rates of both sexual and biomedical ‘risk behavior,’ measurements of HIV incidence, and comparative analysis of virological surveillance data. These transformations further link up with advances in medical technology development, including the development of viral load testing and new social forms of biomedical engagement, via viral monitoring, telemedicine, and extra-clinical practices of surveillance such as video directly observed therapy, through which compliance to virological regimes can be accomplished remotely via in-home self-governance practices.

Further, Clarke and colleagues posit the molecularization and geneticization of biomedicine as constituting a shifting visualization and construction of the problem space of biomedicine, made possible by developments in the basic sciences and technological innovations in the practice of medicine. While they frame this shift as one from germs, enzymes, and biological compounds to a focus on the (sub)molecular level, individual genes and genomes, I would argue that in the field of HIV biomedicine this has been reflected in a shift from a focus on bodies and their (sexual) behavior to a focus within the body, at the level of the virus and also its genotype, and a working on bodies from the ‘inside out’ through technoscientific means. The developments in laboratory technology which have allowed for more affordable, more decentralized viral load monitoring have been co-constitutive with the construction of *biomedical* (rather than sexual) risk behavior in transforming surveillance at the virological level, a shift back onto the visualization of viruses within the body as an element of technoscientization. This technoscientization of surveillance practices is also engaged in the making up of new kinds of subjectivities and biosocialities (the “virally suppressed” body and “The Undetectables”), as I will discuss in my analysis. This deepening of focus into a kind of technoscientific surveillance that works from the level of viral visualization is also productive of new forms of biomedical citizenships.

The transformations of bodies and identities. Clarke and colleagues (2010) argue that biomedicalization is also characterized by a fundamental shift in emphasis from *control over* bodies and selves to *transformations of* them as they are enhanced, customized and otherwise re-constituted under the new biomedical gaze. Working “from the inside out,” biomedicalization, they assert, drawing on Martin (1994), engages a form of governance that “is achieved through alterations of biomedicalized subjectivities and desires for transformed bodies and selves. The body is no longer viewed as relatively static, immutable, and the focus of control, but instead as flexible, capable of being reconfigured and transformed” (Clarke et al. 2010:181). These transformations can be productive of new kinds of technoscientific identities and subjectivities, ones that are specifically constructed through technoscientific means. They are inscribed on us, whether they are desired or not, and negotiated individually and collectively in heterogenous ways. The imperative to 'know the self' and also to 'take care of the self,' along with the multiplicity of technoscientific practices by which to do so, have been productive of new kinds of identities, which they call *technoscientific identities*.

These authors argue that identity formation is influenced in four key ways, all of which are critical to the analysis at hand. First, it is through the application of technoscience that individuals may be able to acquire an otherwise unattainable but desired identity, such as that of "non-infectious". Second, biomedicalization calls on individuals to engage in new types of performances, which are productive of new kinds of subjectivities and social relations. Third, biomedicalization, particularly through the use of risk assessment, can be productive of new types of social categories (i.e., the "undetectable" or the "undiagnosed"). Lastly, the authors argue that these transformations also offer new platforms and spaces, including virtual or imagined ones, for the performance of these new subjectivities, including new biosocial communities and through telemedicine and the Internet. These processes can involve the creation of "biomedically induced bodily transformations" (Clarke et al. 2010:55).

One example of this in the case of HIV treatment as prevention technologies would be rendering oneself non-infectious – a shifting of meaningful, critical social forms – by the consumption of a pill and the achievement of a particular virological state, being virally suppressed. This makes possible the production of a new technoscientific identity - "undetectable" - and new expectations for the biomedical performances which reinforce this identity - "being adherent and engaged in care" - but also is generative of new categorizations of risk and moral achievements, including its foil, "failing to be virally suppressed," and in turn, new techniques of viral surveillance including self-governance. Clarke and colleagues (2010:81) assert that "The subjectivities that arise out of these performances of what it is to be healthy (e.g., proactive, prevention-conscious, neorational) suggest how biomedical technoscience indicates a type of governmentality that can enact itself at the level of subjective identities and social relations.” These technoscientific performances and practices of self-governance may be of heightened sociological meaning when they involve not only work upon the self for the optimization of one’s own health, but also for the protection of those in one’s presumed community.

Further, as echoed by Rabinow (1992; 2005) and Rose (2007), these technoscientific possibilities also create new opportunities for collective identity formation, as biosocialities or new forms of biological/biomedical citizenships. These biosocial assemblages may coalesce to advocate for or to contest new technoscientific applications, such as the use of antiretrovirals for prevention, or the performance of pharmaceutical consumption as an element of personal responsibility for the one’s own health and the health of others, or to stake a claim to a right to a particular technoscientific identity, such as the *right* to be undetectable. However, as in all aspects of biomedicalization, these transformations in subjectivities can occur unevenly and in highly stratified ways, ones that may merely go on to echo and reproduce already existing inequalities (Clarke et al. 2010).

Stratified biomedicalization. The concept of stratified biomedicalization seeks to highlight how biomedicalization is both engaged in the processes of customization, privatization and corporatization, which allow for exclusionary forms of so called ‘boutique medicine’ to emerge, while also being implicated in how certain individuals, communities, or populations are deemed necessary objects of heightened biomedical surveillance, regulation and control as a result of these technoscientific transformations. They assert that “stratified biomedicalization both exacerbates and reshapes the contours and consequences of what is called ‘the medical divide’ – the widening gap between biomedical ‘haves’ and ‘have-nots’ (Clarke et al. 2010:83).

In light of the transformations in biomedicine emphasized above, I will argue in the analysis that follows that the stratified nature of biomedicalization can be seen both in the stratified technoscientization of HIV prevention and treatment, including access to the most tolerable, effective antiretrovirals and point-of-care viral load testing, as well as in the deployment of the ‘dividing practices’ of biomedicalization, the highly uneven ways by which bodies and communities are surveilled, categorized and disciplined under the biomedical gaze and the emergent risk discourses of treatment as prevention. Shim, in her analysis of the stratified biomedicalization of heart disease, asserts that one way in which biomedicalization travels in highly stratified and uneven ways can be seen in the extent to which elements of it are involved in boundary work, which she describes as “the selective ways in which it works, and how it ultimately reinforces and sustains social inequalities” (Shim 2010:220). Further, stratified biomedicalization is engaged in the production of technoscientific identities, in particular, stratifying access to particularly desired identities, such as “undetectable,” while unevenly inscribing others, such as “non-compliant” or “unknown status” where access to the technologies that that make such knowledge or compliance possible is scarce or unreliable.

Theories of Vital Politics and Somatic Ethics. In his theoretical elaboration of the concepts of vital politics and somatic ethics, Nikolas Rose (2007) delineates five pathways of gradual, incremental change and movement (‘mutations’) that he sees as currently shaping contemporary biopolitics. These are: (1) molecularization; (2) optimization; (3) subjectification; (4) somatic expertise; and (5) bioeconomics. These theoretical transformations in biomedicine echo and complement Clarke and colleagues (2010) formulation of the transformations unfolding in the biomedicalization era. Below I discuss in more detail, several of these pathways and link them up with the discursive work of HIV treatment as prevention.

Molecularization. Whereas Foucault (1973/1994) described the clinical gaze as disciplining at the level of the molar body itself, Rose argues that contemporary biomedical assemblages are increasingly focusing not (only) into the depths of limbs, organs, and tissues but *at the molecular level*, via a molecular gaze, made possible in part through new technologies, and in particular, new techniques of visualization. He argues, drawing on Fleck’s (1979) conception of ‘styles of thought,’ that molecularization reframes what there is to explain, asserting that “it shapes and establishes the very object of explanation, the set of problems, issues, phenomena that an explanation is attempting to account for” (Rose 2007:12). In this way, Rose argues that molecularization opens up new possibilities for intervention and creates new opportunities for the mobilization of these vital elements, thus opening life itself up to politics. Rose's theoretical elaboration of molecularization and the emergence of a molecular biopolitics forms a critical sociological foundation for what I will argue in this dissertation is a distinct but related process of *viralization,* an unfolding biopolitical assemblage - a 'mutation', as Rose might say - which is reshaping the arenas of HIV prevention and treatment. Through molecularization, Rose asserts that vitality comes to be thought about, reframed, make knowable via the molecular gaze and through this way of visualizing and constructing the problem space of biomedicine, life comes to be acted upon, revised, worked on at the molecular rather than the molar level. Of particular significance to the analysis to follow is his assertion that technologies of visualization, through which molecules can be rendered visible and actionable, open up a problem space in which life can be acted upon at the molecular level. I will argue the same is true of technologies of viral visualization.

Optimization. Arguing that contemporary biomedicine operates not through a search for depth in closed systems, but in a flattened, open field, Rose asserts that biomedicine moves not so much in the direction of ferreting out explanations for underlying function or seeking an intervention for the reassertion of the natural vital norm, but in a open search for optimization and the creation of new and dynamic vital futures. The optimization of life thus seeks not merely to treat organic diseases or to enhance health, but to optimize life itself, bringing new responsibilities to bear on the individual and creating new kinds biological subjects in the process. This future orientation itself is crucial to Rose's conception of vital politics. Rose, however, does assert that such possibilities are being opened up largely for the wealthy and not universally, highlighting here the way that the optimization of life can be seen as a form of stratified biomedicalization. One aspect of optimization that Rose takes up is the issue of treatment for susceptibility to future illness, which he perceives as a historical extension of thinking around the concepts of 'predisposition' and 'risk.' Susceptibility, in this sense, like risk, takes a probabilistic aspect of the future and makes it open to biomedical intervention in the present as a means of optimizing individual life chances. This produces not only new types of technologies and relations of power, but new forms of biological subjectification (‘pre-patients’ or even ‘pre-at risk’).

Subjectification and Ethopolitics. For Rose, health itself has become a key ethical value. He asserts that, “Health, understood as an imperative, for the self and for others, to maximize the vital forces and potentialities of the living body, has become a key element in contemporary ethical regimes” (Rose 2007:23). Citing both Rabinow’s (1992; 2005) conception of biosociality, as well as Petryna (2004) and Rose and Novas’ (2004) conception of biological citizenship, Rose argues that these new ways of being vital subjects entail new ways of making claims to corporeal identity, such as ‘being undetectable,’ and to social rights, such as the ‘right’ to know one’s viral load, as well as new ethical obligations to participate in the care of one’s body, health, family and community, and vital futures, particularly in advanced liberal democracies. These new forms of subjectification, particularly those involving risk and susceptibility, also entail the bringing of individuals and groups into new planes of surveillance and new obligations to engage with biomedicine, its pastoral powers, and each other. As Inda asserts, “…as vital processes become an object of technical manipulation, we end up with the cultivation of new subjects who understand themselves through their biology and engage in all sorts of life practices aimed at fostering individual and collective health” (Inda 2014:41).

Such engagements are not merely matters of choice and consumerism, though they are both of these things, but even at - and *especially* at - the molecular level, they are a matter of ethical imperative: “This is an ethic in which the maximization of lifestyle, potential, health, and quality of life has become almost obligatory, and where negative judgments are directed toward those who will not, for whatever reason, adopt an active, informed, positive, and prudent relation to the future” (Rose 2007:25). Here, Rose asserts that his concept of ethopolitics refers to “attempts to shape the conduct of human beings by acting upon their sentiments, beliefs, and values – in short, by acting on ethics” (Rose 2007:27). This is one way in which, for Rose, individual moral self-governance is linked to broader goals of the good government of humans at the population level. He writes,

> For even if no revolutionary advances in treatment are produced, once diagnosed with susceptibilities the responsible asymptomatic individual is enrolled for a life sentence as a ‘pre-patient’ suffering from a ‘protosickness’. And, in the near future, perhaps, they will subject themselves to new forms of monitoring that engender a new ethical relation to the self. (Rose 2007:94)

This is a ‘somatization of ethics’, wherein the body in its corporeality becomes a space for acting upon ethics. Rose (2007:26) argues that

> These molecular phenomena, rendered visible and transformed into the determinants of our moods, desires, personalities, and pathologies, become the target of new pharmaceutical techniques. And these techniques do not merely promise coping, nor even cure, but correction and enhancement of the kinds of persons we are or want to be.

One important aspect of ethopolitics is the creation of what Rose calls a “moral economy of hope” (Rose 2007:27), in which traditional fear of illness and death is being re-cast in an ethos of biomedical hope for the future. This future-oriented moral economy not only operates through the trading on of emotion and hope (say, for a cure, or for the pharmaceutical bringing about of the ‘End of AIDS’) through which new forms of biopolitical subjects are made and new citizenship projects advanced, but it is also involved, literally, in the production of bioeconomic expectation, investment, innovation, and profit, particularly in pharmaceuticals and other biomedical technologies. An ethos of hope, anticipation and expectation of vital futures is engaged with emergent forms of biomedical subjectification, but this moral economy of hope is also quite literally that which “stimulates circuits of investment” (Rose 2007:27). In the case of treatment as prevention, this will involve anticipation of and capital investment in new forms of antiretrovirals, viral visualization technologies, and likely disinvestment from those technologies which fail to sufficiently trade on emotion, hope and anticipation for the imagined futures of ‘End of AIDS’.

Expertise. Rose asserts that new forms of authority can be located in new kinds of experts; that is, not only politicians and medical providers, but biomedical scientists, bioethics committees, and pharmaceutical companies. For Rose (2007:28),

> Biopolitics today depends upon meticulous work in the laboratory in the creation of new phenomena, the massive computing power of the apparatus that seeks to link medical histories and family genealogies with genomic sequences, the marketing powers of the pharmaceutical companies, the regulatory strategies of research ethics, drug licensing bodies committees and bioethics commissions, and, of course, the search for the profits and shareholder value that such forms of expertise promise. It is here, in the practices of contemporary biopower, that novel forms of authority are to be found.

These new forms of authority, these emerging ‘experts,’ offer not only a new language (“undetectable,” “virological failure” and “treatment as prevention”), new categorizations and calculations of risk, and new forms of somatic ethics at the level of the individual, but also new professional spaces as well (associations, scientific meetings, schools of thought, journals, myths, Twitter handles, and bandwagons). These new forms of somatic expertise are further developed and bolstered by what Rose calls ‘popularizers’ (such as activists, bloggers and journalists) who are engaged in the processes of biomedical translation for the lay public and other non-scientific professionals. But beyond these forms of expertise, Rose also theorizes that the expansion of bioethics itself acts as a form of expertise in the new era of vital politics, where it has come to shape key actors, such as pharmaceutical companies and medical technology firms, and to serve as part of the legitimizing apparatus that corporations may utilize in their own processes of research and development, commodification, and market creation for biomedical products and services.

Bioeconomics. Lastly, Rose argues that there is in fact an elective affinity (a la Max Weber) between contemporary somatic ethics and biocapitalism. This opens up new biopolitical spaces wherein the search for scientific innovation and industry profit – with the end goal being the improved management of vitality – becomes a moral enterprise, while the moral economy of somatic ethics itself – particularly the ways in which individuals and communities are morally compelled to act on their own vitalities – can become a means of generating profit as well as hope. In this way, economics becomes intricately involved in “the production and configuring of truths” (Rose 2007:32) of biomedicine, that is, in biopolitics itself.

Anticipatory Regimes: Engaging with a Politics of Temporality and Imagined Possibilities

Adams, Murphy and Clarke (2009:246) describe anticipation, our tendency to think and live towards the future, as a defining characteristic of the present moment, “a politics of temporality and affect”. They assert that “‘the future’ can, and therefore must, be *anticipated*… anticipation has become a common, lived affect-state of daily life, shaping regimes of self, health and spirituality.” (Adams et al. 2009:247, italics in original). Further they argue that.

> predictable uncertainty leads to anticipation as an *affective state*, an excited forward looking subjective condition characterized as much by nervous anxiety as a continual refreshing of yearning, of ‘needing to know.’ Anticipation is the palpable effect of the speculative future on the present. The anticipatory excitement of the cliff hanger as a narrative mode is as familiar as terror-inducing apocalyptic visions.…[a]nticipation now names a particular self-evident ‘futurism’ in which our ‘presents’ are necessarily understood as contingent upon an ever-changing astral future that may or may not be known for certain, but still must be acted on nonetheless. (Adams et al. 2009:247)

In this way, regimes of anticipation not only call on individuals and collectivities to orient towards the future in the present, defining the present and also the past via a politics of temporality, but in very material ways, obligating action along material trajectories in the present as part of an orientation to imagined futures. “Anticipation pervades the ways we think about, feel and address our contemporary problems” (Adams et al. 2009:248). These authors assert that it does so via five critical dimensions. These include: injunction, abduction, optimization, preparedness, and possibility.

Injunction asserts anticipation as “a moral imperative, a will to anticipate” (Adams et al. 2009:254). In this way, anticipating the future, acting now in the present in order to prepare for, head off, or make possible the best kind of future one can, calls on individuals to inhabit “an ethicized state of being” (254). This positing of the injunction to anticipate links up with the work of both Petersen and Lupton (1996) who describe the duty to participate in the new public health in order to optimize the future health of the population and its offspring, and also with Rose’s (2007) conception of ‘somatic ethics,’ which asserts an ethical imperative to act on one’s body, to attend to risks and susceptibilities, the obligation to optimize one’s health and one’s vital futures. For Adams and colleagues, the injunction to anticipate means buying into constructions of risk, accepting that risk as calculable and knowable, for example, through surveillance practices, and then being willed to act on this knowledge to prepare for and protect oneself against the future or to optimize these future possibilities.

Abduction describes "the processes of tacking back and forth between futures, pasts and presents, framing the life yet to come *and* the life that precedes the present as the unavoidable template for producing the future…turning the ever-moving horizon of the future into what which determines the present." (Adams et al. 2009:251). It means drawing on data and knowledge of the past and probabilistic projections of what the future could be in order to drive action, intervention, on the present. Abduction involves considering how to act in anticipation of the future, so as to herald the future into being or protect oneself from it. "Abduction is the work, the labor of living in anticipation" (Adams et al. 2009:255), a labor that we all are compelled to perform.

Optimization refers to the anticipatory orientation, and in fact, ethical obligation, to transform, reshape, re-engineer oneself, one's health, one's body, one's life so secure as Rose (2007) describes it 'the best possible futures.' Optimization necessarily compels individuals to draw on various forms of somatic expertise, that is, expert guidance on what is the best course of action for optimizing health and life. These vital futures are made up as expanding infinitely into an open rather than a closed field, framing optimization as an ongoing, never-ending, intervention on the self and on the community. There is no end point to anticipation and our imagined futures are expansive, infinite, never quite reached on the horizon. Adams and colleagues (2009) describe this as the 'tyranny of optimization.' The anticipated goal, the dreamed of possibilities for the future are never truly satisfied, never completed. These authors argue,

> In regimes of anticipation, optimization can become realized as a kind of hallucination, a simulated future that envelops us to provoke affective and sensory states as well as practical responses in the present…The hallucinatory presence of the nightmare or fantasy future transforms anticipation from a call to action into a call for compliance with tyrannical futures. (Adams et al. 2009:257)

Preparedness, as opposed to prevention, makes the call for a pre-emptive strike in advance of anticipated futures. The imperative here is not so much to prevent, to avert disasters, but to prepare for them, to make oneself ready, attend to one's risks, act before it is too late, be ready for what will come and/or herald it into being through intervening on the present via the past. Preparedness brings with it a certain urgency, a moral imperative for action right now, one that is reactive, but also speculative, residing along with uncertainty, the impossibility of ever knowing for sure if the future will be grasped, yet compelled to act anyway. As Adams and colleagues argue, "Anticipation authorizes pre-emptive actions in the present forced by a purported urgency in the future" (Adams, Murphy & Clarke 2009:258).

Possibility. Lastly, anticipatory regimes offer up novel engagements with 'possibility' by "predict[ing] where there is opportunity now for what was previously impossible" (Adams et al. 2009:258). That is, it brings the imagined futures, the wildest dreams, the possibilities that have so far seemed beyond reach, beyond even our dreams, into the present, so that the present can be acted on 'as if', as part of these 'conditions of possibility.' Notably, Adams and colleagues describe how the affective aspects of leaning into these future possibilities may ethically reconfigure our present via an urgency towards these imagined futures, even where ethical quandaries may bubble up. The authors describe how concerns about the ethicality of present day genomic research built out of a past of eugenics and Holocaust genetics research has been dampened by the urgency of the possibilities for genomic medicine to cure what has so far been incurable. They also assert that the urgency of the possibilities envisioned via anticipation also make possible the erasure of other possible trajectories of action through a positing of the future as 'inevitable' and foreclosing on other possible futures.

Adams and colleagues (2009) elaboration of anticipation as a politics of temporality and affect in present day biomedicine draws up alongside the work of both Clarke et al. (2010) and Rose (2007). The transformations that Clarke and colleagues describe as mutually constitutive of biomedicalization are not strictly determining, but in fact, offer up the hope of opening up spaces where conditions of possibility can unfold, including along planes of temporality. This anticipatory orientation to the future and the potentialities of biomedicine, posited by Clarke and colleagues, is "a sociocultural parallel to the bioeconomic/biopolitical focus on speculative and promissory capital" (Clarke et al. 2010:40). In this conception of vital politics and somatic ethics, Rose (2007) also seeks to engage with a politics of temporality and affect via his assertion that individuals are called on to optimize themselves, their bodies, their offspring in the present in the name of 'the best possible future(s)'. The present, Rose (2007) argues, can be imbued with a 'moral economy of hope,' which links up not only with affect, with excitement and hope in anticipation of future possibilities, but also with capital. For Rose (2007:7), "The new world of vital risk and vital susceptibilities, demanding action in the vital present in the name of vital futures to come, is generating an emergent form of life."

Conclusion

This theoretical work, which attends to critical perspectives on risk, surveillance, including techniques of self-governance, as well as subjectivity, and the ongoing transformations that are constitutive of biomedicalization, broadly conceived, form the foundation of the four empirical chapters that follow. In this analysis, I explore how HIV treatment as prevention is co-constitutive of a re-configuring of HIV risk discourses, transformations in biomedical surveillance practices, and importantly, how these 'mutations' are engaged in the production of new kinds of subjects and new forms of biosocial engagement, especially around claims-making for the right to know one's viral load and the right to be undetectable. Drawing on the work of Adams and colleagues (2009), I also explore how antiretrovirals themselves as material 'things' of discursive significance are deployed as part of a politics of temporality to both potentiate and also disrupt the anticipatory regime of the 'End of AIDS.'

Research Design and Methods

Methodological Approach

Utilizing a constructivist approach to grounded theory (Charmaz 2006) and situational analysis (Clarke 2005), I have explored the discourses of HIV treatment as prevention through a multi-sited approach using data collected via (1) one-on-one interviews with HIV scientists, policy makers, medical providers, and community leaders in advocacy and activism, (2) ethnographic observations of three scientific meetings, including the analysis of documentary, material and visual data collected from these field sites, and (3) also extant documentary, material, and visual data provided by research participants. This research has been informed by a number of key methodological approaches. First, I have approached HIV treatment as prevention as an emergent discourse utilizing situational analysis (Clarke 2005) as a theory/methods package (Clarke & Star 2007) which positions the situation – that is the discursive work of HIV treatment as prevention – as the basic analytic unit. Further, I have drawn on constructivist grounded theory, as conceptualized by Charmaz (2006), to inform the fundamental processes of my study design, data collection and data analysis, while continually returning to situational analysis in order open up broader analytic understanding of the situation of HIV treatment as prevention.

Grounded Theory

My research methods have primarily drawn upon Charmaz's (2006) elaboration of constructivist grounded theory. Building on but diverging from the more traditional, positivist approaches to grounded theory initially developed by Glaser and Strauss (1967) as well as later by Glaser (1978), Strauss (1987) and Strauss and Corbin (1990; 1998), Charmaz's (2006) approach to grounded theory continues to emphasize basic social processes by placing the study of action at the center of data collection and analysis, while also asserting that both the researcher and the research participant are actively involved in the co-construction of meaning around these processes. This perspective differs from more traditional conceptions of grounded theory that conceive of empirical reality as something ‘out there’ in the world to be discovered by the neutral researcher through objective data collection and analysis.

In contrast, constructivist grounded theory posits the researcher herself as actively engaged in the world that she studies and in constructing meaning from her data. In this way, Charmaz (2006:10) asserts that we, as researchers, are actively involved in the processes by which “[w]e construct our grounded theories through our past and present involvements and interactions with people, perspectives, and research practices.” This approach to grounded theory does not posit the researcher as a *tabula rasa*, but encourages the integration of researcher interests, interpretations, and sensitizing concepts (Blumer 1969) into the design of the study itself, including the types of participants interviewed and the interview questions themselves. This emphasis on the co-construction of theoretical meaning is a key reason for utilizing a constructivist grounded theory approach in this study. As a researcher who has worked for over a decade in the HIV prevention field, I bring to the table an important collection of beliefs, interests, interpretations and biases that have inevitably shaped the trajectory of this research project, and which must be both accounted for and meaningfully bracketed in my data collection and analysis. These include, but are not limited to, my pre-existing assumptions about the sustainability of HIV treatment as prevention on a global scale, personal qualms about the impact of treatment as prevention on human rights, and a degree of suspicion about pharmaceutical industry involvement in the promotion of their products as biomedical prevention tools. At the same time, my own growing sense of hope and enthusiasm about the broader goals of treatment as prevention, including their impacts on the lives of people I personally know and love, which have emerged throughout my work on this project, must also be acknowledged and bracketed.

Charmaz’s (2006:14) approach to grounded theory encourages the collection of “rich data” which are “detailed, focused, and full” through the use of interviews, as well as ethnographic methods and the textual analysis of extant or elicited data. Both data collection and analysis are driven by the constant comparative method and theoretical sampling. The constant comparative method calls on the researcher to be continually moving between data, codes, and categories, as well as back into the field, in order to build conceptual and theoretical understanding. Charmaz advocates that data analysis, beginning with initial coding and moving on to more focused and theoretical coding of data, should begin as soon as data is collected. This allows the researcher to not only move between various texts (interview transcripts, field notes, and extant data sources) in the process of constructing codes, but to also continually return to the field to collect more data in order to elaborate on emerging codes and categories.

Theoretical sampling, in contrast to representative or statistical sampling, is a strategy which involves "seeking and collecting pertinent data to elaborate and refine categories in your emerging theory" (Charmaz 2006: 96). In practice, it means that sampling is emergent, and is driven by the need to build on and refine codes, categories and theories that emerge in the processes of data analysis. It does not seek to achieve representativeness of a sample or to build statistical power. Instead, theoretical sampling drives data collection until the point of theoretical saturation, the point at which "gathering fresh data no longer sparks new theoretical insights, nor reveals new properties of your core theoretical categories" (Charmaz 2006:113) or to, as others have advocated, a point of theoretical sufficiency (Dey 1999).

Such methods not only encourage the co-construction of meaning about social processes and phenomena between researchers and participants, but enable research design, data collection and data analysis to continually remain open to the possibilities emerging from data itself. Such an approach to methodology has been especially crucial in this research project as I sought to explore a highly emergent social phenomenon through multiple, perhaps sometimes competing professional lenses, utilizing a multi-sited approach involving the analysis of data collected via multiple methods and from diverse sources (interview, ethnographic participant observation, narrative texts, material artifacts, photographs, and video). Because of the nature of this project and its theoretical underpinnings, it has also been imperative to move one step beyond grounded theory to incorporate other research methods that can further attend to this push around the postmodern turn.

Situational Analysis

Clarke (2005) posits situational analysis as one methodological approach to 're-grounding' grounded theory around the postmodern turn, that is, pushing grounded theory towards an always already capacity to tangle with the partial, the multiple, the uncertain, the unstable, and the messy that characterize our postmodern world. It also is an approach that enables researchers to go beyond social action and the knowing subject to explore the situation of enquiry more broadly, including its non-human and discursive aspects. Emerging out of Strauss's (1993) social worlds/arenas/negotiations framework and the Symbolic Interactionist concept of the situation as the fundamental unit of analysis (Clarke & Fujimara 1992), Clarke developed situational analysis as a theory/methods package (Clarke & Star 2007; see also Fujimara 1992; Star 1989; Star and Griesemer 1989), which cartographically seeks to open up data analysis.

While grounded theory approaches tend to the basic social processes going on within a given situation, situational analysis offers a complementary set of methods – through the processes of mapping – to "elucidat[e] the key elements, materialities, discourses, structures, and conditions that characterize the situation of inquiry" (Clarke 2005: xxii). Thus, while Charmaz's methods for data collection, coding, categorizing and memoing offered one set of tools through which I could explore the processes involved in the discursive work of HIV treatment as prevention, situational analysis called me to "go beyond 'the knowing subject' and be fully on the situation of inquiry broadly conceived" (Clarke 2005: xxviii). Perhaps, more importantly, situational analysis constructs the situation itself as being multiple, contested, unstable, porous, and mutually constitutive, and requiring analytic tools that are able to bend around the postmodern turn. This has been an apt methodological approach for the exploration of an emerging discursive situation, which in the course of the two years of this project, has, in fact, been very much a moving target - messy, contested, unstable, multiply constituted and constituting.

As this project has been designed as an exploration of the discourses of HIV treatment as prevention and the discursive work of this biomedical prevention approach in the professional social worlds/arenas of HIV prevention and treatment, I have found it useful to ground my work in Clarke's (2005:148) conception of discourses as "communication of any kind around/about/on a particular socially or culturally recognizable theme" and as "forms of representation." I have also drawn on Jaworkski and Coupland's (1999) assertion that language as a medium of communication is not neutral and is actively involved in the *constitution* of knowledge, not merely in its transmission, focusing in my analysis on language use, meaning making, arguments, claims, motives, assumptions, as well as silences and displacements within the discursive body of knowledge making up HIV treatment as prevention. Strauss (1978) saw social worlds as 'universes of discourse' and Clarke's situational analysis offers a supplementary and complementary set of tools for cartographically exploring HIV treatment as prevention within these 'universes'.

I have utilized this analytic approach to explore the discursive situation of HIV treatment as prevention itself, including its key human and nonhuman actors and actants, its narrative and visual material cultures and their relationships with each other, the ways in which they constitute subjectivities and make up material things, most critically, antiretrovirals themselves, the negotiations over discursive meanings taking place within and across various social worlds and arenas, as well as the absences, silences and invisibilities produced through these discourses. I have done this in part through the creation of situational maps, social worlds/arenas maps, and positional maps that draw on my analysis of interview and ethnographic data. In addition, I have leaned heavily on situational analysis in attending to documentary, material and visual data included in this analysis, in particular drawing on Clarke's (2005) take on discourse analysis to pursue the ways in which structural and cultural elements work through discourses to shape institutional policies and practices as well as individual action (Farnell & Graham 1998). Situational analysis has been particularly critical in situating antiretrovirals themselves as material things, as technologies of significance to the discursive work of HIV treatment as prevention.

Situational analysis has also been especially useful for providing a set of tools beyond basic grounded theory coding and memoing for attending to the visualization of the discourses of HIV treatment as prevention. Clarke and colleagues (2010:104) assert the analytic value of understanding the visualization of "things medical" (or perhaps, "things biomedical"), that is, citing Latour and Woolgar (1979) that "visual materials are nonhuman actants writ large; images and objects do many kinds of work" (Clarke et al. 2010:104). I would argue along with these authors that visual images, objects, things are themselves constitutive of biomedical knowledge and practices, as well as constituted by them. As Clarke and colleagues assert, "imagery offers opening through which to see" (2010:107), and as such, the "visual cultures of biomedicine" (Clarke et al 2010:108) become particularly meaningful analytic problem spaces. I have sought to incorporate visual sources of data in this analysis, particularly as a means of exploring how images are deployed in representations of the non-human and material (for example, antiretrovirals, and HIV diagnostic and viral load technologies) and also how the visual is engaged in critical legitimation work, particularly around the prioritization and valorization of viral suppression.

Data Collection

Guided by these methodologies, I have explored the discourses of HIV treatment as prevention, with a particular focus here on the discursive constructions of risk, subjectivities, surveillance practices and anticipation. I have done so through a multi-sited analysis of qualitative interview and extant narrative data collected from HIV researchers, policy makers, clinicians, and community leaders in advocacy and activism, as well as ethnographic data collected through participant observation at three global scientific meetings, including documentary, material and visual data. The selection of such a wide assortment of research sites and data sources is guided by Clarke's (2005:171) assertion that such an approach can "open up what constitutes the research situation…bring[ing] us closer to the messy complexities that constitute 'life itself'."

One-on-one interviews

I conducted one-on-one semi-structured interviews and engaged in participant observation during interviews with thirty-one unique research participants. Follow-up interviews were also conducted with five of these research participants to further explore specific codes and categories emergent in earlier data collection. Participants were HIV clinical (n=2) or social scientists (n=2), health policy makers in both public and private organizations (n=8), clinicians or clinical support workers (n=6), directors of HIV service organizations (n=4), and leaders in community-based HIV advocacy (n=8), all of whom engaged with treatment as prevention in their professional work. They ranged from a clinical scientist who served as principal investigator on a large global treatment as prevention RCT, hospital and community-based HIV clinician-specialists, the director of a national treatment advocacy organisation, the head of a large urban AIDS service organization, a science writer for an HIV community publication, the director of a global HIV social justice organization, and the head of a national network of people living with HIV/AIDS, among others. Though this study was designed to explore the emergence and travels of the discourses of HIV treatment as prevention largely within professional social worlds/arenas, it is also important to note that of the thirty-one participants interviewed for this study, fifteen disclosed their own HIV-positive status during the interview, and their experiences of engaging with treatment as prevention in their personal lives have contributed immensely to this project.

I chose to focus on gathering data from those working primarily at meso-level institutions – universities, research centers, policy institutes, city and state departments of health, hospitals and medical centers, advocacy organizations, and media outlets. I believe that such individuals are uniquely positioned in interaction with the scientific knowledges, policies and practices that are changing the way HIV prevention is done on the ground at the levels of the individual and the community. Their work, disseminated in the form of scientific publications, conference presentations, position statements, clinical protocols, treatment guidelines, magazine articles, and blogs, is in essence what is transforming and translating the abstract idea of HIV treatment as prevention into on-the-ground beliefs and practices involving real flesh and blood bodies, the pills they consume, and the other biomedical technologies they engage with. Thus, I believe these individuals are strategically positioned to offer perspectives *in* on the discursive work of HIV treatment as prevention from the vantage points of the various social worlds and arenas within and between which they travel.

Sampling. I identified potential interview participants in several ways, relying more heavily on certain methods than others when theoretical sampling necessitated it and finding certain approaches to be more or less fruitful, which I will discuss below. Potential participants were identified: (1) through a search of PubMed to locate authors of articles on HIV treatment as prevention that have been published in high impact journals, (2) through a search of speakers on the topic of HIV treatment as prevention at two global HIV treatment and prevention scientific meetings, the 20th International AIDS Conference in July of 2014 and the 2014 IAPAC Controlling the HIV Epidemic with Antiretrovirals Summit in September of that year, (3) through the staff directories and websites of Departments of Health in several major American and British cities (San Francisco, New York, Washington, DC, and London) as well as key non-governmental organizations or policy centers focusing on HIV prevention and treatment policy in these same cities, and (4) lastly, through referral from past participants.

First, in order to identify potential participants, specifically scientists and policy makers, engaged in academic work on HIV treatment as prevention, I conducted a search of PubMed for the names of first authors of publications that contain the term ‘HIV treatment as prevention’ in either their titles or abstracts that were published since 2009 (the year the Granich et al. article was published) in journals with an impact factor of 2.5 or greater, which allowed me to identify articles that were likely to be most widely read and cited. Second, I identified potential participants utilizing a search of the official meeting programs of two major global scientific conferences in the field of HIV treatment and prevention, the 20th International AIDS

Conference, held July 20-25th, 2014 in Melbourne, Australia and the International Providers of AIDS Care's (IAPAC) Controlling the HIV Epidemic with Antiretrovirals Summit, held September 18-19th, 2014 in London, United Kingdom. I identified first author-presenters listed who had presented on the topic of HIV treatment as prevention in plenary sessions, scientific sessions, poster sessions, or workshops. Presenters were selected for contact if the term 'HIV treatment as prevention' was part of the published title of a session or description of a session, or in the title of an individual presentation or abstract. Individuals were prioritized for recruitment when they were identified via searches of both PubMed and scientific meeting programs, and efforts were made to sample widely from both the clinical and social sciences.

Third, utilizing institutional websites and online employee directories, I identified key individuals handling HIV prevention or treatment policy at four City Departments of Health, or their equivalent, in San Francisco, New York, and Washington, DC in the U.S. and London in the UK, as well as prevention and treatment policy specialists at a number of non-governmental organizations or policy centers in these same cities. I have specifically sought to identify individuals to approach for recruitment at both governmental and non-governmental organizations with the aim of providing a window into the discursive travels of treatment as prevention through multiple public and private pathways. I specifically selected these geographic sites as they are those cities in the U.S. and the UK that have significant populations of people living with HIV. These locations have been on the forefront of HIV prevention policy making both at the local and national levels, including the implementation of some of the first HIV treatment as prevention initiatives. I have also specifically chosen to include a non-U.S. site for interview data collection in order to have a window in on global, not merely U.S. national discourse on HIV treatment as prevention, and sought to utilize my London site, as well as non-U.S. authors and conference presenters, as a gateway into this global discourse. It is important to note, however, that as relatively wealthy, albeit socially stratified, metropolises of the Global North, these cities are *not* necessarily representative of the geographic deployment of HIV treatment as prevention in its global travels, even though they are home to some of the ‘champions’ of treatment as prevention and are sites of early adoption. The challenge of grabbing hold of the very slippery, ever-changing, and amorphous assemblages of global HIV treatment as prevention discourses is a limitation I discuss in detail later.

Lastly, I also sought to identify potential participants through referral from previous interview participants. At the conclusion of each interview, I asked participants if, having now spoken with me and having a greater understanding of what I was interested in exploring through this research project, they could identify any of their colleagues or other key actors in HIV treatment as prevention science, policy and practice who they would recommend that I contact for participation in the study.

Study Recruitment: All potential participants were contacted via email using the text of the study recruitment letter and an attached study information sheet. If individuals expressed an interest in participating in the study, together we arranged a mutually convenient time for a one-on-one interview, which took place either in person, over the phone, or via Skype. Informed consent, as per UCSF CHR guidelines, was obtained prior to the start of the interview, either in person through a face-to-face review of the consent form, or using an emailed version of the consent form for phone/Skype interviews. The procedures for obtaining informed consent and the broader protections for human subjects in place in this study are discussed in more detail later in this chapter.

In practice, approaching potential participants through active or passive referral through a colleague came to be the most fruitful recruitment method, even when it was not the sole method of identifying them. Initially, I cast a wide net in terms of identifying a diverse field of potential interviewees through the first three approaches detailed above, focusing specifically on approaching equal numbers of scientists, policymakers, clinicians and leaders in advocacy and activism. Where I had identified an individual through, for example, a PubMed search, who had also been recommended by a previous participant, I prioritised these individuals for recruitment, utilizing, with permission, my existing relationship with their colleague as a ‘way in.’ In some cases, past participants offered to email their colleagues on my behalf with my recruitment materials. This was a particularly effective way of making contact and successfully recruiting new participants.

As this process moved forward, I found, perhaps unsurprisingly, that individuals most closely engaged on the ground with communities of people living with HIV, whatever their professional role, tended to be more willing to participate. Leaders in advocacy and activism tended to be most responsive to my inquiry followed by clinicians and those who worked in policy, particularly in non-governmental, rather than governmental, organizations. Scientists, particularly clinical researchers, were especially difficult to engage with. In part, I believe this was because they also tended to be the most powerful individuals I sought to study, and this presented all the complexities I anticipated in ‘studying up,’ a issue I discuss more fully later in this chapter. In addition, clinical scientists were often the early adopters and promoters of treatment as prevention, and more than others I spoke to, tended to be ‘champions’ of the approach. I think it is likely that they perceived a sociologist studying treatment as prevention to be, by nature, critical of it, and were uncomfortable or unwilling to grant me an interview for this reason. In the end, I had to more intensively focus on recruitment of clinical researchers as well as those in public health policy, in particular, in order to feel that I was adequately saturating my data with a diverse set of perspectives.

Informed Consent: Informed consent, as per UCSF CHR guidelines, was obtained prior to the start of the interview, either in person through a face-to-face review of the consent form, or using an emailed version of the consent form for phone/Skype interviews. Prior to commencing each interview, I reviewed the consent form with participants, assessed the participant’s comprehension of the study procedures and risks/benefits, and answered any questions about the study, including via email in the days leading up to the interview. Participants interviewed over the phone or via Skype had the option to either review the consent form in advance of the interview, attach an electronic signature and return it via email, or upon having read it, were verbally consented at the start of the interview using the CHR-approved verbal consent script. The verbal consent process was digitally recorded. The literacy and education levels of most participants in this study was generally very high, and many participants worked in professional capacities in which they had administered informed consent for their own research studies.

The Interview: Interviews usually lasted approximately one to one and a half hours. Many interviews took place over the phone or via Skype, but in-person interviews were most often held at the participant's office, with a few conducted in a participant's home or in a quiet, private classroom of a local university, where at the time I held a teaching position. All interviews were digitally recorded with the participant's permission. Participants were offered a $20 (or its equivalent in foreign currency) Amazon gift card as a thank you for their participation in the study.

During the interviews, I queried participants broadly on their perception of from where and how the idea of HIV treatment as prevention emerged, including the key social, political and economic catalysts for this concept, and why it sprang forth into HIV prevention and treatment science, policy and practice when it did, including who it benefits most and who or what might be left out or silenced by its emergence and implementation. I also asked them about their perceptions of how HIV treatment as prevention has been accepted in the professional worlds and arenas in which they conduct their work, including any resistances they see emerging in response to it. Further, I asked them about how the emergence of treatment as prevention has impacted the nature of their own work, including its organization, content and funding, and their feelings about this impact, particularly for those who work in direct patient care or supportive services. Lastly, I queried them on their perceptions of the future of HIV prevention science, policy and/or practice in light of HIV treatment as prevention approaches, and specifically what they believe this approach means for the subjective experiences of living with HIV. The development of the initial interview guide for this project was driven by the research questions framing this project, but it also grew and changed in response to both emergent theoretical categories and my own growing interest in focusing specifically on the areas of risk, surveillance, subjectivity, and of the discursive construction of antiretrovirals as prevention technologies. A revised interview guide, which developed during the course of the initial round of data collection and analysis, is also attached.

After completing my analysis of the first round of interviews (n=31), I also followed up with a small number of participants (n=5) willing to be interviewed a second time in order to clarify issues raised in our previous interview and to seek further elaboration on emerging codes and categories. Further, several participants also provided extant sources of data, either during or after our interview, in the form of peer-reviewed or lay press articles or blogs they had written or other documents, such as consensus statements or treatment guidelines they had contributed to or felt where important to include in my analysis. These documents were memoed on and coded for inclusion in my analysis in much the same as documentary data collected during my ethnographic field work, which is described later in this chapter.

Studying Up: As I designed this project to study the discourses of HIV treatment as prevention that are co-constitutive of the professional social worlds/arenas of HIV treatment and prevention, this study inevitably involved a degree of ‘studying up’ on persons and institutions that occupied positions of relative power. These relations of power, both anticipated and actualized in this project, impacted on both its design and its implementation. For that reason, I think it is important to discuss studying up in this context here.

C. Wright Mills (1956), in his classic sociological work, “The Power Elite,” framed relations of power in 20th century democratic capitalist societies as made up of an interlocking network of connections, often based on family and educational alliances, between the political, military and business worlds. Though his work emerged out of a very different social and political situation than our much more globalized present, his analysis of the ways in which relations of power are both networked and in many ways, robust and self-sustaining over generations, lends itself to framing the complexities of conducting research within scientific and biomedical social worlds, themselves increasingly corporatized. His analysis of power, in particular, lends itself to explaining some of the challenges of access and legitimation I encountered during data collection. Nader (1972) was one of the first social scientists to issue a concerted call for a turn away from studying the so-called ‘colonized’, the poor, the exotic, and a turn towards studying the ‘colonizers’, the powerful, the elite, those perhaps (sometimes) a little more like ourselves. Studying up, particularly, of institutions and the individual actors that make institutions work “raise(s) important questions as to responsibility, accountability, self-regulation” (Nader 1972:5) and also challenges researchers to trouble the kinds of questions they might ask of research subjects. ‘Studying up,’ as well as ‘down,’ is therefore critical for the production of the ‘thick description’ so important in qualitative research and for the generation of theories of social processes (Nader 1972).

Nonetheless, ‘studying up,’ as well as ‘sideways’ on one’s own colleagues, presents a set of methodological challenges that had to be attended to in the course of this research project, most notably in the interview portion of the study, where I anticipated and experienced both access issues (Nader 1972) and the messiness of the power dynamics in play when conducting research upwards (Nader 1972; Mosse 2006). I conducted participant recruitment via email, which while making my attempts to make contact easily ‘deletable’, is also the common form of communication in the professional fields that I studied. I believe this approach made my request seem legitimate and professional, but non-intrusive. I offered a small incentive for participation ($20 Amazon gift card or its equivalent), which while not ‘needed’ by these relatively elite professionals in the same way that incentives are often ‘needed’ in studies of individuals who may have few other avenues for earning a living other than participation in research, I hope this was seen as a token of appreciation for the time devoted to participation in this project. As I studied a group of professionals who, in my own experience, are uniquely and often very personally devoted to the issues of HIV prevention and treatment and had strong beliefs about treatment as prevention, I believe that most of those who did respond to my inquiry found the call to participate in sociological research on treatment as prevention, a compelling one.

However, there were a number of high profile individuals, particularly those based in multilateral organizations, such as UNAIDS and the WHO, and particularly outspoken public proponents of treatment as prevention who were contacted for recruitment purposes, but declined to participate in this project. This is an outcome that in retrospect, in light of the work of Mills (1956), I might have anticipated. In part, this may have been a reflection of the relations of power in studying up and their impact on access. My project was perhaps simply not seen as important enough to squeeze into their already busy schedules. I believe this access issue was also a reflection of the perception of sociological research on treatment as prevention. These specific individuals, who were contacted but declined to participate, were also those who were prominent speakers at the three scientific meetings included as ethnographic field sites. At these meetings, they tended to represent treatment as prevention as a ‘closed book’ or a ‘done deal,’ something so *obviously* the only path forward that it ought to be closed to too much further inquiry. I anticipate that the aims of this research may have come across as too critical, *too sociological*, to be fully comfortable for them. Nonetheless, the beauty of the multi-sited design of this project is that it enabled me to capture their perspectives and their engagements with the discourses of treatment as prevention via ethnographic field work methods, including the analysis of audio data and field notes from sessions at which these sought-after interview participants were key speakers.

A further challenge, though a seemingly less problematic one, were the power dynamics emergent in the interview space when ‘studying up’ as a graduate student on research subjects who are relatively powerful and respected within a field that I myself am also apart of. Mosse (2006) noted in his experience of studying up on international aid and development organizations that there was sometimes contestation of the accounts produced through qualitative inquiry and also resistance on the part of research subjects of the boundary-making inherent in the research process, particularly in terms of relationships formed in the field. As I approached data collection and analysis from a constructivist perspective, I conceived of the process of knowledge formation in my interviews to be one of co-construction, a mutual, back-and-forth negotiation of our own versions of the situation, which I hope left me open to and flexible to the power dynamics at play in the interview space. Both studying ‘up’ and studying ‘down’ equally require remaining on one’s toes in the interview space, attentive to the social dynamics at play, and sensitive to the needs of the individual participant, knowing when to challenge and push back and knowing when to hold one’s tongue. I believe my past experience doing research primarily with poor or otherwise marginalized persons living with HIV, who can themselves bring to the interview environment a plethora of challenges (being under the influence of drugs or alcohol, just needing someone to talk to, financial desperation, seeking advice on health issues, etc.), prepared me well for the unique set of challenges that ‘studying up’ in the HIV prevention and treatment fields posed.

With rare exception, the interview participants in this project were incredibly welcoming and enthusiastic about my work - to be expected in such a self-selected group - and generally took steps to make me feel optimally comfortable in the interview space, including buying me coffee, making me a pot of tea, taking me on extended tours of their organizations, and offering to lend me books. The power dynamics of the research situation felt foregrounded in only one research interview with a clinician-researcher who was a strong early proponent and adopter of treatment as prevention and who responded hostilely to nearly every question, questioning my background research in preparation for the interview and describing the content of the interview as “inappropriate.” For example, I asked a question during this interview about the impact of treatment as prevention on stigma, because it had been invoked as a key part of the work of the discourses of treatment as prevention by many participants, and this this participant took offense to the question, refusing to answer and responding that “providers don’t do work with stigma.” This experience was uncomfortable and shook my confidence temporarily, but it was by far the exception. But I mention it here because I believe it is representative of the challenges I had originally anticipated in ‘studying up’ and negotiating relations of power in the interview space.

However, the challenges presented by studying up in these professional social worlds and arenas emerged largely only in relation to access. The enthusiasm of past participants to connect me with their colleagues who I had expressed an interest in interviewing and the utilization of a multi-sited approach greatly helped in mediating these challenges. Gusterson (1997:115) argued that, “participant observation is a research technique that does not travel well up the social structure.” On the contrary, I found that my ethnographic fieldwork at scientific meetings, described in the following section, offered a unique opportunity to both gain access to the ‘playing fields’ of HIV researchers, policy makers, clinicians, and other leaders in these social worlds and arenas, but also to find another ‘way in’ to developing ‘thick description’ and ultimately generating theory about the emergence of the discourses of HIV treatment as prevention.

Ethnography of Scientific Meetings

As part of this multi-sited research project, I also conducted ethnographic fieldwork as a participant-observer at three global HIV treatment and prevention scientific meetings: the 20th International AIDS Conference (IAC), and two consecutive International Association of Providers of AIDS Care (IAPAC) Summits on Controlling the HIV Epidemic with Antiretrovirals.

The IAC, held July 20-25th, 2014 in Melbourne, Australia, is a biennial scientific meeting and exhibition organized by the International AIDS Society, a professional association of HIV clinicians, service providers, researchers, policymakers and persons living with HIV/AIDS. The IAC was first convened in 1988 and is the largest and most attended conference on HIV/AIDS in the world, making it a key site for the dissemination of research findings, policy and practice approaches, and thus a critical event for the constitution of discourses around HIV treatment as prevention. The IAC is also heavily co-sponsored by several major multinational pharmaceutical firms, making it a key space to interact with important industry players and observe the engagements of the pharmaceutical industry with the science and policy arenas. It is also a venue which historically has served as an important platform for activists, particularly around HIV treatment access, an at times marginalized perspective that I felt it was important to ‘turn up the volume’ on in my analysis.

The IAPAC Summit is an annual biomedical prevention conference focused specifically on HIV treatment as prevention and pre-exposure prophylaxis. The International Association of

Providers of AIDS Care (IAPAC) is a global professional association of over 20,000 clinicians and allied health professionals providing HIV/AIDS-related care. They hold a number of clinically-oriented conferences annually related to HIV/AIDS care, including a conference on HIV treatment adherence, on HIV nursing, and on viral hepatitis, in addition to the conference described here. I conducted ethnographic field work at both the 2014 meeting entitled "Controlling the HIV Epidemic with Antiretrovirals: Avoiding the Cost of Inaction," held September 18-19 in London, United Kingdom, and the 2015 meeting entitled "Controlling the HIV Epidemic with Antiretrovirals: Having the Courage of Our Convictions," held October 1-2 in Paris, France.

I decided to pair these ethnographic sites and the use of ethnographic field work methods, including the collection of documentary, material and visual data, with interview methods in order to gain access to and elicit data from a broader field of actors in the social worlds/arenas involved in the discursive work of HIV treatment as prevention. While I limited my interview recruitment to participants from four professional group of human actors, broadly conceived, conducting participant observation at scientific meetings allowed me to engage with other key actors, including representatives of industry and multilateral organizations. Hammersley and Atkinson (2007:102) argue that combining formal interviews with ethnographic fieldwork has "distinct advantages" such that "the data from each can be used to illuminate the other."

Utilizing ethnographic methods in this capacity also allowed for the collection of key documentary, material and visual data, including official reports, corporate marketing materials, scientific publications, lay press publications, product samples, and photographs and video of displays, performances and protests, which took place in these settings. I chose to include the collection of these types of documentary/textual, visual and material data as a component of my ethnographic fieldwork because I believe that, specifically in the scientific and policy arenas, which stretch across global geographic and virtual spaces, the production of knowledge and discourse so often happens through the creation and deployment of these textual, material, and visual forms of representation. Similarly, while this project is very much concerned with the work that human actors ‘do’ in discourse production, it is equally concerned with the work of non-human actors and actants, including aspects of visual/material culture – the viruses, bacteria, pills, screening and diagnostic tests, medical devices, etc., including how they are represented in visual imagery – about which HIV science, policy and practice circulates.

Access to each of these ethnographic sites was gained by registering as a conference attendee. For the IAC, this involved the payment of a registration fee as a student delegate. The IAPAC Summits are free to all registered attendees, though spaces are limited. Data collected during each period of ethnographic immersion fell into the following categories:

(1) written field notes collected on formal conference presentations and other conference activities, as well as informal interactions, such as naturally occurring conversations and behaviors, which were observed during the meetings. This included conversations that were overheard and those informal conversations I myself engaged in in the course of asking questions of presenters, talking with fellow attendees, etc.

(2) transcripts of the digital audio recordings of formal meeting sessions,

(3) documentary data (official reports, scientific publications, magazines, newspapers, brochures, corporate marketing materials, etc.),

(4) material artifacts (product samples, photographs of ‘places and spaces’, architecture, marketing props, protest props, product displays, signs, etc.);

(5) visual data (photographs and/or video of advertisements, artwork, performances, protests, etc.).

Field notes were recorded both on a laptop, particularly during formal sessions where such note-taking is, as Hammersley and Atkinson (2007) describe it, “an unremarkable activity,” as well as occasionally in hand-written form in a field journal, which were later written up more formally.

At the IAC, formal meetings sessions were sampled by conducting a search of the published conference programme in advance of the start of the conference, and purposively selecting, first, those sessions that contained the term ‘HIV treatment as prevention’ in the session title or the written description of the session, followed, secondly, by those sessions which were not explicitly focused only on HIV treatment as prevention, but which contained papers, posters or other presentations that included ‘HIV treatment as prevention’ in their titles or abstracts. Lastly, I also attended sessions focused more broadly on HIV prevention or HIV treatment in order to collect data on how HIV treatment as prevention as a specific prevention strategy is being examined in relation to broader discourses on HIV prevention or HIV treatment. I utilized my ‘down time’ when not attending formal sessions to observe and participate in informal interactions, to explore the Exhibition Hall and the Global Village to collect documentary, material and visual data, to attend artistic displays, performances, and film screenings, and to observe other formal and informal conference activities, including those of activist groups as well as for-profit corporations present for commercial promotion and product marketing purposes. The IAPAC Summits, much smaller events relative to the IAC, had no concurrent sessions. Here, I attended and collected data in the form of audio recordings, written field notes, documentary materials, and photographs at all sessions throughout each of the two-day meetings. In total, this involved the recording of 21 hours and 26 minutes of audio data from the International AIDS Conference, 9 hours and 10 minutes of audio data from the 2014 IAPAC Summit, and 8 hours and 6 minutes from the 2015 IAPAC Summit, for a total of 38 hours and 42 minutes of audio data, which was later reviewed in its entirety and selectively transcribed. Audio recordings of conference proceedings were selected for full transcription when the contained content directly related to HIV treatment as prevention.

Copies and samples of documentary and material data (reports, brochures, product samples, publications, etc.) that were freely made available to attendees were collected where available from these field sites. Where such data was not ‘free for the taking’ in hard copy form, it was photographed and memoed on and/or the contact details of associated organizations jotted down in order to later request an electronic copy. Visual data in the form of photographs and video were recorded using a digital camera and this visual data was indexed electronically along with field notes on my interactions with and experience of this data in the field. Wherever possible, copies of powerpoint slides utilized in formal meeting presentations were also accessed, indexed and included for analysis in conversation with the text of transcribed meeting sessions. In total, 63 distinct extant sources of narrative, visual and material data related to treatment as prevention collected from field sites were included for analysis.

There was no formal process of informed consent for participation in the ethnographic participant observation component of this study, as data collection involved minimal risk to individuals and involved data collection on naturally occurring interactions in a public space. As per the usual conventions for collection of participant observation data in public spaces, it would have been impossible or highly disruptive to seek to gain prior informed consent from individuals in this public place.

Data Analysis

Transcribed interview and ethnographic audio data, ethnographic field notes, including those on material and visual data, and the texts of documentary data, as well as photographs and video recorded at field sites were initially analyzed using constructivist grounded theory methods (Charmaz 2006) and utilizing Dedoose qualitative data analysis software. First, I conducted an initial round of coding of the first eighteen transcribed interviews and a selection of ethnographic data, followed by memoing on a selection of the most salient initial codes. Following this, I returned to the field to collect the remainder of the first round of interviews, using a revised interview guide, focused on deepening my understanding of the most salient discursive processes emerging from my early data. During this time, I continued to memo on and develop these codes into more focused codes, moving back and forth between data and the field. At the completion of these interviews, I returned fully to coding, completing a second round of focused, more theoretical coding on all interview and ethnographic data, including documentary, material and visual discourse data. My data analysis of material and visual data was guided by Clarke's (2005) approach to mapping visual discourses and included the creation of 'locating,' 'big picture,' and 'specification' memos, which were then coded and integrated into memos on more focused and theoretical codes (Charmaz 2006). During this time when I was engaged in coding and memoing, I simultaneously conducted follow-up interviews with five of my original research participants in order to specifically query them on the emerging codes and categories developing in my research as well as to ask follow-up questions related to our first interview.

Further, I also sought to cartographically explore this data using situational analysis to develop a deeper and 'thicker' analysis of the discursive situation, intentionally pushing beyond a focus exclusively on human and institutional actors and social action in itself, beyond 'the knowing subject,' to include nonhuman actors and actants, cultural and visual forms, and discursive elements. This involved the creation of situational and social worlds/arenas maps, as well as a number of positional maps on the most salient areas of the discursive work of treatment as prevention. These maps were used to frame the broader situation and collective engagements of key actors in the discourses of HIV treatment as prevention in order to more fully situate the social processes and theoretical categories fleshed out in my grounded theory analysis. Situational maps were especially critical for developing my analysis of how antiretrovirals themselves are discursively situated as material things which both potentiate and trouble the broader situation of HIV treatment as prevention, and in analyzing aspects of temporality and anticipation. The goal of this multi-sited research project, and the deployment of these two tactically distinct but intertwined approaches to data collection and analysis, was to push beyond a neat, linear, two-dimensional study of HIV treatment as prevention as a scientific idea, a prevention policy or a clinical practice, towards a more complex, more messy, less linear and more multi-dimensional analysis of the present discursive situation and its impact on real lives and bodies. I believe that these approaches, utilized in tandem with each other, have allowed me to do just that.

Protection of Human Subjects

The interview component of this research project was approved via an Expedited Review by the University of California, San Francisco Committee on Human Subjects Research, while the ethnographic component was certified as Exempt Status. Procedures for administering informed consent to participate in the interview component of this project have already been described in this chapter. All interviews were de-identified and names of speakers have been omitted from the transcribed text of scientific meeting data. In the empirical chapters to follow, excerpts from interview transcripts of have been identified only by a general description of their professional role, and where appropriate, sometimes also the geographic location where they do their work. Excerpts from the proceedings of scientific conferences have been identified only with the title of the conference, the location, and the date on which it was recorded. A more detailed description of the procedures put in place to protect human subjects, including confidentiality and data protection are described in the Written Informed Consent Form, approved by the UCSF CHR. The Verbal Consent Script for Phone and Skype Interviews, as well as my Initial and Revised Interview Guides are attached as appendices to this dissertation.

Re-configuring HIV Risk Discourses: From Sexual Risk to Biomedical Risk

In this chapter, I discuss several related transformations occurring, via treatment as prevention, in the construction of HIV transmission risk between sexual partners. First, I argue that the emergent discourses of HIV treatment as prevention are co-constitutive of a re-shaping of what constitutes ‘safer sex.’ Sex between a person who is living with HIV with an undetectable viral load and an HIV-negative person is increasingly coming to be constructed as even safer than sex between two individuals who are HIV-negative or believe themselves to be, irrespective of whether a barrier method is used. This has been productive of a shift in language from ‘unprotected sex’ or ‘unsafe sex’ to ‘condomless sex,’ a more morally neutral way of describing how sex can be rendered ‘safe’ via viral suppression even when condoms are not used.

Along with this shift, there has been an attendant re-configuring of the techniques of self-governance - the technologies of the self - through which individuals *qua* risk subjects can and must contain the risk of HIV transmission they pose to others. Prior to the emergence of HIV biomedical prevention, including treatment as prevention, individuals governed their HIV risk via expectations to consistently and correctly use and negotiate the use of condoms, along with other seroadaptive practices, such as serosorting and bodily positioning; that is, they engaged in techniques of *sexual* risk governance. The emergence of biomedical prevention approaches is productive of novel techniques of biomedical risk reduction and the imperative to engage with them. In this way, performing self-governance of HIV risk in the era of treatment as prevention calls on individuals *qua* risk subjects to appropriately engage with biomedicine: to engage in HIV diagnostic testing, and if positive, to turn up to HIV appointments and be faithfully engaged with HIV related care, to consume antiretrovirals and to comply with that regimen so as to render themselves non-infectious, or virally suppressed. These are techniques of *biomedical* - as opposed to sexual - risk governance. I then discuss several dimensions to the imperative to biomedically manage risk, including the knowability and certainty of the quantification of risk via viral load measurements, and also how biomedical risk governance compels individual compliance both through regimes of the optimization of health ("the care of the self") and also the responsibilization to protect others ("the care of the social"). I argue that it is through these imperatives that persons living with HIV are called on to constitute themselves as responsible, biomedically engaged, pharmaceutically contained risk subjects.

Lastly, I conclude this exploration of the re-configuring of HIV risk via treatment as prevention by arguing that this shift has been co-constitutive of the framing of those who are 'unknown' status or 'undiagnosed,' those who have never been tested for HIV or who simply have not been tested as recently as *today*, as 'risky.' If engagement with biomedicine and the rendering of oneself as pharmaceutically contained and virally suppressed are the techniques by which HIV risk can be biomedically governed, then those who *cannot* or *will* not submit for biomedical surveillance and for the quantification of risk via HIV testing and viral load monitoring come to be constructed as 'dangerous,' 'risky, and 'the transmitters,' irrespective of their HIV status. Risk - and HIV risk, in particular - is fundamentally about moral culpability, and via treatment as prevention, moral culpability for HIV transmission is increasingly falling on those do not or will not engage with biomedicine, including for biomedical monitoring of their current HIV-negative status, one which is always already potentially pre-HIV. In the era of biomedical prevention, those who are 'undiagnosed' or 'unknown' status or even 'HIV-negative yesterday' are coming to be constructed as to blame for increasing rates of HIV infection. I take up, specifically, the extension of HIV risk into the pre-HIV state, particularly through discourses of HIV diagnostic test marketing, a critical dimension of the transformations that both Clarke and colleagues (2010) and Rose (2007) assert is co-constitutive of processes of biomedicalization.

Re-shaping 'Safer Sex'

Traditional HIV prevention discourses have tended to prioritize the imperative to alter sexual behavior in order to reduce risk, in order to have 'safer sex.' The re-constitution of the bodies of people living with HIV via treatment consumption and viral suppression is transforming 'safer sex' via the deployment of a discourse of the HIV-positive but undetectable partner as, in many cases, *safer* in terms of HIV risk than an HIV-negative or unknown status partner. As I will discuss shortly, this is in part because they are appropriately and responsibly engaged with biomedicine, having made themselves up as responsible, risk-averting, biomedical subjects, by rendering themselves pharmaceutically non-infectious. I start this analysis here, however, in order to argue that transformations in the risk discourses of HIV via treatment as prevention are productive of new kinds of social relations in sexual partnerships, a re-configuration of the language used to talk about 'safe' and 'unsafe' sex, and a re-shaping of particular forms of biomedical - as opposed to sexual - risk, which are consequential for both surveillance techniques and for subjectivity, including the creation of new kinds of risk-averting and risky subjects.

Emblematic of traditional sexual behavioral approaches to the prevention of HIV transmission has been the ABC Approach, heavily promoted in particular by the U.S. government in their international HIV prevention programs, specifically the President's Emergency Plan for AIDS Relief (PEPFAR), established by Former President George W. Bush in 2003. The ABC Approach emphasizes sexual behavioral change, aiming to encourage individuals to change their 'risky' sexual behaviors by forgoing sex entirely until marriage (practicing abstinence), or being faithful to one partner in a monogamous relationship, and using condoms correctly and consistently every time (President's Emergency Plan for AIDS Relief 2016). According to the PEPFAR guidance on behavioral prevention, "The ABC approach employs population-specific interventions that emphasize abstinence for youth and other unmarried persons, including delay of sexual debut; mutual faithfulness and partner reduction for sexually active adults; and correct and consistent use of condoms by those whose behavior places them at risk for transmitting or becoming infected with HIV." Other approaches, particularly where condoms are not going to be used, have emphasized strategic sexual positioning, often the HIV-positive partner assuming the receptive role, which has a lower probability of transmission (Vittinghoff, Douglas, Judson, Mckirnan, MacQueen & Buchbinder 1999), and knowing one's HIV status and endeavoring to only have sex with partners of the same serostatus, a practice called serosorting - HIV positive partners for those who are positive, and HIV negative for those who are negative - again focusing on intervening on sexual behavior itself. To have sex with multiple partners, to not use condoms, and especially to have sex with serodifferent partners, that is, those who are of a different HIV status or whose HIV status one does not know, has traditionally been framed as 'risky', as 'unsafe', as 'unprotected,' the sort of behavior to be intervened on through behavior change interventions, such as the ABC approach.

Self-governance of sexual behavior, that is doing work upon the self in order to manage *sexual risk* has been long been explored by scholars working on HIV (Race 2001), as well as other sexually transmitted infections, such as genital herpes (Oster & Cheek 2008) via Foucault's concept of 'technologies of the self' (Foucault 1994), often in ways that problematize the subjectification of sexual risk averting subjects. In this analysis, I will argue, however, that the emergence of HIV treatment as prevention and its engagement with these more traditional discourses on HIV sexual risk has been productive of a re-configuration, or more accurately, an ongoing, emergent *re-configuring* of what it means to be 'risky' and what it means to be 'safe'. The discursive re-configuring of risk and safety via treatment consumption and viral suppression is enabling the practice of 'safer sex' irrespective of traditional markers of sexual safety, such as condom use or serosorting. Treatment as prevention, via the framing of viral suppression as a means of rendering individuals safe, contained, and responsibly engaged with biomedicine, means moving towards a more *biomedicalized* construction of safer sex, that is, as one interview participant said, "not just using a condom every time" (Program Director of a community health center, Washington, DC).

The emergence of viral suppression as a marker of biomedical non-infectiousness and does two types of discursive work on HIV risk. First, it disrupts the boundaries between what we might call 'safe' or 'safer sex' and 'unsafe' or 'unprotected sex,' reframing what is constructed as sexually 'safe' and sexual 'risky' beyond traditional sexual behavioral constructions of HIV risk. I will explore this first disruption in this sub-section, including how it is co-constitutive of a shift in language use around descriptions of 'unprotected' and 'safe' sex by the U.S. Centers for

Disease Control and Prevention (CDC). In the what follows, I will also take up an exploration of the second kind of discursive work that treatment as prevention does on HIV risk via viral suppression, arguing that it is productive of new practices of 'making safe', in the words of one participant, an HIV and sexual health consultant in London. Increasingly, to avert risk as a person living with HIV means to know one's HIV status via diagnostic testing, be engaged in HIV related care, compliant with treatment, and virally suppressed. In this way, the re-configuring of HIV risk is productive of and produced by a shift in emphasis from individual and epidemiological concern about performances of *sexual* risk reduction to performances of *biomedical* risk reduction. Here, I will focus specifically on how this re-configuring of HIV risk is re-shaping discourses of 'safer sex.' Later in this chapter, I will explore in more depth how this re-configuring of HIV risk is engaged in novel practices of biomedical subjectification, resulting in the making up of new kinds of technoscientific identities in relation to being 'undetectable.'

For an HIV-negative person, having sex with a person living with HIV who has an undetectable viral load is increasingly, albeit in sometimes messy and uneven ways, coming to be constructed as less risky than with an HIV-negative or unknown status partner, regardless of whether condoms are used or not. This narrative positing a re-configuring of risk was asserted by most participants in this project, including those who are themselves living with HIV. This shifting conception of HIV risk is described by the participant excerpted below, an HIV advocate, who posits how sex with a partner who is virally suppressed is safer than with a partner whose HIV status is not known, irrespective of condom use.

> I think risk with someone who has an undetectable viral load and who's not using a condom is much lower than somebody who's status you don't know and you're not using a condom. Whether or not you use a condom is far less important compared to viral load. (HIV advocate, London, UK)

Many participants who were HIV providers also echoed how this re-shaping of HIV risk is changing some of the conversations they have with their patients and also, as this participant describes, "challenging some of the misconceptions around risk."

> We see gay men who want to have unprotected sex, who are having unprotected sex, and we'll often say, 'You're safer to be having unprotected sex with someone who is known to be positive,' because often it will be, 'I only sleep with people who are clean' or

> ‘I only sleep with people who are negative,’ and we’ll have that discussion with them that ‘Actually, you’re safer having sex with someone who is diagnosed and undetectable than someone who may be in the very early stages of infection with a very high viral load,’ which is weird, but definitely right, I think. Again that’s what I mean about it [treatment as prevention] challenging some of the misconceptions around risk. (HIV and sexual health consultant, London, UK)

This re-configuring of HIV risk was described as both opening up new possibilities for novel social relations, including the reimagining of serodifferent sexual partnerships which were framed as liberating by some participants, echoing the work of Persson and colleagues (2016) on serodifferent couples utilizing biomedical prevention strategies.

> It has changed a lot of people’s lives at least from what I find because I do think people are, like I know a lot of HIV positive people who decided that they were only going to date other HIV positive people, and obviously to each their own, but some people I know have changed that because of treatment as prevention and they feel like they are able to find love for love and not necessarily serosort if they don’t want to and because they feel like they’re not necessarily putting somebody at as high a risk and with those educated conversations, that’s exactly right. So I think that’s really exciting. It’s definitely changed a lot of people’s lives and making people just feel healthier frankly. (Program Director at a Community Health Center, Washington, DC)

Re-configuring HIV risk via pharmaceutical consumption and viral suppression is framed as allowing people living with HIV and their partners to “have the sex they want to have,” without the burdens of worrying about transmission, or selecting only partners who are themselves living with HIV, or practicing correct and consistent condom use, an aspect of sexual risk reduction practices frequently framed as a considerable burden.

Constructing Knowability and Certainty of Biomedical Risk Via Viral Load.

Every sexual encounter with another person might be thought of as a risk, a gamble, a chance to be taken in the name of intimacy, companionship, pleasure, economic gain, and security, among other things. It involves balancing the risks of the unknown against the hoped for of what might be to come. When it comes to sex, the risks of the unknown include the risk of exposure to any number of sexually transmitted infections, including HIV. The re-configuring of HIV risk discourses, and specifically, the increasing prioritization of *biomedical* risk over *sexual* risk, draws on a binary framing of ‘knowing’ vs. ‘not knowing.’ Increasingly, to have ‘safer sex’ means not strictly to use a condom or to engage in other practices of sexual behavior change, but to *know* one’s HIV status and to act on it through biomedical means, irrespective of condom use. To test HIV positive is framed as to generate knowledge that one can - and should - act upon in order to then contain the risk circulating within one's blood through the consumption of antiretrovirals and the achievement of sustained viral suppression. The knowability of being HIV positive also links up with its immutability. Until there is a cure, once one tests HIV positive, one will always be HIV positive. It is *known* and it is also *unchangeable*.

How individuals as responsible, healthy, risk-averting selves can then intervene, and I will argue are compelled to, is to transform this otherwise immutable categorization from the 'inside out' (Clarke et al. 2010) by containing it, by suppressing it, by rendering it pharmaceutically inert with via the consumption of antiretrovirals. In this way, being undetectable is being reframed as 'safer' than having never tested or being newly infected but believing oneself to be HIV-negative because it involves a confrontation with risk, literally, with the copies of the virus circulating in one's blood, and a biomedical taming of it, and precisely via highly technoscientific techniques of viral visualization, or what I call, *viralization*. Later in my analysis, I take up Rose's (2007) elaboration on processes of molecularization and the deployment of a molecular gaze to argue that similar transformations of biomedical surveillance practices are taking place via the increasing prioritization of viral suppression and viral load monitoring. Here, however, it is important to emphasize this shift in gaze from the molar body to the level of viruses and blood via techniques of viralization only to assert that what the viral gaze makes possible is *the visualization and quantification of risk* at the virological level, to a degree of precision and certainty that is simply impossible to achieve via techniques of sexual risk reduction.

Many participants constructed the knowability and certainty of non-infectiousness via viral suppression particularly in reference to efforts to engage in seroadaptive practices, such as serosorting. Here, the uncertainty and changeability of being HIV-negative made it a comparatively more tenuous and in fact, "dangerous" subject position to hold in terms of constructions of risks to others, as the participant below describes.

> I just think the science around serosorting is very, very tricky now. I think that while serosorting seems to work well for those who are actually living with HIV, I mean 'I'm

> positive, you're positive, you do what you want to do.' I think that's been a notable approach within the community. But for HIV-negative individuals, certainly if they are saying, 'Well, I'm negative, you're negative,' there are too many unknown variables with that in terms of transmission risk. It's much, much higher. I think it's very dangerous. (Project Director for a Treatment Advocacy Organization, New York, NY)

In fact, the participant below, a journalist working for an HIV community publication described how some individuals who believe themselves to be HIV-negative are increasing 'serosorting' - or perhaps 'viral sorting' - by intentionally seeking *only* partners who are known to be HIV-positive and believed to be undetectable because of the tenuousness and uncertainty of 'HIV-negative' as a risk category.

> There's even the cadre of people, who knows how many, who when serosorting, and this may be different now that people are on PrEP, but at least previous to that, some people would only have condom-less intercourse, HIV negative people, with HIV positive people on medication. Because that's the only way they could know for sure, they presumed the medications were working properly, that the person didn't have a viral load. Someone who says they're HIV negative and for all you know they got HIV last Wednesday, and they've an enormous viral load, much more than an HIV positive person would who wasn't on medications but had had HIV for a year or so. So that's an interesting thing, to know that people are being really clever about it, about that sort of risk-taking. (Journalist writing for an HIV community publication, New York, NY)

Beyond being constructed as more reliably knowable and certain, viral suppression offers up a biomedical risk reduction technique, the successful and responsible practice of which is very precisely *quantifiable*. Treatment as prevention prioritizes a clinical, virological indicator - viral load - accessible only through laboratory monitoring of blood products, but which produces a numerical value that marks one's risk category. Achieving viral suppression, which is often but not universally defined as having a viral load of less than 50 viral copies per ml, is proof that one's viral replication, the source of biomedical risk circulating within one's bloodstream, is sufficiently contained. The quantifiable nature of measurements of viral load - literally having a lab report to whip out in order to identify oneself as 'undetectable,' one strategy for sexual negotiation described by a participant later in this chapter - is framed as possessing a certainty, a quantifiability that a previous HIV negative test does not, even given the risks of virological failure or virological 'blips' (Grennan et al. 2012).

The concept of risk and of risk thinking, developed as it has in post-Enlightenment modernity, is underpinned by modernist ideals of social progress and the belief that via scientific discovery of objective Truth, uncertainty can be rendered calculable and manageable through rational scientific approaches (Lupton 1999). Petersen and Lupton (1996) assert that ‘truths’ about rational, health-optimising, risk-reducing citizen subjects are produced through epidemiological expertise and the application of population level knowledge about risk harvested via surveillance and made sense of via statistics, through which social life comes to be rendered more calculable, rationalized, and orderly. In fact, these authors assert that rational calculations of risk via population surveillance serve as “a means of countering the fear engendered by illness, disease and death, seeking to establish and maintain order in the face of the disorder of ill bodies” (Petersen & Lupton 1996:6). What disease in our present era has engendered more fear of contagion, illness and death than AIDS? In fact, Crawford (1994) eloquently asserts that HIV/AIDS has perhaps more efficiently than any other disease generated moral anxiety about the maintenance of both the symbolic and the material boundaries between the ‘healthy self’ and the ‘diseased other.’ And yet, how better to render HIV risk more rationalized, more calculable, more neatly quantifiable and orderly than the application of a numerical value, or in this case, the lack thereof, to this risk? To be ‘undetectable’ is to have no - *zero* - detectable virus circulating in the blood, to be increasingly able to say that it is “impossible” for HIV to be transmitted. That is, an undetectable viral load means that the risk of transmitting HIV to a sexual partner is zero, as echoed in the language deployed in a recent initiative by the Prevention Access Campaign called “Undetectable = Untransmittable.” The image above, (excerpted from http://www.preventionaccess.org/undetectable, September 19, 2016) is a screen shot of from the PAC website, which describes their stakeholders, advocacy efforts, and includes a downloadable community consensus statement and other resources.

To claim the subject position of ‘undetectable’ is to claim that one has neutralized the risk posed to others of HIV viruses circulating in one’s blood to such a low level that it is not possible to transmit HIV, regardless of the practice of any other techniques of sexual risk reduction. Viral load testing as a technique for the rational calculation of biomedical risk of HIV transmission engenders a reliable, quantifiable degree of certainty, more so than the calculus around sexual

"We can now say with confidence that if you are taking HIV medication as prescribed, and have had an undetectable viral load for over six months, you cannot pass on HIV with or without a condom. The risk is effectively zero."

Dr. Michael Brady,
Medical Director, Terrence Higgins Trust, London, England (July 2016)

Figure 2. Undetectable=Untransmittable, Prevention Access Campaign

risk ever could, including more certainty than one might ever hope to produce through an HIV negative test result. This is because being HIV negative is always already changeable, always already potentially pre-HIV. Condoms break, or may be forgotten altogether in the heat of the moment. Serosorting can be uncertain and risky. Past HIV negative test results are not to be fully trusted. As one panelist, speaking at the 2015 IAPAC Summit said, for someone who is currently HIV negative,

> Having sex with someone who is undetectable is fine. Having sex with someone who is negative is not fine. (Presenter at the 2015 IAPAC Summit, Paris, France, October 1, 2015)

Implied by this assertion of the "not fine"-ness of sex with a seroconcordant HIV-negative partner is that it is not the state of being *un*-infected with the HIV virus itself that is risky or "not fine," but the construction of the uncertainty or changeability of this risk category that is productive of the potential for risk. To assume one's partner is HIV-negative is thus to leave oneself open to the possibility that they may no longer be, as described by the participant below, the director of an HIV advocacy organization.

> I've put that [I'm undetectable] in my [online meet-up] profile since four or five years ago, and that often leads to individual discussions with people, with strangers online, about, 'Well, I still don't want to have sex with you because you're positive' and I have to, I try to frame it as, 'Well, actually it's safer to have sex with me than it is with someone

> who claims that they're HIV negative but actually doesn't know it because they could have a higher viral load.' (Director of an HIV advocacy organization, London, UK)

The instability of being HIV-negative at one's most recent test or having never been tested, but now being potentially HIV-positive is constructed as generative of risk, a risk much greater than that posed by a partner who is living with HIV and undetectable. To be HIV-positive and virally suppressed is to inhabit a risk category, a subject position, that is knowable, calculable, quantifiable, even when viral suppression itself may not always be stable, for example, in cases of virological failure, non-compliance, and virological 'blips' (Grennan et al. 2012).

Irrespective of the acknowledgement of the tenuousness and instability of viral suppression as a biomedical state, one that is itself changeable, including particularly as a result of failures at appropriate pharmaceutical and virological self-governance, the constructed "impossibility' of HIV transmission - it's 'untransmittability' to borrow the language of the Prevention Access Campaign - with an undetectable viral load is framed as platform from which to launch sexual negotiations, a source of relief, one that relieves guilt and worry in sexual relationships, and is productive of trust between serodifferent partners. This is described in the excerpt below from an interview with the director of a New York area AIDS service organization.

> I think giving people something that is an alternative to a condom is actually quite important and particularly for people with HIV. It also relieves guilt in sex, because even if people are using their condoms, there's always the fear, if I'm having sex with a negative partner, the condom's going to break, that something is going to go wrong, that somehow I'm going to infect this person. If you know that literally it's impossible for you to transmit the virus, that is a tremendous relief even if the person is still using a condom. (Director of an AIDS Service Organization, New York, NY)

For Clarke and colleagues (2010), a perspective also echoed by Rose (2007), biomedicalization is co-constitutive of an ever-expanding conception of risk, that is, an expansion of risk both into health and an elaboration of ever more precise calculations of risk, including pre-symptomatic risk (Clarke et al 2010), what Rose describes as 'susceptibility,' as well as a an expansion of constructions of risk *from the interior of the body out.* Race (2001) argues that the viral load test is one means by which 'truth' is signified via the marking of certain kinds of HIV-positive subjects. I argue specifically that the constructed knowability, calculability and quantifiability of biomedical risk via viral load testing constitutes an undetectable viral load as signifying ‘truth’ in a way that is uniquely seductive, particularly relative to the knowability and calculability of sexual risk, in the late modern neoliberal present. Later in this chapter, I posit that this has critical implications not only for the ways in that individuals may make themselves up as biomedically engaged, treatment-consuming, responsibilized citizen-subjects, but also with an emerging framing of of ‘unknown status’ or ‘undiagnosed,’ that is, those whose risk cannot or will not be quantified via HIV diagnostic testing and viral load monitoring, as ‘risky.’

Further, not only does viral load monitoring offer a technoscientific means of quantifying HIV risk, but it does so in a way that renders risk self-governance a largely individuated, private practice whereby, as Race (2001) argues, risk is situated not so much in cultural practice, for example, the cultural practices of seroadaptive risk negotiations, but more fully situated within bodies themselves. Echoing the rationality of neoliberal governance, described by Petersen and Lupton, as well as Clarke and colleagues (2010) and Rose (2007), managing one’s risk has become a personal moral and ethical project, one that is both individualized and private, yet as part of a broader assemblage of social obligations to protect the community. This re-shaping of HIV risk as something that can be pharmaceutically transformed and then technoscientifically quantified via viral assays is also quite literally generative of transformations in the bioeconomics of HIV prevention. The expanding markets for both pharmaceuticals and viral load testing technologies also stimulate investment and innovation and generate corporate and individual wealth.

Shifting Language of ‘Safer Sex:’ From ‘Unprotected’ to ‘Condom-less’ Sex

The re-configuring of HIV risk via treatment as prevention is constituted by and constitutive of the language used and the ways of talking about safer sex and sexual risk within the professional social worlds of HIV prevention. In my data, this was evident both in the efforts to transform the language used to define ‘safer sex’ and efforts to challenge the binaries of ‘safe’ vs. ‘unsafe’ sex in educational and awareness materials, as well as in official documents produced and disseminated by governmental and non-governmental organizations. Below is an excerpt from an educational document produced by the Australian AIDS service organization, ACON, distributed in July of 2014 at the 20th International AIDS Conference, which reads:

> What is ‘safe sex’? (Position Statement #3) The HIV prevention landscape has changed. Condoms and lubricant remain the most effective preventive tools against HIV, but they are no longer the only option. Safe sex, in terms of HIV prevention, is no longer restricted to binaries of condom-less sex or sex with condoms. In regards to HIV, ‘safe sex’ now refers to sex with a very low likelihood of transmission. There are now at least five (5) strategies that reasonably constitute safe sex (assuming certain parameters are met): 1. The use of condoms during casual encounters between men of unknown or discordant serostatus, 2. HIV negative men taking effective pre-exposure prophylaxis (PrEP), 3. Men living with HIV only have sex without condoms when they have a sustained undetectable viral load (UVL) and in the absence of sexually transmissible infections (STIs), 4. Effective use of serosorting between HIV positive men, 5. Effective negotiated safety agreements. (ACON “Position Statements,” Collected from the Global Village of the 20th International AIDS Conference, Melbourne, Australia, July 21, 2014)

Though techniques for practicing ‘safe sex’ are many, and as these materials emphasize may continue to include seroadaptive practices or the use of condoms between partners, particularly when they do not know their own or their partner’s HIV status, these materials also assert that via viral suppression, HIV risk can be biomedically contained. This is a shift I would argue, drawing on Clarke and colleagues’ (2010) work on biomedicalization, represents a move from attending to risk through *control over* bodies to *transformations of* them, particularly from the ‘inside out’ through biomedical, in this case pharmaceutical, means.

This re-configuring of HIV risk via a redefinition of what it means to have ‘safer sex’ is also deployed in new language to describe sexual risk by the U.S. Centers for Disease Control and Prevention. At the urging of advocacy organizations such as the HIV Prevention Justice Alliance as well as others, the CDC has recently replaced the term, ‘unprotected sex’ with the term ‘condom-less sex’ in official documents, emphasizing that sex can come to be rendered ‘safe’ or ‘protected’ through biomedical technologies and not only through the use of a barrier method, like a condom, even for serodifferent couples. Below is an except from a sign on letter, drafted by the HIV Prevention Justice Alliance and signed by a long list of HIV advocacy organizations, in response to the language used in the 2013 MMMR Report on HIV Testing and Risk of U.S. Gay, Bisexual and Other MSM, which critiques what they see as an “inaccurate” and “misleading” construction of HIV risk. It reads,

> Open Letter to the Centers for Disease Control and Prevention (CDC) on 2013 MMWR Report on HIV Testing and Risk of US Gay, Bisexual and other MSM: A call to re-evaluate language, methods and recommendations in order to support men's health and HIV resiliency: CDC urged to reduce its own risk of misleading depictions of Gay/Bi/MSM sexuality, HIV prevention practices. Seeking the spotlight of World AIDS Day, CDC released a report in their Morbidity and Mortality Weekly Report (MMWR) focused on gay, bisexual and other MSM (men who have sex with men) in the United States – the population that remains both disproportionately affected by HIV and drastically underserved by federal HIV/AIDS prevention resources…'Unprotected anal sex' and 'unprotected discordant anal sex' are the key terms for looking at sexual behavior across the three years of the NHBS cohort. However, these terms have grown increasingly non-specific, or even inaccurate, in the current landscape of HIV prevention and the parameters of sexual decision-making by gay men, other MSM and their partners. Insertive anal sex and receptive anal sex are distinct acts with very different levels of risk – a spectrum of risk that is further broadened through widespread sero-adaptive practices. In addition, the use of virally-suppressive HIV treatment is a relevant factor in accurate risk assessment and sexual decision-making. In the report, unprotected is used to refer to the non-use of condoms. However it does not mean that sex occurred in an environment of heightened HIV risk. (HIV Prevention Justice Alliance, "Condom-less Sex Sign On Letter," Collected from an Interview Participant, July 15, 2015)

At the urging of these advocacy organizations, the CDC ultimately adapted its language, replacing 'unprotected' sex with 'condom-less' sex, a linguistic de-linking of condom use from HIV risk reduction, an historical moment of discursive significance which was referenced by several participants in this study, who saw it as an acknowledgement of the disruption of more traditional binary framings of HIV risk and risk reduction practices by treatment as prevention. The challenge to the binary of safe versus unsafe sex posed by HIV treatment as prevention was referenced by the participant below when we spoke about how treatment as prevention is changing definitions of sexual risk, saying,

> The CDC issued this statement saying that they wouldn't be talking about unsafe sex any more. They would just specify condom-less sex. (HIV advocate, London, UK)

I make the case in this chapter that the novel ways through which HIV risk subjects are coming to be constructed is part of a shifting of risk from the binaries of 'unprotected sex' vs. 'safe sex' to those of 'undetectable' vs. 'detectable.' This is not, however, productive of a simultaneous abandonment of anxieties about the dangers of 'risky sex,' but is illustrative of the particularly heightened valence of health and the fashioning of the self via the imperative of health as a moral enterprise in contemporary Western neoliberal rationality (Crawford 2006; Petersen and Lupton 1996). I argue that the re-fashioning of the self via *biomedical* transformations, not simply changes in sexual behavior, is deeply entwined with not only constructions of moral culpability and redemption (Douglas 1966/1969; 1985; Clarke et al. 2010), but with ethical styles of living (Rose 2007). This is why attending to *biomedical* risk, whether in addition to or in place of work on *sexual* risk, matters so much in the present.

Cultural anthropologist Mary Douglas (1966/1969; 1985) posits that risk functions as a boundary maintaining device, one that via moral constructions of blame, demarcates and maintains the borders between the pure/healthy/moral and the polluted/unhealthy/immoral. In particular, she asserts that risk acts as a practice, one that is highly symbolic rather than strictly rational and cognitive, for calling out responsibility for transgression and of culturally positing the directionality of blame (Douglas 1985). My argument is not though that sexual transgression matters somehow less now, as the excerpt below highlights.

> There's still a huge lack of knowledge and disbelief about this [the impact of viral suppression on HIV transmission risk]. People still do not accept, despite the abundant evidence, that a positive person with a undetectable viral load is, at the least, very unlikely to transmit. It's almost as if it's a dangerous piece of information. People treat it as if it's dangerous, as if it's a dangerous thing to say.
>
> [I: Why do you think that is?]
>
> It’s the license to bareback thing. It's like, ‘If we let people know this they will all have unprotected sex.’ And you say things like, ‘Well, certainly in terms of HIV what this tells us is that if they all have unprotected sex, it won't matter.’ Then they say, ‘Well, that's worse! What about ... ‘ Then you get into rational things about STIs, sexual health in general, which is fine. But it's not really rational. It's about how condom-less sex has been internalized as bad sex, as wicked sex, as almost abusive in some way. You’re either abusing the other or yourself. (HIV advocate, London UK)

Here, sexual transgression - “barebacking” or intentionally having sex without a condom - is constructed as continuing to ignite border anxiety between moral and immoral selves, and especially in reference to sex between men, an already morally fraught sexual practice, regardless of HIV transmission risk. But the argument I seek to build throughout this chapter is that health is increasingly coming to be the new terrain on which personal morality is constructed, for example, as Petersen and Lupton (1996) have argued through a moral imperative for individuals to entrepreneurially manage not only their health, but their risks to others and to the community. In the era of increasingly technoscientific biomedicine (Clarke et al. 2010), an entrepreneurial engagement with biomedicine - that is engagement with clinical care, the consumption of pharmaceuticals, and the routine monitoring of a particular biomedical/biopharmaceutical state, viral suppression - is increasingly coming to be how persons living with HIV can fashion themselves and the kind of sex they have - whether 'unprotected' or 'condomless' - according to these emerging moral imperatives of biomedicalized HIV prevention. In this way, sex is the terrain on which the transformations of HIV risk are being rehearsed and performed, including in still morally fraught, messy and deeply stratified ways, as the excerpt above alludes to.

From Sexual Risk to Biomedical Risk: Re-shaping HIV Risk Discourses via Biomedicine

The work of fashioning the self as a responsible, risk-averting, healthy biomedicalized subject that I seek to illustrate here is of a distinctly different sort than that theorized by Crawford (1994) in his work on the symbolic functions of risk, by which risk comes to function in patrolling the borders between the self and the other. For Crawford, as for Petersen and Lupton (1996), and later also for Clarke and colleagues (2010) and Rose (2007), health is an imperative through which late modern identity is - *and must be* - constructed, and health and risk are recruited to maintain the boundaries between healthy, responsible, entrepreneurial selves and unhealthy, irresponsible, risky others. For Crawford, the infected, unhealthy, risky others embodied by those living with HIV work as the symbolic negation of the responsible, disciplined, healthy self around which late modern identity is to be created. Yet, I argue that, via HIV treatment as prevention, new symbolic borders are being built, those between 'undetectable' and 'detectable,' new technoscientific practices for patrolling these borders are being deployed, and critically, new practices of subjectification are involved in the making up of new kinds of technoscientific identities. Increasingly, yet still unevenly, to be 'undetectable' via an engagement with biomedicine is becoming the way to fashion oneself as responsible, disciplined, risk-averting HIV-positive subject involving new techniques not only of optimizing health, but also of responsibly caring for others and the community, broadly speaking. Crawford (1994:1356) argues that, "Health has become the expression of a technological dream and serious illness has increasingly become the shadow world of that dream." Here, I assert that viral suppression has become a technoscientific means of approximating the healthy self, as healthy as one can ever be while living with HIV. This is echoed in the words of Michel Sidibé, the executive director of UNAIDS, in his Opening Address at the 20th International AIDS Conference in Melbourne, Australia, "Today, an undetectable viral load is the closest we have to a cure" (International AIDS Conference, Melbourne, Australia, July 20, 2014).

Viral suppression is thus for people living with HIV presently constructed as this "expression of a technological dream," that which has the capacity to transform lives, to re-shape identities along with a re-configuring of risk discourses and biomedical obligations. I argue that HIV risk is being re-shaped not only pharmaceutically, but more broadly, by the imperative to be engaged with HIV biomedicine, through the so-called HIV care continuum, that is, entrepreneurially moving along the continuum of engagement with biomedicine from linking to and being fully engaged in HIV specialist care, initiating and faithfully consuming antiretrovirals, and achieving a state of sustained viral suppression. This imperative to be engaged with biomedicine is, I argue, later in this chapter, reflected in the symbolic negation of the 'undiagnosed' self, constructed as the source of new HIV infections, the foil of the responsible, biomedically engaged, virally suppressed HIV-positive self I describe in the pages that follow. Those who are appropriately engaged with biomedicine and rendered non-infectious via viral suppression have carried out the performative work by which biomedical risk can be "neutralized" as the participant below, an HIV and sexual health consultant, describes.

> If you're trying to think about how it would work and how it would land in the world, which is that 'Here is somebody with HIV and why don't we ask them to take treatment now to prevent onward transmission?,' it does two things. First of all, it neutralizes the dangerous patient and so the general public is like, 'Oh yeah, yeah, that's a good thing you can take to diffuse that bomb'. And it's a natural extension of treating a condition that exists…[comparing treatment as prevention with pre-exposure prophylaxis, this participant goes on to say] with TasP you've neutralized your bomb, but with PrEP you've weaponized it. In terms of how I see it being seen, it's not how I would reflect on it, [but] what is the perception of the body that's going to swallow the pill? And the perception of the PrEP body is of a different order than the TasP body. The TasP body is being appropriately neutralized. (HIV and Sexual Health Consultant, London, UK)

Thus, co-constitutive of a reconfiguration of HIV risk, for people living with HIV, increasingly the way to perform the role of being a responsible risk subject is not so much "to use a condom every time" because as the participant below claims, "condoms do break," but it is to be fully engaged with HIV biomedicine. That is, to be fully engaged in HIV care, compliant with treatment, regularly monitoring one's viral load, knowing one's lab values, and having achieved sustained viral suppression are the techniques of self-governance, the 'technologies of the self,' by which people living with HIV are increasingly coming to be expected to fashion themselves. Here, a program director at an urban community health center in Washington, DC, describes this saying,

> People are a little bit unrealistic when they say, 'Well, now you're HIV-positive, so you're going to use a condom for the rest of your life, or god help you, you're not going to have sex.'…I just don't think that we've always been realistic, and so with this harm reduction model, saying 'Okay…if you're not going to use condoms, at least if you're healthy, you monitor your CD4, your viral load, you talk to your doctor, you know your lab values, you've been undetectable for five years.' You know, studies show that it can even be better to have unprotected sex when you have an undetected viral load than when you don't know what your viral load is and when you're using a condom because condoms do break. (Program Director at a community health center, Washington, DC)

This same participant goes on to discuss their peer-led risk reduction activities with their patients who are living with HIV, describing in this excerpt how they are increasingly integrating the concepts of biomedical risk reduction into educational sessions on sexual negotiation, making conservations about viral load monitoring pivotal to these role play sessions.

> [I: What are some of those role-plays or some of those sessions like?] Basically we have them practice. We practice with two different peers. It's usually two different patients in front of other patients to critique them and they'll be like at a bar, dancing or whatever, and things will start to get kind of hot and heavy, and they'll maybe move to the bathroom and somebody will say to the other one, 'Well, have you been tested in the last three months?,' and the person will say, 'Well, yes, actually I'm HIV positive' and we'll have the HIV negative person practice and say, 'Well, how long have you been positive? Are you comfortable talking about it? Are you on medication? How long have you been on medication? Do you know your labs?' We'll even encourage, a lot of our HIV clients will carry their lab values with them. (Program Director at a community health center, Washington, DC)

To engage willingly in these practices of biomedical disciplining, including through practices of self-governance of biomedical risk, is also a way of performing responsibility, of constituting oneself as a responsible, disciplined risk subject, one who both seeks to both take care of the self by optimizing health and avoiding risk, and also seeks to protect others from harm, demonstrating what Barry et al. (1996) and Colvin et al. (2010) describe as a form of ‘responsibilized citizenship.’

‘Caring for the Social’: Performing Responsibility for Risk and the Responsibilization of Undetectability

Here, I discuss two ways in which constructions of the responsibilities of people living with HIV to engage with HIV biomedicine, consume antiretrovirals and render themselves virally suppressed are deployed to make sense of how treatment as prevention is engaged in processes of subjectification and risk governance. Drawing on the work of Foucault (1994; 2008) and echoing Petersen and Lupton (1996), Barry and colleagues (1996) describe ‘responsibilized citizenship’ as a form of neoliberal governmentality through which individual citizen subjects are called on to take personal responsibility for working on and optimizing health, particularly through lifestyle and consumer choices, such as the consumption of pharmaceuticals. Colvin and colleagues (2010) take up Barry and colleagues’ conception of ‘responsibilized citizenship’ by positing that techniques of individualized, entrepreneurial responsibility for taking care of one’s own health go hand in hand with responsibility for ‘caring for the social,’ or taking care of others, with critical implications for one’s own sense of self. In their paper, Colvin and colleagues (2010) framed the responsibilization to ‘care for the social’ in addition to the self as being made up as part of localized enactments of masculinities (e.g. taking care of health and taking treatment so as to fulfill duties to the family as the male breadwinner). These authors frame this as an effort to transform the highly individuating and privatized discourses of ‘caring for the self’ or optimizing one’s own health via taking up a personal responsibility for being adherent to antiretroviral treatment, through a shaping of discourses of responsibility for others, ‘caring for the social,’ both in the family and the broader community.

Here, I apply Colvin and colleagues elaboration of techniques for ‘caring for the social’ in a distinctly different situation of inquiry, one concerned with how treatment as prevention is being constructed as a practice of both ‘caring for the self’ via entrepreneurial self-governance of health, but also, as I explore here, of ‘caring for the social’ via a responsibilization of altruism. Many participants in this study, all of whom are professionals engaging in HIV-related professional social worlds and some of whom are themselves living with HIV, constructed the imperative to engage with HIV biomedicine, consume treatment, and be virally suppressed as one technique by which people living with HIV could perform responsibility.

Rendering oneself non-infectious via viral suppression is constructed as a way of acting responsibly and demonstrating altruism to protect others. To be engaged with biomedicine, compliant with one’s treatment regimen, and virally suppressed is to re-configure oneself as a person living with HIV, constructed otherwise as a potential threat or a danger, who is actively doing the morally right and altruistic thing and engaging in the appropriate techniques of responsible self-governance of one’s own health, as well as the care of others. To be responsible for the health of others and to consume treatment altruistically is to ‘care for the social’, and to engage in techniques of what Colvin and colleagues have elaborated is a means of making oneself up as a ‘responsible citizen’. Through the achievement of an increasingly discursively marked virological state, individuals are framed as able to ‘be responsible’ and to perform this responsibility for others, even when they may be unable or unwilling to use condoms, a more traditional way of performing responsibility for preventing HIV transmission.

> Now at least there’s another way to say, ‘Well, hey, yes, I’m not using condoms, but check out my labs and I am being safe. I am being responsible.’ (Program Director at a community health center, Washington, DC)

The participant below, the director of a treatment advocacy organization, described this act of taking care of others by knowing one’s HIV status, being in care and on treatment, and achieving viral suppression, as one means by which people living with HIV might perform responsibility for others so as to “chip away at” perceptions of people living with HIV as not doing all they can do to to end the HIV epidemic. Anyone who is unwilling to do so, or who continues to critique treatment as prevention (in this instance, we were discussing one particular individual, details of which I have edited out), is both selfish and lacking in altruism.

> [Treatment as prevention] presents the opportunity for HIV positive people to say 'By virtue of knowing my status alone, I'm less likely to transmit HIV to others, instead of change my behaviors.' We know that from the data. 'By virtue of my decision to enter care and treatment, I'm not only looking out for my health, but taking responsibility for preventing infections among others.'… Humans just like to avoid disease, period. I'm not sure we can have much greater expectations for the communities that are at-risk for HIV. I think it's a really incredibly difficult thing to chip away at. I think treatment as prevention and having HIV positive people very visibly say 'I know my status and I'm engaged in care and treatment in part in order to protect my community,' it's a way of chipping away at it…I think, it was very selfish [referencing when a well-known HIV advocate, name omitted, publicly critiqued treatment as prevention] and lacked the kind of altruism that is necessary for helping us to end the epidemic. I think it takes a very dim view of the conscience of and role that HIV positive people see themselves as playing in the epidemic. (Director of a Treatment Advocacy Organization, San Francisco, CA)

This is productive of a framing of undetectability as a marker of morality and responsibility, of proper containment of biomedical risk. To be "virally suppressed" means the otherwise uncontrolled, multiplying virus circulating in one's blood has been pharmaceutically suppressed, contained, brought under control, and quite literally in the case of having an undetectable viral load, made invisible, so small as to be beyond technological visualization practices, to be not-detectable. Making oneself non-infectious is the responsible thing to do. This framing of 'caring for the social' as a technique of responsibilization, however, is also framed as problematic for the obligations it places on individuals to protect others and for its potential to create divergent ethical categories - 'the good, non-infectious HIV-positive person' and 'the bad, infectious HIV-positive person.'

Being virally suppressed via pharmaceutical consumption and compliance with virological monitoring disrupts the binary between 'safe' and 'unsafe' sex, offering an alternative ways of being responsible, of taking care of others. In terms of HIV risk, responsible biomedical subjects are pharmaceutically contained ones, one's with virological proof - who perhaps even carry their lab reports around with them - that they have managed their HIV infection prudently and responsibly. This re-configuring of HIV risk - via an increasing preoccupation with *biomedical* risk rather than *sexual* risk - is both potentially liberating and de-marginalizing, opening up new possibilities within relationships, including reducing anxiety about transmission, and in lifestyle choices, for example, by making it possible to conceive a child without sperm washing or other assisted conception technologies. Yet several participants also described how treatment as prevention may be problematic for the expectations, the obligations, it may place on people living with HIV to engage with biomedicine, to consume antiretrovirals and to render themselves pharmaceutically non-infectious for the altruistic protection of others.

> The responsible person knows, the person who has had a test. The responsible body is tested and the irresponsible body is not tested. And the discourse…you know, some of these new prevention posters, would you rather have sex with someone who's got HIV and is on treatment or with somebody who's never had a test? And actually the answer is that on treatment is safer. We're beginning much more in this country to stop talking about protected sex and to talk about condom-less sex as a different idea because you can have safe sex without a condom these days with TasP, well, with antiretrovirals, never mind TasP, with treatment. But as long as a you're saying that the unmedicalized body is the risk, yeah, you're putting obligations on people. (HIV and Sexual Health Consultant, London, UK)

When it becomes possible to have sex without a condom, or even with one, in case it breaks, and to do it completely safely with zero, or close to zero, risk of transmission via the consumption of antiretrovirals and the achievement of an undetectable viral load, does it then become an *obligation* to engage in these techniques of pharmaceutical and virological subjectification? Risk and surveillance are co-constitutive of each other (Clarke et al. 2010); risk comes to be calculated ever more precisely via mechanisms of biomedical surveillance, and then the imperative to intervene on risk becomes the justification for these techniques of surveillance, including via technologies of the self, as well as more traditional forms of institutional domination of those who fail to fashion themselves appropriately as risk subjects (Foucault 2008; Lemke 2002).

Many participants constructed treatment as prevention as a "win/win," as did one U.S.-based clinical scientist involved in the HPTN 052 Study, offering a biomedical means of not only optimising health, but of protecting others. Yet several participants voiced their concern that by responsibizing individuals to know their HIV status and then to engage with biomedicine so as to "neutralize the bomb" within their bodies, to know themselves and then re-fashion themselves virologically, risked re-drawing the moral boundaries between 'healthy selves' and 'unhealthy others' (Crawford 1994) in ways that could be stigmatizing or even coercive of those unwilling or unable to engage fully with biomedicine. The participant below, an HIV advocate and director of an advocacy organization, problematized the potential for the assembling of a moral binary between the biomedicalized, responsible, good self and the *un-biomedicalized*, irresponsible, bad self.

> So there's also discussions about if you do advertise that you're undetectable, are you somehow oppressing people with HIV who aren't? Because you're sort of saying, 'I'm a good person, I'm the not infectious HIV-positive person.' I do worry about one of the arguments that I'm constantly making around why criminalization is this poor public health policy is that people that we need to be most concerned about are those who are un-tested and, you know particularly, recently infected because they're much less likely to be on treatment, but you know, I do worry about stigmatizing, you know, untreated people with HIV, that there will be two classes of people with HIV - the 'good' ones on treatment and the 'bad' ones who are either undiagnosed and/or unable to access treatment or achieve an undetectable viral load. These 'bad' people are already being stigmatized and blamed for the ongoing epidemic, even by some HIV advocates. (HIV advocate, London, UK)

This narrative of concern about the border anxiety between boundaries of the biomedicalized and un-biomedicalized self and of the production of new boundaries to be patrolled, echoes my assertion that the re-configuring of HIV risk is a fundamentally moral enterprise, just as constructing HIV risk has always been. What is being transformed, however, with the increasing biomedicalization of HIV prevention, is where these borders are drawn, who are the "good pozzies" and the "bad pozzies," as one participant, the director of an HIV advocacy organization in New York said. This has implications not only for those who fail to fulfill the imperative to engage with biomedicine, broadly speaking, for example, by choosing not to take an HIV diagnostic test or opting for naturopathic remedies rather than antiretrovirals, but for those who *cannot* fulfill this imperative, as a result of the already deeply socially and economically stratified nature of the travels of HIV biomedicine transnationally. Next, I turn to an exploration of the re-configuring of HIV risk via the lens of stratified biomedicalization, emphasizing how treatment as prevention is framed as responsibilizing biomedical risk reduction in sometimes deeply uneven and exclusionary ways.

Stratified Biomedicalization and the Re-Configuring of HIV Risk

Clarke and colleagues (2010) developed the concept of stratified biomedicalization to highlight how biomedicalization is involved in both increasingly exclusionary, often privatized and corporatized forms of medicine, while also engaged in the implication of certain individuals, communities and populations as necessary objects of heightened biomedical surveillance, regulation and control as a result of these technoscientific transformations. Stratified biomedicalization becomes an especially sociologically meaningful concept in analyzing treatment as prevention when re-fashioning oneself as responsible, disciplined and risk averting increasingly is to be accomplished via a moral imperative to engage with biomedicine, consume pharmaceuticals and participate in regular, and relatively expensive, monitoring of viral load. According to Médecins Sans Frontières (2013), the cost of a single laboratory-based viral load test ranges widely from $11 to $72 globally. Where engagement in HIV testing, care, and treatment is already highly stratified, particularly by race, ethnicity, gender, and poverty status (Pellowski et al. 2013), those who are already socially and economically marginalized may not only be unable to attend to their biomedical risk by appropriately engaging with biomedicine and rendering themselves non-infectious via viral suppression, but they may be disproportionately penalized for failing to do so.

Particularly worrisome is the potential for stratified access to HIV testing, care, and treatment to interact with the criminalization of HIV exposure and transmission. Queering Conrad and Schneider's (1980) assertion that medicalization involves a transformation 'from badness to sickness,' Hoppe (2014) describes how the criminalization of HIV non-disclosure reflects an effort to construct HIV 'sickness' as 'badness.' For Hoppe, though prosecutions for non-disclosure prior to HIV exposure or transmission draw on scientific evidence and biomedical concerns, they fundamentally reflect an effort to build and police moral rather than virological borders. In the context of the highly stratified nature of access to HIV care, treatment, and viral load testing, the stratifications in exclusionary forms of HIV biomedicine may likely come to impact some individuals and communities in deeply uneven ways. This draws on Peterson and Lupton's (1995) claim that those bodies who tend to be subject to heightened surveillance and disciplining via the interventions of the 'new' public health, tend to be those already subjected to heightened patrolling of moral transgressions, including those of gay men, persons of color, and women, especially in terms of the risk they pose to their unborn children during pre-conception, pregnancy and birth.

Further, particularly in the U.S., but also where there is nationalized health care, such as within the British National Health Service, pharmaceuticals are biotechnological commodities, which cost money to purchase and generate wealth and investment. Through this lens, biomedical risk reduction practices can also be constructed as consumer practices, with pharmaceuticals, and in fact, even the state of ‘sexual safety’ itself, as commodities to be purchased, and particularly so in privatized health care systems like that of the U.S. via the BioTechnoService Complex, Inc. (Clarke et al. 2010). Below the director of a U.S. based HIV advocacy organization frames biomedical risk reduction as a good to be purchased.

> You buy sexual safety now. You purchase sexual safety. You want to have sexual safety? Oh, this is what you have to buy. Last night I saw an ad on TV for something. I don't know if it was an insurance company or whatever. I wish I'd written this down. It was something like, ‘Good health doesn't just happen,’ about how you have to, whatever it was they were selling, you had to buy that to have good health. You couldn't assume you have good health unless you bought it was the message. (Director of an HIV advocacy organization, New York, U.S.)

This construction of HIV risk reduction, via the consumption of pharmaceuticals and viral load monitoring technologies as a neoliberal consumer imperative, one that not only can be bought, but *should be* bought echoes both the work of Crawford (1994) on the symbolic boundary work of HIV risk and also of Ecks (2005) on pharmaceutical citizenship. For Crawford (1994; 2006), health has come to be a particularly middle-class neoliberal imperative, one through which identity is constructed via consumer choices. Good health is no long a product of good fortune, a divine blessing for a life devoutly lived, but a product of the entrepreneurial fashioning of a healthy lifestyle, including consumption practices. It also echoes the work of Ecks (2005) on the concept of pharmaceutical citizenship, whereby once marginalized ‘citizen-patients’ come to become full citizens of middle-class consumer society only through consumption of pharmaceuticals, troubling the problem of stratified access to pharmaceuticals. What if sexual safety can be had, not *also* through the purchase and consumption of antiretrovirals and the utilization of viral load monitoring technologies, but increasingly *only* through these means? This participant in particular seeks to trouble the stratification in access to the goods of biomedicalized prevention, and in this case, specifically, the ramifications that the commodification of HIV prevention might have for individuals' ability to make up themselves as 'sexually safe' via discourses of biomedicalized HIV risk. Stratified biomedicalization is a thread that I return to again and again throughout this analysis.

Re-configuring Who is 'Risky:' HIV 'Status Unknown' or 'Undiagnosed'

The re-configuring of HIV risk via treatment as prevention is not only co-constitutive of a construction of people who are living with HIV and virally suppressed as "your safest bet," in the words of one London-based HIV epidemiologist, and of a re-framing of what can constitute 'safer sex,' but on the flip side, it is also co-constitutive of a framing of those who are 'unknown status' or 'undiagnosed' as risky, precisely because they are not appropriately biomedically surveilled. If an engagement with biomedicine and the rendering of oneself as pharmaceutically contained and virally suppressed are the techniques by which HIV risk can be biomedically governed, then those who *cannot* or *will* not submit for biomedical surveillance and for the quantification of risk via HIV testing and viral load monitoring come to be constructed as "dangerous," "risky", and "the transmitters," in fact, irrespective of their HIV status. If people living with HIV who are appropriately engaged with biomedicine, on treatment and virally suppressed are no longer the dangerous bogeymen and women they once were in the pre-biomedical prevention era, then those who are 'unknown status' or are 'undiagnosed,' who are not surveilled through diagnostic testing, entered willingly into treatment or prevention continua, and compliant with these biomedical regimes capable of transforming HIV risk 'from the inside out,' they are increasingly constructed as being the source of risk, the source of new infections, the so-called "transmitters."

This is the case even when they are or subsequently prove to be HIV-negative. In fact, in addition to the HIV *care* continuum, there is also now an HIV *prevention* continuum for HIV-negative individuals, itself described as another kind of "paradigm shift" (McNairy & El-Sadr 2014:S12) in HIV biomedical prevention. According to these authors, "[t]he HIV prevention continuum, similar to the HIV care continuum, builds on HIV testing as its foundation followed by linkage of HIV-uninfected persons to prevention services, retention in services, and adherence to services to prevent HIV acquisition and transmission." Adherence to *prevention services* which includes a myriad of behavioral and structural interventions, including the provision of a number of biomedical interventions, such as voluntary medical male circumcision and consumption of pre-exposure prophylaxis, as well as repeat diagnostic testing, with the end points being the prevention of HIV acquisition *and* onward transmission. In this way, I argue that the HIV prevention continuum (McNairy & El-Sadr 2014) is engaged in the marking of 'unknown status' individuals as HIV risk subjects always already pre-HIV, obligating an engagement with preventive HIV biomedicine, including also the consumption of antiretrovirals for pre-exposure prophylaxis, while simultaneously framing being 'unknown status' as a potential reservoir for the onward transmission of HIV to others.

Engaging with HIV diagnostic testing is a technique for the self-management of HIV risk, making up what Foucault (1994) calls one of a number of a 'technologies of the self,' through which self-regulating, agentic individuals work upon themselves via processes of subjectification, that is, processes involved in creating a socially constructed sense of the self, particularly so as to achieve, voluntarily, the broader aims of the modern neoliberal state. Health is a fundamentally moral enterprise (Petersen & Lupton 1996) and as such, risk - and HIV risk, in particular - is fundamentally about moral culpability for actual, perceived or anticipated transgressions (Crawford 1994; Douglas 1966/1969;1985; Petersen & Lupton 1996). I argue that moral culpability for HIV transmission is increasingly, though not exclusively, falling on those do not or will not engage with biomedicine, who will not engage appropriately in those 'technologies of the self' including the biomedical monitoring of their current presumed HIV-negative status via HIV diagnostic testing. In this way, those who are 'undiagnosed' or 'unknown' status or even 'HIV-negative yesterday' are coming to be constructed as not only the source of risk, but also morally culpable, for HIV transmission.

The 'undiagnosed' as the new 'transmitters.' Those described as 'undiagnosed' or 'unknown status' are being framed as the source of new infections, as the population to be intervened on, specifically compared to 'untreated people,' making the distinction between the two groups. According to one participant, a program director at a community health center in Washington, DC, it is undiagnosed people who are “the people that are transmitting it.”

> Unfortunately, I do think there is still, I think at least in DC, but I think everywhere, there are a lot of people that aren’t diagnosed at all. I think those are the people that are transmitting it. I don’t think it’s the people who know that they’re HIV positive and are just not taking their meds and have high viral loads and going crazy. That’s just not the experience I have at all. (Program Director at a community health center in Washington, DC)

Several participants described how knowing one’s HIV status alone, even when one is not on treatment or not virally suppressed, is framed as enough to change the way many people living with HIV behave, some of them coming to avoid romantic and sexual intimacy with others altogether after their diagnoses.

Here, knowing one’s HIV positive status - or even one’s HIV negative status, at least in the short-term - is constructed as having biomedical knowledge of the self, information garnered via a visualization of the blood, to act on. Whether a diagnostic test turns out to be reactive or not, it provides information that can guide both one’s behavior and one’s engagement with biomedicine via an entrance onto either the HIV care continuum or the HIV prevention continuum. To be ‘unknown status’ or ‘undiagnosed’ is to lack this information, this knowledge of the self, to not be appropriately engaged with biomedicine through surveillance via diagnostic technologies, and to not be able to contain one’s potential risk, irrespective of actual HIV status. To be ‘undiagnosed’ or ‘unknown status’ is to inhabit the subject position of the *potentially* ‘infected other’ in contrast to the ‘virally contained self’ who is HIV-positive but virally suppressed. To be ‘undiagnosed’ or ‘unknown status’ is being re-configured as a morally fraught category, insufficiently biomedically surveilled because they are “out there” and not engaged with biomedicine. They are framed as “a dangerous group” and the ‘source of new infections.’

> Generally speaking, in a lot of places there's increasing evidence, I guess, that the continued rates of infection are coming from people who are undiagnosed. So the main intervention for reducing those infections is probably more closely tied to diagnosing people who are not yet diagnosed and making treatment available as an option, than it is from treatment as a prevention policy. So for example, for people doing modeling in the UK, Andrew Phillips and the group at the Royal Free, actually if everybody who was diagnosed was on treatment, it wouldn't make much difference to the level of new infections because we're within care and it's a small section of people now who are diagnosed and not on treatment. So this pressure to put everybody who's diagnosed on

> treatment is unlikely, certainly in the UK, to reduce new infections, as the effect on new infections will come from reducing the proportion of people who are not yet diagnosed, who are sort of out there, unaware of their status. (Director of a Treatment Advocacy Organization, London, UK)

This discourse of the ‘undiagnosed’ or ‘unknown status’ risk subject is further deployed in the excerpt below from Mark S. King’s “The Comfort of Blaming Other People for New HIV Cases” on his blog, “My Fabulous Disease.”

> The college student had real concern in his eyes when he asked me a question during a recent presentation at American University. ‘Isn’t it true,’ he asked, ‘that the HIV epidemic continues because people who know they are positive keep infecting other people?’ It is a question I have heard before, in one way or another, and it always makes me cringe. Not only does it thrust all culpability onto those living with HIV, it also promotes a narrative that being infected with HIV chemically changes our moral fiber and transforms us into abusive monsters. It is the kind of characterization that is driving HIV criminalization laws and prosecutions, which are jailing people with HIV for the offense of having sex at all, even when we protect our partners. ‘That is simply wrong,’ I responded to the student. ‘In fact, the largest amount of new infections is due to people who don’t know they are positive, who are operating on outdated HIV test results, or who haven’t tested at all. They are having sex while the HIV virus is raging in their bodies. They are the more dangerous group.’ (From “The Comfort of Blaming Other People for New HIV Cases”, Mark S. King, My Fabulous Disease, Excerpted from http://marksking.com/my-fabulous-disease/comfort-blaming-people-new-hiv-cases, Cited by an Interview Participant)

The ‘undiagnosed’ are constructed as risky, as “the more dangerous group” in part because knowing one’s HIV status alone, irrespective of being on treatment, is constructed as changing sexual risk behavior in and of itself. In this sense, engaging in the visualization of one’s biomedical risk via testing also enables more traditional forms of sexual risk reduction through sexual behavior change, even when sexual risk reduction in the absence of treatment compliance is not necessarily the only intended outcome. As one participant noted,

> Lots of HIV positive people, a shockingly high number, are not being very sexually active at all. Lots of people withdraw from social contact. Lots of people still withdraw from sexual contact. Lots of women, in particular, want nothing more to do with anybody at all. (HIV Advocate, London, UK).

The participant quoted above goes on to argue the point that the population of people who are undiagnosed are the ones worthy of intervention rather than the small group of people living with HIV who are not yet on treatment, here speaking in the context of the UK, because simply being diagnosed HIV-positive is not, in itself, a risk factor for transmission. He argues this is because many people disengage from social and sexual contact in the period immediately after diagnosis. This assertion goes hand in hand with that of the excerpt from Mark S. King, writing on his blog, *My Fabulous Disease*, that people living with HIV, upon learning their status, are not then "transform[ed] into abusive monsters" who infect others with disregard. In fact, the construction of the 'undiagnosed' as the source of continued transmissions works to counter to the moral blame directed at people living with HIV for irresponsibly spreading the virus, of being, as another participant described this caricature, "AIDS predators" (Director of an HIV advocacy organization, New York, NY). For Crawford (1994), the displacement of collective anxieties about health and disease onto the 'other,' in this case, 'the insufficiently biomedically surveilled other' functions to be self-assuaging, a means of coping with internalized vulnerabilities, including here, perhaps those of people living with HIV themselves who have for so long and still continue to be constructed as moral transgressors and as a source of risk.

This discourse is further deployed as a specific tactic to re-direct concern, moral panic, and the potential for coercive or uninformed treatment away from people living with HIV themselves in this excerpt from the report, "Positive Health, Dignity and Prevention: A Policy Framework," a response by the advocacy community itself to the emergence of biomedical prevention, here framing those who are unaware of their HIV status as the primary source of new infections.

> A common misperception is that that most new HIV infections involve a person who is aware of being HIV-positive. But according to the most recently published data on people aware and unaware of their HIV status, the vast majority of people living with HIV worldwide - an estimated 80%-90% - have not yet been tested and are unaware of their HIV-positive status. The United States Centers for Disease Control (CDC) has found that people unaware they are living with HIV are more than twice as likely to engage in high-risk sex than those aware of their HIV-positive status and have also estimated that up to 70% of new HIV infections are acquired from people who are undiagnosed. (Excerpted from the report, "Positive Health, Dignity and Prevention: A Policy Framework," Available at http://www.gnpplus.net/resources/positive-health-dignity-and-prevention-a-policy-framework/ Published January 2011, Collected at International AIDS Conference, July 22, 2014)

Through the re-configuring of HIV risk discourses, by which HIV risk is being transformed from the 'inside out' through pharmaceutical means, the 'undiagnosed' are discursively constructed as 'risky' in part as an explicit strategy to contest the moral culpability of people already known to be living with HIV in the spread of HIV infection. As engagement with HIV biomedicine increasingly constitutes a set of techniques through which people living with HIV can fashion themselves as responsible, disciplined, risk-averting, neoliberal subjects, to fail to be biomedically surveilled, even by HIV diagnostic testing, is to fail in making oneself up as an appropriately biomedically surveilled risk subject, irrespective of HIV status. It involves novel re-directions of moral culpability for HIV risk, from those HIV positive but undetectable, appropriately biomedically surveilled risk subjects, onto those who cannot, or will not, or have yet to be surveilled, as Mark S. King writes, that “dangerous group” in whose bodies the HIV virus is “raging” so far *undetected* and therefore not even capable of being pharmaceutically rendered *undetectable*.

“Diagnose the undiagnosed”: Extending HIV risk constructions into the pre-HIV state. According to Crawford (1994) as well as Clarke et al. (2010) and Rose (2007), constructions of those who are ‘at risk’ or ‘susceptible’ to risk works to draw illness and disease closer into the realm of health, troubling contemporary beliefs in the effectiveness of biomedicine and technology, constructing us all as potentially pre-diseased. To be undiagnosed, that is, specifically, un-surveilled, pre-detection, essentially pre-HIV, is risky because it potentially leaves individuals highly infectious and unknowingly so because they have yet to be diagnosed and rendered non-infectious via viral suppression. To be undiagnosed is to be not even visible in this process, to be not intervene-able on, and therefore to be open to being labeled ‘risky.’ Via the discourses of treatment as prevention, testing for HIV - and the diagnostic technologies through which antibodies themselves can be visualized - come to be framed as tools for linking the risky undiagnosed bodies “out there” to an engagement with biomedicine, resulting either in routine diagnostic surveillance (regular testing) and/or the consumption of pre-exposure prophylaxis for those who test negative at each test, and entrance onto the HIV care continuum for those who test positive. This framing constructs everyone as potentially pre-HIV, “the undiagnosed,” someone *to be* diagnosed and then obligated to engage further with biomedicine through continued testing or PrEP, or entering onto the HIV care continuum to ultimately consume antiretrovirals and become virally suppressed. Testing is the technology by which

individuals come to be ‘neutralized’ (TasP) or ‘weaponized’ (PrEP) through pharmaceuticals or marked for continued biomedical surveillance of their potentially pre-HIV risk category. After all, everyone, even after a test, continues to be ‘unknown’ or ‘undiagnosed’ after a day or so.

I draw especially on Clarke and colleagues (2010) theoretical work on the extension of biomedical risk into health and the expansion of markets for technoscientific products, including HIV diagnostic tests as well as antiretrovirals for pre-exposure prophylaxis. The use of the language of “undiagnosed” implies individuals are always already infected with HIV, that they may be infected in the future or may already be infected but do not know it. HIV diagnostic tests are not being marketed to confirm an individual’s HIV negative status, or to make known an unknown, they are being marketed to “diagnose the undiagnosed,” the potentially already infected who are presently outside the reach of the techniques of biomedical surveillance. What is specific about the construction of the ‘undiagnosed’ as always already pre-HIV is that it discursively extends the discourses of HIV risk onto those who are, for all intents and purposes, believed to be HIV-negative, marking everyone as potentially HIV-positive but undiagnosed. The imperative to ‘diagnose the undiagnosed’ and the construction of those who are ‘unknown status’ or ‘undiagnosed’ as not only the source of new infections, but as justification for the expansion of biomedical surveillance into the pre-HIV state for the purposes of intervening on the risk that those who are pre-HIV, not yet diagnosed, pose *to others*. This construction of the as yet insufficiently biomedically surveilled emerges particularly in the marketing of HIV diagnostic technologies themselves, as the excerpt and image below from an OraQuick rapid oral fluid test brochure demonstrates.

> ~ 22,5 million Sub-Saharan Africans are infected with HIV. Only 1 in 10 Africans have been tested. Early detection can lead to early antiretroviral therapy, saving lives. A rapid point-of-care test that delivers quick results and identifies the undiagnosed HIV+ patient…Provide earlier treatment and reduce further transmissions. (“Diagnose the Undiagnosed (Africans)” OraSure Brochure, Collected from OraSure commercial booth in the Exhibition Hall, International AIDS Conference, July 21, 2014)

Constructing the ‘undiagnosed’ as a risk group to be intervened on specifically for biomedical prevention purposes, so as to expand the market for earlier antiretroviral treatment and prevent onward transmission of HIV, emphasizes how HIV risk is extending its reach beyond those who are themselves already diagnosed as living with HIV.

What is crucial here is that individuals who, for all intents and purposes, previously tested negative, perhaps even yesterday, are being constructed as risk subjects, not as strictly and perhaps not even primarily as ‘at risk’ of acquiring HIV, but as ‘risky’ bodies, always already pre-HIV, implicated in potentially infecting others. Crawford (1994) asserts that border anxiety at the boundaries between risk categories serves the existing social order in that it allows anxieties about the social system to be deflected onto individuals. Here, I argue that the anxieties that coalesce around the contact points between constructions of the healthy, responsible, risk-averting self and the diseased, irresponsible, risky self may reflect not only how techniques of biomedical subjectification are coming to be a crucial way of staking a claim to self-identity, but also how population level surveillance of biomedical risk is increasingly being extended, here particularly in ways that also extend markets for bioeconomic expansion, including not only for diagnostic technologies, but also for antitretrovirals for use as pre-exposure prophylaxis.

OraQuick® HIV – *the rapid oral fluid test*

Diagnose the Undiagnosed

- ~ 22,5 million Sub Saharan Africans are infected with HIV.[1]
- Only 1 in 10 Africans have been tested.[2]
- Early detection can lead to early anti-retroviral therapy, saving lives.[3]

A rapid point-of-care test that delivers quick results and identifies the undiagnosed HIV+ patient

- 3 out of 4 patients surveyed preferred oral fluid testing over whole blood.[4]
- 18% more people are willing to be tested for HIV with an oral fluid specimen over whole blood.[5]
- Provide earlier treatment and reduce further HIV transmissions.

Figure 3. Diagnose the Undiagnosed, OraQuick HIV 1/2 Marketing Brochure

Conclusion

Throughout my analysis, I draw on the theoretical frame of Foucault’s conception of biopower (1984), including Rabinow and Rose’s (2006) recent elaboration of it. For Foucault (1984), biopower is a mechanism of power through which modern life comes to be organized around ways to intervene on life itself, *to make live*, both through techniques of subjectification, the disciplining of the individual body, as well as through the regulation of the vital processes of populations. In their more recent theoretical elaboration of biopower, Rabinow and Rose (2006) frame it as consisting of one or more truth discourses related to human or biological life, a number of strategies for regulating and intervening on the population, and also modes of subjectification, what Foucault (1994) calls ‘technologies of the self,’ through which individuals come to work upon themselves, via these truth discourses, to improve life and health not only of themselves, but of their families and communities as well. I describe here how the re-configuring of HIV risk discourses can be seen as one of the ‘truth discourses’ by which the regulation of the population and the disciplining of individuals is being made manifest via HIV treatment as prevention.

In this chapter, I have explored how HIV treatment as prevention is being constructed as productive of a re-configuring of HIV risk, including a re-shaping of what it means to have ‘safer sex’ and transforming the techniques of subjectification by which the entrepreneurial self can *and must* engage with HIV biomedicine, to shape her/himself as a healthy, disciplined risk-averting subject. Increasingly, though in still highly stratified ways, an engagement with biomedicine, treatment adherence and viral suppression are coming to be the ways by which people living with HIV can engage in a form of ‘responsibilized citizenship,’ taking care of the self as well as taking care of others via techniques of responsibilization (Barry et al. 1996; Colvin et al. 2010). These are just the sort of ‘truth discourses’ about how to live healthfully and avoid risk that Petersen and Lupton (1996) assert are co-constitutive of the relations of power/knowledge involved in the deployment of the ‘new’ public health.

Drawing on Crawford (1994) and Douglas (1966/1969; 1985), I also argue that the re-configuring of HIV risk via treatment as prevention may trouble the boundary maintenance work ongoing between the ‘healthy self’ (historically, the HIV-negative self) and the ‘diseased other’ (the HIV-positive self) by technoscientifically drawing the ‘infected self’ along the risk continuum, closer to embodying the norm of being non-infectious, and rendering them less of a *biomedical* threat via viral suppression. Whether this troubles their construction as a *moral* threat, however, I think, remains to be seen.

At the same time, I argue that this re-configuring of risk may also generate ‘border anxiety’ running along newly re-drawn boundaries between other technoscientific identities, such as between the ‘virally suppressed’ and the ‘virally detectable,’ and between the ‘positive but undetectable’ and the ‘undiagnosed and never been tested,’ quite likely in surprising new ways. Importantly, for the chapters that follow, risk and surveillance mutually construct one another; through surveillance, risks are calculated and standardized into ever more precise calculations, and then the imperative to intervene on these risks becomes the justification for the disciplining of bodies that is made possible via techniques of biomedical surveillance, including self-surveillance (Clarke et al. 2010).

Transforming Subjectivity and Biosocialities via HIV Treatment as Prevention: Undetectable as the New Face of HIV

In this chapter, I explore how the emergence of HIV treatment as prevention is co-constitutive of a prioritization and a hierarchialization of viral suppression as a biomedical state, as "what the game is all about," which has critical implications for subjectivity and for biosocialities, including emergent forms of biomedical citizenships. The prioritization of viral suppression is taking place via a number of biopolitical techniques which seek to make being virally suppressed *the* "end goal" of engagement with HIV biomedicine, the "one number health goal" of people living with HIV and the primary means of performing a responsible engagement with HIV care and treatment and with regimes of healthy living. Here, I offer an analysis of three techniques by which being undetectable is prioritized, celebrated in a very public fashion, and constructed as the only way to live as a person living with HIV. First, I will explore the social incentivization of viral suppression through an analysis of meso-level efforts at the social marketing of viral suppression; that is, how being virally suppressed is being discursively constructed as 'cool', 'hip', as an exclusive club to which all people living with HIV should want to belong and being celebrated in very public ways.

Next, I will explore the work of one especially powerful image as a cultural symbol - that of a "re-imagined" Red Ribbon created by AIDS Vancouver - as an example of the visual discourses being deployed to assert being undetectable as "the new face of HIV." The prioritization of viral suppression, here I argue particularly through visual imagery, is of sociological significance because it discursively opens up the conditions of possibility for what it means to live with HIV, creating new opportunities for subjectification and biosocialities in what is now being called the "post-treatment era." Yet, I also use my analysis of these visual discourse materials to explore how the construction of being undetectable as "the new face of HIV" may also displace other possibilities for living with HIV, with critical implications for subjectivity, particularly for those who fail to technoscientifically fashion themselves as virally suppressed.

Lastly, I explore how these transformations are being co-produced via novel forms of biomedical citizenships involving claims-making for both the right to *be* undetectable and also the right to *know* one's viral load, including how these forms of biomedical citizenships are emerging in the context of deeply stratified global access to both antiretrovirals and also viral load technologies. I conclude by arguing that the prioritization of viral suppression via treatment as prevention has critical implications for subjectivity and biosocialities, as well as for transformations in biomedical surveillance of people living with HIV, an empirical topic I take up in the chapter that follows.

"It's Cool to be Virally Suppressed:" The Social Incentivization of Viral Suppression

Viral suppression is presently being incentivized both financially, for example, through conditional cash transfer programs, as well as socially, through social marketing campaigns aimed at rewarding, and perhaps even celebrating, being undetectable in very public ways. The social incentivization of viral suppression is taking place via a re-framing what it means to be living with HIV with an undetectable viral load - as one participant described it, "increasingly promoting viral load as an achievement to be celebrated in a public fashion" (Director of an HIV advocacy organization, New York, NY) - and doing so by offering social, rather than strictly financial, incentives to be responsibly engaged with biomedicine and rendered non-infectious through viral suppression. Viral suppression is socially incentivized by re-framing those with an undetectable viral load as role models to model oneself after, as "super heroes" or "elites" to be emulated. Emblematic of this process has been the efforts of Housing Works' The Undetectables Project. The Undetectables Project is a pilot program based at Housing Works in New York City. Housing Works is an AIDS service organization which provides an array of medical, mental health and other supportive services such as housing support, legal assistance, social enterprise programs and job training for people living with HIV.

The Undetectables Project enrolls Housing Works' consumers who are living with HIV, receive their primary health care at Housing Works, and who are identified as having complex life circumstances which may be a barrier to engagement with treatment including substance use and behavioral health issues, or a history of homelessness or incarceration, for which they also receive additional supportive services through Housing Works. The Project describes itself as “[a] groundbreaking new campaign aimed at helping 80% or more of the Housing Works HIV + community achieve - and maintain - viral suppression. The Undectectables Project combines a comic book narrative with a dedicated community support from medical and case management staff to achieve its goal.” (Excerpted from The Housing Works website at http://www.housingworks.org/heal/medical-and-dental-care/the-undetectables/). Notably, the full Undetectables Project website can be found at the URL of https://liveundetectable.org/; that is, *live* undetectable (dot org)*,* a technique of vital politics indeed!

At the time that the interview excerpted below was conducted, The Undetectables Project had enrolled a cohort of 600 Housing Works consumers. It involves participation in a financial incentive scheme that offers eligible individuals a financial incentive in the form of a $100 gift card up to four times a year when they receive their undetectable viral load results, an aspect of the program that is itself analytically interesting, but that I will not discuss at length in this chapter. It also involves what those involved in the design and implementation of the initiative describe as an anti-stigma campaign whose goal is the normalization of being virally suppressed, the techniques of which I will argue below are engaged in a prioritization and very public celebration of viral suppression. In the excerpt below, a participant in this project who is affiliated with Housing Works, describes how both the financial and social incentivization of viral suppression is a reflection of the mission of this AIDS service organization to integrate the goals of treatment as prevention into their community-based work, one that is driven by broader changes in the organization of Medicaid, the payer for many of these services.

> I had been suggesting since the early 90's that we're incentivizing positive health outcomes for everybody but the patient. So I had been promoting the idea of incentivizing viral suppression and we put together a work group to look at, first of all, how we could make viral suppression the central focus of an integrated care team, and then linking that up with the incentives. I think, one of the things I would say, and this is a little bit far afield, but I think it's very important to appreciate, is we're, the whole healthcare system is moving, certainly the Medicaid system is moving towards something called patient-centered medical homes. At the core of that is integrated care teams. I think it always sounds good. I think it's much harder to actually put into practice. It was interesting because what the patient is buying into signing up for The

> Undetectables is it gave the patient a set of priorities such that viral suppression and treatment adherence suddenly became the patient's number one health goal and that actually helped to focus the team that's supposed to be helping the patient. All too often, teams still think in their own silos, ‘What's my care plan?’ versus ‘What's your care plan?’ and ‘My priority is getting this person stably housed. Your priority is that.’ Getting everybody harnessed around the priority of viral suppression was a good way of really getting integrated care to start to focus on what it means to work in that fashion. (HIV services provider involved with Undetectables Project, New York, NY)

In addition to offering financial incentives for sustaining viral suppression, in the form of $100 gift card up to four times a year when clients receive their undetectable viral load results, the Undetectables Project has sought to not only normalize being virally suppressed, but beyond that I argue to socially incentivize it, by making it “hip” or “cool” to be undetectable, a novel and positive way to re-fashion oneself as a person living with HIV. The participant excerpted above, who is involved with the work of Housing Works, describes how through the efforts of their anti-stigma campaign they sought make it just as socially acceptable to ask how someone’s viral load is as to ask them how they are doing. In this way, this project is described by those involved in designing and implementing it as seeking to combat stigma and normalize viral suppression.

> We trained the janitors, for example, just because we wanted everybody to see this as a community-wide effort, and everybody had something to say. Again part of reversing stigma is being able to ask, it's like we ask, ‘How are you doing today?’ Nobody thinks that's an intrusive question, yet to say, ‘So, how's your viral load?’ is seen as intrusive. We wanted to make it just as acceptable to say, ‘So hey, are you undetectable?’ as it is to say, ‘So how are you feeling today?’ (HIV services provider involved with Undetectables Project, New York, NY)

But going beyond the normalization of viral suppression, the Undetectables Project also seeks to re-frame being virally suppressed as “hip” and as “cool,” and people who are virally suppressed as “super heroes,” as those to be emulated, celebrated, looked up to, the sort of people you ought to want to be. I argue that this initiative is about much more than combatting stigma or normalizing being undetectable; it is about re-defining being undetectable as a means through which to transform oneself from the ‘inside out’ by accessing a new kind of status and a new set of ‘powers’ to end the HIV epidemic, accrued through achieving and sustaining a prized virological state. This participant excerpted above goes on to say,

> I think one of the biggest innovations, in addition to the cash, was a whole marketing campaign that transformed HIV stigma. That's the whole idea behind the name, 'The Undetectables'. It's being a superhero and stopping the epidemic. I would say that being a hip superhero and 'I'm stopping the epidemic' has been as big a selling point as the cash, as well as people being educated to the fact that they can't transmit the virus if they're undetectable. (HIV services provider involved with Undetectables Project, New York, NY)

In part, this re-framing of being undetectable as "hip" is deployed through the creation and publication of a series of comic books about "The Undetectables," a group of super heroes with undetectable viral loads who offer support and education to others in their community. There are presently two published issues of The Undetectables comic books, which are available for download at https://liveundetectable.org/comics. The story told in Issue 1 of The Undetectables is of four people living with HIV in New York City, characters that are themselves based on real consumers using Housing Works' HIV care and treatment services, who have to face and fight against the metaphorical foes of Denial, Stigma, Fear and Apathy as they go about their day, helping others in their community to do the same. The characters they help include, among others, Eddie who is considering dropping out of care and stopping treatment altogether and Maria who is a consumer of the clinic, but seemingly not currently on treatment and struggling with her sobriety.

Figure 4. The Undetectables, Issue 1, Cover Page

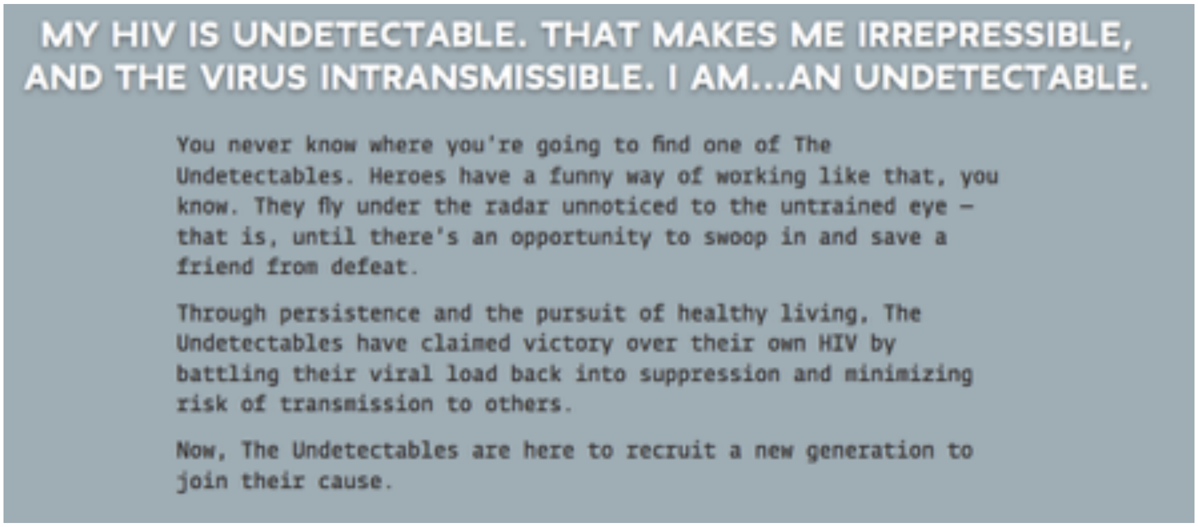
The story opens in New York's Washington Square Park where, Terrance, one of the Undetectables, happens to meet Eddie, seemingly one of the clinic's consumers, in the park and they talk about attending a group at the clinic the next day. Eddie responds, "Of course, I wouldn't miss it." As the plot unfolds, Denial in the form of a shadowy male figure - which "has the power to fog one's mind" - creeps up behind Eddie causing Eddie to do an about face and say that actually he is considering stopping treatment because he feels well and does not want his treatment to "define" him. To which Terrence, the Undetectable, responds that to stop taking his antiretrovirals is "dangerous" and "Meds don't define you..Staying healthy does," an appeal to the discourses of healthism through which being healthy, particularly via consumption practices, such as the consumption of pharmaceuticals,

Figure 5. The Undetectables, Issue 1, "I am an Undetectable"

comes to be an ethical way of living (Clarke et al. 2010; Crawford 2006; Petersen and Lupton 1996; Rose 2007).

After the Undetectables come together to fight these metaphorical foes, which manifest in some cases as actual sci-fi style monsters, Eddie decides he needs to stay engaged in care and on treatment, asking one of the Undetectables, the “Gender Warrior” for a lift to the clinic so he can get a new prescription. In another storyline that winds through the comic’s narrative, Apathy tries to convince Maria to use drugs when she gets frustrated with her living situation and feels like she is not getting the help she needs. Maria takes a call from her caseworker to confirm her appointment for that day, saying “Actually I’ve got some great ideas on how you can help me join the Undetectables,” that is, presumably getting on treatment and achieving viral suppression herself. I take up a further analysis of Maria’s story in the chapter that follows on the transformations in biomedical surveillance of people living with HIV.

In this way, being undetectable - literally, being “an Undetectable” - is constructed as a technique, or mode of subjectification (Foucault 1984; 2008; see also Rabinow & Rose 2006), for transforming oneself into special kind of person with special powers and a superhero status.



MY HIV IS UNDETECTABLE. THAT MAKES ME IRREPRESSIBLE, AND THE VIRUS INTRANSMISSIBLE. I AM...AN UNDETECTABLE.

You never know where you're going to find one of The Undetectables. Heroes have a funny way of working like that, you know. They fly under the radar unnoticed to the untrained eye – that is, until there's an opportunity to swoop in and save a friend from defeat.

Through persistence and the pursuit of healthy living, The Undetectables have claimed victory over their own HIV by battling their viral load back into suppression and minimizing risk of transmission to others.

Now, The Undetectables are here to recruit a new generation to join their cause.

Figure 6. The Undetectables Project Website, “My HIV is Undetectable”

The introductory text on the Undetectables website reads as follows.

> My HIV is undetectable. That makes me irrepressible, and the virus intransmissible. I am….an Undetectable. You never know where you’re going to find one of The

> Undetectables. Heroes have a funny way of working like that, you know. They fly under the radar unnoticed to the untrained eye - that is, until there's an opportunity to swoop in and save a friend from defeat. Through persistence and the pursuit of healthy living, The Undetectables have claimed victory over their own HIV by battling their viral load back into suppression and minimizing risk of transmission to others. Now, The Undetectables are here to recruit a new generation to join their cause. (Excerpted from the website, www.liveundetectable.org)

To be "irrepressible" is thus to be more powerful, not able to be repressed or held back by stigma or apathy or denial of the benefits of treatment. The Undetectables possess special powers that enable them to act to "save a friend from defeat." They have achieved undetectable viral loads, "have claimed victory over their own HIV," via "persistence and the pursuit of healthy living." Here individual personal responsibility for taking care of one's health - "the pursuit of healthy living" - is framed as the means by which one can achieve an undetectable viral load. Rendering oneself virally suppressed is the way one fashions oneself as a healthy self, a means of "claim[ing] victory over HIV by battling their viral load back into suppression," by being powerful over oneself and the virus circulating in one's body and by acting to optimize health. Further, to become an "Undetectable" is also to perform 'the care of the social' (Colvin et al. 2010), to do work upon the self and upon the virus circulating in one's blood, in order to protect others. To say, "I'm stopping the epidemic" and by doing so to fashion oneself as a "hip superhero," to responsibly care for others by rendering inert the threat one poses to them is to be cool, empowered *and* powerful, in control, to be a superhero.

And who doesn't want to be a superhero? The discourse of the "superhero" is one, in our society, many of us ascribe to from childhood. In fact, imagery and narratives of 'superhero-ness' abound. The week that I worked on this analysis was Fire Safety Week at my daughter's preschool. The children were asked to come to school each day dressed as superheroes. To be responsible with fire, to take care of oneself and one's family in the home by doing so, is to be a superhero. It is likewise something they are meant to aspire to. Each morning as we arrive, the parking load is bouncing with two and three year olds dressed in Superman and Batman suits, foam muscles bulging from beneath their costumes. The visual discourse of the "superhero" is also one that contests cultural ascriptions of the body infected with HIV. Superheroes are strong, muscular, and able. Even though one of the Undetectables is described as disabled and in the imagery is using a wheelchair, she is still very visually framed as *able*, as physically strong and healthy. The visual of the “super hero” disrupts the historical imagery of the thin, frail, Karposi Sarcoma riddled body of the “AIDS patient.” To be undetectable, to be “an Undetectable” is to be powerful, to be strong, to be in control of oneself, one’s body, and so much so as to be able to save others, to “save a friend from defeat,” to be a responsible citizen.

Beyond the valorization of viral suppression by making it “hip” to be undetectable, viral suppression is socially incentivized through the bestowing of recognition in very public ways on those who have achieved an undetectable viral load. The celebration of viral suppression through public recognition can include creating opportunities for individuals to be honored for their achievement in public forums, such as the Housing Works’ annual holiday party, as described below, where those who are undetectable - who are “an Undetectable” - could stand up in front of others to receive a standing ovation.

> I was telling somebody just the other day, we have an annual holiday party that 1000 consumers come to. Two years ago, the year before last, before we rolled out the project, I asked for people who were undetectable to stand up and more for..this is a group of people where just about everybody in the room is HIV positive, but because of stigma, people are reluctant to say. I might have gotten a dozen, maybe two dozen to stand up. This last year, I did the same, ‘If you're an Undetectable, stand up,’ and more than half the room stood up, and then you couldn't tell because they were given a standing ovation. (HIV services provider involved with Undetectables Project, New York, NY)

Viral suppression is also incentivized through the utilization of viral suppression as a means to access special events or exclusive spaces. The Undetectables Project also organizes social events, including a costume dance party, where consumers participating in the program could come dressed as one of the super hero characters from the Undetectables comic books. Here, not only is being virally suppressed framed as hip or cool or desirable, something one wants to dress up as, but to be undetectable gains one access to social events that one might not otherwise be able to access and at which one is embraced and celebrated.

> We recently had an event in one of our health centers that was a costume event, but you came as one of the superheroes and we gave out prizes for the people who…there was actually a dance party and we gave out prizes for people who had the best costumes reflecting the half-dozen superheroes in the book. All of that kind of stuff, at

> every community activity being an Undetectable is celebrated. (HIV services provider involved with Undetectables Project, New York, NY)

A second community-based initiative through which viral suppression is being socially incentivized in a very publicly celebratory fashion, drawing on a similar narrative to that of Housing Works, is called the Elite Society of the Undetectables. The Elite Society of the Undetectables was launched by Jessica Cole, who started the organization when she worked at AID Atlanta, an Atlanta-based AIDS service organization, to honor the memory of her brother, who died from AIDS-related causes in 1995. The Elite Society of the Undetectables, which is based in Atlanta, has characteristics of other members-only societies, specifically those of private members clubs, debutante societies, and university sororities and fraternities, including a crest, a sponsorship system by which "elites" who have achieved viral suppression mentor new members in the model of 12-step programs, and formal members only events in exclusive venues.

Figure 7. Elite Society of the Undetectables crest

Membership in The Elite Society of the Undetectables, along with access to exclusive social events, is determined by submitting a membership pledge and application. The text of the pledge reads,

> I, ___________, being aware of the honor which is being bestowed upon me by my selection for membership in The Elite Society of the Undetectables, do hereby pledge loyalty to this organization. It shall be my earnest purpose to give unsparingly of my time and energy toward the promotion of Decreasing the Spread and Stigma of HIV/AIDS through Community Prevention. I will strive to be at all times adherent to my

> medications, medical appointments, and to support others who are struggling with this disease. I will remain undetectable and always practice safer sex! I pledge myself to uphold the high purpose of this society for which I have been selected in every way by word and deed to make its ideals the ideals of my life. (Excerpted from presentation of The Elite Society of the Undetectables presented at a Ryan White 2012 Grantee Meeting, November 28, 2012, Available for download at https://careacttarget.org/sites/default/files/rw2012/E12.pptx)

The membership application also asks for details about the applicant's most recent viral load and CD4 test results, their present antiretroviral regimen, how long they have been on this particular treatment regimen, as well as if they are considering changing regimens and why, along with their provider's name and contact details. Of note, both the Elite Society of the Undetectables, as illustrated by language of the membership pledge above, and The Undetectables Project claim that the key goal of their initiatives is the combatting of HIV-related stigma, yet their anti-stigma efforts are underpinned by the prioritization of the achievement of a biomedical state - viral suppression - through the consumption of pharmaceuticals by people living with HIV themselves. In this way, the transformations they seek to catalyze through these efforts may be at the level of community perceptions of people living with HIV, but these initiatives fundamentally seek to manifest these social changes via a biomedical re-configuring of the self, both of the actual virological condition through pharmaceutical suppression of the HIV virus in the bloodstream, but also via the self-identity of people living with HIV. Thus while they seek to incentivize the entrepreneurial re-fashioning of their consumers as biomedically engaged, treatment adhering, risk-averting healthy subjects who are deserving of public praise and celebration, there is little emphasis on transformations in enacted stigma and discrimination towards people living with HIV on the part of the wider community.

The Elite Society of the Undetectables has hosted roughly quarterly events at exclusive Atlanta venues, including the W Hotel and the Georgian Terrace, where they recently hosted a Christmas Party and a Spring Fling, as well as educational programs with pharmaceutical company sponsorship. An invitation to their Christmas Party, though not expressly excluding those who had not achieved viral suppression, requested that individuals who wished to attend respond to the RSVP providing a copy of their most recent viral load and CD4 test results.

Photographs of the Elite Society of the Undetectables' Spring Fling posted publicly to a Facebook page show attendees in formal or semi-formal dress, gowns or cocktail dresses for women and suits or collared shirts for men, with attendees sitting around white linened tables, formally set, drinking what looks like iced tea out of tumblers and eating plates of salad. Other photos show attendees dancing on a dance floor in a ballroom to a live band and a group standing together for a posed photo holding certificates with their names printed on them. One participant in this study, who was not involved directly with the organization itself, referenced the formal social events of the Elite Society of the Undetectables as an example of the social incentivization of viral suppression.

> I've heard a lot of other ways in which viral load has been incentivized for years, not with cash but through things like, have you heard of the, what is it called? It's like the Ball of the Undetectables or something? Have you heard of that? [I: No, no.] Oh, so there's this party that happens in Atlanta every year and it's like a red carpet party, and it's for people with HIV, and you have to be virally suppressed to attend. And it's like a really nice party with nice food. People get dressed up. They have like gowns on and everything. I forget what it's called, it's like something, the Gala of the Undetectables, or something like that. And it's basically intending to promote this sort of message that it's cool to be virally suppressed, you know, it's the goal to be virally suppressed. (Director of a national network of people living with HIV, U.S.)

Here viral suppression is constructed as, quite literally, a ticket to accessing an elite status and exclusive social events. It is notable that the consumer populations of both Housing Works and AID Atlanta tend to be made up of urban people of color with complex social and behavioral histories, including homelessness, incarceration and various co-morbidities, a population which by and large would likely find formal gala events, particularly in such exclusive venues such as the W Hotel or the Georgian Terrace, otherwise inaccessible. In this way, to be virally suppressed means to gain access to exclusive spaces reserved only for others who have achieved this "elite" or "super hero" status within their community through the only access point that is perhaps available to them, an engagement with biomedicine, however, fraught even access to healthcare may sometimes be for these populations.

Much like the use of financial incentives was problematized by some of my research participants, the social incentivization of viral suppression is problematized on the grounds that it asserts a certain exclusivity associated with viral suppression - and perhaps intentionally so, some people can be “elite” only because others are not - and is based on the assumption that everyone *should* be on antiretroviral therapy and everyone *can* achieve sustained viral suppression. Some participants contested the social incentivization of viral suppression, through initiatives like The Undetectables Project and the Elite Society of the Undetectables, on the grounds that it potentially excludes people living with HIV who cannot, despite their best efforts, perhaps because of homophobia or transphobia, poverty, sexism, racism among other intersecting marginalities, achieve sustained viral suppression. This runs counter to the discourse that viral suppression is achievable for all who are sufficiently persistent and personally responsible for pursuing a healthy lifestyle, as I discuss below. One participant, who is the director of a national network of people living with HIV, said,

> I think some of the tension from people with HIV about that sort of approach comes from the recognition of the fact that not everyone can be virally suppressed even if they’re trying. (Director of a national network of people living with HIV, U.S.)

When I raised this particular line of critique with the participant affiliated with Housing Works who discussed the design and implementation of The Undetectables Project, referencing the critique of another participant who expressed concern that the incentivization of viral suppression might create “a two-tiered system” between those who are on treatment and who are virally suppressed and those who are not, this participant responded,

> Well, so give me an example of somebody who can’t [achieve viral suppression]. [I: Right, right. I think in one case it was someone who was speaking of himself and he was just, he really wasn't on the right medication for him, and he was trying all these different medications and he felt like they weren't working. He eventually did hit on one that was the right one for him.] In most parts of the United States, we now have very good resistance testing. If somebody's really saying that they're getting such poor quality of healthcare that they can't achieve viral suppression because they're not getting the right combination of meds, I would say they need to change their doctor. That's not about a two-tiered system. There's pretty much at this point, unless somebody's end stage, there's pretty much a good enough array of products out there that we ought to be finding combinations that serve everybody. (HIV services provider involved with Undetectables Project, New York, NY)

Though this participant from Housing Works went on to describe how treatment support, adherence counseling and efforts to meet other social needs, such as homelessness or substance use, should remain a key dimension of intervening on the failure to achieve viral suppression, the conversation itself was constructed through a narrative of personal responsibility for the achievement of viral suppression. *Everyone* can be a super hero. Everyone can have the power to transform their health and fight to protect their communities from harm, including the potential of harm posed by the virus circulating within their own bodies, if only they try hard enough, if they demand better medications, if they take the personal initiative to change providers, if they seek out appropriate adherence support, get themselves cleaned up, get off the streets and get it together. With enough hard work, everyone can be "an Undetectable," a narrative that echoes Boero's (2010) analysis of the discourses of personal responsibility for biomedical failure. As several other participants noted, the failure to achieve viral suppression, even when individuals want to be on treatment and virally suppressed, can be related to the existence of drug resistance virus, lack of access to care and treatment, including both lack of access to resistance testing and viral load monitoring, a poor response to treatment, and as the participant below emphasizes, simply not wishing to be on treatment or finding other ways to care for one's health.

> I have noticed that some of the service providers, particularly those with the most disenfranchised clientele, are increasingly promoting undetectable viral load as an achievement to be celebrated in a public fashion. I'm not sure what I think of that, partly because it seems to go hand-in-hand with the assumption that every person, regardless of CD4 count, should be on antiretroviral treatment. The science seems to support that position at this point, but it doesn't address long-term non-progressors, or those with one of the genetic deletions associated with slower progression. Those two categories, at least, may find it better for their health to wait before treating, but no one seems to care about that point. (Director of an HIV advocacy organization, New York, NY)

My goal in this chapter is to explore how HIV treatment as prevention via a construction of being virally suppressed as the best possible, if not the only, way to live with HIV is potentially transforming subjectivity for people living with HIV, displacing some possible biosocial identities with emergent, and quite often highly technoscientific, ones (Clarke et al. 2010), and also creating new ground for novel biosocial communities (Rabinow 1992; 2005), including ones bounded by exclusivity and restricted access, quite literally in the case of organizations like the Elite Society of the Undetectables. I have explored in this section how being virally suppressed is coming to be socially incentivized via techniques that potentially re-draw the moral boundaries between being undetectable and failing to be. As I will explore throughout this chapter, this potential re-drawing of boundaries along novel technoscientific borders may not so much *combat* stigma, however hopeful these initiatives may be that it will, but may *re-direct* it onto new sites of moral transgression (Douglas 1985). Historically the boundaries between 'healthy selves' and 'diseased others' have been snugly situated between the HIV-negative (the 'healthy self') and the 'AIDS patient' (the 'diseased other'). Taking Crawford's (1994) work and pulling it into the era of HIV treatment as prevention, I argue that there may be a re-drawing of moral boundaries between those who are undetectable and also "irrepressible," who are strong, who are disciplined and who protect their communities and their own health, and those who are not, who cannot be, or will not be "an Undetectable."

These emergent and novel techniques for subjectification, through which being virally suppressed becomes the path to a highly desirable, socially normative and publicly celebrated technoscientific identity, can be seen as an aspect of what Foucault called *biopower* (1984; see also Rabinow & Rose 2006). The social incentivization of viral suppression can be seen as engaged in constructing the 'truth discourses' of HIV treatment as prevention through which individual citizen subjects come to work upon themselves, here via their engagements with meso-level institutions, for the optimization of their own health, but also for the collective good of the population as a whole (Rabinow & Rose 2006). The discourse of the prioritization and hierarchialization of viral suppression raises the question, one I will come back to throughout my analysis, of what happens to those who do not achieve or sustain viral suppression and thus are unable to signify their compliance, their adherence to care, their responsibility for themselves and those in their community. For example, what about those who cannot answer the janitor's seemingly innocuous query - "So, how's your viral load?" - with a resounding "I'm an Undetectable!"

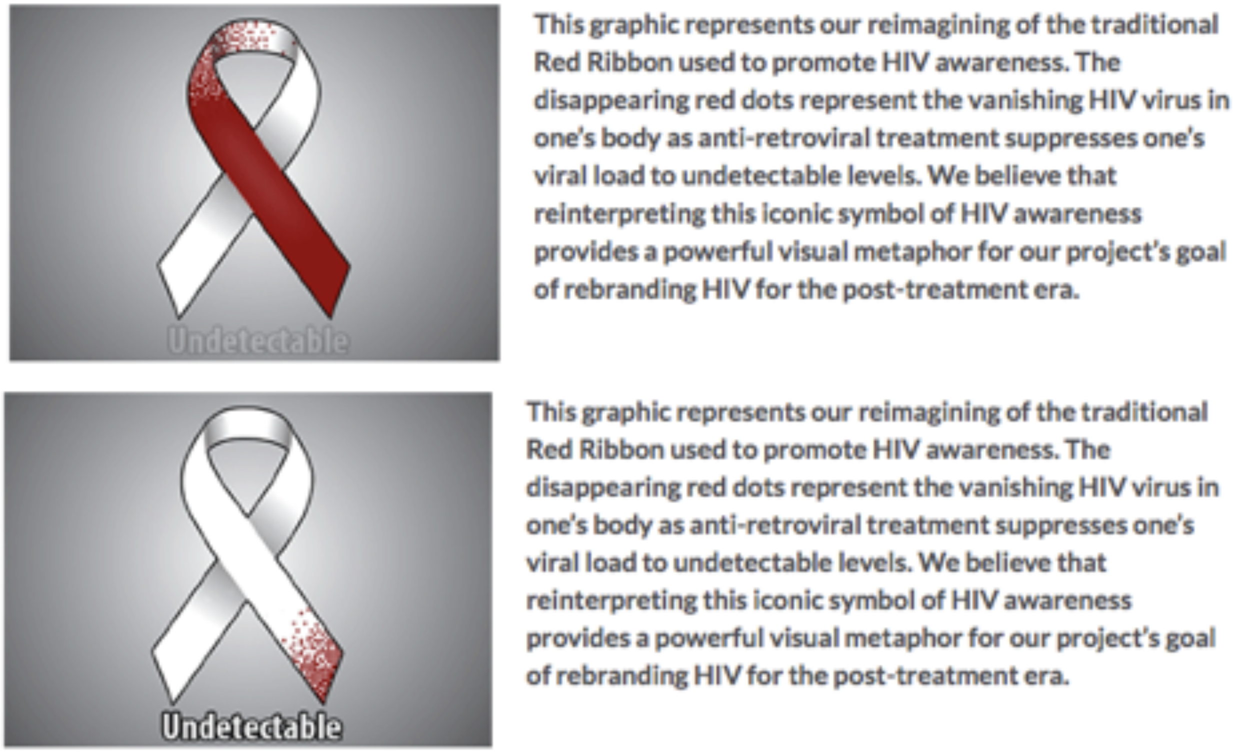
Further, the social incentivization of viral suppression may not only re-draw moral boundaries, but it potentially re-draws very material ones as well. Never mind the material benefits of financially incentivizing being undetectable - one participant described a person living with HIV who relied on the financial incentive to pay the co-pay for her antiretrovirals - the social incentives of such initiatives grant individuals who are virally suppressed access to social networks, events and spaces which have the potential to alter the very material trajectories of their lives. These emergent biosocial collectivities formed when individuals perhaps otherwise unknown to each other, come together, for a costume party, a black tie gala, or a pharmaceutical industry sponsored community forum may enable, and in fact compel, them to re-fashion themselves to fit the social norms of these spaces and communities around specific technoscientific knowledges of the self.

These emergent biosocial groups of individuals being organized and also organizing themselves around the achievement of a particular viral load measurement echoes in many ways Biehl's (2006) analysis of subjectivity based on his ethnographic field work in Brazilian *casas de apoio*, or houses of support. In these houses of support, individuals with HIV were compelled to rehabilitate themselves both medically and socially into responsible, self-governing, "domesticated" subjects (Biehl 2006:233), while those who could not or would not appropriately medically and socially self-govern, who remained at the margins, were "non-compliant" with treatment and other behavioral expectations of the *casas* were rendered, quite literally, invisible within the Brazilian medical and social services system. Not only were they expelled from these residential support programs, but they ceased to 'exist;' not even their eventual deaths were registered by the state.

For Biehl (2006:235), the Brazilian houses of support, via techniques of both institutional surveillance and the imperative to engage in practices of self-surveillance, provided a "technical means of inclusion." He argues that they came to form distinct biosocial communities through which "a selected group of poor and marginal diseased people have access to a novel social and biomedical inclusion. This citizenship is articulated through biotechnology, pastoral means, disciplinary practices of self-care, and monitored treatment…While these people learn new scientific knowledge and navigate through new laboratories and treatment regimes, they constitute themselves as patient citizens and force their inclusion into a very sophisticated form of pharmaceutical governance" (Biehl 2006:234-235). Similarly, I argue that initiatives, such as that of Housing Works' The Undetectables Project and the Elite Society of the Undetectables, may be productive of new collective biosocialities through which individuals *qua* subjects may both desire to and be compelled to re-fashion or re-socialize themselves, taking on new responsibilities, engaging with new social norms, including those of the exclusive places where these biosocial groups gather, in order to be celebrated for their virological accomplishments. Such biosocial engagements also bring them into the gaze of novel techniques of biomedical surveillance, an analytic thread I will explore in depth in the chapter to follow.

Re-imagining the Red Ribbon via the Discursive Prioritization of Viral Suppression

Next, I turn to an analytic exploration of the deployment of one specific example of the visual discourses that are co-constitutive of the prioritization and hierarchialization of viral suppression. AIDS Vancouver, a community health care organization serving those living with HIV in Vancouver, British Columbia, has launched a new campaign entitled "Undetectable: A New Face of HIV" for the purposes of promoting and "exploring what it means to be undetectable". Upon loading the front page of the website (www.aidsvancouver.org/



This graphic represents our reimagining of the traditional Red Ribbon used to promote HIV awareness. The disappearing red dots represent the vanishing HIV virus in one's body as anti-retroviral treatment suppresses one's viral load to undetectable levels. We believe that reinterpreting this iconic symbol of HIV awareness provides a powerful visual metaphor for our project's goal of rebranding HIV for the post-treatment era.

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Figure 8. Undetectable: The New Face of HIV, AIDS Vancouver

undetectable), my eyes were immediately drawn to a .gif very prominently positioned at the top of the page of the classic AIDS Red Ribbon against a grey background with the words “HIV/AIDS” in a red font beneath it. As the .gif plays, the red ribbon transforms pixel by pixel from red to white in a sweeping motion from the bottom left corner, around the upper curve of the ribbon. As the red disappears little by little, the words “HIV/AIDS” in red font below the ribbon fade to grey and the word “Undetectable” in white font begins to appear. At the end of the .gif, only a few pixels of red are left in the bottom righthand corner of the ribbon with the rest of the ribbon being white. The word “Undetectable” is boldly visible in white underneath it. Next to the image is the text that follows,

> This graphic represents our reimagining of the traditional Red Ribbon used to promote HIV awareness. The disappearing red dots represent the vanishing HIV virus in one’s body as anti-retroviral treatment suppresses one’s viral load to undetectable levels. We believe that reinterpreting this iconic symbol of HIV awareness provides a powerful visual metaphor for our project’s goal of rebranding HIV for the post-treatment era. (Excerpted from “Undetectable: A New Face of HIV, AIDS Vancouver website, www.aidsvancouver.org/undetectable, Emailed to me by an Interview Participant)

Here the authors of this text assert that their goal in designing this graphic is in an effort to “reimagine,” “reinterpret,” and “rebrand” the Red Ribbon as a symbol of HIV awareness and also of HIV in the “post-treatment era.” In the text that follows on the same page, the authors state that,

> Today, living with HIV can mean different things – there is a spectrum of outcomes ranging from very poor to excellent. With advancements in antiretroviral (ARV) therapies, there is now a new group of people living with HIV who are undetectable, meaning they have very little virus in their blood. As a result, most of these individuals have a non-compromised immune system, will live a normal lifespan, and are very unlikely to transmit the virus sexually after six months with an undetectable viral load.

While acknowledging that not all individuals can achieve viral suppression - “there is a spectrum of outcomes ranging from very poor to excellent” - modern antiretrovirals are framed as having created the conditions of possibility for the emergence of “a new group of people living with HIV who are undetectable.” This “new group” serves as the “new face of HIV.”

Before further analyzing this visual discourse material, it is important here to connect this re-imagining of the Red Ribbon to its history, described here in an excerpt from Visual AIDS’ The Red Ribbon Project.

> In 1991, a group of artists came together to create a meaningful symbol at the height of the AIDS crisis—to show support and compassion for those with AIDS and their caregivers. These artists were a part of the Visual AIDS Artists' Caucus and what they created was titled ‘The Ribbon Project,’ better known today simply as the Red Ribbon. Through a series of meetings in April and May of 1991, and using the yellow ribbons as inspiration, the Red Ribbon was born. The color red was chosen for its ‘connection to blood and the idea of passion—not only anger, but love…' The ribbon format was selected in part because it was easy to recreate and wear. The original instructions were to ‘cut the red ribbon in 6 inch length, then fold at the top into an inverted 'V' shape. Use a safety pin to attach to clothing.’ Red ribbons were created by the thousands at ‘ribbon bees’ - gatherings of Artists' Caucus members, friends and supporters working together to cut, fold ribbons and pin ribbons for national distribution. When requests became too large to handle, other groups are engaged to participate, including the formation of the Armory Ribbon Bee Project, organized by artists, Hope Sandow and Frank Moore, in which homeless women at the Park Avenue Shelter were paid weekly to make tens of thousands of ribbons…Today the red ribbon is an internationally recognized symbol of AIDS Awareness and a design icon. It has led the way for many other color ribbons and awareness projects. Unlike some other commercial marketing campaigns, the red ribbon originally evolved as an artists/activist project. (“The Red Ribbon Project”, Excerpted from the Visual AIDS website at https://www.visualaids.org/projects/detail/the-red-ribbon-project)

In its original iteration by Visual AIDS, the Red Ribbon was conceived of as “a meaningful symbol…to show support and compassion for those with AIDS and their caregivers.” To then re-imagine it via an imagery of the Red Ribbon being drained of red color, or having its red color shift to white, becoming literally of no color at all, can be seen as a way of symbolizing the end of AIDS, if not HIV. It also might be seen to visualize the increasing suppression level of virus in the body. Each pixel that shifts from red to white and seems to disappear is, in fact, still there, but no longer visualized, not able to be seen by the naked eye, because it is marked as white. It is marked as essentially colorless. It may still be there - and certainly in the case of an undetectable viral load, the virus *is* still present - but it cannot be easily visualized. It is beyond detection. It is undetectable.

It is important to unpack what this imagery assumes. It assumes that the original image of the Red Ribbon, conceived of as a symbol of support and compassion for those with HIV/AIDS and those who cared for them, is obsolete, that it *needs* a “re-imagining” because people living with HIV are today framed less so as people who need support and compassion, but more people who need care and treatment (literally, “care,” as in they need to be “retained in care”). This re-branding of HIV seeks to literally replace “HIV/AIDS” with being “Undetectable,” the new way to be a person living with HIV. Viral suppression is framed here through a message of hope, with a gaze focused via an anticipatory orientation (Adams et al. 2009) to the future on what is being called the "post-treatment era" when the discourses framing what it means to live with HIV go even beyond antiretroviral therapy. This moral economy of hope, drawing on Rose (2007) utilizes this re-imagined symbol of HIV/AIDS to engage a particular anticipatory future about HIV (and here minus the /AIDS), one in which symbols of the past - the very visual symbol of the AIDS Red Ribbon - will be replaced by newly interpreted symbols of a re-imagined and highly anticipated future which is hailing in the 'End of AIDS.'

Yet it is important to turn up the volume on the voices claiming that this is a future that perhaps not all can, at present, anticipate. The turning of the Red Ribbon white, the draining it of the color that marked it as a particular symbol of support and compassion for people living with HIV/AIDS assumes that they do not continue to need support and compassion, that treatment is all they need to achieve this new goal and gain membership in this "new group of people," this new ethical category. I argue that this narrative links up with that voiced by several participants about the changing public perception of people living with HIV since the advent of combination therapy. In the excerpt below, one presenter at the 2014 IAPAC Summit, who is an HIV advocate and the director of a U.S.-based advocacy organization, framed the modern antiretroviral era, that is, the period that began with the advent of combination therapy, as bringing an end to the narrative of people living with HIV as deserving of compassion and sympathy. This presenter asserts that a new era has been ushered in in its place in which people living with HIV are charged with the responsibility for containing themselves as vectors of infection now that they are living longer and returning to relatively normal lives through which they might pose a threat to others, evidenced by the increasing criminalization of HIV exposure and transmission.

> In the old days, there was a steady supply of stories in the media about people with HIV leading inspiring lives, creating art, pursuing their careers, starting businesses, despite this very severe, life-threatening health challenge that in most cases was going to kill them. Those stories are gone. Today in the media when you read about an individual with HIV it is as often as not in a criminal context. 'An AIDS monster,' 'An AIDS predator.' The big shift really happened after combination therapy came out and the public began

> to understand that the consequences of HIV infection were different. Before then, regardless of whatever moral judgement someone might make about homosexuality or drug use, there was some degree of human compassion and the expectation that these people were very likely to die, often horrific deaths, probably pretty soon. But as the consciousness sort of changed and as it's understood that we were going to live, how we were viewed became very different. We started to become viewed as an inherent threat, a danger to society. Because we were going to live longer, we were going to be around to infect longer. So we started to become defined by the criminal justice system and the public health system, to a very great degree, through our potential to infect others, as viral vectors, potential infectors, a population that needed to be sought out, tracked down, tested, identified, reported, listed, regulated, controlled and ultimately in many cases, criminalized. (Presenter at the 2014 IAPAC Summit, London, UK, September 18, 2014)

In the era of biomedical prevention, "living with HIV" now comes with an imperative to contain the virus circulating within one's blood via pharmaceutical means. Visual AIDS asserts that the color red was chosen for the original Red Ribbon because red symbolizes blood, but also passion, anger and love. The new visualization of the ribbon in this imagery by AIDS Vancouver literally takes the red out of blood. It removes that which was once framed as dangerous, seeking to displace blood as part of the visual of HIV, that which throughout the history of HIV/AIDS has been so visually symbolic as a source of contagion. Does it also dilute the passion, the anger and the love that was so much a part of the original design and symbolism of the imagery?

It is critical to point out here that there is little room in this imagery (except perhaps for those few stubborn red pixels at the bottom right of the ribbon) for those for whom the actualization of this symbolic imagery is not possible, those who cannot dilute the virus in their blood, who fail to transform themselves from blood red to a purified, contained, unmarked white. These individuals - those with outcomes that the website acknowledges are still "very poor" - may be represented by the scant grouping of red pixels that remain at the bottom right of the ribbon, those which cannot be made 'Undetectable White' like all the others, or who *will not* be. As such, they are isolated to the bottom corner of the image, not prominently featured, but pushed aside, de-centered. They are the ones who do not join this "new group of people" and do not become the "new face of HIV". The re-branding of this visual assumes their existence, but not their prominence or centrality, and it equally does not offer up an alternative visual to represent them. Here, viral suppression is framed as the new way to be with HIV, and perhaps the *only* acceptable way to be, or at least the only way deserving to be visualized in the imagery calling into being this new era. As one participant, an HIV advocate, describes when we spoke about this imagery in our interview.

> There is no question but that educating people about the degree to which treatment can make a person with HIV less or non-infectious, or protect a person who does not have HIV from acquiring it, that is an important and necessary part of what is needed to address stigma, discrimination and criminalization. The Vancouver campaign is interesting, yet I have a slightly unsettling feeling about it. I think that is because of a concern over the public's perception being shaped in a way that divides us into good pozzies, undetectable and on treatment, and bad pozzies, those who have a viral load or aren't on treatment. We risk creating a new viral apartheid based on whether or not someone is on treatment and how successful that treatment is and I can't help but feel such a new division will ultimately further disenfranchise and stigmatize those who are already disenfranchised and stigmatized the most. So the challenge is how we educate without creating further divisions, or stigmatizing those who for whatever reason, lack of access, personal choice, poor response to treatment, an ability to manage the virus other ways, do not go on treatment or do not achieve an undetectable viral load. The Vancouver effort I would characterize as an admirable step, but it is breaching new territory in what could become a linguistic minefield and will require close monitoring and analysis to make sure this shaping of language achieves the desired results and doesn't have unintended consequences. (Director of an HIV advocacy organization, New York, NY)

Drawing on this source of visual discourse data which emerged in my research, I argue that this “re-branding” of a potent cultural symbol, one not only symbolic of the HIV virus and the HIV epidemic but also the community of people who have lived with and died from AIDS, for the “post-treatment era” potentially leads to an erasure of those whose bodies willfully or stubbornly resist viral suppression, or who cannot access treatment at all. The visualization of this .gif constructs a binary between “HIV/AIDS” and “Undetectable,” depicted by the fading of the word “HIV/AIDS” to be replaced by the word “Undetectable.” Notably, the word “AIDS” is found nowhere else in any of the text associated with this imagery. While the authors acknowledge that outcomes of HIV disease and antiretroviral treatment can vary, including some that may be “very poor,” the discursive framing of the anticipated futures of HIV through viral suppression is imaged through a “new face of HIV,” one that is undetectable, healthy with a non-compromised immune system, who is likely to live a normal lifespan and who is rendered non-infectious with the achievement of a sustained undetectable viral load. This narrative is both productive of a discursive erasure of AIDS itself, of HIV as leading to opportunistic infections and early death, and of people with AIDS, an erasure which is challenged by the highly stratified nature of the biomedicalization of HIV, which saw 1.1 million people die from AIDS-related causes globally in 2015 (World Health Organization 2016).

Drawing on Crawford's (1994) work, I argue that this imagery potentially re-draws the moral boundaries between healthy, responsible, risk-averting undetectable selves, "the new face of HIV," and the diseased, irresponsible, infectious selves who are not virally suppressed; that is, potentially productive of new borders to be patrolled between "the good pozzies" and "the bad pozzies." As various critical perspectives on risk, including Petersen and Lupton (1996) and also Douglas (1985), have asserted, health is a fundamentally moral enterprise. The narrative of health as a moral project and of the entrepreneurial, self-regulating subject compelled to work upon and optimize her or his own health, functions as a way to posit the directionality of blame and call out individuals *qua* subjects for their moral transgressions in the name of health. If being virally suppressed is an ethical project with which all persons living with HIV are charged, then it has critical implications for subjectivity and for the techniques by which individuals can ethically re-fashion themselves, particularly in the contexts of the stratifications in access to antiretrovirals and HIV biomedicine, broadly, and also the global disparities in the distribution of death from AIDS.

Adams and colleagues (2009) describe how regimes of anticipation, particularly those heralding in highly anticipated futures via biomedicine and technoscience, deploy the imperative to anticipate, the imperative to act in the present as if the imagined future is possible, even if uncertain. The visualization of the draining of the Red Ribbon of its 'red,' of its blood, presumably of the HIV virus, at least to a level so low that it is no longer visible, anticipates a future in which being virally suppressed will be the "new" way to live with HIV. What is not sufficiently queried here is if it will be the *only* way to live with HIV. If it is, and if through this prioritization and hierarchialization of viral suppression, a new border comes to be patrolled between "the good pozzies" and "the bad pozzies," and potentially new technologies of invisibility (Biehl 2007) deployed, it raises the critical question of what becomes of those people living with HIV who *cannot* or *will* not anticipate the “post-treatment era”? This analysis links up with that in my final empirical chapter on the ‘End of AIDS’ as a regime of anticipation (Adams et al. 2009).

“We Demand Undetectable”: Claims-making, Viral Suppression, and Biomedical Citizenship

Viral suppression is framed as a means through which, at the individual level, individuals can be rendered or can render themselves non-infectious to others. At the population level, it is framed as a biomedical means through which individuals acting virologically on themselves can collectively actualize the achievement of population level targets. When people living with HIV consume antiretrovirals to become undetectable, they also further the achievement of population level goals - for example, those of UNAIDS’ 90-90-90 for 90% of all those on treatment globally to be virally suppressed. As such, I argue throughout this analysis that it acts as a form of *biopower* (Foucault 1984), linking both the disciplining of individuals and the regulation of populations.

As Rose and Novas (2005) and also Rose (2007) assert, citizenship projects built via biomedical claims-making are both individualizing and also collectivizing. In order to further the achievement of these bipolar objectives, people living with HIV who want to take treatment and want to be virally suppressed need access to a sustainable supply of the right drugs in order to *act* pharmacologically on themselves and they also need access to viral load testing, in order to *know* their viral suppression status. Further, they need a structural environment that is conducive to treatment adherence, one that is free of overly broad criminalization, stigma and discrimination, and other human rights abuses. Because having as many people living with HIV as possible virally suppressed is now framed as the best thing for the population - for a city, for a nation-state, for the world - viral suppression, not simply treatment access alone, is a right now being claimed by people living with HIV. Yet this claims-making is occurring in a climate that continues to be highly stratified in terms of access to both treatment and viral load testing technologies. Though global access to antiretroviral treatment has improved in recent years, only 47% of all people living with HIV in the world are on treatment (UNAIDS 2016), and only 23% have access to viral load testing (UNAIDS 2014a).

In a discursive engagement with treatment as prevention as the driving force behind the call to expand treatment and viral load technology access, viral suppression - not simply antiretroviral treatment - is being constructed as something individuals have a *right* to, which governments and funders are obligated to properly make available. This is co-constitutive of emergent biosocial assemblages whereby individual and collective identities come to be shaped through claims-making around viral suppression and also new forms of biomedical citizenships. Drawing on the work of Petryna (2004), Rose (2007) and Rose and Novas (2005) on biological citizenships, below I will explore two examples of emerging biomedical citizenship projects taking shape around the demand for viral suppression and the demand for the right to know one's viral load.

I seek to use the term, *biomedical citizenship*, in this analysis as a sensitizing concept (Blumer 1969) to distinguish it from the use of the term, *biological citizenship*, by Petryna (2004) and other scholars. I take biological citizenships to be citizenship projects that are advanced to make claims to social, legal and medical entitlements via the state or other organizational actors based on a shared biological status or biological risk category. Here, however, I argue that biosocial communities are taking shape (or being charged with the imperative to take shape) in order to make claims against the state or other non-state institutional actors, such as UNAIDS or the Global Fund, not so much on the basis of shared biology, a shared disease state or injury for which they assert the right to compensation or repair, but on the basis of *the right to claim a desired biomedical state*. The claims-making I describe here, therefore, is not that which emerges out of a shared identity as people living with HIV, though it may also involve that, but one which involves a shared claim to the right to achieve a desired technoscientific identity and the materiality of a virological state. Such claims-making via biomedical citizenship projects seeks to make a claim to a right that can lead to transformation of subjects and bodies 'from the inside out,' in this case, at the virological level.

On my first day of ethnographic fieldwork at the 20th International AIDS Conference in Melbourne, Australia, I was attending a non-commercial satellite session organized by UNAIDS, entitled “A New Target for HIV Treatment Scale-up: Ending the AIDS Epidemic,” which was interrupted by an organized protest by members of the Global Network of People Living with HIV/AIDS (GNP+) and affiliates demanding the commitment of global leaders to the promise of an undetectable viral load for all people living with HIV globally by 2020. Below I have excerpted my field notes on this event and also the transcript of the audio of a statement from a GNP+ spokesperson which was delivered at the event. I have excerpted them together below to capture the chronology of the events.

Figure 9. “Leaders Commit to Undetectable for All by 2020,” GNP+ Protest at International AIDS Conference

> After the moderator has introduced the first panelist and asked him to come to the stage, protesters stand up throughout the room and begin to chant, ‘We demand undetectable. Inaction is unacceptable’ for approximately one minute, coming to the front of the room and unfurling a banner, which read ‘Leaders commit to undetectable for all by 2020.’ Other signs held by protestors read, ‘Suppress the virus not human rights.

> Undetectable viral load for all by 2020.' A representative of the group took to the podium and spoke to everyone in the room, saying:
>
> 'Today we would like to call for an ambitious target of undetectable viral load to form the call of the global goals being debated by the United Nations institutions as well as national governments and we demand not just the promises, but the funding of treatment options, the laws and policies that are needed to meet these targets [applause and cheering]. To achieve success in the fight against the HIV epidemic, reporting and tracking HIV testing and treatment as success indicators are not good enough anymore. We need to know how well HIV positive people are actually doing. Currently, reaching and maintaining an undetectable viral load is the closest thing we have to a cure for HIV. Today most people living with HIV outside wealthy countries don't even know their viral load and too many do not even have treatment to control their virus, but also they don't even have access to testing. When ARV was introduced in the 2000s, most skeptics actually argued that it was not possible to roll out and they cited as many challenges and demands as being discussed at the moment as arguments against the roll out of this target. The target we want is as follows: at least 80% of all treatment eligible persons must have an undetectable viral load by 2020. Persons who do not receive viral load tests in the preceding 12 months must not be considered to be virally suppressed. We know that viral load testing and monitoring is just one piece of the puzzle. To achieve undetectable targets leaders must commit to using every tool to eliminate barriers that make ARVs and other drugs unaffordable in many countries. No single viral load test anywhere in the world should cost more than $10. [applause and cheering] The funders of national programs, including the Global Fund, PEPFAR and other initiatives that are putting money to respond to the HIV epidemic, we are also asking for fully funding strong, fully accountable community-based treatment literacy and adherence support along with strong social protection programs. Lastly, we are asking the leaders to commit to human rights based HIV response by combatting criminalization, discrimination, stigma, and discriminating policy practices by putting in place a strong community-led rights infrastructure. Thank you.' [applause and cheering]. (Excerpted from written field notes and transcribed audio, International AIDS Conference, July 20, 2014)

What sets this particular claim to a form of biomedical citizenship apart from previous forms of treatment access activism, for example that of the Treatment Access Campaign, is that it involves not simply a collective demand for access to a material thing, a claims-making on the basis of a shared experience of living with HIV to a sustainable supply of antiretrovirals, but a demand for the achievement of a specific virological state - a demand to *be* undetectable. To be virally suppressed is not simply to have access to affordable pills and to have the right to consume them, but it is a claim to inhabit a certain embodied state through biomedical means. It is a claim for rights working 'from the inside out,' a key dimension of the transformations that are co-constitutive of biomedicalization (Clarke et al. 2010).

Demanding viral suppression is about demanding to exist in a particular virological state and staking a claim against governments, funders, and other institutional actors for the right

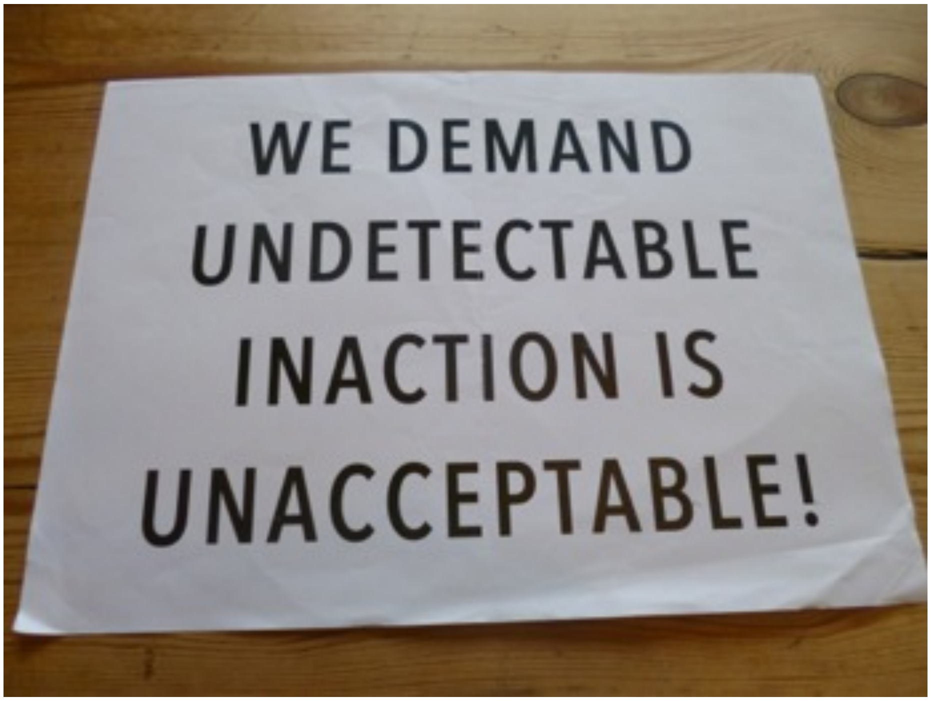


Figure 10. "We Demand Undetectable, Inaction is Unacceptable!" Protest Sign

inhabit this virological state. As I will discuss shortly with the International Treatment Preparedness Coalition's "Be healthy - Know your viral load" campaign, it also asserts a claim against these organizational actors for the right to one know oneself, for a demand to know one's viral load. Like Rose (2007), I argue that rights asserted via the claims-making of biological/biomedical citizenship projects entail both claims to entitlements as well as the obligations to make oneself up as citizens through them. The right to *achieve* a particular virological state and the right to *know* one's viral load status are intimately entangled with the *obligation* to do so.

The assertion of the right to viral suppression by people living with HIV involves not only right to the achievement of a specific desirable virological state, which itself is asserted along with the rights to access treatment as well as the favorable social, political and legal environments to support health and treatment adherence, but it also involves a claims-making to the right to know one's viral load via access to affordable viral load testing. Viral suppression is a right that can only truly be claimed via a virological visualization of blood products. One may be virally suppressed, but one cannot *know* unless one has recently taken and received the results of a viral load test. This is a claim asserted in the statement by the representative of GNP+ above, that “Persons who do not receive viral load tests in the preceding 12 months must not be considered to be virally suppressed.” In this way, the right to know one’s viral load is deeply entwined with the right to achieve an undetectable viral load. An individual cannot truly be virally suppressed unless marked by the quantification of viral copies circulating in their blood via techniques of viral load monitoring. This claim is asserted by the protestors cited above. It is also asserted via the viral load monitoring awareness campaign, “Be Healthy - Know your viral load,” discussed below.

In partnership with the AIDS and Rights Alliance for Southern Africa (ARASA), the International Treatment Preparedness Coalition launched a campaign in October of 2015 aimed broadly at an African audience entitled “Be Healthy - Know your viral load.” Its stated goal is “encouraging people living with HIV to get a viral load test, and demanding governments to provide routine viral load testing to all people living with HIV.” (International Treatment Preparedness Coalition, excerpted from the website at www.itpcglobal.org). As part of this campaign, they created a short film, posted to the front page of their main website, entitled, “Be Healthy - Know your viral load.” The film is set in a rural African community and follows two seemingly real people living with HIV (not actors), a middle-aged man who was once a truck driver before he was diagnosed with HIV, and a young woman in her early 20s who was born with HIV, as they engage with the issue of access to viral load tests in their communities. One of them, the middle aged man, is able to access viral load testing and as a result is able to adjust his antiretroviral regimen; the other, the young woman, is not able to access viral load testing. A selection of transcribed dialogue from the short film, along with on-screen captions, is excerpted below.

> Middle-aged Man: I was advised to go for viral load testing and they did explain to me the benefit of knowing the number of HIV virus in my body.
>
> [Caption: A viral load test measures the amount of HIV in your body. Even if you have a high CD4 count, you can still have a high viral load.]

> Middle-aged Man: They said, ‘You have more than 1000 virus in your body, so we need to change the medicine.’
>
> Young Woman: Personally, I’ve never had that viral load test because in Uganda we only have access to four machines and getting the viral load test is so expensive. It really pushes our hope down.
>
> Middle-aged Man: After they changed my medicine, each day and every day, I’m getting better and better. I am able to do everything that I was not doing. If I didn’t do that through viral load testing, I’m sure today I wouldn’t be here.
>
> [Caption: Take ownership of your health by taking a viral load test. It tells you how well your treatment is working. It also minimizes the chance of transmitting the virus to your partner and unborn children.]
>
> Young Woman: Not accessing the viral load test makes me feel oppressed and so bad because I should know how my immunity is standing according to the ARV treatment I’ve been taking. Currently, I just guess that I’m fine and that the medicine is working. Just guessing, but I don’t know the truth. But if I had the viral load test I would know how I am standing health-wise.
>
> [Caption: The World Health Organization recommends that people living with HIV receive one viral load test per year.]
>
> Middle-age Man: I thought my future is completely shattered. But through viral load testing, it has been resurrected. Regardless of being positive, I am still retaining that title as bread-winner and I am happy that I will continue supporting my family. There are people out there in the same boat which I was in at first and I would like to encourage them to do what I did. Please, I urge you, it’s your life. Don’t take chances.”
>
> Young Woman: I do demand viral load testing for myself and my colleagues who are living with HIV.
>
> [Caption: Routine viral load testing will improve the health outcomes of people living with HIV and reduce the spread of the virus. Make routine viral load testing available to all now.]

The call to action made in this film is two part: it is, first, that individuals have a responsibility to know their viral loads, and then, secondly, that viral load is a right that all people with HIV must demand for themselves and their communities. This is reflected in the two ways through which individuals are called to act in the graphics on the campaign website (www.knowyourviralload.org). Through the language of this campaign, individuals are responsibilized to know their viral loads. It is an expression of control over the situation of being HIV-positive, an expression of control and ownership which one is expected to exert and that one is expected to demand when it is not readily accessible. The moral imperative here is on *individuals* to assert the right to demand viral load testing technologies in their communities,

KNOW YOUR VIRAL LOAD

Ask for a test from your HIV clinic. It is the only safe way to know if your treatment is working. Spread the word.

Follow our suggestions

DEMAND ROUTINE VIRAL LOAD TESTING

Demand viral load tests for you and your community. Routine viral load testing is part of your right to health.

Join the campaign

Figure 11. “Be Healthy - Know your viral load” Website Banner

rather than on governments and funders to provide them. Individuals are implored to, “Take ownership of your health by taking a viral load test.” Control and ownership of one’s health is in part framed as being exerted through the demand for and the creation of knowledge about the self, and specifically knowledge of the self at the viral level. To take a viral load test is to produce knowledge about the self - “truth” as the young woman in the film says - that cannot otherwise be known simply by assessing one’s symptoms, how one feels.

> Currently, I just guess that I’m fine and that the medicine is working. Just guessing, but I don’t know the truth.

The film also deploys a narrative about knowing one’s viral load as a technique for reducing the risk of onward transmission. Here, the message is not that to be engaged in care, adherent to treatment, and achieving sustained viral suppression, which is then made known through routine viral load testing, can reduce the risk of onward transmission. It the *knowing itself*, the practice of submitting to the test itself and then knowing the results, that is framed as reducing one’s risk. *Knowing* is being responsible in taking care of others, and in this case, more specifically, being biomedically surveilled at the virological level. Allowing the level of virus in one’s blood to be visualized and quantified is a means of performing responsibility. As the captioned text in the film implores,

> Take ownership of your health by taking a viral load test. It tells you how well your treatment is working. It also minimizes the chance of transmitting the virus to your partner and unborn children.

Via this discursive framing, to be a good, responsible citizen living with HIV is to stake a claim to the right to access viral load testing in one’s community and to be responsible enough to submit oneself to it. To know is to be healthy, to know is to be rendered safe to others, and to know is to be a responsible member of one’s community. A knowing self is a responsible and healthy self. As the title of the film implies and the graphic above from the campaign website implores, “Be healthy - Know your viral load”.

Figure 12. “Be Healthy - Know your viral load Website Graphic

As the middle-aged man in the film states, “I thought my future is completely shattered. But through viral load testing, it has been resurrected.” This campaign thus deploys a narrative through which engaging in viral load testing becomes a new mode of subjectification, a ‘technology of the self’ (Foucault 1994), offering a path to “resurrection,” to a new life. Though he speaks about how viral load testing was the catalyst for changing his treatment regimen, it is viral load testing itself that is constructed as giving him a new life, bringing him back to health, and allowing him to support his family. In this way, knowing is framed as the means by which to achieve health, protect others, and generally optimize life. As such, subjectification as a responsible, self-governing biomedical citizen is framed in this discourse as not only creating new possibilities for the self, for optimizing life and health, but also, drawing on the work of Colvin and colleagues (2010), of performing one’s responsibilities to one’s family and community. Taking care of others, ‘taking care of the social’, is here practiced through an enactment of localized masculinities, in the case of the middle-aged man in the film who described “retaining that title as bread-winner and I am happy that I will continue supporting my family.” Importantly, this path to resurrection is constructed as achieved not via general improvements in health and wellbeing, not via treatment access or treatment consumption, not even by the achievement of viral suppression, but via a technoscientific re-constitution of the self *through viral load testing itself.* This echoes Rose’s (2007) assertion that citizenship projects are in the present era are being re-territorialized, however unevenly, via a new politics of life and in highly technoscientific ways.

The second call to action implored by the “Be Healthy - Know your viral load” campaign constructs knowing one’s viral load not only as a moral imperative, a means of taking care of one’s health and also protecting others, but as a right that is part of the broader bundle of social rights that constitute the right to health. The right to know one’s viral load status is a right that individuals are charged with demanding on behalf of themselves and also those in their communities.

IS YOUR HIV TREATMENT WORKING? YOU HAVE A RIGHT TO KNOW

A viral load test is the only sure way to know if your treatment is working.

More about viral load testing

WITHOUT A VIRAL LOAD TEST
I'M SURE I WOULDN'T BE HERE TODAY

FIND OUT HOW A VIRAL LOAD TEST SAVED LONDON CHUMA'S LIFE

Figure 13. “Is your HIV treatment working? You have a right to know,” Be Healthy - Know your viral load Website Graphic

> Demand routine viral load testing. Demand viral load tests for you and your community. Routine viral load testing is part of your right to health. (Excerpted from the campaign website at www.knowyourviralload.org)

On this same page is the graphic above, which reads, “Is your HIV treatment working? You have a right to know.” (Excerpted from www.knowyourviralload.org). The website lists a number of action steps that individuals can take to assert their rights to viral load testing, including seeking regular viral load testing and reporting to the campaign if they are not able to access it for any reason, engaging with government and health care providers to demand viral load testing, scheduling a local screening of the film, “Be Healthy - Know your viral load,” and utilizing a downloadable advocacy toolkit. The text associated with this image reads,

> Demand Viral Load testing - join our campaign. As a result of people like you demanding treatment, 15 million people around the world are receiving HIV treatment today. However, less than a quarter of people with HIV are virally suppressed (virus is undetectable) worldwide. Most of these people live in Africa. A main contributor to this, is the lack of access to routine viral load monitoring. We need you to mobilize and demand your right to good health. Call on your governments and health providers to provide routine viral load testing now.

In this way, the narrative of the *right* to know one’s viral load links up with the *imperative* to know, echoing Petersen and Lupton (1996) and Rose (2007), with critical sociological implications both for subjectivity and also for conceptualizing the transformations in biomedical surveillance that are occurring via techniques of viral visualisation. Viral load testing, by visualizing one’s blood and quantifying the number of viral copies circulating in it, is a technique by which one can appropriately self-govern via a technoscientific knowledge of the self through which one can achieve health, can “be healthy,” can protect one’s partners and unborn children from transmission, and also take care of one’s social and economic responsibilities, such as providing for one’s family. Notably, this discourse rubs up against narratives of personal responsibility for engagement with HIV biomedicine, one rife with claims about individuated rights and obligations, but little critique or challenge of the structural or other conditions of inequality that can act as barriers for individual and collective agency.

Much like the anti-stigma messaging of the social incentivization efforts described earlier in this chapter, the “Be healthy - Know your viral load” campaign places responsibility both for knowing one's viral load and demanding expanded access to viral load technologies on the shoulders of people living with HIV. This is the case despite the young woman in the film claiming that the reason she has never had her viral load tested is because it is very expensive and there are only four viral load testing machines in all of Uganda. The film itself does not ignore the structural barriers to accessing viral load testing and engaging in practices of virological self-governance, but it frames the solution to overcoming these structural barriers as one that is largely, though not exclusively, a matter of personal responsibility for demanding and accessing viral load monitoring at both the individual level and collectively via biosocial communities. Echoing the critiques of Clarke and colleagues (2010), the construction of the structural problems of the unaffordability and inaccessability of viral load testing as a largely individual problem to be overcome by the personal responsibility for staking a claim to viral load testing as a social right notably draws attention to how access to the fruits of the biomedicalization of HIV prevention may be deeply stratified. It also emphasizes how these stratifications in access to a biomedical technology can also stratify access to highly desired technoscientific identities - "virally suppressed" - as well as create the possibilities that some individuals who cannot, through either individual personal responsibility or collective action as part of a biosocial community, assert their right to access such technologies might then be subjected to heightened forms of institutional surveillance, such as via the criminalization of HIV exposure and transmission.

Conclusion

Much like the re-configuring of HIV risk discourses, I have posited in this chapter that the construction of 'being undetectable' is an emergent technoscientific identity (Clarke et al. 2010), one which comes to shape both the formation of biosocial communities and also the basis for claims-making to emergent forms of biomedical citizenships. This is one among many modes of subjectification by which the 'truth discourses' of HIV treatment as prevention are engaged in the disciplining of biomedical subjects and the regulation of populations. The increasing hierarchialization, celebration and prioritization of viral suppression as the only way to *be* as a person living with HIV can be seen, on one hand, as potentially normalizing, liberating and de-marginalizing, a way of re-fashioning oneself as a healthy, responsible, morally disciplined biomedical subject, opening doors to new possibilities for living, working, creating a family, and re-shaping biosocial communities, as asserted, for example, by Persson and colleagues (2016). At the same time, my analysis seeks to echo their work by asserting that the new possibilities for subjectivity created via treatment as prevention also risk creating new borders as well.

The discursive framing of viral suppression as a biomedical state to be publicly celebrated and rewarded with the achievement of both a suppressed viral load and of access to viral load technologies as a right around which citizenship projects can be organized may work by 'centering' being undetectable as the "new face of HIV." This centering of undetectability as form of subjectivity and the biomedical basis for an emergent technoscientific identity is seen vividly in the imagery of the "re-imagined" Red Ribbon created by AIDS Vancouver. I posit that this centering of viral suppression, via the many techniques of subjectification discussed here, has the potential to to displace other ways of identifying as and living as a person with HIV. In this way, these novel techniques for the subjectification of HIV biomedical subjects link up, not only with the re-configuring of risk discourses, but the creation of potential new hierarchies underpinned by success or failure at pharmaceutical and virological self-governance. It is also constitutive of practices of biomedical surveillance, that is, with transformations in how bodies and populations are surveilled when viral suppression becomes "what the game is all about," an analytic thread I explore in the next chapter.

Transforming Biomedical Surveillance via Techniques of Viral Visualization

In this chapter, I argue that the emergence of HIV treatment as prevention has been co-constitutive of a number of transformations in the techniques of biomedical surveillance of people living with HIV. Previously, I explored how the prioritization, and in fact, the hierarchialization of viral suppression as a biomedical state, one through which individuals can re-configure themselves as healthy, risk-averting citizen subjects, including via emerging biomedical citizenship projects, has sociological implications for subjectivity, and the formation of biosocial communities. Here, I discuss a series of transformations that are taking place related to the techniques by which people living with HIV are being biomedically - in fact, virologically - surveilled through increasingly technoscientific means. This is illustrated by an emerging prioritization of viral load monitoring, that is techniques of visualizing the number of viral copies circulating in the blood, as a measure of both pharmaceutical compliance to a biomedical regime and also as a measure of biomedical risk, the potential to infect others. I explore how this is occurring simultaneously with a de-emphasizing of, perhaps even disparaging of, CD4 cell count monitoring. I argue that this re-configuring of the techniques used for the biomedical surveillance of people living with HIV is nonetheless occurring in deeply stratified ways, stratified along the divides of access to viral load technologies, but also stratified along moral borders as well. Despite the increasingly prioritization of viral load monitoring, CD4 cell count monitoring and more traditional forms of clinical or institutional surveillance may still prevail in instances of individual non-compliance with the regimes of HIV biomedical prevention; that is, in those instances when individuals do not take their antiretrovirals as prescribed, do not report for routine monitoring, or disengage from HIV care altogether. As such, I argue that the point of contact between the shifting emphases on these forms of surveillance provides a space for rich sociological analysis.

Drawing on the work of both Clarke and colleagues (2010) and Rose (2007) on the biomedicalized transformations in the practices of visualization and the problem spaces they make visible, I argue that treatment as prevention is not primarily about the pharmaceuticalization of HIV prevention, or even what Biel (2007) calls the ‘pharmaceuticalization of public health,’ though it could be argued it is both of these things. It is fundamentally about the shifting gaze of HIV prevention, from a *molar* to a *viral* gaze, along with the increasing technoscientization (Clarke et al. 2010) of the practices of HIV prevention. According to Bell and Figert, pharmaceuticalization is “the expansion of the use of (mostly prescription) medicines to treat social or behavioral problems - that is, the use of pharmaceuticals to control an expanding set of behaviors.” (Bell & Figert 2015:28). While treatment as prevention, of course, is co-constitutive of the growing pharmaceuticalization of HIV prevention, particularly when it is considered in tandem with pre-exposure prophylaxis, I argue that of particular theoretical interest is how treatment as prevention is also co-constitutive of a deepening of the problem space of HIV prevention from the level of clinical to that of the viral, a deepening that is accomplished through techniques of viral visualization. Whereas Foucault (1973/1994) described the clinical gaze as disciplining at the level of the molar body itself, Clarke and colleagues (2010) and Rose (2007) argue that contemporary biomedicine is increasingly focusing not only on the molar body, at the level of limbs, organ systems, and tissues, but at the molecular level, via a molecular gaze. What they call, *molecularization*, is made possible through new technologies, particularly new techniques of visualization, which make ‘seeing’ into the depths of the body to the molecular level technoscientifically possible.

In this chapter, I describe a process of *viralization*, by which the disciplining of individual subjects and the biomedical surveillance of populations are increasingly potentiated via viral load monitoring, a technique of viral visualization. I discuss these transformations in biomedical surveillance with emphasis on their implications for subjectivity, particularly for those who fail to be appropriately surveilled by the viral gaze, as well as from the perspective of the stratified biomedicalization of HIV prevention (Clarke et al. 2010).

Prioritizing Viral Suppression By Making Possible Viral Visualization

Biomedical surveillance of people living with HIV is being transformed through the emerging prioritization of viral suppression and with it, the technologies of viral load monitoring, which make possible this emerging emphasis on viral visualization, along with a simultaneous de-prioritization of CD4 cell monitoring. Viral load monitoring, as the very material practice of visualizing and quantifying what is circulating in the blood, is being prioritizing both in clinical care as well as as a metric for monitoring population level success at controlling the epidemic. A viral load test is a measure of the number of HIV RNA viral copies circulating in a given measure of blood plasma, usually reported as copies per milliliter. A viral load measure of less than 50 copies per ml is generally considered to be the threshold for being "undetectable," though participants in this study who are clinical providers described how some highly sensitive viral load tests now detect HIV RNA copies to a threshold of 20 copies per milliliter, meaning individuals using these tests could be "virally suppressed" with a viral load of 23 copies per milliliter, yet receive a test result reporting an initially alarming and distressing "detectable" level of virus. The CD4 cell test measures the number of CD4 T lymphocyte cells, an type of white blood cell associated with immune function, in a cubic millimeter of blood. In this way, viral load tests measure how much HIV virus is in the blood and CD4 tests measure the health of the immune system in response to the virus.This is important because I argue that the shift in visualization practices is fundamentally one from a concern with immune function and disease progression - the body's control over HIV disease - to a concern with visualizing compliance with a biomedical regime and the pharmaceutical transformations occurring at the virological level. As a panelist speaking at the 2014 IAPAC Summit said,

> I think it's more and more likely that as soon as you're diagnosed you need to start thinking about going onto treatment and that's coming to us. CD4 counts, we've been relying on them. It turns out that viral load is as important or more important and your progression depends on your viral load and we need to start measuring that. (Presenter at the 2014 IAPAC Summit, London, UK, September 18, 2014)

Another participant, a policy director within a City Department of Health said,

> The CDC, yesterday or the day before, announced that you don't need to spend as much time testing people for their CD4 count, that real marker is viral suppression. Here we've begun to increase our expectations for viral suppression below 20. Right now the national standard is 200, and that was reduced from 400, but because of the advances in viral load testing, our standard is below 20. (Policy Director, City Department of Health, U.S.)

This is a shift in the discourse of surveillance from one of *control over* sickness, monitoring decreasing CD4 counts over time in order to determine the best time to initiate antiretrovirals to slow disease progression and increase survival, to one of *transformations of* bodies via viral suppression. CD4 monitoring makes known the status of disease progression, what the HIV virus is doing to the body. Viral load monitoring makes known individual's own self-governance of their health, whether they are complying with treatment and effectively rendering themselves non-infectious. It is a measure of the success of the biomedical transformations produced through the consumption of antiretrovirals; that is, a measure of what biomedical subjects do *to* the virus through their adherence to a treatment regimen. Through techniques of viral visualization - seeking to make the virus visible and quantifiable - viral load testing monitors individuals' engagement with biomedicine.

This transformation of viral surveillance also links up with shifting techniques of the surveilling of individuals by biomedicine, a transformation which will be taken up in more detail later in this chapter, but will be noted here. Commenting on the revised U.S. Guidelines for the Use of Antiretroviral Agents, the article excerpted below from A&U Magazine (June 2014), an HIV community magazine which describes itself as "America's AIDS magazine," plugs into the discourse of the emerging prioritization of viral load over CD4 while framing frequent clinical or laboratory monitoring as being unnecessary for those who perform appropriate engagement with biomedicine via viral suppression, with the recommendation in this case to switch from biannual to annual laboratory monitoring.

> Laboratory monitoring. As research suggests that continued CD4 monitoring does not change positive health outcomes for patients with viral suppression and CD4 counts exceeding 200 cells/mm3 after 48 weeks of therapy, the panel recommends that patients with long-term virological suppression on ART be switched from biannual to annual monitoring. ("Treatment Horizons, commenting on revised U.S. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents," A&U Magazine June 2014 Issue, Collected from the Exhibition Hall of the International AIDS Conference, July 22, 2014)

The emerging prioritization of viral load monitoring as a measure of biomedical compliance over CD4 monitoring is made particularly visible in the shifting discourse of the World Health Organization. The 2013 WHO Guidelines on Antiretroviral Treatment acknowledge that prior to 2010 clinical outcomes and CD4 count monitoring were recommended for the routine monitoring of disease progression and treatment response. However, from the March 2014 Supplement to the 2013 Guidelines, released a few months before the meeting of the 20th International AIDS Conference in July 2014, there is a noticeable shift in the prioritization of viral load monitoring, perhaps most noticeably with the addition of a section titled, “Changing Role of CD4 Cell Counts in HIV Care and Treatment.” Speaking to this shifting discourse, a WHO representative presenting at the International AIDS Conference said,

> We know we need to have more resources for viral load. Though WHO still has a recommendation for CD4 threshold at initiation, we also see that once a patient is stably suppressed on viral load and if viral load is available in a country, and this predicates having viral load available, you may be able to save funds and shift that into viral load by reducing the number of CD4 done for monitoring purposes. We know that CD4 for monitoring does not have very high sensitivity or specificity, and we did an analysis and a systematic review showing that if patients are stable, have a low viral load, after 10 years of follow-up in many cohorts, that the CD4 just does not fluctuate, so although patients really love their CD4, it may not be a good use of resources and those resources might be able to be shifted into having more viral load available. We do see that CD4 is important for telling us how sick people are, just like a hemoglobin is quite important or a creatine is important, and it tells us something about how quickly we need to get people into care. So we don’t say that there is no need for CD4. It’s just not for monitoring on a regular basis. Now we have not made a recommendation about scaling down CD4, but we’ll be looking at it in our next set of recommendations and guidelines. (Presenter at the International AIDS Conference, Melbourne, Australia, July 21, 2014)

After the release of the interim results of the START study in May 2015, which showed a clinical benefit to starting antiretroviral treatment at higher CD4 counts, the WHO held a consultation to review and revise current treatment guidelines. They released their updated Guideline on When to Start Antiretroviral Therapy and Pre-exposure Prophylaxis for HIV in September of 2015 in the run up to the convening of the IAPAC Controlling the HIV Epidemic with Antiretrovirals Summit, held in Paris in October of 2015.

> During the past decade, WHO guidelines for ART in low- and middle-income countries have evolved towards recommending that countries phase in viral load for monitoring treatment and, since 2013, WHO has recommended viral load monitoring as the preferred approach to monitor patient response to ART. Most countries have adopted this recommendation and are in the process of scaling up viral load monitoring capacity. Previously, the main way to monitor response to ART was through either clinical or immunological (CD4 cell count) monitoring, and in settings where both immunological and virological monitoring is available, both are generally done. Given the recommendations in this guideline to initiate ART at any CD4 count, it may be reasonable to reduce or stop CD4 cell count for monitoring in settings where viral load

> monitoring can be assured. Nevertheless, CD4 count testing still has an important role to play in assessing baseline risk of disease progression, for starting and stopping prophylaxis and in making priority-setting decisions regarding ART initiation in settings where universal treatment is not possible. CD4 cell count measurement may also be important for individuals for whom ART is failing. The complete update of the consolidated ARV guidelines will include updated recommendations and operational guidance on clinical monitoring, including use of CD4 count and viral load testing. (Excerpted from Programmatic note on the recommendations, CD4 count and viral load monitoring, WHO Guideline on When to Start Antiretroviral Therapy and Pre-exposure Prophylaxis for HIV, September 2015, Collected at the 2015 IAPAC Summit, Paris, France, October 1, 2015)

Of significance, these guidelines abandon the routine use of CD4 thresholds for initiating treatment, recommending that all persons living with HIV should be offered antiretroviral therapy irrespective of CD4 count, where resources allow. While a number of high and middle income countries had already taken this step in their national guidelines, this recommendation discursively re-shapes the global landscape of laboratory monitoring for HIV, yet in still highly stratified ways as I discuss later in this chapter.

"Ding dong the CD4 witch is dead!": Constructing CD4 Testing as Obsolete

In line with the prioritization of viral load monitoring, as evidenced by shifting discourse on viral load in the WHO documents as above, CD4 testing is increasingly being constructed as obsolete, as an "Aunt Sally," an anachronism, in fact, something standing in the way of the progress of viral surveillance techniques, and its 'demise' something to be celebrated. The prioritization of viral load as a technology of viral surveillance is not just about the shifting focus to viral load technologies; it is also about the deployment of a discursive framing of CD4 monitoring as outdated and obsolete, except for, as I will discuss shortly, in cases of non-compliance when more traditional techniques of heightened surveillance may be deployed. Commenting on the revised U.S. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents, this article in the June 2014 issue of A&U magazine, also excerpted above, describes the U.S. recommendations for CD4 monitoring frequency, saying:

> Frequency of CD4 Monitoring. The panel recommends a decrease in CD4 count monitoring, while maintaining the importance of viral load as a marker of treatment success. The panel reaffirms the importance of frequent CD4 count monitoring when a patient first enters care to determine the need for initializing antiretrovirals and prophylaxis against any opportunistic infections; or when a patient experiences viral rebound, develops new HIV-associated clinical symptoms, or develops conditions or

> starts therapy that may lead to a depletion of CD4 cells. Monitoring is also helpful in patients with advanced HIV infection to indicate when OI prophylaxis or treatment might be discontinued. However, frequent CD4 count monitoring is generally not needed for patient management, especially in patients with higher counts and consistently suppressed viral loads, as previously noted. ("Treatment Horizons, commenting on revised U.S. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents," A&U Magazine, June 2014 Issue, Collected from the Exhibition Hall at the International AIDS Conference, Melbourne, Australia, July 21, 2014)

With viral load monitoring constructed as "a marker of treatment success," that is, of appropriate self governance via an engagement with a regime of biomedical compliance, CD4 monitoring comes to be bounded as meaningful only as an initial marker of disease progression when entering HIV care or when individuals fail to become appropriately virally surveilled through sustained viral suppression.

CD4 monitoring, as a measure of immunological response and disease progression, becomes less meaningful in part because of the doing way with of CD4 thresholds for antiretroviral initiation. If all individuals who test positive for HIV are increasingly being recommended to start antiretrovirals immediately after diagnosis, which is the World Health Organization recommendation as of 2015, then it becomes less clinically meaningful to monitor falling CD4 counts. The exception to this rule, however, are those individuals who decline antiretrovirals for whatever reason, who are not appropriately compliant with them, or as will be discussed later as an empirical example of stratified biomedicalization, in settings where CD4 thresholds are utilized in order to ration a limited supply of drugs to "the sickest of the sick" and where viral load technologies are not available.

In the context of UK treatment guidelines at the time of this interview, which recommended treatment for individual clinical benefit at or below 350 CD4 cells, but treatment for prevention purposes for any person living with HIV who requested it regardless of CD4 count, the participant excerpted below framed CD4 monitoring technologies as meaningful only as marker of "bad medical practice" if clinicians did not offer antiretrovirals once CD4 count dropped to a certain level, rather than as a technique of rationing access to antiretrovirals.

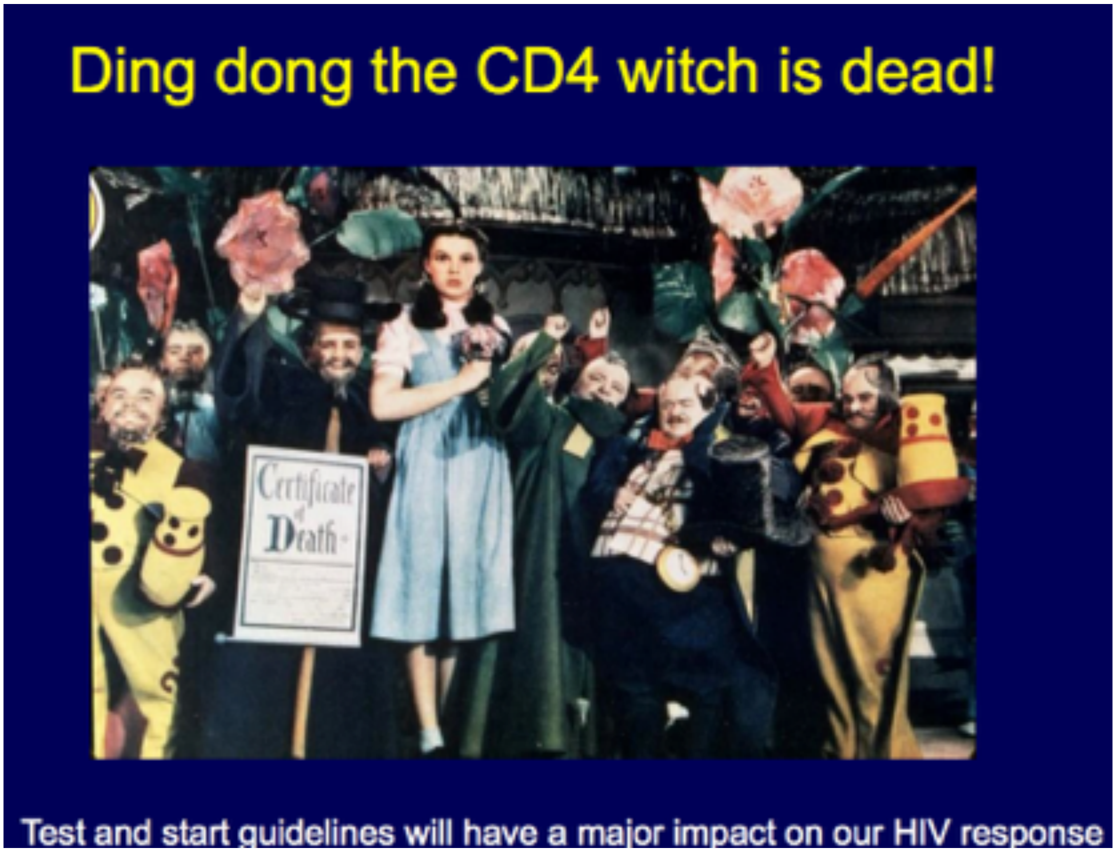
> I think CD4 guidelines are an Aunt Sally fundamentally. I don't think they matter. I mean, obviously, you have one that says certainly give people treatment below a CD4 count of 350. That's the threshold for which, for me, there is unequivocal evidence of clinical

> benefit. In that case, the old Hippocratic Oath kicks in. You really have to offer people treatment. You have to recommend treatment, okay? 350 to 500 is a muddy area. Anything above that, as I say, I don't know we'll ever have the evidence in terms of clinical risk versus benefit…I think it's a bit of an Aunt Sally because I think if you keep as an absolute foundation stone principle as part of this the idea of patient choice and informed patient choice, patient agency, then that gets around the subject of when you should recommend it to the patient. I'm very proud and I hope they keep the exact wording of the BHIVA guidelines on this, which I still think is the best way of putting it, which says that, and I can almost quote this verbatim… 'that it is a matter of good medical practice for doctors to talk with their patients about the prevention benefits of being on treatment.' That's part one of a hinged statement. '…and that if then having heard this, the patient then wants to take treatment, then the doctor must give it to them.' That has in it in a single sentence the idea that the physician has a responsibility and the patient has a choice… As I say, I think CD4 count criteria are kind of bullshit. I think they're helpful in the sense that they're a caution. I think they're useful for doctors. I think they're useful for saying, 'If you don't do this, then it's bad medical practice.' (HIV advocate, London, UK)

In this sense, CD4 thresholds are also constructed as a surveillance device of clinical practice, as a means of driving clinical decision making and a means of making sure that providers are doing what they ethically ought to be doing, rather than as a means of biomedical surveillance, measuring if patients are doing what *they* ought to be doing.

Lastly, and quite poignantly, in an effort to discursively prioritize viral load monitoring, CD4 monitoring is being constructed as not merely an anachronistic "Aunt Sally;" it is being constructed as a "bottleneck," as a thing that gets in the way of providing an optimal HIV response and optimal HIV care, particularly in settings where it eats up resources that are now framed as better spent on antiretrovirals and viral load testing. At the IAPAC Summit in Paris in October 2015 representatives from the World Health Organization made the formal announcement that antiretrovirals are recommended for all persons living with HIV irrespective of CD4 count. This lead to another panelist celebrating the 'death' of routine CD4 monitoring by proclaiming in the text and powerpoint slide that follows, "Ding dong the CD4 witch is dead!"

> The first bottleneck, at least for me, is the CD4 count. Many have been pleading with us to get rid of this thing as a staging criteria and as a barrier for patients to get on care. So for those of you who are familiar with the Wicked Witch of the East or whatnot in the Wizard of Oz. I think the CD4 witch is dead. I think that people will still want to get that CD4, and will still try to impose that on patients as a criteria for getting on treatment. I think we need to work really hard to just get that CD4 count out of the initial algorithm. Later on, if people want to get it, that's fine, but it shouldn't be seen as a barrier. So that's Dorothy and that's the death certificate there, so it's real. (Presenter at the 2015 IAPAC Summit, Paris, France, October 2, 2015)



Ding dong the CD4 witch is dead!

Test and start guidelines will have a major impact on our HIV response

Figure 14. “Ding dong the CD4 witch is dead!” Presentation slide from the 2014 IAPAC Summit

CD4 is Important Only When People are Failing to be Virally Surveilled

However, CD4 monitoring was constructed as particularly meaningful in those situations when individuals failed to be appropriately virologically disciplined, when techniques of viral visualization via viral load monitoring revealed that individuals perhaps were not doing what they should have been. In these instances, heightened biomedical surveillance was invoked through more traditional forms of surveilling, including CD4 monitoring. Here, an HIV specialist describes the instances in which he feels CD4 monitoring remains important in his clinical care,

> [I: Has it [treatment as prevention] changed anything in terms of how you monitor patients in terms of blood tests, in monitoring CD4, monitoring viral load? Do you do anything differently now than you used to?] Well, we do them a little differently, I don't know if it's because of treatment as prevention. We're understanding ... we used to be on the quarterly model. You’d check CD4 count, viral load every quarter and that was our goal. Even some of the care continuum data is based on retention and care being defined that way. We're certainly now if someone is stable we're much more comfortable with viral loads being just twice a year, six months apart preferably and CD4 count even annually…As long as someone is taking antivirals and is suppressed then, the CD4

> count really is not that important because if it's low we're not going to actually…I mean, if it's really low, we need to know that, but assuming that there's a reasonable immune reconstitution there's not anything that we're going to do if it's 350 versus 500 versus 800. There's no real difference…Though there are a couple of caveats. I would say that obviously if someone is on and off therapy, then following their CD4 count is very important. If I'm worried that someone is, as a lot of our patients are, in unstable situations then following a CD4 count is important. Then there's this other small group of patients that I feel like have had a very poor immune reconstitution and recently I've figured out there's a couple of my patients that, one of the reasons I'm convinced is that they actually start taking antivirals for the three to four weeks before getting their labs done. With the current medications that's usually enough to get them virally suppressed, but their CD4 counts don't rebound and so they've got really low CD4 counts. I haven't been able to figure out why, but I think that's the reason, that they are actually not taking their antivirals and then they get nervous, like flossing your teeth before going to the dentist. They get nervous. They are folks that I have a hard time getting in and so that's my hunch. In those folks, I do think it's important to follow CD4 count and figure out. It was a little clue, for example, one of these patients was on thyroid medicine also and their thyroid was always completely out of whack. I couldn't figure out why they would have an undetectable viral load if they were taking their meds, why would they have an undetectable viral load and yet have a, their thyroid would be ... their TSH was ridiculously high and I figured out that he's not taking his meds except for a few weeks before he comes to see me, but that's not the way TSH works. That's not going to fix your TSH. It could drop your viral load, but again not fix your CD4 count. In those patients, there certainly are situations in anyone who is unstable where I think CD4 count is very important still. (HIV physician working in a community health center, San Francisco, CA)

In this way, CD4 monitoring is constructed as continuing to be a meaningful technique for monitoring biomedical non-compliance in those who are suspected of not appropriately self-governing, even in instances when they may in fact be virally suppressed. The deployment of CD4 monitoring as valuable as a surveillance tool in these instances engages with the deployment of techniques of heightened traditional forms of biomedical surveillance in those who fail to appropriately engage with biomedicine, which will be discussed later in this chapter.

Stratified Biomedicalization of the Prioritization of Viral Load Monitoring

While viral load monitoring may be framed in global treatment as prevention discourses as the gold standard for monitoring biomedical compliance along with an associated de-emphasis on CD4 monitoring, the prioritization of viral load over CD4 is possible only where resources are available for the comparatively more expensive viral load monitoring, not to mention universal and sustainable access to antiretrovirals. Alongside the discursive prioritization of viral load monitoring runs a framing of CD4 monitoring as retaining its relevance in filling the gap in laboratory-based surveillance of HIV, where viral load monitoring is not available. The CD4 witch is not yet “dead” in places down dusty roads “in mud huts” which lack decentralized point-of-care viral load capacity or even centralized laboratory facilities for viral load monitoring. This stratification of the prioritization of viral load monitoring acts as a discursive counter posited even by the WHO in their March 2014 Update on the “Changing Role of CD4 Cell Counts in HIV Care and Treatment”.

> Current guidelines for ART monitoring vary from country to country. The Democratic Republic of the Congo, Guinea and several other countries currently rely on CD4 alone, whereas several countries including Kenya, Lesotho, Mozambique, Swaziland and Zimbabwe rely on routine CD4 cell monitoring and use viral load only in a targeted way to confirm treatment failure among people with immune or clinical failure, and Malawi and South Africa rely on viral load for long-term monitoring; in the case of South Africa, discontinuation of routine CD4 is now recommended after one year for people stable on ART unless continued CD4 results are needed for decisions regarding stopping opportunistic infection prophylaxis. Monitoring strategies can also differ between the public and private sectors; in India, for example, targeted use of viral load is provided in the public sector, whereas routine viral load monitoring is offered in the private sector. The frequency of both CD4 and viral load tests performed for ART monitoring also varies substantially between countries. (Excerpted from Changing Role of CD4 Cell Counts in HIV Care and Treatment, in the March 2014 Supplement to 2013 WHO Guidelines, Collected at the International AIDS Conference, Melbourne, Australia, July 21, 2014)

This stratification in access to prioritization of viral load monitoring, given the significance of viral load in determining one’s status as an infectious/non-infectious body, makes treatment *as prevention* technoscientifically not possible in some settings, as alluded to in this policy brief from APCOM, a coalition advocating for issues around HIV affecting men who have sex with men and transgendered persons in Asia and the Pacific region.

> However, in many parts of Asia and the Pacific viral load testing is unavailable, as are the most effective drugs in suppressing viral load. As a result, consistent condom use cannot be discounted. Other ways of reducing HIV risk include negotiated safety, strategic positioning, and serosorting, all of which have become a part of modern prevention discourse and practice for MSM. (More Than The Virus, an APCOM Policy Brief, Collected at the International AIDS Conference, Melbourne, Australia, July 22, 2014)

One cannot be pharmaceutically rendered non-infectious unless techniques for routine, accurate viral load monitoring are possible. The stratification of the biomedicalization of HIV prevention means that traditional forms of sexual risk reduction as prevention, such as condom use, serosorting, and strategic positioning continue to be deployed in professional prevention discourses in settings were the fruits of technoscientific progress are not yet easily accessible for many. This highlights the exclusionary nature of the biomedicalization of HIV prevention and its prioritization of viral visualization as a technique of biomedical surveillance.

CD4 Counts Continue to Have Meaning for People Living with HIV: A Counter Discourse to Shifting Prioritization of Viral Load Monitoring

While viral load monitoring is being constructed as *the* emerging technoscientific tool for measuring biomedical compliance, a counter narrative continues to frame CD4 monitoring as of particular significance to people living with HIV, particularly in high-income countries, where viral load testing is routinely available. Several participants, particularly those living with HIV themselves, framed CD4 testing as of continued significance for knowing how one is doing immunologically and for monitoring health rather than strictly treatment compliance. CD4 count is also framed as something that continues to be celebrated as an achievement or agonized over as a signifier of declining personal health, even as it comes to be de-emphasized among professionals primarily concerned with monitoring individual engagement with biomedicine and stability on a treatment regime. I argue this is evidence that the shifts in technoscientific knowledge production do not always occur neatly and evenly, and that there may be some 'recalcitrancies,' particularly when one technique of biomedical monitoring, such as CD4 tests in this example, retain significance in processes of subjectification. One NHS-based HIV specialist in London spoke about how in his clinic there is a shifting prioritization of viral load, to the extent that they are moving from quarterly monitoring of both CD4 and viral load to six-monthly viral load monitoring with CD4 count monitored annually for individuals who are stable on treatment only "if they want one."

> We are doing less monitoring now. Viral load only when on therapy and with a CD4 of greater than 500 although patients can have annual CD4 if they want one. (HIV and sexual health consultant, London, UK)

Here, CD4 monitoring is framed as a matter of patient satisfaction, of providing patients with information that tells them something about themselves, about their immune status and how their bodies are coping with HIV, rather than information about their own biomedical compliance, which they likely already know based on their treatment compliance, except in the increasingly rare instances of viral resistance causing treatment failure.

Another HIV specialist working in the Bay Area framed this shift towards a prioritization of viral load as one that made sense in terms of the use of resources and of not burdening patients with unnecessary monitoring, but he raised the value of addressing patient discomfort with not knowing their CD4 counts. Even while acknowledging the trend towards prioritizing viral load, including the extent to which, in the U.S., it is used as a proxy for retention in care, in his practice, he discussed presently not separating out viral load and CD4. This is in part because he felt patients are “uncomfortable with not getting that feedback”.

> [I: You said you used to do them (blood tests) every quarter is that right?] Yeah. [I: Now it's more every 6 months or so if someone is doing well and then maybe even every year for CD4 count.] CD4 count only, yeah. I think with some patients now that that can be done annually, but practically I don't actually separate them out. I do CD4 counts with viral loads. It’s just patients are so accustomed to it that they really are uncomfortable with not getting that feedback. It doesn't change anything we do for the most part. Some day we'll figure out how to do less of them. (HIV physician working in a community health center, San Francisco, CA)

In part, this discomfort with not receiving feedback on CD4 count was constructed as a product of being “accustomed” to routine CD4 monitoring, though he anticipated that one day in his practice they would figure out how to do them less routinely, implied here that he would figure out how to reassure patients who are presently uncomfortable with less frequent CD4 monitoring. Later in our interview, he compared patient comfort with a reliance only on viral load rather than CD4 as something that would happen in time, particularly for the cohort of his patients who had been living with HIV for 20 or 30 years. Much like the generational gap in comfort in relying on viral suppression for prevention, he felt that comfort in relying solely on viral load monitoring would come as a younger generation of people living with HIV grew up and older generations grew into a comfort with this clinical shift.

However, particularly, in speaking with participants who are themselves living with HIV, the personal significance of CD4 as a means of self-monitoring and as a measurement around which to rally and celebrate was framed as still critically important and not yet ebbing. When I asked if this participant, the director of an HIV advocacy organization who is herself living with

HIV, felt that viral load was coming to be prioritized over CD4 among the communities of people living with HIV she engaged with, she replied,

> No, I don't see any of that from people living with HIV. For people with HIV, CD4 count is still a very important marker. There's something really internalized about it, you know, to the point where folks are like posting in their Facebook status, like ‘So and so CD4 count, here's my new CD4 count. Yay!’ And this is something that people really feel a lot of investment in. I don't think that viral suppression has usurped that in any kind of way. (Director of a national network of people living with HIV, U.S.)

This participant, in particular, connected the discourses around the significance of CD4 as a personal marker of health status among people living with HIV to a broader debate over the present day relevance of AIDS as a social category and the debate over retiring the term.

> There's also a very tense conversation happening right now about retiring the word ‘AIDS’. I don't know if anybody's told you about that? [I: No, no, not really. No, not explicitly.] So you know basically in the context of the CD4 conversation, I think that there is this idea that, in a resource rich country like we have, where everybody should have access to care and treatment if they want it, some of us believe that the term, using the dichotomy of HIV and AIDS is no longer politically strategic and it's no longer really relevant to sexual health because your CD4 count can drop below 200 and then it can come up but you have an AIDS diagnosis technically forever. The division has been used to allocate resources to enable people to qualify for certain kinds of benefits, and some of us believe that it's basically a way of incentivizing people to be sick and poor. And so in that context too, I think CD4 count continues to retain a certain kind of meaning in terms of how folks see themselves defined on the spectrum of health. (Director of a national network of people living with HIV, U.S.)

Paoli and colleagues (2012) explored similar claims about the financial incentivization of an AIDS diagnosis via state disability grants in South Africa. They found that some people living with HIV in their analysis sought to ‘tip the scales’ by manipulating CD4 counts without fully discontinuing treatment in order to retain eligibility for state grants when poverty and unemployment left few other options for economic survival. This highlights how CD4 testing may continue to hold considerable symbolic and material value to some people living with HIV, and particularly in the context of deep social and economic inequalities.

This construction of the social and political significance of CD4 count as a measurement on which a social category and a disability status can hinge is reflective of the broader discourses of CD4 as significant, and particularly to people living with HIV, even when it is significant only as an identity - “person with AIDS” - which may be unwanted, yet not easily shed even when one achieves sustained viral suppression. This discursive framing of the continued significance of CD4 as an immunological measure and as a signifier of disease and disability status posits its continued relevance in the broader discourses through which what it means to live with HIV is presently being re-shaped and re-constituted by treatment as prevention, even if unevenly.

Transformations in Viral Surveillance: Emergence of Viralization as Biomedical Surveillance

I now turn to an analysis of how biomedical surveillance practices are deployed to surveil individuals' engagement with biomedicine, both at sites of interaction with biomedicine, such as the clinic and the laboratory, and via practices of self-governance or 'technologies of the self' (Foucault 1994), that is, the ways that individuals police and surveil their own behaviors so as to appropriately engage with biomedicine.

The emergence of treatment as prevention and the increasing prioritization of viral suppression as a biomedical surveillance technique is engaged in transforming the surveillance of people living with HIV in two broad ways: (1) via techniques of viral visualization, what I will call 'viralization,' whereby self-governance via antiretroviral consumption and practices of visualizing the virus in the blood in the laboratory in order to measure biomedical compliance are coming to displace more traditional forms of surveillance, such as via the clinical gaze, albeit it in uneven ways, and (2) via heightened forms of more 'traditional' surveillance when individuals fail to be appropriately virally surveilled through techniques of viral visualization; that is, when they either disengage from care altogether, or for various reasons, fail to achieve viral suppression.

"We just test the blood:" Surveilling biomedical compliance via viral load monitoring. Surveillance practices are being transformed via the techniques of viral surveillance, by the possibilities of looking within and beyond the molar body, into the bloodstream, counting viral copies. To know if individuals - in this case, patients - are doing the right thing, are complying with and appropriately engaging with biomedicine, as one participant said, "we just test the blood" (Peer support worker, London, UK). The practice of clinical surveillance is here re-shaped, becoming less a matter of tracking sexual risk behavior or correct use of a barrier

method via behavioral surveillance techniques, and more a matter of looking into the bloodstream, within the blood, using technoscientific means to measure compliance to pharmaceutical regimens/regimes at the viral level. Below a participant alludes to the challenges, as a provider, of surveilling compliance to sexual behavior change, comparing this to the comparatively “easy” approach of monitoring compliance to a pharmaceutical prevention method by “test[ing] the blood”.

> Sexual habits are incredibly difficult to change. Let’s face it, people who are quite well-educated etc., you know, still, yeah. One of the things I say regularly is ‘Why should we feel guilty?’ We’ve just been doing what 99% of the world would, ‘let’s have sex.’ You know anything to make that sex safer is…I think there’s quite a lot of interest in the microbicides, you know? I think people see a cream or something like that as easier, but certainly I think again the trials, if I remember correctly, have not been very promising. But there again, people didn’t put it on regularly, you know. With pills, it’s easy. We just test the blood. (Peer support worker at an HIV clinic, London, UK)

Further, the participant below, a program director at a large urban HIV clinic in Washington, DC, echoes this by describing how she conceptualized treatment as prevention as the use of antiretrovirals preventatively, broadly speaking, but in its use with people living with HIV, specifically, it involved “keeping them undetectable and helping lower the community viral load.” Regardless of whether the patients at her clinic were using condoms or having condom-less sex, she emphasized encouraging them to talk to their partners about their HIV status and their lab values, but in terms of what they did in the clinic, it involved “really watching their viral load.”

> For me, treatment as prevention is both post-exposure prophylaxis, pre-exposure prophylaxis, but also it is keeping people who are HIV-positive on medication, again if they are ready to be on medication, and keeping them undetectable and helping lower the community viral load. So we know that so many people who are HIV-positive may not be using condoms, or else obviously our numbers wouldn’t be what they are today, and so encouraging that dialogue about their HIV, their HIV levels, both their CD4 and their viral load in the relationships that they are having, you know, be it, monogamous, serious relationships to one night stands, you know, whatever that conversation is, but really watching their viral load. (Program director at a community health center, Washington, DC)

Surveilling via viralization: Displacing the clinical gaze with the gaze of viral visualization. Surveillance practices are being transformed via the technoscientific possibilities of visualizing what is in the blood, of engaging in a process of viral visualization, in order to discipline biomedical compliance, a technique which I have called *viralization* The term, viralization, is inspired by Nikolas Rose's (2007) coining of the term, *molecularization*, to describe the ways in which the clinical gaze is increasingly becoming a molecular gaze, focused on the the interior of the body, not just on its organ systems, but on its molecules. Rose asserts that the shifting disciplinary gaze of biomedicine is made possible by new techniques of visualization, new technoscientific means of visualizing what is happening at the molecular level.

Here, I argue that the biopolitical assemblage(s) of treatment as prevention are increasingly incorporating the deployment of a disciplining gaze that goes beyond a focus just on the molar body, its lifestyle, its sexual behavior, and even its biomedical behavior, to focus on what is happening within the blood *at the viral level*. It is a *viral* gaze, rather than a molecular gaze, and it is being made possible and accomplished by new techniques of viral visualization, via viral load testing. These techniques of viral visualization are thus engaged in the transformation of the surveillance of people living with HIV, from one of behavioral or even clinical surveillance to that of viral surveillance. In this way, surveillance happens less via the clinical gaze, face to face in the space of clinic, and more via both practices of individual self-governance and the technoscientific visualization of blood products in the laboratory. Viral surveillance thus is about looking into the blood for the 'truth' about risk (Race 2001), that is, the risk one poses by not complying with antiretroviral regimens, and the need for heightened surveillance to ensure compliance, rather than specifically looking at the molar body, the person, their lifestyle, and their sexual behaviors. Individuals do not necessarily even need to present for clinical surveillance, in situ in the clinic, via the clinical gaze when their biomedical compliance - what they do in the privacy of their own homes when they do or do not take their treatment - is visualized and made known via technoscientific visualization of the viral copies in their blood. In this sense, performing biomedical compliance via a suppressed viral load, perhaps by simply having a biannual appointment for a blood draw at the lab without even seeing a doctor, becomes much more important than actually coming in for an appointment.

As one panelist speaking at the 2015 IAPAC Summit described it, she expected to see stable, virally suppressed patients less frequently because keeping regular clinical appointments when individuals were doing well and had an undetectable viral load "detracts from every day activities and their family life" (Paris, France, October 2, 2015). Further, an interview participant, based in a large urban HIV clinic in Washington, DC, said,

> [I: Right, I'm wondering, has it changed anything you do in terms of viral load testing and record keeping in terms of screening, testing and viral load testing?] It does. It used to be, for us, that it was much more important how often you came to the doctor and it was just, 'Great, we saw you four times a year. You came in. You're doing your best. Good job'. And those were the indicators we would pull and we still pull them because HRSA wants to see them and they want to see how often people come. But we're much more interested now if people are coming only once, twice a year but they're undetectable and they're maintaining that undetectable rate, we feel much more confident in their care and we're less worried about that. Some of us are like professional stalkers. We'll call you, 'We haven't seen you! We haven't seen you!'. That's kind of what we do. But it's so different now when we pull our viral load to see 'Oh!'. I think we're now at an 88% or right around viral suppression rate of our medical patients, which is high, yeah, but we want it to be higher. We now don't focus as much on that 88%, because so what if you're not coming in that often? But you're communicating with your provider. You're getting your meds. I think it's going to change HIV work in the future. I think it's going to be less about how often you come, but as long as that medicine is working and you're healthy, it kind of doesn't matter how often you see your provider. All your provider does is pull your labs and we can do that even without you seeing a provider. Again, talking about money, going to the provider is more expensive than if you just go to the lab. It's that 12% of people who aren't virally suppressed that we've now started focusing on because of treatment as prevention. We know how important it is to find them and so now we have programs where, if a client either hasn't come in in awhile and the last time he wasn't virally suppressed, or if this client is coming in but he continues to not be virally suppressed, we would go to their home. We would convince them to come in. We would hook them up with a mentor to kind of talk about what's going on. We really put, I would say, probably 70% of our effort into that like 12% of our clients because the other ones don't really need our effort as much. (Program director at a community health center, Washington, DC)

Similarly, a panelist at the 2015 IAPAC Summit in Paris, himself an HIV clinician, echoed this perspective, highlighting here the 'torque' (Bowker & Star 1999) that he had experienced in transforming his own practice from one focused on face-to-face clinical surveillance within the walls of the clinic to one involving viral surveillance 'at a distance' with fewer clinical visits.

> If you are an asymptomatic, HIV infected individual who has a busy life and a CD4 count of 700, the last thing you want to know is you have to see the doctor once a month and the pharmacist once a month and the laboratory. We're just not making things feasible for people who want to carry on with their life. As we are moving into sleeker, safer, better tolerated treatments and we're moving in to offering treatment to people who are asymptomatic largely, we need to recognize that we need to re-structure how we do business. I often find that when I tell people that they have a 6 month refill or a

> one year refill, they look at me astonished and say, ‘What are you talking about? Am I not supposed to see you next month or the other month?’ The reality is that we don’t need to impose that on people. But we need to change tactics because I cannot afford to send somebody to the pharmacy with a 6 or a 12 month refill and have the pharmacy tell me that they are not allowed to do that. So even those subtle barriers are going to make a huge difference. Think about it this way, how are we going to treat all the people we are treating if we don’t decrease the frequency of monitoring that is not medically justified? If not, we aren’t going to get there. (Presenter at the 2015 IAPAC Summit, Paris, France, October 2, 2015)

In this particular excerpt, traditional clinical surveillance via the clinical gaze of the doctor is framed as not only an imposition on people living with HIV themselves, but it is framed as an operational and financial barrier to the scale up of expanded antiretroviral treatment. Clinical visits cost money and sending those who are diagnosed but not initiated on treatment away to await a decline in CD4 count was constructed complicating retention in care. Viral surveillance techniques were framed as productive of task shifting and also potentially more cost effective than clinical surveillance alone and more effective than prevention efforts aimed at behavior change. The participant below echoed this is describing the imagined future of HIV care.

> [I: What do you think the work you do now will look like ten years from now?] God, I think it’s going to be so different. I don’t know. I think it will be less bricks and mortar. I think it will be less people coming to the clinic or the health center to deal with x, y and z. I think it will be more virtual. I think it will be more people at their homes or in mobile clinics, getting their viral labs drawn and their prescriptions. I think because of funding and money, I think we’ll be using doctors less and less because they’re unaffordable. I think it’ll be more of the mid-level practitioners, PAs, higher level nurse practitioners, to kind of get the prescribing done and I think it will be more lay people drawing the blood and having the conversations and making sure people are staying on their meds. (Program Director at a community health center, Washington, DC)

Stratification of Biomedicalization via Techniques of Viral Surveillance

Viral surveillance via an engagement with biomedicine, the consumption of antiretrovirals, and monitoring the performance of viral suppression is constructed as involving a displacement of both cost and collective responsibility for prevention from traditional public health prevention budgets to privatized or corporatized forms of payment for care and treatment. This is framed as being the case even when payers were in fact public entities, such as Medicaid in the U.S. or the NHS in the UK, as antiretrovirals themselves are commodities that are productive of wealth generation. The participant below, in particular, framed biomedical prevention, both treatment as prevention and pre-exposure prophylaxis, as having the potential to further marginalize already marginalized communities, particularly in the U.S., young men who have sex with men of color, who have the least access to health care, broadly speaking.

> By the way, in the U.S., one of the things that I believe is driving the really aggressive embrace and promotion of PrEP and TasP is money. Not just that this is a product that will be sold and billers can make money off, but also from public health's perspective because it moves the cost of HIV prevention out of their budget. Condom promotion and all that other kind of stuff, they have to pay for. It moves this onto the payers, the insurance companies, the taxpayer funded programs to provide treatment. That's great for public health. It's more money for them to do other things. But all the other stuff is getting shut down and cut way back, which is just accelerating the abandonment of condoms and accelerating the change in social norms around condom use. Let me give you one example. Everyone knows there's all sorts of research showing that young men who have sex with men, especially young men who have sex with men, young men of color who have sex with men, are at this extraordinarily heightened risk for all sorts of reasons that people are looking at, even as they have fewer, young men of color, fewer sex partners, less drug use, and in many cases, a higher rate of condom usage. First, as you are feeding this abandonment of condoms, thus a community is disproportionately impacted, and is much more likely to be able to have access to condoms than to things like antiretrovirals, but think of who these people are, these young men who have sex with men who are at such risk. Well, a huge percentage of them are not out. They're not out to themselves, let alone their doctor or their families or whatever. Now, they can carry a condom around, those ones who are concerned enough about protecting themselves, they can carry a condom in their wallet or have in their knapsack or their dopp kit without it being stigmatizing. So for them to get PrEP or treatment, they have to acknowledge that they might be engaging in anal intercourse. PrEP especially does not happen without that discussion. Many of them are very far away from being able to have that discussion. They're not out to their physician, some very significant number of them. So you are taking something away and the reduction in funding and promotion and emphasis on condoms as protection in favor of biomedical prevention, it does take something away. It makes something less available and it is accelerating this change in social norms. The people who are going to pay the greatest price for that are very young men who have sex with men who are not out to others and the young men of color are less likely to be out to their doctor and they're less likely to have a doctor. That’s where the problem lies. (Director of an HIV advocacy organization, New York, NY)

Here, more ‘traditional’ forms of sexual surveillance or sexual behavior change, such as condom use, are framed as more accessible to those who may already have stratified access to the fruits of biomedicine broadly speaking, who may not be able to speak to their providers about their needs or who may not be able to afford to access to health care to begin with. This participant goes on to compare the stratified access to antiretrovirals among young men of color to the stratified access of young women of color to contraceptive technologies.

> People who don't have any sexually transmitted infections are much more able to resist an exposure. There's a very small chance that they transmit, even if they have sex, even sex with someone, even if they really, truly are exposed. Within a day or two, they've cleared the virus. If they have gonorrhea or chlamydia or syphilis or other kinds of things

> like that, they have vastly greater risk, exponentially greater risk of acquiring the virus. Here we are obsessing on this one virus instead of looking at more comprehensive, broader issues of sexual health. The Guttmacher Institute is a policy organization in the U.S. that's closely affiliated with Planned Parenthood that does some of the most sophisticated research on reproductive health issues, and if you look at their research over the last ... I think the one I looked at was 2001 to 2009 or something like that. During that period, and it was a period where there was certainly increased access to and social acceptance of birth control. That has been pretty progressive since the introduction of the pill. Yet during that period, the rate of unwanted pregnancy among white women and wealthy women dropped dramatically. The rate of unwanted pregnancy amongst the poor and women of color increased dramatically. It's one of the great unreported stories. How poor women and women of color in the U.S. are having unwanted pregnancies at a higher rate than ever, even at a time when birth control is pretty widely available. Now, I'm not talking about abortions. Access to abortions has been restricted. I'm talking about actually the unwanted pregnancy in the first place. I fear that we're going to see something similar with antiretrovirals for prevention, that it's going to reduce the rate of transmission among the gay boys in Chelsea and of course Hollywood and gay men with a sort of strong gay community identity and connection, right? It's going to put others at greater risk and will ultimately lead to an increase in seroconversion in other sectors. (Director of an HIV advocacy organization, New York, NY)

The increasing displacement of sexual risk reduction techniques by biomedical risk reduction is posited here as an example of the stratified biomedicalization of HIV prevention. The techniques of performing responsible pharmaceutical citizenship (Ecks 2005) through compliance with a specific pharmaceutical regime that renders one non-infectious and enables one to optimize one's health may be productive of de-marginalization for those who *can* engage this very middle-class health consumerism - "the gay boys in Chelsea" - but as Persson and colleagues (2016) echo, it may be further marginalizing for those who cannot do so due to stratified access to biomedicine, broadly conceived. As such, I would argue that techniques of viral surveillance, via the increasing prioritization of viral load as a measure of biomedical compliance and the financial and social incentivization of viral suppression as a biomedical state and an ethical category, may not only be deployed in highly stratified ways, but may in fact be productive of the widening biomedical divides between the 'haves' and the 'have nots' (Clarke et al. 2010).

Virological Failure Triggers Heightened Biomedical Surveillance

The discursive work of HIV treatment as prevention has been co-constitutive of transformations in the biomedical surveillance of people living with HIV, from for example, a focus on *control over* sickness to one of *transformations of* bodies and identities via viral suppression (Clarke et al. 2010). This is also occurring along with the emergence of and prioritization of techniques of viral visualization as a means of biomedical surveillance. People living with HIV, as responsibly pharmaceuticalized subjects, are increasingly being surveilled not at the clinical or molar level, but at the viral level via a monitoring of biomedical compliance through viral load testing, echoing Rose's (2007) conception of molecularization. Those who are undetectable are able to perform a responsible engagement with biomedicine through the consumption of antiretrovirals and by rendering themselves non-infectious, quantified via techniques of viral visualization. This is what Foucault (1994) would call 'technologies of the self', that is, the appropriate performance of self-governance in response to a particular neoliberal rationality of the state.

Nonetheless, the transformations in biomedical surveillance of people living with HIV are not occurring evenly and they are not deployed universally. Heightened forms of more traditional institutional surveillance (Foucault 2008; Lemke 2002) may be deployed in instances where individuals fail to be responsibly virally surveilled, either when viral suppression cannot be visualized, e.g., when individuals disengage from biomedicine entirely, or do not present for appropriate viral load testing when expected, or when they fail to achieve viral suppression even when otherwise treatment compliant. These more 'traditional' forms of clinical or behavioral surveillance and disciplining may include home visits, "professional stalkers," as described by the participant below, extra appointments in the clinic for adherence counseling or treatment literacy support, further surveillance by other medical experts (mental health teams, midwives/ obstetricians, substance abuse specialists, child protective services, etc.), adherence monitoring though pill counts or other adherence devices, or directly observed therapy. It also has the potential, as several participants noted, to include other institutional forms of domination and control, including compulsory testing and treatment, and heightened criminal penalties in cases of prosecution for HIV exposure and criminalization for those who are not on treatment or not virally suppressed.

The participant below, a program director at an urban HIV clinic in Washington, DC, describes how their case management efforts are increasingly coming to focus on the minority of their client population who is disengaged from care or treatment, or unable to achieve viral suppression, utilizing these more traditional forms of clinical and behavioral surveillance.

> We're much more interested now if people are coming only once, twice a year but they're undetectable and they're maintaining that undetectable rate, we feel much more confident in their care and we're less worried about that. Some of us are like professional stalkers, we'll call you, 'We haven't seen you! We haven't seen you!'. That's kind of what we do… It's that 12% of people who aren't virally suppressed that we've now started focusing on because of treatment as prevention, we know how important it is to find them and so now we have programs where, if a client either hasn't come in in a while and the last time he wasn't virally suppressed, or if this client is coming in but he continues to not be virally suppressed, we would go to their home. We would convince them to come in. We would hook them up with a mentor to kind of talk about what's going on. We really put, I would say, probably 70% of our effort into that like 12% of our clients because the other ones don't really need out effort as much. (Program Director at a community health center, Washington, DC)

The participant below, who is involved in supporting work through the model of care coordination, as part of the New York Department of Health and Mental Hygiene, describes some of this work, emphasizing how these heightened forms of institutional surveillance overwhelming tend to target, at least in the demographics of New York City, people living with HIV in communities of color rather than predominantly white gay men and other MSM living in Chelsea.

> Care coordination, which, that model really focuses on those who are most in need medically of assistance to achieve optimal health outcomes, so that's a program that focuses on those who are newly diagnosed, those who are sporadically engaged in care and those who are virally unsuppressed - one of those three criteria. So it helps people to navigate the health system, receive accompaniment to appointments, if they need it, there's also directly observed therapy, so it's an intensive case management model… And then those who are in DOT, those people have pill box counts and get feedback in terms of taking their medications and charting that in increasing their adherence. [I: Can you tell me a bit more about how the directly observed therapy actually works, out in the real world? How is it done?] It's five days a week.They're able to do it in the clinic with the nurse or in the field with a patient navigator with the patient navigator observing the client taking the medication. They don't touch the medication or bring it to the client. It's more of a support service and an engagement to sort of coach people around care. Our latest thought, that we're far from implementing, would be to also be able to do it on the weekend, possibly do video DOT where people do videotapes of taking their medication so that they can continue to be able to sort of work on it on the weekends. [I: And is this a program that has existed for a while, or is it something that is relatively new?] It's in it's fourth year. [I: It's fourth year, you said? And do you have a sense if it's something that came about in response to the idea of treatment as prevention or that it's unrelated purely from an individual clinical standpoint?] No, it was very much developed as a part

> of treatment as prevention. They did an analysis of surveillance data, found the percentage of people disengaged from care, percentage of people who are virally unsuppressed, figured out a model about how to address that, where to situate it, what neighborhoods to put it in throughout New York City, to be able to very specifically focus on those people who needed it the most in order to address individual health as well as public health. [I: What are the specific neighborhoods or populations that you're tending to target?] It's South Bronx, Central Brooklyn, Upper Manhattan, but we also have programs in Queens and Staten Island and Lower Manhattan and other parts of Brooklyn, Downtown Brooklyn. In terms of demographically, it's overwhelmingly, almost 90% Latino and Black clients. (Policy Director, Department of Health and Mental Hygiene, New York, NY)

Heightened institutional surveillance of those who are disengaged from care or virally un-supressed is also increasingly being accomplished via computer technologies. Echoing Clarke and colleagues (2010), I posit that this is a dimension of the increasing technoscientization of HIV biomedicine, including biomedical prevention. The use of electronic medical records, clinical decision support technologies and other computer technologies in the heightened surveillance of those not appropriately engaged with biomedicine and virally suppressed is framed via the language of both the Update to the U.S. National HIV/AIDS Strategy, published in July of 2015, and in the Blueprint to End AIDS in New York State, published in March of 2015.

> Equally important is the need to re-engage people diagnosed with HIV who have subsequently fallen out of care. In 2012, only 39 percent of all persons living with HIV infection were engaged in care. 'Data to care' strategies may be applied to identify and re-engage persons in care, and have shown to be effective in improving care continuum outcomes. Clinical decision support tools may also be helpful to identify persons out of care. Retention in care is critical for achieving and sustaining viral suppression. (Excerpted from Goal 2: Increasing Access to Care and Improving Health Outcomes for People Living with HIV, National HIV/AIDS Strategy for the United States, Updated to 2020, Published July 2015)

As framed in the Blueprint to End AIDS in New York State, this may also include the deployment of multi-site access to electronic medical records through which people living with HIV themselves will be expected to "empower" themselves via techniques of self-governance of biomedical compliance. The linkage of this electronic data across sites, from provider to public health institutions to third party payers is here also framed as productive of heightened surveillance through which to optimize engagement in care and viral suppression.

> Use client-level data to identify and assist patients lost to care or not virally suppressed… Other persons may be seeing a provider but, for some reason, not able to

> reach or maintain viral suppression. Patient access to their electronic medical records, pharmacy, and laboratory data, can empower patients and improve continuity of care and adherence. Properly cross-checked data can be used successfully to initiate appropriate provider or public health interventions to identify those persons truly lost to care or not virally suppressed and take steps to improve their health outcomes. Expansion of data sharing with managed care plans and additional community-based partners, and clinics, including migrant health centers, would increase the overall capacity to conduct linkage and retention activities. Managed care plans, health homes and other care providers need to develop additional programs to prevent lost to care situations and optimize viral load suppression. Providing joint access to both patients and providers can assist in improving rates of adherence and viral load suppression. (Excerpted from the Blueprint to End AIDS in New York State, March 2015)

I argue that this can be seen as technique by which the increasing technoscientization of HIV biomedicine, particularly via the use of computer and information technologies linked across multiple sites and to multiple individual and institutional actors, can be viewed as a mode of subjectification, placing ever growing ethical demands on individuals to biomedically self-monitor (Clarke et al. 2010; Rose 2007). Intriguing possibilities for subjectivity re-fashioned via self-monitoring digital technologies have been raised, for example, through the development of HIV care mHealth technologies for use on smartphones by which patients can access their medical records and lab reports and perhaps even engage with their providers via a mobile app (Marent, Henwood & Darking 2016), a form of technoscientization that has raised concerns about patient privacy and data ownership. The imagined futures of viral load monitoring technologies also include the potential for at-home self-tracking of viral load, as imagined by one participant, an HIV epidemiologist based in London, perhaps even through wearable or surgically implanted technology. These highly technoscientific imagined forms of viral surveillance, linked up with digital technologies, would have significant implications for subjectivity and the the imperative for entrepreneurial self-governance of biomedical compliance, as well as for clinical monitoring or even third party data mining for public health surveillance or pharmaceutical marketing purposes. This is an area of sociological inquiry that is only beginning to emerge as these technologies do (Lupton 2016).

The heightened institutional surveillance of those who fail to be virally suppressed is further framed as being potentiated by the imagined futures of antiretrovirals. This links up with the construction of anticipated new forms of antiretrovirals, specifically long-acting injectable agents, as being productive of new social relations between individuals, partners, providers and biomedicine, which I will explore in the chapter to follow. I argue this is most poignantly illustrated by the anticipation of the deployment of clinical contracts that would allow negative partners to be notified by the clinic if their partner who is living with HIV did not keep their scheduled appointment to receive their quarterly injection. Further, other participants problematized the utilization of the legal and criminal justice systems for the institutional surveillance and disciplining of those who fail to achieve viral suppression, via the criminalization of HIV exposure and transmission. The prison was framed by Foucault (1982; 2008, see also Lemke 2002) as a site of institutional surveillance par excellence, along with that of the *clinique* (the hospital). As the surveillance of people living with HIV may be moving out of the clinical space, via a surveilling at a distance through techniques of viral visualization and personal responsibility for engagement in pharmaceutical self-governance, it remains to be seen if the courts and prison take up the institutional disciplining - and perhaps even the biomedical disciplining via the compulsory administration of injectable antiretrovirals - of those who fail to responsibly self-govern to achieve viral suppression.

The deployment of heightened forms of institutional surveillance of those who fail be be appropriately surveilled through techniques of viralization is illustrated via the visual discourses of The Undetectables Project comic Issue 1 (available for download at https://liveundetectable.org/comics). To be an “Undetectable,” as discussed earlier in this analysis in reference to the social incentivization of viral suppression, is to be “hip,” “cool,” someone to be emulated, someone one ought to desire to become as a person living with HIV. Those who are undetectable are framed as powerful and in control, strengthened through their own self-governance, their own efforts to optimize their health and to help and protect others (Petersen & Lupton 1996). One of the ‘others’ the Undetectables help is Maria, a character who though, seeming engaged in supportive services via a transitional housing program and through involvement with a case worker at the clinic, is not presently “an Undetectable,” is not presently virally suppressed. The Undetectables align forces to help her to fight off the metaphorical foe of

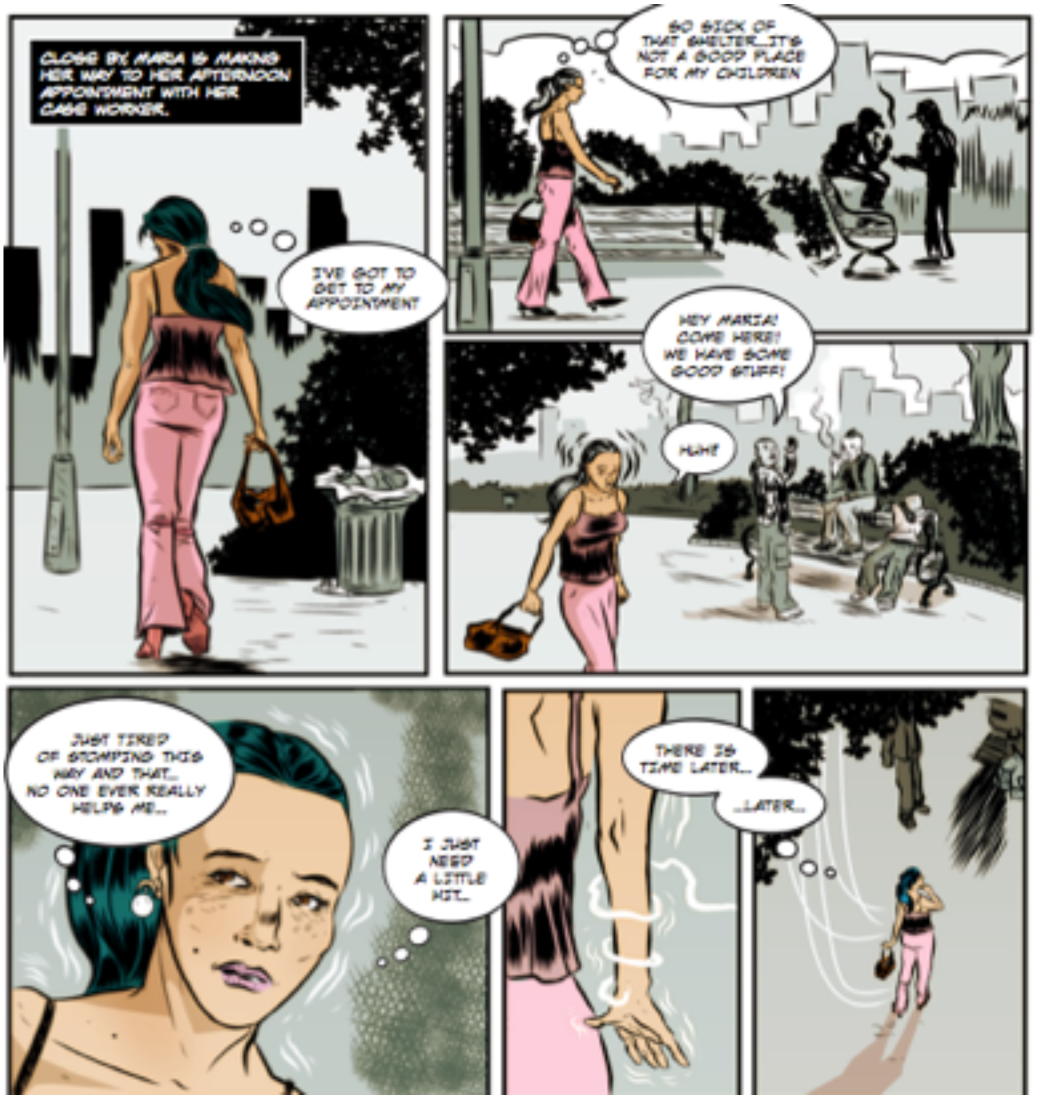


Figure 15. The Undetectables, Issue 1, "Maria's Story"

Apathy, helping her to resist an offer of drugs as she walks through New York's Washington Square Park and to affirm to keep her scheduled appointment with her case worker at the clinic.

In the closing pages of the comic book, as the Undetectables vanquish the foes of Stigma, Apathy, Fear and Denial, there is in the same panel a separate box inset in this image, one of a man, presumably a clinic staff person, dressed in a white coat, sitting at a desk in front of both a computer and a television screen. On the television, which he appears to be watching as he types, there is an image of the scene featured in the panel where the Undetectables are coming together after their victory over Stigma, Apathy, Fear and Denial. This image appears on the television screen as a captioned news clip, shot from a perspective above, as if from a news

Figure 16. The Undetectables, Issue 1, "Heightened Forms of Traditional Surveillance"

helicopter. The clinic staff member appears to be watching the actions of the Undetectables on the television while also engaging with something on his computer screen, itself blank to the line of sight of the reader. In the final panel of the comic book, this same clinic staff person is shown calling Maria. Maria answers her phone and the staff person says, "Hey Maria! Glad I was able to reach you! Just wanted to make sure that we can meet today…" to which a smiling, more carefree-looking Maria responds, "Of course! Actually I've got some great ideas on how you can help me join…The Undetectables."

Not only is this imagery deploying the discursive construction of the viral suppressed as a biosocial community that all persons with HIV ought to want to “join,” as already discussed, but the visualization of clinical surveillance in this imagery echoes the language that frames those who are dis-engaged from care or otherwise failing to be virally suppressed as targets of heightened forms of institutional surveillance. Here, Maria, in particular, who is not virally suppressed, is singled out from the other characters for observation by a clinic staff member - quite literally a “professional stalker,” a term used by an interview participant to describe those working to re-engage the virally un-surpressed in their clinic setting - someone who is watching as if from above, unnoticed. Pointedly, this clinic staff person is also sitting in front of a desktop computer, simultaneously typing on the keyboard, while watching the screen playing the news

Figure 17. The Undetectables, Issue 1, “I’ve Got Some Great Ideas”

clip, and possibly speaking into a headset. Here, computer technologies are constructed very visually as tools of biomedical surveillance, echoing Clarke and colleagues (2010) assertion of computerization and data banking as techniques by which the increasing technoscientization of biomedicine is being made, here quite literally, highly visible in the transformations of biomedicalization.

Conclusion

Continuing to draw on Foucault's (1984) as well as Rabinow and Rose's (2006) conceptualizations of *biopower*, in this chapter, I have explored how the increasing prioritization of viral load monitoring and a simultaneous, yet uneven, displacement of CD4 count monitoring are constituting a shifting visualization of the problem space of HIV biomedicine via treatment as prevention. Clarke and colleagues (2010) and Rose (2007) have posited the shifting ways of visualizing the problem spaces of biomedicine as one from a focus on the molar body, its behaviors and lifestyles, via the clinical gaze or even the gaze of surveillance medicine into extracorporeal spaces (Armstrong 1995), to one of a molecular or genomic gaze. Here, I have sought to expand Rose's (2007) formulation of *molecularization* via a positing of processes of viral visualization, or *viralization*, that I argue are involved in transforming the problem space of HIV prevention. *Viralization* can be seen as a means of both surveilling and regulating the vital processes of populations of people living with HIV via a shifting metric for population level vitality and also a measure of the robustness of health care infrastructure. But importantly, it can also be seen as an emerging disciplining gaze of HIV biomedical prevention, through which individuals *qua* subjects are increasing expect to self-manage their health and their risk to others at the virological level and through a highly technoscientific mode of subjectification, one that can increasingly be deployed without individuals even seeing a doctor at the clinic and which is imagined in the future to potentially include opportunities for self-tracking of viral load.

However, it is critical to emphasize how these transformations in biomedical surveillance via the viral gaze are occurring in highly stratified ways and are also framed as potentially productive of a widening biomedical divide (Clarke et al. 2010). When individuals fail to effectively entrepreneurially self-govern, and thus they fail to achieve viral suppression, heightened forms of more 'traditional' surveillance may continue to prevail. This includes monitoring of disease progression and immune function, the body's control over HIV disease, via CD4 count monitoring rather than transformations of it via pharmaceutical self-governance, echoing Clarke and colleagues (2010). It may also include the deployment of forms of institutional regulation, both via biomedicine itself as well as by other institutions of social control, such as the criminal justice system and the prison. Through his conception of governmentality, Foucault (2008) asserts that the state sought to govern at a distance through techniques of self-subjectification by a rational self-regulating individual. Where individuals fail to appropriately self-govern via 'technologies of the self,' 'technologies of domination,' such as via the police, military, schools and medical institutions assure compliance, sometimes through force or violence, with the objectives of the state. Instances of overt 'domination' or 'violence' towards people living with HIV who fail to be appropriately surveilled and disciplined by the viral gaze are rare; the forced testing of sex workers in Greece (Artavia 2013) and the overly broad criminalization of HIV exposure and transmission, particularly if it comes to be stratified along the divides of the responsible performance of engagement with biomedicine, treatment compliance and viral load, however, were notable exceptions highlighted in this study.

Yet, examples of heightened techniques of clinical surveillance and disciplining of those who disengage from care or fail to achieve viral suppression abound in my data, including home visits for those who fail to keep a clinical appointment, pill counting, directly observed therapy, sometimes performed over several weeks of inpatient monitoring in the case of pregnant women, are just some examples of the deployment of heightened forms of 'traditional' surveillance where the performance of responsible self-disciplining via techniques of viralization fails. This analysis returns to my earlier assertion, drawing on Clarke and colleagues (2010), that the re-configuring of HIV biomedical risk and the transformations in techniques of biomedical surveillance via treatment as prevention are mutually constitutive. When HIV risk comes to be constructed via a responsible engagement with HIV biomedicine, including treatment compliance and the achievement of a non-infectious viral load, then likewise the techniques for the visualization of virological compliance with the ‘truth discourses’ of treatment as prevention shift their gaze in tandem. Presently, they are increasingly defining the problem space of HIV prevention via a viral gaze and a concern with what is taking place at the virological level. I argue that, echoing Clarke and colleagues (2010) and Rose (2007), that this constitutes a transformation of both HIV risk and techniques of biomedical surveillance, yet in still deeply uneven and highly stratified ways. These transformations in both the constructions and also the very embodied practice of risk, surveillance, and subjectification take on a heightened valence via an intensifying anticipatory orientation to the imagined futures in which the ‘End of AIDS’ can be made possible through HIV biomedical prevention.

HIV Treatment as Prevention and the 'End of AIDS' as Regimes of Anticipation: Foregrounding Antiretrovirals in Anticipatory Practice

Clarke (2005:153) stresses the importance of studying "the social life of things." In this chapter, I situate antiretrovirals themselves as technologies of critical material and discursive significance within the discourses of HIV treatment as prevention. I explore the ways in which both human actors engaged professionally with treatment as prevention as well as narrative and visual discourse materials are constructing antiretrovirals themselves as material things, as critical technologies, that are framed as both making possible treatment as prevention and troubling it. Through this lens, I specifically explore how antiretrovirals are being situated temporally, as technologies with an evolving present, a sometimes fraught past, the 'baggage' of which is carried along into the present, and also as provoking the anticipation of imagined futures. I locate my analysis within the theoretical work of Adams, Murphy and Clarke (2009), while also drawing on that of Clarke and colleagues (2010) and Rose (2007), in order to posit that HIV treatment as prevention is co-constitutive of an anticipatory orientation to the future, one which is hailing in the so-called 'End of AIDS' via HIV biomedical prevention.

Orienting in Anticipation of the 'End of AIDS'

The term, the 'End of AIDS,' and variations on it have entered the lexicon of those in the professional social worlds of HIV prevention and treatment simultaneously with the emergence of biomedical HIV prevention, both treatment as prevention as well as pre-exposure prophylaxis. The term itself and allusions to it have been taken up for use by numerous individual and collective actors in recent years, including for example, in New York State's Plan to End the AIDS Epidemic and San Francisco's Getting to Zero Campaign, with the CEO of the San Francisco AIDS Foundation, Neil Guiliano, recently declaring that "the end of AIDs is within our grasp" (2016). However, in order to tap into the driving forces behind the broader global anticipatory orientation to the 'End of AIDS,' I want here to turn to a more focused analysis of how the 'End of AIDS' is being anticipated by the Joint United Nations Programme on HIV/AIDS (UNAIDS), and specifically via documents published for distribution at the 20th International AIDS Conference in July of 2014. It was here that the UNAIDS 90-90-90 target was unveiled, which has as its aim “nothing less than the end of the AIDS epidemic by 2030” (UNAIDS 2014a). I will also draw on several other documents on the ‘End of AIDS’ collected via this same ethnographic site, using these together to situate the ‘End of AIDS’ as a regime of anticipation. I then argue that antiretrovirals themselves are constructed as technologies of critical material and discursive significance to this anticipatory practice, technologies that are both heralding in and also troubling the anticipation of the ‘End of AIDS’ via treatment as prevention.

According to Adams and colleagues (2009), regimes of anticipation not only call on individuals and collectivities to orient towards the future in the present, defining the present and also the past via a politics of temporality, but in very material and affective ways, are obligating action along material trajectories in the present as part of an orientation to imagined futures. Adams and colleagues describe five key dimensions of an anticipatory orientation to the future. These are: (1) *injunction*, which is the imperative or the will to anticipate; (2) *abduction*, which is the method, the tacking back and forth between the present, the past, and imagined yet uncertain futures, that drives intervention in the present in the name of the future; (3) *optimization*, the ethical obligation to not simply anticipate but to act so as to optimize one’s ‘vital futures’ (Rose 2007), creating the ‘best possible futures;’ (4) *preparedness*, which calls for pre-emptive action in preparation for imagined futures and highlights the urgency of acting before it is too late; and lastly (5) *possibility*, that anticipation creates novel engagements with possibility, compelling a drawing of the future into the present so that the present can be acted on as part of these conditions of possibility, notably ethically re-configuring the urgency of acting in the present and foreclosing on other possible futures.

HIV treatment as prevention is anticipated via the UNAIDS 90-90-90 target, which aims for 90% of those who test positive to be on antiretroviral therapy and 90% of these individuals on treatment to have achieved sustained viral suppression by 2020, to bring about “nothing less than the end of AIDS epidemic by 2030” (UNAIDS 2014a:3). HIV treatment as prevention is constructed as heralding in the ‘End of AIDS’ through the use of a language of closure and finality, as “writing the final chapter of the AIDS epidemic” (UNAIDS 2014a: cover page) and as “the last climb” (UNAIDS 2014b: cover page), from the title of the address by Michel Sidibé, the executive director of UNAIDS, at the Opening Session of the 20th International AIDS Conference in Melbourne, Australia where these new targets were announced. This anticipatory orientation to the future is not simply described, but is *compelled*, through this language of closure and finality, the sense of being on the last stretch, the very last effort before AIDS is vanquished, *ended.* For Adams and colleagues (2009), regimes of anticipation obligate us to anticipate, and to act in the present, *now*, as if the future is uncertain, but also inevitable, as if there is no other way to possibly act, no other ethical means of intervention than *this one*.

THE LAST CLIMB: ENDING AIDS, LEAVING NO ONE BEHIND

Figure 18. “The Last Climb: Ending AIDS, Leaving No One Behind,” Opening Address by Michel Sidibé

The narrative of ‘Ending AIDS’ echoes this by asserting a duty to participate in ending AIDS. Much like Petersen and Lupton (1996) argue that the ‘new’ public health brings with it a participatory imperative, or what Rose (2007) describes as an ethopolitics of health, by which the optimization of health becomes a key ethical value, the *injunction* to bring about the ‘End of AIDS’ compels us all to act. It compels us all to be ‘in,’ as visualized as part of the campaign for ‘Ending HIV’ by Australian AIDS service organization, ACON, in the image below. Only through participation, through engaging in what Sidibé calls, “a moral and ethical imperative”, can we together “reach the summit” (UNAIDSb 2014b:8).

WELCOME

Thank you for coming to Melbourne to participate in AIDS 2014.

We hope your conference experience will help advance local and global efforts to treat and prevent HIV and AIDS.

As a very active conference participant, as well as a proud sponsor of many conference activities, ACON is looking forward to sharing the knowledge, skills and networks we have developed through our almost 30 years of responding to HIV and AIDS.

This booklet provides a brief overview of ACON and our current HIV prevention campaigns, a breakdown of the presentations, symposiums, and panel discussions in which we're participating, and a summary of our position on HIV-related policies that affect our communities.

If you have any questions about our work, please feel free to contact any of our relevant staff.

Importantly, we're also looking forward to improving our own local practice by gaining new understandings of how other people and organisations around the world are tackling HIV prevention and supporting people with HIV.

We wish you all the best during your stay and hope you return home safely.

Mark Orr
President

Nicolas Parkhill
Chief Executive Officer

Figure 19. "Ending HIV: I'm In," ACON Brochure

'Ending AIDS' not only forms a moral imperative, an *injunction* to act, but the anticipatory orientation of the discourse of 'Ending AIDS' is permeated with a sense of urgency, the necessity of acting now, preemptively, before it's 'too late,' what Adams and colleagues call *preparedness*. As he began his speech and introduced his "vision for ending AIDS," Michel Sidibé said, "AIDS 2014 calls on us to be bold. Today, I am calling for ending AIDS by 2030." (UNAIDS 2014b:1) before going on to say, "We have a fragile, five-year window of opportunity. If we are smart and scale up fast by 2020, we will be on track to end the epidemic by 2030. This is why I am calling on the world to adopt a new, ambitious target: 90% of people tested, 90% of people living with HIV on treatment and 90% of people in treatment with suppressed viral loads. 90-90-90 is not just a numeric target. It is a moral and economic imperative.” (UNAIDS 2014b: 6).

Further, in his Opening Address, Sidibé references the expansive and very open-endedness of an anticipatory orientation to the imagined futures of ‘Ending AIDS,’ in saying, “To quote Nelson Mandela: ‘After climbing a great hill, one only finds that there are many more hills to climb.’ We have been climbing this epidemic one hill at a time. Now we must finish our journey with a final climb, and we cannot lose anyone along the way.” (UNAIDS 2014b:3). I argue that this quote emphasizes what Adams and colleagues (2009) call ‘the tyranny of optimization,’ the sense that anticipating possibility, our ‘best possible futures,’ also means never quite fully attaining them, never quite being finished with the work of creating these ‘vital futures’ (Rose 2007). They assert that, “the pursuit of the ‘best possible’ is legitimately infinite in scope and always ongoing…the scope of optimization is unlimited.” (Adams et al. 2009:256). I argue specifically that this ‘tyranny of optimization’ manifests itself through a vagueness about what

“After climbing a great hill, one only finds that there are many more hills to climb.”

—NELSON MANDELA

The last climb

A VISION FOR ENDING AIDS

Figure 20. Many More Hills to Climb, Opening Address by Michel Sidibé

the ‘End of AIDS’ really means. According to Sidibé, “We all agree on what ending AIDS by 2030 means: we will bring the HIV epidemic under control so that it is not a public health threat to any country, village, family or individual,” (UNAIDS 2014b:3). This is a vague, non-specific target at best, and at worst is scientifically inaccurate, conflating HIV infection and clinical AIDS. One participant, an HIV advocate and journalist, touched on this non-specificity and inaccuracy of the language of the ‘End of AIDS’ by saying,

> I hate that [the term, ‘Ending AIDS’]. I hate that expression. I wrote a whole article lambasting it about a year and a half ago. For one thing, it's inaccurate. The term, ‘ending AIDS’ is not correct. It should be saying ending HIV. ‘What do you mean?’ Most people will just say ‘end AIDS,’ and really I’ve turned around and I've asked people to define this. [Names omitted], the people who are working on the New York State plan. ‘What do you mean by end of AIDS?’ A lot of them don't know. They can't define it or they refuse to define it, in the case of [name omitted]. I finally strong-armed him into doing so and he finally said it meant eradication. I think in his case he said [organization omitted] meant ‘end HIV.’ I'm not so sure. They like to go back and forth. (Journalist for an HIV community publication, New York, NY)

The non-specificity, the vagueness of the outcomes by which to measure the achievement of the ‘End of AIDS’ stand in stark contrast to the very specific calls for urgent preparedness, the need to act now, before the “fragile, five-year window of opportunity” to do so passes. In this way, I argue that as a regime of anticipation, the real ‘work’ of anticipatory practice is what happens in the present, whether the highly anticipated future is ever achieved is secondary to how the present itself is intervened on *as if it will be achieved*.

Lastly, Adams and colleagues assert that anticipation creates novel engagements with *possibility*, by which possible futures are drawn into the present so that the present can be acted on, via a citing of the past, as if these futures are not only possible, but inevitable. These possible futures are not only inevitable, assuming we intervene urgently, but this urgency may ethically re-configure action by foreclosing on other possible courses of intervention in the present. These novel engagements with the possibility of anticipated futures involve the creation of what Rose (2007) calls a ‘moral economy of hope,’ in which traditional fear of illness and death is being re-cast in an ethos of biomedical hope for the future. In fact, an ethos of hope for the future via the ‘End of AIDS’ is a critical discursive aspect of the narrative around ‘ending

AIDS'. In an excerpt from a *Poz Magazine* article called "Selling the End of AIDS," Dr. Anthony Fauci of the National Institute of Allergy and Infectious Diseases is referenced, saying,

> Anthony S. Fauci, MD, director of the National Institute of Allergy and Infectious Diseases, wrote an editorial in *Science* that ran in July of that year in which he enthused, 'We finally have scientifically validated prevention modalities that clearly work, suggesting that ending the pandemic is feasible.' Treatment as prevention, or TasP, had become a beacon of hope. (Excerpted from "Selling the End of AIDS," Poz Magazine, Published October 1, 2014)

Similarly in the conclusion of his Opening Address to the 20th International AIDS Conference, Michel Sidibé draws on the imperative to hope for the possibility of the 'End of AIDS,' of "scal[ing] this mountain" and "reach[ing] the summit" by not "squandering the opportunity of a lifetime", saying,

> My friends, let us not leave Melbourne thinking that it will be easy to reach the summit. Complacency will cause us to stumble. Will future generations say that we squandered the opportunity of a lifetime?…If every person here tonight, and everyone working to end the epidemic acts with the same sense of urgency, the same hope and the same commitment to fight for those left behind, we will scale this mountain. (UNAIDS 2014b: 8).

Further, deploying a narrative of hope for the future of the 'End of AIDS' via what Adams and colleagues (2009) call a temporal *abduction* between the present, the past and imagined and highly anticipated futures, the published print version of Sidibé's Opening Address includes the image to the right on its inside back cover. The image is a photo

Figure 20. "Honouring the Past & Hope for the Future: Towards an HIV Free Generation," Opening Address by Michel Sidibé

of an LED sign on the side of the Exhibition Centre in Melbourne, Australia, where the 20th International AIDS Conference was held. The text displayed on this LED sign reads, “Honouring the Past & Hope for the Future: Towards an HIV Free Generation,” and below this text, it features a quote from Sidibé, which reads, “Ending AIDS is the only dream we should all have” (UNAIDS 2014b:9).

In this way, via a citing of the past and a drawing on of hope for the future so as to form the template for how to act - *and what to act on* - in the present, not only is the “dream” of “Ending AIDS” framed as what is to be hoped for, as making up the anticipated, yet still uncertain, possibility for our collective futures, but it is made up as “the only dream we all should have,” foreclosing on all others it might have alternatively been possible to dream. In fact, by foreclosing on other possible trajectories of action towards the future, some have gone as far as to critique the call to bring about the ‘End of AIDS’ as distracting from the challenges of intervening on HIV and on AIDS in the present, including and especially those in the advocacy communities, as described in “Selling the End of AIDS” excerpted here.

> In a screed he blasted to various email listservs on the eve of July’s International AIDS Conference in Melbourne, ACT UP alumnus Gregg Gonsalves lambasted end-of-AIDS rhetoric as ‘a strange strain of utopianism’ and ‘a mirage leading us astray’ from the all-too-real difficulties of dealing with the global AIDS crisis in the present. (Excerpted from “Selling the End of AIDS,” Poz Magazine, Published October 1, 2014).

Adams and colleagues (2009) assert that “Anticipation pervades the ways we think about, feel and address our contemporary problems” (Adams, Murphy & Clarke 2009:248). In this chapter, I argue that in the professional social worlds of HIV prevention, anticipation of imagined futures that will bring about the so-called ‘End of AIDS’ via biomedical HIV prevention, including treatment as prevention, is productive of the present, via a citing of the past, and that antiretrovirals themselves are discursively situated as material things that both potentiate and disrupt the future possibilities for their deployment as prevention technologies.

Foregrounding Antiretrovirals Themselves in Anticipatory Practice

There are three threads to the part of my analysis that follows. First, I explore how present day antiretrovirals, via techniques of abduction, a tacking back and forth between the present, the past, and imagined but uncertain futures, are constructed as evolving. This evolving is part of what makes possible the use of these pharmaceutical ‘things’ as prevention technologies. Next, I explore how ‘antiretroviral baggage’ from the past, including the very material forms of ‘older,’ more burdensome, less tolerable antiretroviral formulations, as well as historical skepticism of pharmaceutical products, potentially disrupts the deployment of antiretrovirals for prevention. Lastly, I analyze how the imagined futures of these drugs themselves, particularly anticipated forms of novel drug delivery, such as implants or long-acting injectables, are framed as forming the conditions of possibility for the ‘End of AIDS.’ At the same time, they are also deployed to trouble the potential for heightened forms of surveillance and pharmaceutical disciplining.

Constructing the Evolving Present of Antiretrovirals as Prevention Technologies. Antiretrovirals are constructed as evolving, as different today than in the past, and anticipated to be different in the future than in the present. They come with a history. On one hand, this evolution is constructed as part of technoscientific progress, with the antiretrovirals of today, better, easier to take, more tolerable than those of the past, and that technological evolution is in part framed as what makes treatment as prevention possible. Participants described antiretrovirals as “evolving” (Infectious Disease Specialist, New York, NY), as “very different than [they] used to be” (Peer Support Worker, London, UK), as “continue[ing] to mature” (Policy Director, City Department of Health). Comparing the earliest antiretrovirals to “Ford Model A’s,” one panelist at the 2014 IAPAC Summit asserted that “the ball has moved. The needle has moved on what we can expect [of antiretrovirals today]” (London, UK, September 19, 2014). In this way, antiretrovirals are themselves situated as material things which *potentiate* treatment as prevention, the technologies that constitute part of the conditions of possibility that, along with a growing scientific knowledge base, clinical expertise, and political will to ‘end AIDS,’ created the space into which treatment as prevention could expand as a technoscientific practice. Specifically, many participants leaned on constructions of present day antiretrovirals as safer and more tolerable, as less burdensome, and as more forgiving and less likely to require strict adherence to complex regimens in situating them as making treatment as prevention possible, at the individual as well as clinical and health systems levels.

In contrast to the drugs presently available, at least in the Global North and to those who can afford to purchase them in the Global South, older formulations of antiretrovirals are framed by many participants as “of more questionable effectiveness earlier on,” less likely to lead to sustained viral suppression, and more likely to be resisted through viral mutation. These previous regimens are described as “toxic” in relation to modern formulations. One participant, an HIV and sexual health consultant in London, described the earliest antitretrovirals as “foul” and remarked,

> I can remember almost being in this room and trying to persuade a really eminent pediatrician who I have a huge amount of respect for that I should be giving one of my pregnant women AZT in the very early days. And he said, ‘I wouldn’t give it to my dog, never mind a fetus! What do you think you’re doing?’ (HIV and Sexual Health Consultant, London, UK)

I argue, through processes of what Adams, Murphy and Clarke call *abduction*, that is a temporal tacking back and forth between the present, the past, and also into imagined, but uncertain, futures, that antiretrovirals are being discursively constructed as material ‘things’ that are made up as part of an evolving present via a citing of the past. This very material and discursive past is not simply a by-gone era to be forgotten, overcome through technoscientific progress, but is *actively deployed* as part of this politics of temporality, as productive of the evolving present in which drugs once perceived to be too toxic to risk giving to a non-human animal might be perceived as safe enough for daily lifelong use for prevention as well as treatment purposes.

While earlier antiretroviral regimens were constructed as posing a potential risk to those who consumed them, causing eminent physicians to recoil at the suggestion they might be prescribed to pregnant women, leading to unpleasant and at times debilitating side effects, being burdensome and complicated to adhere to, present day antiretrovirals, framed as “relatively clean and relatively easy” (HIV and Sexual Health Consultant, London, UK), are increasingly being situated as making possible the ‘ask’ of treatment as prevention. As such, they create the conditions of possibility wherein individuals might be offered, or even expected to consume, antiretrovirals not only or even not exclusively for their own benefit, but to protect others. The clinician above goes on to describe this evolving of antiretrovirals into the present via a tacking back to the past, saying,

> “So I started my professional career running essentially a palliative care service. Everybody died. And then we got to the point where we had, we’ve had every single stage going through and having to think what we’re going to do with these medicines. In the early days of HIV with AZT, when everybody got anemic, and everybody having alarms set to take their medications in the middle of the night, and people coming in for blood transfusions because of the side effects of the drug, but there was nothing else. But they were, they gave us a respect for these drugs. And yes, we saw fabulous results. By the time we got to, ‘are you going to take protease inhibitors which is 18 pills a day?’ the idea that you’d offer that to somebody who wasn’t going to get a personal benefit was a non-starter. So you got an overlapping movement of technological expertise by a pharmaceutical sophistication and once you get to a product that is relatively clean and relatively easy, actually then the conversation changes. Because then you can begin to say, ‘You know what? You could take one pill once a day and most people are fine on it. And as far as we know it’s not going to compromise anything later on. What do you think?’…Now to think that I would have done in 1995 when I was talking to people about, ‘Well, I’m really sorry, you know, if you could just take this sack full of stuff.’” (HIV and Sexual Health Consultant, London, UK)

The construction of antiretrovirals as evolving emerges specifically through constructions of present day formulations as being increasingly tolerable, with lessening pill burdens, and more forgiving of imperfect adherence via a tacking back and forth between the present, the past, and highly anticipated imagined futures. These present day qualities of antiretrovirals are framed as critical for the deployment of antiretrovirals as prevention technologies, that is, they are framed as making possible the expansion of treatment via treatment as prevention, particularly by facilitating more community-based models of care involving task shifting to community nurses or peer support staff to dispense antiretrovirals and support their use, a shift which I will argue is framed as possible only if the drugs being dispensed through these programs are safe, tolerable and require minimal monitoring for side effects and toxicities.

Tolerability. The tolerability of present day antiretrovirals is constructed via their lessening or lack of side effects, lower toxicity, increasing safety, making them easier to take, cleaner and sleeker and more acceptable relative to antiretrovirals of the past. Their present tolerability is framed in relation to a past, a history, in which treatment was less tolerable, more toxic, less safe, and thus constructed as more difficult to take, messy, and more burdensome.

Tolerability is a critical aspect of the construction of antiretrovirals as evolving, via a tacking back to the past, and in anticipation of the conditions of possibility that they open up as prevention technologies. As one participant described, tolerability is part of the advancing "treatment landscape".

> The treatment landscape just began to advance and we actually started to find a lot more therapies that were more palatable, that were more tolerable, that were acceptable to people living with HIV and treatment began sort of catering to that. (Project Director for a treatment advocacy organization, New York, NY)

A presenter at the 2014 IAPAC Summit echoed this.

> Here I think we can embrace the idea that there are new combinations, new tolerability. The ball has moved. The needle has moved on what we can expect. (Presenter at the 2014 IAPAC Summit, London, UK, September 19, 2014)

Many participants framed tolerable drugs as "better" (HIV clinical scientist and physician, London, UK), or "much better" (HIV and sexual health consultant, London, UK) relative to older, less tolerable regimens. Present day antiretrovirals are framed as tolerable in large part because they cause either no side effects at all or fewer side effects than older formulations.

> Broadly speaking, treatment is really tolerable. There's very few side effects. (Director of a treatment advocacy organization, London, UK)

> And I think perhaps just the knowledge of how successful the drugs have been, and an increasing awareness among at least some, if not many, people that the side effects are better now and are tolerable. For me, I mean just one thing, for example, walking around New York City in the '90s, I moved here in '97, and then 2000s, you saw people with lipodystrophy everywhere. It was written all over their faces and it was very sad. I don't really see that a lot anymore. Older guys may still have it, but I think a lot of them probably have had some reconstructive fillers to deal with it so that it's not very permanent. They have the money and they can keep redoing it as much as they have to. That's a huge change because it was very stigmatizing. You felt very viscerally, definitely a lot of the people on HIV medications around here felt that, and just that visual sense is not really around any more. (Journalist for an HIV community publication, New York, NY)

While these modern drugs are described as having fewer side effects overall, including both long and short-term effects, when they do cause side effects, many participants described these side effects as likely to be both short-term, lasting only during the initial adjustment period, and manageable, something the individual is more able to cope with, rather than having a significant impact on quality of life. This was described by the participants below, both of whom are HIV specialist clinicians at geographically and demographically distinct NHS hospitals in London.

> Rather than a few years back it was more about getting people ready for treatment and working out which side effects they'd be able to tolerate, trying to counsel them very carefully around what to expect and how to adhere to their medication, and we still do all of that, but now it's, in terms of the choices, it's so much easier to start treatment. The side effects are so much less that I think we have far less angst around starting treatment because we are able to pick an option for an individual patient that either has very short-term manageable side effects or has virtually no side effects. (HIV and sexual health consultant, London, UK)

> The drugs we've got at our disposal now are so much better. The half-lives are longer. The risks of resistance are going down. They're easier to take. People aren't sitting on the loo with diarrhea all day. (HIV and sexual health consultant at a different London hospital)

These participants described side effects from present day antiretrovirals as largely tolerable specifically *because* they are short-lived and manageable, causing minimal interruption to individuals' daily lives and schedules. Here participants engaged with a narrative of temporality in order to situate present day antiretrovirals as tolerable precisely because they are less of a temporal burden than those in the past. In this way, time matters when tolerability fails. Even when drugs do produce side effects in bodies, momentarily rupturing the facade of tolerability being constructed, side effects are framed as coming and then going quickly, being short-lived, not keeping people "sitting on the loo with diarrhea all day." They take less away from those who consume them, specifically less time feeling unwell and coping with side effects. This framing of antiretrovirals as evolving via a shortening duration of side effects within a lessening impact on daily life allows for them to still be disruptive in bodies without troubling the claim of their evolving tolerability as making possible this new "treatment landscape."

Antiretrovirals today are constructed by some participants as not only as having fewer side effects - fewer headaches, fewer incidents of diarrhea, fewer occasions when one feels unwell because of taking them - which demand less of people both temporally and affectively, but antiretrovirals are constructed as less toxic, less hazardous, and safer relative to antiretrovirals of the past.

> They don't have the same toxicity they used to. (Project director for a treatment advocacy organization, New York, NY)

> We've got better, less toxic drugs. (HIV clinical scientist and physician, London, UK)

In fact, present day antiretrovirals are framed as not only safe, but *safe enough* that providers can recommend and individuals might consider taking them not only for individual clinical reasons, to slow disease progression and improve survival, but to protect others by reducing individual infectiousness via viral suppression.

> What we need to do is say, 'If you are living with HIV, we now have drugs that we feel comfortable are safe enough to keep you well, and you get two benefits. They keep you well and they stop you from transmitting.' (Presenter at the 2014 IAPAC Summit, London, UK, September 18, 2014)

This framing of the safety of present day antiretrovirals stands in stark contrast the regimens of the past, as described by the HIV and sexual health consultant excerpted earlier in this chapter, who emphasized how offering these earlier regimens to any of her patients who would not necessarily experience an immediate individual level benefit (as opposed to a public health one) would be a "non-starter."

Present day tolerability is also framed by some of these participants through a discourse of cleanliness and sleekness. In contrast to messier, dirtier, more toxic earlier formulations, antiretrovirals are today described as "sleeker" (Presenter at the 2015 IAPAC Summit, Paris, France, October 2, 2015) and "relatively clean" (HIV and Sexual Health Consultant, London, UK). They were framed by several participants as also more appealing to those who would consume them. The treatment available to people living with HIV today includes "…therapies that were more palatable, that were more tolerable, that were more acceptable to people living with HIV" (Project Director at a treatment advocacy organization, New York, NY). One participant, the director of a New York-based treatment advocacy and policy organization, sums up this framing of tolerability by tacking back and forth between the present and the past to frame modern antiretrovirals, by saying,

> The new treatments have come a very, very long way, in terms of just being, in enabling people to be in therapy much better. If you take a look at what viral load suppression rates were in the mid-1990s and late 1990s with the first generation of drugs, those adherence rates are much improved now. In part, it's because these drugs, they don't have the same toxicity they used to, particularly for some of the more short terms side effects, the headaches, the nausea, and so on and so forth. That has been much improved. Treatments are much easier to take now. (Project Director at a treatment advocacy organization, New York, NY)

Tolerable drugs with fewer side effects that are easier to take make it easier for individuals to comply with the imperative to move through the HIV care continuum, that is to engage in HIV care, to start and adhere to treatment and to achieve sustained viral suppression, thus rendering themselves non-infectious. Tolerability was framed by a few participants as potentially contributing to improved retention in care and treatment adherence by contributing to building a trusting relationship between the providers of care and support and the persons living with HIV who engage with them.

> Superior tolerability means improved retention on treatment and it probably means better retention in care. 'The doctor didn't put me on poison so I'm more likely to trust that doctor, or that healthcare system, or that advocate.' (Presenter at the 2014 IAPAC Summit, London, UK, September 19, 2014)

Tolerability of present day drugs is also situated as a necessary prerequisite to the achievement of the anticipated population level goals of reducing HIV transmission because evolving tolerability relative to the past *makes possible* improved retention in care and treatment, which have population level effects, as described by the presenters below from a session at the 20th International AIDS Conference.

> Drugs with lower side effects and more tolerable, more forgiving of missed doses, these help to enable us to achieve those goals [stated earlier, of engaging people in care and getting them on treatment and virally suppressed] on a larger scale. (Presenter at the International AIDS Conference, Melbourne, Australia, July 20, 2014)

> We believe a combination of three factors is very important to making sure patients in care, stay in care, and are virally suppressed, and that's better drugs that are tolerable and forgiving, patient monitoring to make sure that those regimens are working and that includes viral load monitoring, and service delivery that addresses retention in care. (Presenter at the International AIDS Conference, Melbourne, Australia, July 20, 2014)

In this way, the evolving tolerability and safety of antiretrovirals makes possible the striving for population level targets, ones that are envisioned as bringing about the 'End of AIDS' according to the UNAIDS' 90-90-90 targets by 2030.

Further, the evolving tolerability of antiretrovirals is situated as improving the delivery of HIV care. Safer and more tolerable drugs are framed by several participants as making possible decreasing clinic time and resources spent on monitoring for toxicities and dealing with side effects. Because they are safer and produce fewer side effects, particularly the most serious side effects, such as liver or kidney damage or anemia, more tolerable drugs are framed as requiring less clinical follow-up for monitoring. This means they are more straightforward to initiate with new patients, with less follow-up during the adjustment period compared to previous formulations, and require less time spent monitoring for and addressing side effects over time. Tolerability is then constructed as making more resources available to expand treatment programs, getting more individuals on treatment and earlier in the course of their infection. Here, in the presentation by a speaker at the 2014 IAPAC Summit, evolving antiretrovirals are constructed as technologies that help to create the conditions of possibility for the future success of treatment as prevention at the institutional and health systems levels.

> Fewer toxicities and side effects means that patient doesn't have to come back and report to the clinic because they're having unacceptable side effects. That means less provider time spent managing side effects. It means more resources available to actually take care of patients and deliver more patients on treatment. (Presenter at the 2014 IAPAC Summit, London, UK, September 19, 2014)

In part, this is because a less intensive focus on toxicity monitoring and treatment of side effects facilitates task shifting. Several other participants spoke of how community nurses have expressed discomfort providing certain antiretrovirals in the community because of their past experience of patients experiencing severe side effects on these drugs. Tolerability here is framed as making it possible for tasks to be shifted and resources to be better utilized for treatment scale up.

> In a perfect world…it would all just be much more open and easily accessible, more and more task shifting as the drugs get less onerous, and you could just have a bunch of community nurses going around giving injections once every three months. You don't need all sorts of blood tests and toxicity tests and measures done. (HIV Clinical Scientist and Physician, London, UK)

Here, present day antiretrovirals are framed as potentiating anticipated new systems of care delivery, ones that are more community-based, peer or lay led, increasingly technoscientific, yet with less actual time spent traveling to or waiting in the clinic as part of clinical monitoring. This makes possible more efficient use of time by clinical and other support staff.

Evolving to reduced pill burden. Beyond tolerability, the framing of antiretrovirals as evolving, and in particular, evolving into drugs that can be taken earlier in the course of infection, when one is still asymptomatic, and also for prevention purposes involves a foregrounding of the reducing pill burden of present day treatment regimens, an element of the construction of antiretrovirals that continues to be situated in its own micropolitics of temporality and affect. In tacking back and forth between the past and present constructions of these drugs, many participants described the burden of pill consumption temporally, measured by the time it took out of the day, the number of interruptions in time, the sleep time disturbances when alarms had to be set in the middle of the night, the time and effort to plan the consumption of food and drinks around pill taking. The complexity of regimens of the past, requiring a detailed attention to timing and whether they were to be taken with food or milk or on an empty stomach, is described by this participant, a peer support worker herself living with HIV.

> When I started 20 years ago, there was nothing, then it moved on to taking so many tablets a day, with food, without food, with water, with milk, that sort of thing. People had little alarms on their watches, you know? (Peer Support Worker, London, UK).

The reduced pill burden of present day first line antiretroviral drugs, at least those widely available in resource-rich settings, a critical element of stratified biomedicalization (Clarke et al. 2010) to be discussed shortly, is framed as a product of the evolving of antiretrovirals. The drugs that are available now are better and easier to take than the drugs that were available in the past, in part, because they require taking fewer pills, often only one or two pills a day.

> If you projected ten years back, ten years ago we were taking handfuls of pills and we wanted one pill once a day. We've now got four or five different one pill once a day combinations. (Director of a treatment advocacy organization, London, UK)

> Treatments are much easier to take now. They're down to one pill, once daily. That's tremendous. (Project Director at a treatment advocacy organization, New York, NY)

Taking fewer pills with less complex dosing requirements also makes taking treatment simpler, thus making the burden of taking antiretrovirals preventively less. Reduced pill burden here is framed as not simply 'fewer pills' but fewer pills that require a lot of those who consume them to work, which is framed, as by the HIV and sexual health consultant excerpted earlier in this chapter, as making the 'ask' of treatment as prevention possible today. Today, "you could take one pill once a day" as opposed to in the past era of protease inhibitors, it was "eighteen pills a day," a pill burden that would have been a "non-starter" if her patients were primarily going to reap a preventative rather than clinical benefit. Further, the lessening pill burden of the evolving present of antiretrovirals was also framed as making antiretrovirals easier to take, not only because regimens have become less complex, but because by becoming simpler, they have also become more easily concealable and more portable. As the London-based HIV and sexual health consultant excerpted above went on to explain, "You can put them in a bag." Reduced pill burden, along with increasing tolerability, is constructed as produced through the evolution of antiretrovirals. Pills that are not so burdensome to consume, because in this case, they are part of simpler regimens, with longer half-lives, greater flexibility, and more concealable and portable, are part of the conditions of possibility for treatment as prevention. At the individual level, it makes the ask of starting on treatment easier, including for prevention purposes.

Evolving antiretroviral forgiveness. Lastly, the construction of antiretrovirals as evolving is deployed through a foregrounding of present day antiretrovirals as more "forgiving" than those of the past. According to the Oxford English Dictionary (Stevenson 2010), to forgive is to "stop feeling angry or resentful towards (someone) for an offense, flaw, or mistake," or to "no longer feel angry about or wish to punish (an offense, flaw, or mistake)." Here, the "offense" or "mistake" is not taking one's pills on time, as prescribed, not being medically compliant to a regimen of pharmaceutical consumption. In contrast to the days when "people had little alarms on their watches" so as to perfectly time the consumption of multiple pills a day, antiretrovirals in the evolving present are much more flexible, much less likely to "resent" or "punish" the offense of not taking them perfectly as prescribed and, in particular, through the development of viral resistance. The greater forgiveness of present regimens has relieved some of the anxiety around and focus on perfect adherence, which several participants noted, including this HIV provider from the Bay Area.

> In some ways the work on adherence has even gotten a little less intense because the antivirals have gotten so much better. When we were on regimens that were every eight

> hours or whatever, which was a long time ago, but the issue was the regimens were more vulnerable and so missing one dose even could be a big deal and just they're a lot more, the regimens we have today are a lot more forgiving, so there is a little bit less focus on it. (HIV Physician at a community health center in the Bay Area)

Situating antiretrovirals as forgiving coincides with a construction of present day regimens as easier to adhere to and more likely to facilitate the goals of achieving sustained viral suppression. Forgiving regimens are framed as “the right regimens,” one’s which can enable achieving viral suppression, even with real world, imperfect use over time.

> Some of the regimens are more like quote-unquote ‘forgiving,’ so like you can forget a couple of doses a week and you're still won’t develop resistance. And then I think people would also say, you know, that with appropriate adherence support, people can do extremely well. When you look at the data from, for example, clinical trials they reach like almost 90% viral load suppression, so it is possible to have good outcomes. It's just a question of providing the right regimens and the right support. (Infectious Disease Specialist, New York, NY)

The framing of antiretrovirals as forgiving is constructed as part of the evolving package of attributes that effective treatment must have. Being forgiving, along with being tolerable, and not being too burdensome is posited as necessary to achieve the goals required to bring about the ‘End of AIDS.’ In this way, antiretrovirals are constructed as not simply evolved, but *evolving*, as engaged in ongoing progress towards even better, easier, simpler, more tolerable, more desirable regimens, which include long acting formulations and injectables. Anticipating the future of antiretroviral technologies is taken up later in this chapter, but it is important to highlight here how this evolution is framed as ongoing, as having a past, which may bring with it assorted ‘baggage,’ a present, in which new possibilities for using treatment are opening up, and a future in which further technoscientific possibilities are anticipated as part of this unfolding process of technoscientific progress.

Abduction as a technique constructing the evolving present in pharmaceutical marketing. Adams and colleagues (2009) describe the process of abduction, the practice of tacking back and forth temporally as a technique of a politics of temporality and affect, of drawing a citing of the past into making up of the present as a template for the creation of highly anticipated, yet still uncertain, futures. The image to the right is of a set of patient information guides, published in September of 2012 and funded by Gilead Sciences, Inc., a major U.S.-based biopharmaceuticals company, which is called "THEN + NOW." The booklets included in the pack range in their titles from "HIV treatment guidelines," to "Avoiding HIV treatment resistance," "History of HIV treatment," and "Living healthily with HIV." These materials were collected from the Gilead booth in the Exhibition Hall of the 20th International AIDS Conference in July of 2014. The title of this patient education series itself - "THEN + NOW" - engages in processes of *abduction* (Adams et al. 2009), by framing the present, one in which, via these guides, posits present day antiretrovirals as having advanced from *then* into *now*, via a citing of technoscientific progress. In "History of HIV treatment," the authors write,

Figure 21. "Then + Now," Gilead Sciences, Inc.

> Treatment advances mean that there are now more than 25 licensed antiretrovirals available. Further advances have also enabled two or more different drugs to be combined into a single tablet. So in 25 years we have gone from numerous pills in a treatment regimen that had to be taken several times a day to, in some cases, a combination which requires just a single tablet taken once a day….Effective treatment can restore and preserve CD4 count (immune system function) and suppress viral load to less than 50 copies per ml in the blood. Suppressing viral load helps to reduce the risk of onward HIV transmission. (Gilead Sciences, Inc. "THEN + NOW," Collected from the Exhibition Hall at the International AIDS Conference, July 22, 2014).

Here, by asserting the evolving progress of antiretroviral development, particularly in this case, the lessing consumption burden of present day antiretrovirals relative to the antiretrovirals of "then," these guides themselves engage with the techniques of abduction in order to situate antiretrovirals as engaged in processes which make it possible for individuals to use antiretrovirals preventatively "to reduce the risk of onward HIV transmission." In this way, an anticipatory orientation to the future is articulated as part of the techniques of pharmaceutical marketing via 'patient education efforts.'

Antiretrovirals travel with 'baggage:' Constructing the tension between the evolving present and the toxic past. It is impossible to talk about antiretrovirals as prevention and treatment technologies, as material 'things' without critically tending to the historical, social and political baggage with which they travel (Hardon & Dilger 2011), often in highly uneven ways that echo the structural inequalities characterizing the distribution of HIV infection itself as well as the stratification in access to antiretrovirals globally. Situating antiretrovirals as 'things' which have a social life means also explicitly seeking to render visible the ways in which global structural inequalities are co-constitutive of HIV technoscientific knowledges and practices. Hardon and Dilger (2011) echo the importance of this analytic by calling attention to how antiretrovirals, like all pharmaceuticals, travel with considerable "baggage" (Hardon & Dilger 2011:149). This includes protocols and guidelines that have historically structured their use, new and old material forms, such as drug formulations and drug resistant viruses, new forms of care and social relations for health care workers who interact with them, new types of identities, or subjectivities, for individuals who consume them, and new personifications or ways of representing antiretrovirals themselves as their evolution twists and turns with the emergence of new technoscientific ways of knowing.

In situating antiretrovirals as material things of critical material and discursive significance to the emergence of treatment as prevention as a technoscientific practice, many participants framed antiretrovirals as bringing with them all manner of 'baggage' as they are evolving into prevention and not just treatment technologies. In my data, this 'baggage' is framed as consisting of the very material effects of antiretrovirals in the production of side effects and toxicities within individual bodies, and the lived experience of dealing with these effects, as well as the discursive aspects, the "stigmas" of the perceived toxicities of antiretrovirals. Some of this antiretroviral 'baggage' was framed as that arising via broader discourses of pharmaceutical mistrust and skepticism, including the historical traumas of the abuses of trust related to (bio)medical research, what several participants called the ‘Tuskegee Effect.’ In this way, the evolving present of antiretrovirals is not left untroubled in anticipation of the biomedicalized future of HIV prevention. The construction of antiretroviral ‘baggage’ via these various threads acts to disrupt the anticipatory potential of antiretrovirals as prevention technologies, including, particularly as I will attend to in the next section of this chapter, in ways that highlight how antiretroviral ‘baggage’ may travel transnationally and in highly stratified ways, as a form of what Clarke and colleagues (2010) describe as stratified biomedicalization.

First, some participants described antiretrovirals continuing to pull along with them into the present the historical framing of antiretrovirals as “toxic,” as having the potential to cause serious iatrogenic effects with long-term use. This framing was particularly asserted by several HIV advocates who are themselves long-term survivors, who have the lived experience of the effects of these toxicities and who have seen the impact they have had on their friends and colleagues. This discursive framing contests the framing of antiretrovirals as evolving into tolerability by seeking to assert the lived experience of the very *in*tolerability of antiretroviral use in their lives. Here, a participant who works for an advocacy organization in San Francisco and who is herself living with HIV, describes her personal discomforts with the scale up of antiretroviral use as part of treatment as prevention.

> It’s really because for long-term survivors who actually lived through the early days of the epidemic, like we’ve seen the toxicities of HIV medication and people actually ended up with renal failure, liver damage and other conditions because of the medications that are supposed to treat their HIV. Then the question becomes, why do we want to put a perfectly healthy person on some potentially highly toxic medication? (Director of an HIV advocacy organization, San Francisco, CA)

Antiretrovirals are perhaps most powerfully constructed as productive of disruptive long-term side effects via the use of these sorts of personal stories, personal stories which are also linked up here with the broader circuits of investment in pharmaceuticals and industry profit. This participant describes feeling as though some of these side effects and toxicities are only just being publicly acknowledged now that these drugs are becoming generic, and thus less profit generating for the pharmaceutical companies behind their development.

> I know so many people that have been on Efavirenz for years and they all had terrible experiences. I was only for two years and then I felt like I'm never sleeping. I felt like I wasn't sleeping, you know. When I slept I didn't have, they said you may have vivid dreams. I didn't have vivid dreams, but I was just like my mind was totally like agitated even in my sleep and then, you know, at the end I had to tell my doctor that I wanted to get pregnant [laughs] because, you know, it was like the only good reason for me to switch to another drug. Then I heard in the past year, I heard so many people, it took them so long to say actually I am not sleeping well, my moods are really weird, and it was all people on Efavirenz and, but it wasn't really taken on board. But now that it is becoming generic and it could be given really cheaply all of a sudden they are listening. So this is, you know, I don't have a clinical trial or structured research. It's my anecdotal evidence of seeing hundreds of people living with HIV here year after year. (Director of an HIV advocacy organization, London, UK)

Further, contesting the earlier narrative of present day antiretrovirals as producing side effects with minimal impact on the lives of those who take them, through a lessing time burden and less complex regimens, some participants in fact framed present day antiretrovirals as productive of an increasing burden in their daily lives through the creation of side effects which themselves then need clinical management and pharmaceutical treatment with even more drugs, as the participant below describes. Here coping with side effects and toxicities is framed as a daily practice, not something fleeting or short-term, but a daily complication that requires its own biomedical intervention and associated techniques of self-governance, which have as yet unknown implications for subjectivity, never mind the health and wellbeing, of those who must self-manage them.

> For my reality, someone with a compromised immune system, like being virally suppressed means I have to take all these additional pills every night before I go to bed, to make sure that my liver enzyme was not completely off the chart and to make sure that I'm not super anemic. These are the side effects. Then to really continue to pay really good attention to every single little symptom that I experience everyday. (Director of an HIV advocacy organization, San Francisco, CA)

This posits the 'baggage' with which antiretrovirals travel as making up a particular temporal and affective burden for those who consume them, framed as problematic when antiretroviral consumption may occur primarily for preventative reasons rather than for disease-fighting purposes.

The lived experience of side effects and toxicities is deployed not only through personal stories of antiretroviral use, but is also constructed as informing the claims making of those who critique treatment as prevention by others engaged professionally with these discourses, even when they themselves may not assert these claims. Here one participant attributes the efforts to critique treatment as prevention by one well-known public figure to this individual's personal experiences with the long-term effects of antiretroviral consumption.

> [A well-known HIV advocate who is an outspoken critic of treatment as prevention, named omitted], in particular, was very adamant that there was the potential for coercion and he just seems very wary of pharmaceuticals, in general, and takes a very critical eye towards what he sees as a possible unnecessary use for them in certain cases. He's just had lots of problems with with them. He broke, shattered his ankle, and it was the result of bone loss. (Journalist for an HIV community publication, New York, NY)

Another participant, an outspoken champion of treatment as prevention, said of the individual referred to in the above excerpt that his critiques of treatment as prevention stem from deep-seated personal issues, exclaiming, "He needs therapy". In this sense, dissent or critique was personalized, both by those offered up the critiques as part of their very personal stories of struggles with antiretroviral use, but also by others who disagreed with them, perhaps as a way to delegitimize them as *just* personal anecdotes.

What Adams and colleagues (2009) describe as *abduction*, the processes of tacking back and forth temporally between the present, the past and imagined futures, is also deployed as a method for addressing this traveling antiretroviral 'baggage' and to bracket the disruptive impact of historical toxicities and side effects as they continue to effect individuals and clinical practice in the present. Several participants described the historical construction of antiretrovirals as toxic and as productive of severe and life disrupting side effects as a "stigma" attached to them, one that is cited but contested by proponents of treatment as prevention who want to make the distinction, via a citing of the past, between earlier antiretrovirals and the newer, safer ones of the evolving present. Here, a panelist at the 2014 IAPAC Summit frames the problematic nature of the 'baggage' with which antiretrovirals travel - "the stigma of what medications were" - as he deploys a discourse of evolution and tolerability, calling older antiretrovirals, "Ford Model A's."

> Here I think we can embrace the idea that there are new combinations, new tolerability. The ball has moved. The needle has moved on what we can expect. The reason that's relevant as we think about scale up is that the stigma of what medications were continues to color our conversations about what medications are today and should be in the future. So people object to medications for universal therapy because the old

> medications were toxic and the old medications were difficult to adhere to. Those were the old medications, and no more so do we drive Ford Model A's anymore. (Presenter at the 2014 IAPAC Summit, London, UK, September 19, 2014)

Yet, this stigma of toxicity and intolerability attached to antiretrovirals - this 'baggage' with which they travel - is constructed as having a very material impact on the practice of treatment as prevention in the present, with longstanding fears about toxicities and resistance being framed as effecting the willingness of individual providers as well as organizations to support offering treatment earlier in the course of disease progression and for prevention purposes. A few participants described how this baggage has been built up through clinical training and the lived experience of providers in providing care for their patients living with HIV, particularly among those whose careers began before more modern regimens became available.

> Well, I think providers came to think of this concept of these drugs will only help for a certain amount of time, so why don't we save those drugs until we really need them? And for people who have HIV but do not, their immune system is not destroyed yet, why don't we just wait? And so they would wait for the CD4 to fall below 500 before they would start treatment. And that was just the way they were trained and the way they thought. And they were against putting highly toxic drugs into people before they really needed them. Well, it turns out, the drugs are not that toxic anymore. And so there's some change in attitude going on, but that discussion went on for quite a while. (HIV social scientist, San Francisco, CA)

Below a panelist at the 2014 IAPAC Summit discusses the resistance of some non-governmental organizations to the Brazilian government's implementation of universal treatment coverage as part of treatment as prevention.

> The biggest resistance [to scale up of treatment as prevention in Brazil] are somehow from a sector of non-governmental organizations that have a very old-fashioned understanding of the epidemic and the facts of the drugs, and therefore, people who used the first drugs thirty years ago, twenty-five years ago, and say that the drugs are very problematic and they will cause a lot of side effects, a lot of resistance, a lot of problems, and they stick that on top of everybody including new people with new drugs. We have resistance from doctors that still have the same feelings that the ARVs are worse than the virus, and therefore, somehow some of them resist to prescribe. (Presenter at the 2014 IAPAC Summit, London, UK, September 18, 2014)

Here, "a very old-fashioned understand of the epidemic and the fact of the drugs" - produced through the lived experience of clinical practice with earlier formulations - is framed as the baggage which pushes back against efforts to re-frame modern antiretrovirals as safe, tolerable and easy to use, including for prevention purposes. This presenter, in particular, attends to the temporal nature of this antiretroviral baggage, its very stickiness, saying “they stick that on top of everybody including new people with new drugs.” The use of this language of stickiness emphasizes how the very material effects of antiretrovirals of the past are drawn into discursive efforts to frame a template for orienting toward and anticipating the future, specifically the future use of antiretrovirals as part of treatment as prevention. The past is not simply forgotten, but it must be attended to in the present and in anticipation of the future.

Several participants actively deployed strategies of temporal abduction to draw past critique of universal, long-term use of antiretrovirals into the present to be deployed to contest the safety and feasibility of present day antiretrovirals for future lifelong use as part of treatment as prevention. As such, I argue that the baggage with which antiretrovirals travel into the evolving present is made up of threads of historical narratives of public claims making on the risks of antiretroviral use, and in many cases by the very opinion leaders who today are vocal supporters of treatment as prevention. This is another way by which the baggage of antiretrovirals of the past may stick to the people and drugs of the present. In the excerpt below, Sean Strub, himself a well-known dissenting voice in treatment as prevention discourse, writing in a 2010 article for *Poz Magazine*, entitled “Medical Ethics and the Rights of People with HIV Under Assault” references the caution called for by Dr. Anthony Fauci, now a public proponent of treatment as prevention, for the long-term use of antiretrovirals in 2000.

> In 2000, at the International AIDS Conference in Durban, Dr. Anthony Fauci, the director of the National Institute of Allergies and Infectious Diseases, questioned the viability of lifetime antiretroviral treatment. He said ‘...prolonged courses of continuous HAART are not an option for most HIV-infected individuals...With current drugs, it is almost certainly not feasible to have people on therapy for an indefinite period of time.’ (“Medical Ethics and the Rights of People with HIV Under Assault” Published on Poz Blogs, April 28, 2010, Emailed by an interview participant)

In this way, historical narratives have consequences. The words spoken ages ago are not neutral, inconsequential. They are not locked in time, set in the stone of historical context, left inertly in the past. They may get put away in the now digital vaults of long-forgotten conference talks to be unearthed in the future and deployed as part of the making of a present that was at that time unforeseen, to challenge new and emerging discursive framings. Here, constructions of earlier formulations of antiretrovirals as inappropriate for long-term use, deployed in the context of limited scientific knowledge of their long term effects and in a situation in which access to these drugs was - intentionally or not - blocked for the vast majority of people living with HIV at the time, these constructions of antiretrovirals as toxic, as fragile, as unsuitable for longterm use travel with them and are being re-deployed today in discursive framings of antiretrovirals as unsafe for expanded use as part of biomedical prevention.

Antiretrovirals also travel with the baggage of a broader pharmaceutical skepticism that has emerged out of the fraught histories of other kinds of drugs, drugs once touted as safe, that came, with time, to produce devastating effects in those who consumed them and their children. These assemblages of fraught pharmaceutical histories attach discursively to antiretrovirals too, as a specter of potential future harm, unknown in the present, that could rear its ugly head and challenge the safety and tolerability of new modern day regimens and trouble our anticipated yet fragile antiretroviral futures. Drugs such as Thalidomide, or as described here, a drug called Stilboestrol which caused vaginal tumors in the children of women who consumed it in pregnancy, are constructed by several participants as examples of this discourse of pharmaceutical skepticism and uncertainty.

> [I: Do you think there's anything that could happen that would halt or reverse this trend?] Yeah, I suppose if something ghastly came out of the woodwork. Like, you're probably too young to remember this but Stilboestrol which was given to women in pregnancy and then their 25-year-old daughters got vaginal tumors. And we were all, 'Bloody hell! We didn't know that was going to happen!' I think we've had enough antirets for long enough to not have something like that come out of the woodwork, but if something big blew up and suddenly we found that Tenofivir gives you brain cancer, eh, you know? So if there was a new risk that came into the system that would change the dynamic, a new risk of antirets. (HIV and Sexual Health Consultant, London, UK)

Here, the predictable uncertainty of anticipated futures, the acknowledged unknownness of the long-term effects of antiretroviral use, is situated as part of a historical narrative in which other drugs once considered safe have fractured the biomedical certainty about their own use in the past. While this particular participant did not acknowledge this past in an effort to explicitly contest present and future engagements with antiretrovirals used preventatively (in fact, she is herself generally optimistic and positive about the possibilities of biomedical prevention), these fraught pharmaceutical histories of other drugs are drawn into the present here in an effort to situate antiretrovirals within the predictable uncertainty of iatrogenesis, positing how antiretrovirals do not exist in a historical vacuum, unaffected by the histories of other sorts of drugs as well as of (bio)medicine, broadly speaking.

Drawing on historical traumas inflicted in the name of scientific knowledge production and progress can also be seen as part of historical 'baggage' with which antiretrovirals travel. Several participants cited the Tuskegee Experiments as being deployed as part of a discourse of skepticism, mistrust and fear of treatment as prevention, particularly among historically marginalized communities in the U.S., such as African Americans, that attached itself to present day constructions the use of antiretrovirals for treatment as prevention. The participant excerpted below, an HIV policy director for a city Department of Health in the U.S., described how most of the populations he works with have bought into the idea of treatment as prevention and the 'End of AIDS,' but there is a small minority who continue to be suspicious of it. When I asked who these individuals were, he responded,

> I think it's a lot of poor communities of color, the African American communities. It's the Tuskegee effect. They are suspicious of the medical establishment. They are suspicious of pharmaceutical companies promoting their products on the subway posters. They are suspicious of people pushing pills down their throat. That is a big hill to climb. (HIV Policy Director at a City Department of Health)

The making up of an evolving present of antiretrovirals that are tolerable, safe and easy to take is also embedded in a broader discourse that at times leaves untroubled the stratified nature of biomedicalization. A construction of the new modern antiretroviral does not speak out loud the disparities in access to antiretrovirals, but especially the newest and safest *and* most expensive across both global and local divides. The older, more toxic, less tolerable, much more fragile drugs that are the foils against which modern antiretrovirals are distinguished have in large part not simply disappeared from the market as newer, evolving formulations have entered it. Instead, these older formulations are framed as the very material forms of antiretroviral 'baggage' that travel to (or are *made* to travel to) regions and communities where access to antiretrovirals - *any antiretrovirals at all* - is deeply stratified, as is access to toxicity monitoring for long-term adverse effects. The old, toxic, fragile drugs are thus framed as having the potential to travel and they travel to the places where they will be purchased regardless, bringing with them all their 'baggage.' This is an example of stratified biomedicalization (Clarke et al. 2010). In the excerpt below, the director of an advocacy and support organization in London frames her concerns about the transnational travels of antiretroviral 'baggage' in relation to treatment as prevention, drawing on her own lived experience of taking antiretrovirals and in working with the clients of her organization,

> I have been on Truvada for twelve years and last week they had to stop me because my kidneys are packing up. I have no effects of this. I mean, I don't feel, I have no symptoms. They have picked it up because I go to hospital every quarter and they can do my blood test and can see the effects the Truvada is having on my kidneys. I'm just like multiply this for millions of people in developing countries where there is not even, you know, they are discussing about viral load tests. I really doubt they are going to be checked for their kidneys, their livers as closely as I have…I am also annoyed because a lot of better treatments are coming out, but those millions of people are not going to be treated with those. They're going to be given, you know, Efavirenz and Truvada, which are very toxic. I've seen people who have taken those drugs. I've seen people taking those drugs for the past fifteen years, twelve years, as long as they've been around. Those drugs are toxic. I'm sorry but they can't tell me, you know. I have the lived experience of myself and the community, you know, so I'm thinking you're going to put those 34 million people in places where they don't even have the monitoring? What is going to happen in ten, fifteen years? You know, how are we going to deal with that? (Director of an HIV advocacy organization, London, UK)

Again, through processes of *abduction* (Adams et al. 2009), tacking back and forth between the present, the past, and imagined yet uncertain futures, antiretrovirals are made up as material things that have a "social life" (Clarke et al. 2010), including assemblages of social, political and economic 'baggage' (Hardon & Dilger 2011) with which they travel into the present, including transnationally, which have the potential to disrupt their potentiation as prevention technologies. Here, this antiretroviral 'baggage' is framed via the specter of as yet unknown iatrogenic effects resulting from their scale up as part of treatment as prevention, and in ways that draw attention to the already highly stratified nature of treatment access transnationally. As Myron Cohen, who is himself one of the clinical scientists on the forefront of research on the use of treatment for prevention, and his colleagues state in a paper in *Lancet Cell*,

> If safe, well tolerated antiretroviral drugs are not available, early treatment is far less likely to offer health benefit, and should be deferred. (Excerpted from "Antiretroviral

> treatment of HIV-1 prevents transmission of HIV-1: where do we go from here?" Cohen et al. 2013, Sent by an interview participant)

Thus safe, tolerable antiretrovirals are a necessary pre-condition for the imagined futures of treatment as prevention. Where a safe, tolerable formulation is not available - including where the 'baggage' of intolerable regimens is deployed in resource-poor settings - then earlier antiretroviral therapy may not offer an individual health benefit, even if it were to offer a population level one, and should be deferred until a more tolerable formulation is available. In this way, the ethics of the very material effects of antiretroviral 'baggage' drawn into the present disrupts and destabilizes the possibilities for the heralding in of the 'End of AIDS' via treatment as prevention globally. The continuing stickiness of this antiretroviral 'baggage' draws up alongside what Adams and colleagues (2009:248) describe as anticipation's tendency to reconfigure the 'lay of the land,' such that "sites that in colonial logics were mapped as either primitive (past and out of time) or modern (present and in time)…[turning] them both into productive ground for anticipatory intervention, each forecasting its own type of darker and/or more hopeful futures."

Antiretroviral 'baggage' as biopolitical ammunition in the visual discourses of treatment as prevention. Drawing on Clarke and colleagues (2010:104) assertion of the analytic value of understanding the visualization of "things (bio)medical" and the critical discursive work that visual imagery performs (Clarke et al. 2010:104), I want to also explore here specifically how the visualization of antiretrovirals is co-constitutive of their construction as biomedical prevention technologies. There are, of course, many ways of visualizing antiretrovirals, and I had several examples emerge in my data, not the least that of imagery used in pharmaceutical advertising, which I will discuss shortly. But first, I focus on one specific site of visualization outside of pharmaceutical advertising, specifically because it intentionally seeks to deploy the 'baggage' that I argue antiretrovirals continue to travel with. I argue that the imagery below seeks to deploy this 'baggage' as a kind of biopolitical ammunition, striving through the imagery of pills to regulate populations and discipline the individual bodies who are the targets of these materials.

The images presented below are from an HIV prevention educational booklet published by the Ugandan AIDS Commission along with The Uganda HIV/AIDS Partnership, entitled “To Protect yourself, your child and your spouse: The choice is yours!” The booklet itself, collected from the Ugandan AIDS Commission booth in the Global Village at the 20th International AIDS Conference in July 2014, heavily promotes sexual behavior change as a primary prevention modality, emphasizing condom use, monogamy and abstinence until marriage, while contesting the wisdom and utility of biomedical prevention, including treatment as prevention. As illustrated in the title, the content of the materials frame personal responsibility for sexual behavior as the the cornerstone of efforts to not only protect the self, but also the family from HIV, visualized quite powerfully in the imagery on the front cover of the booklet by the silhouetted image of a very typically herteronormative ‘family’ (man, woman, two children) against the burning flames of an inferno. A heady visualization of HIV prevention, indeed!

Figure 22. “To Protect Yourself, Your Child and Your Spouse: The Choice is Yours!” Ugandan AIDS Commission

In a sub-section of text within this booklet, with the heading “Where did it all go wrong?”, the authors argue for shifting the focus back to sexual behavior and away from biomedical prevention strategies by saying,

> First, we went wrong when we lost our focus on sex behaviour as the centerpiece for turning off the flow of new infections. The introduction of antiretroviral treatment and other biomedical interventions saw our focus shift to these interventions and at the expense of behavioural interventions. We should have taken these as complementary tools in our arsenal for the war against HIV/AIDS while maintaining the focus on behavioural intervention as the centerpiece. We cast aside the focus on behaviour yet there was already evidence in the literature to suggest that without proper messages, the biomedical interventions could reverse the gaining in risk avoidance sex behaviour. The use of condoms, for instance, led to increased high risk sexual behaviour amongst high risk populations in New York, driven by the perception that as long as you wear a condom it does not matter who you sleep with. Likewise, increased access to treatment or to post-exposure antiretroviral prophylaxis in the United States, Europe, and Australia has been shown to be associated with significant increases in risky sexual behaviour. It is no wonder then that the people began to relax and become complacent. Thus a high proportion of Ugandan adult males have reverted to the risky life style of engaging in sex with multiple concurrent partners which is the key driver of the epidemic. (Excerpted from “To Protect yourself, your child and your spouse: The choice is yours!” Uganda AIDS Commission)

This text is excerpted as part of this analysis in order to situate the image below within in a broader discourse contesting the the use of antiretrovirals preventatively. Here, how antiretroviral pills themselves are visualized is deployed in their construction as morally fraught technologies of prevention, framed as productive of an increase in morally risky behavior (“engaging in sex with multiple partners”), irrespective of HIV transmission risk (“the perception that as long as you wear a condom it does not matter who you sleep with”). The photo below has text alongside it related to treatment as prevention, which reads,

> Yes, it is true that antiretroviral therapy is lifesaving and must not be denied any Ugandan who needs to be put on treatment. However, if you choose to take these risks [of engaging in risky sexual behaviour], let it be clear to you that these drugs are not curative; they are to be taken daily for life; the drugs are not easy to take because they cause serious side effects and require strict adherence to the treatment regimen. Moreover, there is the ever-present and overhanging threat of emergence of drug resistance with its associated consequences of treatment failure requiring change of drug combinations. The virus will sooner or later become resistance to these combinations…The country does not and cannot afford to have enough drugs to treat all those Ugandans that are already living with the disease and need treatment. Indeed only half of those who need to be on treatment are currently enrolled in the treatment programme. So do you really want to join the queue? (Excerpted from “To Protect yourself, your child and your spouse: The choice is yours!” Uganda AIDS Commission)

Figure 23. "Pills" from To Protect Yourself, Your Child and Your Spouse: The Choice is Yours!, Ugandan AIDS Commission

I argue that the image above presents a visualization of antiretrovirals as out-dated, as not modern, not hailing in the future of the 'End of AIDS', particularly in contrast to the imagery of pharmaceutical advertising that follows. The image itself is filtered in sepia tones, making it appear aged. The hand cupping pile of pills is weathered and appears older; it shows lines and wear. The pills themselves are plain, white, unbranded, uncoated round tablets, precisely the sort likely to get stuck in the back of throat when swallowed. There is little color in the photo; in fact, other than the olive tones of the skin, filtered through sepia, the image itself is devoid of color. These pills are not the sleek coated caplets and capsules, the lifestyle drugs, of modern pharmaceutical advertising. There is nothing to set them apart from any other generic looking tablet, for example, the plain, white, round tablets of store brand aspirin or acetaminophen, or even a placebo pill. They have the look of a tablet that is intentionally trying not to distinguish itself for marketing purposes as there is nothing that sets these tablets apart as a special type of pill or a clearly marked brand. This image is not one that speaks of an evolving present, and I would argue that it is *intentionally* not.

Here, antiretrovirals are constructed as disruptive of their own potential as prevention technologies and this narrative is deployed to re-assert the value of sexual behavior change, that is, of behavioral rather than biomedical prevention, and also of self-governance of sexual morality. As biopolitical ammunition in the form of visual imagery in HIV prevention educational materials, this image of antiretrovirals that appear very much unlike the modern, evolving, tolerable and easy to take antiretrovirals described earlier in this chapter, is deployed in an effort, I would argue, to discipline individual bodies, their sexual behavior, their biomedical needs for drugs, by asserting the very out-datedness of present day antiretrovirals. This narrative of antiretrovirals available in Uganda also highlights the argument raised by the participant excerpted earlier in this chapter who described the deployment of the very material 'baggage' of present day antiretrovirals, that is, the older, less tolerable, more fragile and more burdensome formulations, as those likely to travel to those places in the Global South, when they are replaced by more modern, tolerable, easier to take formulations in wealthy parts of the Global North.

The visualization of antiretrovirals asserted in this imagery and the text that accompanies it actively seeks to foreground antiretrovirals as traveling with 'baggage,' with all the things that make adhering to a lifelong antiretroviral regimen in Uganda difficult, acting as a form of biopolitical ammunition, a technique for troubling their scale up as part of biomedical HIV prevention. In this way, calls to return to techniques of sexual risk reduction, of the *sexual* disciplining of individual bodies rather than their *pharmaceutical* disciplining, are more readily legitimated within a discursive framing of antiretrovirals as not easy to take, as having serious side effects, as outdated, fragile, and quite literally, hard to swallow. But this site of the visualization of antiretrovirals is not only evidence of the deployment of antiretroviral 'baggage' in an effort to contest the shift from sexual to biomedical prevention, but it is also a visualization of the deeply stratified nature of the biomedicalization of HIV prevention (Clarke et al. 2010).

Such out-dated, non-branded, hard to swallow plain white round tablets as visualized here are not merely discursive elements in the contestation of HIV treatment as prevention, but they are, in fact, very real, fleshy, material forms that are likely the kind of older, less evolving, more toxic, harder to swallow, multi-pill a day regimen antiretroviral pills that *are* available broadly in Uganda and in many places of the Global South. That is, the visualization of these 'things (bio)medical' by the Ugandan AIDS Commission seeks to trouble of their deployment as part of treatment as prevention. Here, the use of imagery of 'things (bio)medical' is deployed in an effort to discipline individual bodies via a legitimation of traditional sexual risk reduction approaches to prevention, asserting a very visual claim, bound up in a traditionalist sense of sexual morality, to de-legitimate biomedical prevention approaches. But it does so ways that cannot be disconnected from broader critiques about the traveling of antiretroviral 'baggage' in the era of treatment as prevention in ways that reflect and also constitute the already deeply stratified nature of access to antiretrovirals, viral load testing, and other technologies of present day HIV biomedicine.

Perhaps quite surprisingly, in the extant data that I collected either via interview participants or during my field work, there were few example of the visualization of antiretrovirals. There was much talk of antiretrovirals in narrative form and much visualization of people living with HIV themselves in these materials, but antiretroviral pills in material form were largely visually absent. The only other source of visual data on antiretrovirals themselves was in the form of pharmaceutical advertising in two copies of A&U Magazine, a print publication which describes itself as "America's AIDS Magazine" aimed at an audience of people living with HIV largely in the U.S. I collected these materials from a table of free print publications outside of the Exhibition Hall at the 20th International AIDS Conference. The image below is an ad for Complera, a one pill once a day fixed dose combination antiretroviral developed and marketed by Gilead Sciences, Inc. This ad itself is a two page spread in A&U Magazine, Issue 223, published in May of 2013. An almost identical ad for Complera appeared in a later June 2014 issue of A&U Magazine, collected from the same site as this one, but featured a dark haired, olive skinned man with the same marketing slogan and the same imagery of the single Complera caplet as in the image below. These images were similar enough that I have included only one in this chapter. These materials, published in 2013 and 2014, were produced around the same time period as the Ugandan AIDS Commission materials excerpted above, and they were collected from the same area of the Exhibition Hall, though from different tables, during the same period of field work at the International AIDS Conference. I argue, however, that the imagery below deploys a visualization of antiretrovirals as a very different sort of biopolitical ammunition than that above.

The image below, in contrast to that utilized by the Ugandan AIDS Commission, depicts a single antiretroviral pill, rather than a pile of pills. It also depicts a hand (as well as the consumer body attached to that hand) engaging with the pill itself. Rather than this hand being used to cup a pile of 31 pills, it is not even visualized as holding the weight of the antiretroviral itself, but is extended, palm flat, in emphasis of the single pill hovering, weightless, above it. The

Figure 24. Complera Ad, Gilead Sciences, Inc. in A & U Magazine

pill itself is a pink caplet with the Gilead Sciences, Inc. branding - the letters “GSI” - inscribed on it. It is simple, yet it is colorful, marked by branding, and as a caplet, has the feel of a pill that is easier to swallow than the round tablets in the previous image. The image itself contains color. It is naturally filtered, with a bright yellow border to the top of the image, with the woman wearing a lavender shirt, and light blue shading in the background. Overall, the color scheme is muted and not overtly bold, but gives the image a cleanness and modern-ness that the sepia toned image in the Ugandan AIDS Commission materials does not. These colors - largely yellow, white and blue - are the colors of the Complera logo itself, which is in the bottom right hand corner of the second page of the ad.

As this image is part of pharmaceutical advertising, it contains the required patient information and warnings necessary in direct-to-consumer marketing of pharmaceutical products, which lists in small print below the image, the possible side effects of taking Complera, including serious liver problems, kidney failure, and bone loss, and stresses that Complera must be taken as prescribed and with a full meal, acknowledging the dosing complexities, even of a one pill once a day regimen. Yet, the text of patient safety information in pharmaceutical advertising is that which very intentionally seeks not to be read by potential consumers. It is required by law, but comes in small print, with nothing specific to draw attention to it; it actively seeks to perhaps not be read. The text in this image which does stand out and seeks to draw attention to itself is the advertising slogan, “The one for me.” This text is in bolder dark blue font, much larger than that of the patient safety information below it. The Complera pill itself is integrated into this text, elevating the word, “one,” which is itself in bolder font than the rest of the slogan. The gaze of the woman in the image, who is smiling, is directed at the pill hovering above her hand, drawing the viewer’s eye to focus on the pill as well.

In contrast to the text associated with the Ugandan AIDS Commission image, which visually emphasized the complexity of a seemingly multi-pill a day regimen via the imagery of a hand cupping a pile of 31 pills, this image constructs an antiretroviral regimen as simple, a single once a day regimen, “Complera. A complete HIV treatment in only 1 pill a day,” according to the text on the following page. The name itself, Complera, here emphasizes the completeness of this *one pill*. Further, the text, “The one for me,” constructs this particular antiretroviral pill as not only part of a simple regimen, but of a highly personalized and individualized one, an easy to follow and complete treatment regimen that is “the one *for me.*” Here, antiretrovirals of the evolving present, most notably that of the Global North, with the audience of this ad being an American market, are framed as simple and easy to take. They are also framed as able to be differentiated in highly individual ways by individual pharmaceutical consumers who can choose from among a field of possible consumer choices, exactly that regimen that is best for them, the *one* pill that is right *for me*. In this deployment of a visual discourse of antiretrovirals, antiretrovirals are not framed as ‘things (bio)medical’ to which access is limited in the context of broader resource constraints within a national treatment program, but as ‘things’ both (bio)medical *and* consumer, like any of a number of other consumer goods about which an individual might delight, with a smile on their face, in making a very personalized consumer choice to meet a range of highly individual needs. Here, in contrast to the construction of access to the fruits of biomedicalization as deeply stratified, the biomedicalization of HIV prevention is constructed via this imagery as part of the range of individuated, private, health lifestyle choices that health-seeking consumers might select from in order to optimize their ‘vital futures’ (Rose 2007) while also protecting others from risk, and to do so in very personalized ways. This illustrates the ways in which stratified biomedicalization (Clarke et al. 2010) also operates via the practices of highly corporatized, customizable and commodified forms of biomedicine.

Anticipating the Imagined Futures of Antiretroviral Technologies. Present day antiretrovirals are discursively constructed through the anticipation of what they will become in the future. These imagined futures are framed as consisting of antiretrovirals delivered via novel long-acting methods, such as long-acting injectables, implants or dermal patches, which are themselves anticipated to be productive of new social relations between individuals, their providers and biomedicine, as well as between partners, and potentially productive of new techniques for biomedical surveillance and pharmaceutical disciplining.

When antiretrovirals themselves were situated as part of imagined futures, the forms of antiretrovirals that were mostly likely to be imagined were not new formulations of antiretroviral *pills,* but most often they were anticipated to be antiretrovirals that are both long-acting and deliverable via novel forms, such as long-acting injectables, implants and dermal patches. Several participants spoke about their perception of the antiretroviral pipeline as being relatively dry in terms of the development of new classes of antiretrovirals in pill form. Of those participants who discussed their anticipation of how antiretrovirals will continue evolving in the future, these anticipated new forms of long-acting antiretrovirals are constructed as being more tolerable, with a lessening consumption burden (at least less burdensome than pills), easier to comply with because they do not require daily consumption, and as more desirable to consumers. Below the director of a treatment advocacy and information organization in London describes the shifting treatment landscape and his anticipations for the imagined futures of antiretrovirals, which if those anticipations come to fruition, he asserts, “would sort of change treatment considerably”.

> If you projected ten years back, ten years ago we were taking handfuls of pills and we wanted one pill once a day. We've now got four or five different one pill once a day combinations. If you think back ten years before that, a lot can happen in ten years, in terms of research, huge amounts. You could project forward that treatment would become even easier. They've got formulations that are looking at whether you can have real slow release formulations where you might take an injection once a month. I quite like taking daily pills. They’re in and they're out, no problem. Actually, if I ever do a talk, people get very excited about the fact they might just have one injection a month. Ten years is a long time. It could easily happen. That would sort of change treatment considerably. (Director of a treatment advocacy organization, London, UK)

Quite a few participants made the comparison between antiretrovirals and birth control, in various contexts, but here particularly in relation to imagining the future of antiretrovirals by comparing them to advances in forms of drug delivery seen in contraceptive drug development, with a move from a “30-day wheel” to a long-acting, slow release pill, injection or implant device.

> It’s not the same thing, but what is it that women can now take for birth control, that implant that lasts for 90 days? I think we're going to see a situation where you're getting an injection or taking a pill every 30 days, every 90 days, something like that. It will become much easier to scale up. Just like birth control became much easier when you didn't have to carry around that little box with the 30-day wheel. I think that's where we're going to be. (Director of an AIDS service organization, New York, NY)

Long-acting forms of antiretrovirals are framed as “much easier to scale up” and presumably much easier to take and adhere to, much like the perceived ease of taking and adhering to long-acting contraceptives. Interestingly, what is not addressed is whether these forms of delivery are actually preferable. For some, and I would argue this is very much the case with contraceptives as well, a pill may actually *be* the preferable delivery method. It affords a degree of control and precision, being able to stop and start as needed or to change to another if the first causes intolerable side effects or in the case of birth control, if one chooses to conceive (as the participant excerpted above said, “I quite like taking daily pills. They’re in and they’re out, no problem.”). Here the anticipation is that longer lasting forms of antiretroviral delivery will be more desirable and will make starting and adhering to treatment less onerous, which will make treatment on a population level easier to scale up. Yet, barriers to consistent use of injectable contraceptives include both patient and provider perceptions of side effects as well as missed appointments for re-injection (Tolley et al. 2014), challenges which similarly might impact the ‘real world’ uptake of long-acting injectable forms of antiretrovirals as part of treatment as prevention.

However, whether consumer desire for novel forms of antiretrovirals will, in fact, produce better clinical outcomes and fewer side effects or other associated risks is framed as uncertain. A panelist speaking to a session at the 20th International AIDS Conference about the development of new forms of antiretrovirals in the future anticipates the development of long-acting injectables, emphasizing that the desire for them in their clinic setting is patient/consumer-driven, but also questioning whether these new forms of antiretrovirals will in fact be any better than those already existing.

> We are looking at two more choices [of drug regimens, because he discussed that what they use now is limited]. Injectables, for example, we are seeing that there are some long-acting ARVs that are coming up. Some of our patients are demanding for something better, and some of them have indicated that injectables would be good for them. I don’t know, maybe it’s just perception that an injection is better. In some of our countries, people do feel they prefer an injection to tablets. I think a lot of them are worried because of the toxicity will not change much, but maybe it’s a point to argue around. (Presenter at the International AIDS Conference, Melbourne, Australia, July 20, 2014)

The imagined futures of antiretrovirals are also productive of the potential for novel forms of biomedical surveillance and of a reconfiguring of social relations between biomedicine, consumers of these new pharmaceutical forms, and other individual and collective actors. First, imagined future forms of antiretrovirals are anticipated to discipline compliance with treatment as prevention, as the panelist below asserts, to "make the healthy choice the easy choice". In this way, long-acting injectable forms of antiretrovirals are framed as having the potential to revolutionize how individuals and their bodies are pharmaceutically disciplined. Being 'healthy' or 'non-infectious' will be rendered the default choice as individuals, upon giving initial consent for an injection or implant, do not have to 'think' about engaging in daily habits of biomedical risk reduction via the consumption of a pill or sexual risk reduction through the use of a barrier method. The act of choosing to be 'safe' is made 'easier' because the routine decision of consuming antiretrovirals - as well as potentially forgetting to consume them, or actively choosing not to - is to an extent removed from the hands of individuals, or at least for ninety days, or six months, or a year at a time. In this way, long-acting injectables or other forms of long-acting antiretrovirals are constructed as a more effective means of "nudging" or compelling individuals to render themselves non-infectious, to "make the healthy choice," to be responsible pharmaceutical citizens, more so even than the once daily pills of the evolving present. Long-acting injectables and other long-acting forms of antiretrovirals potentiate new techniques of pharmaceutical disciplining, ensuring compliance with pharmaceutical regimens, at least for a period of time. The panelist excerpted below at the 2015 IAPAC Summit described the potential for ensuring compliance to biomedical prevention, "making it truly easy" for individuals to be rendered non-infectious, via long-acting antiretrovirals.

> What are the scientific breakthroughs that will make the healthy choice the easy choice? So prevention with condoms a desired activity? The concept of nudging people to make healthier decisions is mainly used in the sphere of chronic diseases. For example, healthier options in vending machines so people don't snack on fatty foods, or smoke-free buildings, so people have to go outside to smoke, and airbags so people are safer in a car crash. We should consciously work towards the default option that is safer for preventing infectious diseases as well. Some examples of this could be research to develop an effective microbicide for vaginal and anal sex so sensitive and safe enough to be in all lubricants and condoms, easy availability of non-reusable syringes, use of conventional rapid HIV tests to diagnose acute and chronic infection, and long-acting

> PrEP and ART like we have for contraception, so that adherence is near perfect and easy. Ultimately, I believe that when there is a Norplant like solution that lasts six months to a year then the game is completely changed for both treatment and PrEP. Ultimately, when it's truly easy to practice safer sex, where people don't have to think about it too much, it will be done. (Presenter at the 2015 IAPAC Summit, Paris, France, October 1, 2015)

Further, anticipated new forms of antiretrovirals, here, speaking specifically of long-acting injectable antiretrovirals, may be productive of imagined new social arrangements via biomedicine. For example, the participant below, an HIV specialist clinician and researcher, described his anticipation of the potential to develop clinical contracts between providers, patients and their partners, by which patients are obligated to comply with their quarterly shots and, in instances of non-compliance, providers will be compelled, having been granted permission to so, to contact their partners, inform these partners of the missed appointment, and reveal otherwise protected health information, including that their partner living with HIV may presently have an infectious viral load. In his view, this strategy "would eliminate discordant transmission," essentially, I would argue, by limiting the choice to be non-adherent via a form of heightened pharmaceutical disciplining made possible via these new forms of antiretroviral delivery.

> There is one big change that is afoot, and that is with the injectable agents. There are many who hope that we can give these long-acting injectable agents, and there are trials going on called Latte and Latte 2, where you start out taking pills and then you move to two shots every two months. Now you could foresee that if you're in a discordant partnership and you're the negative partner and you want every possible reassurance that you're not going to get HIV, you could see that the partner who is the index case who agrees to take shots with a contract with the doctor who would call me if they miss their shots, which would not really be a HIPAA violation. You can see that the public health use of injectable agents in the treatment arena that would then…you could say, 'I want to use injectable agents because I know they have a discordant partner and I want to put the discordant partner's mind at ease and then I want to tell the client, 'By the way, let's make a deal, let's let your partner have access to your medical records'.' What that would mean…it's a very common HIPAA issue…what that would mean is that you would have an opportunity or an obligation to call them in for their shots. That would eliminate discordant transmission. You could do the same thing with pregnant women by the way. If you have women coming to a clinic in Africa, instead of giving them some pills, you could say, 'Guess what? Here's a shot and we want you back in eight weeks.' But if you're in your third trimester, that one shot would protect your baby from getting HIV. So I think that now we're at the beginning in industry, seeing very special drugs. They're not developed as well as I just said, but we're talking to them about this as a strategy. (Infectious Disease Specialist Physician and Clinical Scientist, U.S.)

I argue that this is an imagined future that raises questions both of patient autonomy and privacy and also of the tensions between clinical medicine and public health. This participant also describes his anticipation that long-acting injectable forms of antiretrovirals could potentiate improved compliance in prevention of mother-to-child transmission. For mothers in their final months of pregnancy, “one shot would protect your baby from getting HIV.” His framing of the use of long-acting forms of antiretrovirals for prevention of mother-to-child transmission bumps up against constructions of other approaches to discipline women’s compliance with antiretroviral regimens during pregnancy and also postnatally, such as Option B+, a strategy which has itself faced much criticism from some, especially women’s advocates, for limiting women’s human rights to choose to be on treatment and whether to stay on treatment postnatally (Matheson et al. 2015).

The imagined futures of antiretrovirals are also framed as productive of the potential for novel forms of pharmaceutical disciplining via, for example, compulsory treatment for non-compliance. Concern about coerced or forced testing and treatment was a common thread running through many participants’ constructions of the anticipated futures of treatment as prevention. These practices, while not necessarily framed as inevitable or even likely, formed a specter of a potential worst case scenario for treatment as prevention. If the scale up of treatment as prevention were to go terribly ethically wrong, the form it would take would be coerced or forced testing and treatment, a concern made more real by recent instances of detention and forced testing of sex workers in Greece (Artavia 2013). Most participants who invoked the possibility of forced treatment framed it as more of a theoretical anxiety about the overzealous use of treatment and likely impractical to actually enforce. After all, how would it be possible to force individuals to consume antiretrovirals pills daily unless they were to be institutionalized for directly observed therapy, a technique which is, in fact, practiced, as discussed elsewhere in this analysis, but is unrealistic to implement on a mass scale. However, several participants framed long-acting injectables as creating at least the technological conditions of possibility for compulsory antiretroviral treatment in those deemed a danger to themselves or others, including, as in the excerpt below, comparing this practice to the compulsory use of injectable antipsychotics.

> The big question about compulsory treatment is how on earth would you do it? What are you going to do? Are you going to incarcerate positive people? God knows it's being tried in a few countries, but you can't practically do it these days in most countries in the world because there's too many of us. How are you going to do it? Interestingly, there is a technology out there whereby you might do it and that's the long-lasting injectable HIV drugs. I think we need to be very careful about them because we have to remember that there is a mechanism whereby you can compel people to take a long-lasting injectable drug and that is injectable antipsychotics. It's not beyond the bounds of possibility that somebody could steer through a law saying positive people are just as much a danger to the public as people with uncontrolled schizophrenia and therefore we must make them take their drugs. (HIV advocate, London, UK)

Without consciously seeking to be provocative and conspiratorial, this construction of injectable antiretrovirals frames them as having the potential to be productive of imagined forms of heightened surveillance and pharmaceutical disciplining, particularly of those who do not successfully comply with the expectations for treatment consumption, or who are otherwise deemed a threat via the legal or criminal justice system (i.e., compulsory treatment with injectables as part of sentencing for exposure or transmission convictions, much like chemical castration for sex offenders). These emergent pharmaceutical technologies are situated as potentially creating the conditions of possibility for new techniques of biomedical surveillance of populations and new practices of pharmaceutical disciplining of individual bodies, and perhaps in ways that echo the already deeply stratified deployments of both HIV treatment access as well as heightened forms of surveillance of certain bodies relative to others.

Conclusion

In this final empirical chapter, I have turned to how antiretrovirals themselves as material 'things' are being situated as technologies which both make possible and disrupt their deployment as prevention technologies. By arguing that HIV treatment as prevention acts as a regime of anticipation, compelling an anticipatory orientation to the imagined futures of the 'End of AIDS,' I draw on how techniques of abduction, the taking back and forth between the present, via the past, to the highly anticipated imagined futures, are employed to situate antiretrovirals as technologies of both material and discursive significance to the expansion of HIV prevention as prevention as a technoscientific practice.

Specifically, I argue that antiretrovirals are being framed as co-constitutive of an evolving pharmaceutical present in which the increasing tolerability, lessening pill burden and improving robustness to viral resistance of today's antiretrovirals is constructed as making possible the use of lifelong antiretroviral treatment for prevention. Constructions of present day antiretrovirals, however, do not leave untroubled their possibilities for use as part of treatment as prevention, and in fact, antiretrovirals today travel with all manner of 'baggage,' including the lived experience of severe side effects and toxicities, as well as the 'baggage' associated with broader biomedical/pharmaceutical skepticism and distrust, particularly among already historically marginalized communities, what several participants called the 'Tuskegee Effect.' The constructions of these various sorts of antiretroviral 'baggage' act to disrupt the anticipatory potential of antiretrovirals as prevention technologies, including in ways that highlight how antiretroviral 'baggage' may travel transnationally and in highly stratified ways. This is an aspect of what Clarke and colleagues (2010) describe as stratified biomedicalization, a term which seeks to emphasize how biomedicalization is engaged in both processes of customization, privatization and corporatization, allowing for the emergence of exclusionary forms and practices of biomedicalization (such, as the increasingly individuated, personalized antiretroviral markets in the Global North) while others are excluded from access to these formulations, and perhaps to *any* antiretrovirals at all.

And finally, the antiretrovirals of the present are situated as part of an anticipatory orientation to the future, one which seeks to herald in the 'End of AIDS' via imaginings of what antiretrovirals may become in this future. Specifically, the imagined futures of antiretrovirals are made up via the possibility for the development of long-acting forms of antiretrovirals. These emergent antiretroviral forms set the conditions of possibility not only for the courting of compliance to pharmaceutical regimes ("making the health choice the easy choice"), but also for the making up of novel forms of biomedical surveillance and pharmaceutical disciplining. These engagements with possibility that Adams and colleagues (2009) describe relate here to what Rose (2007:27) calls a “moral economy of hope,” one in which the traditional fear of illness and death is being re-cast in an ethos of biomedical hope for the future. This ethos operates not only through the trading on of hope and emotion - “a politics of temporality and affect” (Adams et al. 2009) through which new kinds of biopolitical subjects are created - but is quite literally involved in the production of bioeconomic expectation, investment, innovation and profit, for example, that related to antiretroviral research and development. Such investment might also be productive of disinvestment in those technologies that fail to sufficiently trade on emotion, hope and anticipation for the ‘End of AIDS’ (i.e., condoms, sexuality education, microfinance programs).

As one of the biomedical technologies through which the biomedicalization of HIV prevention is being made manifest, it was important to wrap up my empirical work by foregrounding antiretrovirals themselves, particularly for the ways in which they are entangled with the highly stratified nature of the biomedicalization of HIV prevention and also for their very material effects on the creation of biomedical subjects. Specifically, I will argue that one of the key sociological implications of this thread of my analysis has to do with how antiretrovirals, situated as they are here as part of treatment as prevention as an anticipatory regime, are engaged in the making up of new kinds of biomedical subjects. But I believe this analysis provokes questions not only about those kinds of biomedical subjects who *can* and *will* anticipate the ‘End of AIDS,’ but perhaps more intriguingly, of those who *cannot* anticipate, or who *will not* anticipate, or who are seen as somehow thwarting these anticipated futures? Further, what happens to the sense of hope, the optimism, the bioeconomic investment in treatment and in HIV biomedicine if the imagined and highly anticipated “last climb” to bring an end to the AIDS epidemic, upon arrival at the summit, simply reveals even more and larger mountains to climb beyond it, which perhaps call for the imagination of entirely new kinds of futures? What happens when the ‘End of AIDS’ does not come in 2030? How will antiretrovirals and other biomedical technologies be situated in these new forms of likely highly anticipatory practice? These sociological imaginings call for an exploration in the present of their perhaps very material and embodied effects on those living with HIV, their health, and their wellbeing.

Conclusion

Throughout my analysis, I have sought to draw on a Foucauldian approach to analyzing discourses, positing HIV treatment as prevention as a form of biopower (Foucault 1984) engaged both in the disciplining of individual subjects and in the regulation of populations, that is, as a social practice and set of power relations that actively creates the subjects and also the material objects that it signifies (Keller 2013). Drawing on Clarke and colleagues (2010) work on biomedicalization and Nikolas Rose's (2007) elaboration of vital politics and somatic ethics as analytics, as lenses for interrogating my empirical data, I have also sought to posit HIV treatment as prevention as a site of the increasing but uneven biomedicalization of HIV prevention. In conclusion, I summarize my empirical findings in light of their sociological implications for these theoretical perspectives, highlighting the trajectories along which future sociological analysis in these substantive areas might travel and contribute to the building of theory. I focus specifically on four theoretical threads - risk, subjectivity, surveillance and anticipation - as they emerged in my data.

Re-configuring HIV Risk via Treatment as Prevention

Risk and surveillance are co-constitutive of each other (Clarke et al. 2010). Risk is calculated ever more precisely via mechanisms of biomedical surveillance, and then the imperative to intervene on risk becomes the justification for this surveillance, including via techniques of self-governance, as well as more traditional forms of institutional surveillance and domination of those who fail to fashion themselves appropriately as risk subjects (Foucault 2008; Lemke 2002). I have explored how constructions of HIV risk are being re-configured via HIV treatment as prevention, transforming not only constructions of 'safe sex' and 'unsafe sex,' but also importantly for how risk and surveillance shape each other, transforming the practices of creating oneself as a responsible, risk-averting, non-infectious HIV risk subject. Increasingly, yet still unevenly, the techniques for managing HIV risk are coming to be biomedical ones. That is, the emergence of HIV treatment as prevention and other biomedical prevention approaches is re-shaping how HIV risk is managed and is productive of novel techniques of biomedical risk reduction.

Through treatment as prevention, people living with HIV *qua* risk subjects are compelled to engage willingly and faithfully in movement along the HIV care continuum from diagnostic testing, to engagement in HIV specialist care, followed by treatment consumption and compliance with treatment regimens, in order to achieve a state of sustained viral suppression, and thus non-infectiousness. Echoing the analysis of Colvin and colleagues (2010), achieving viral suppression is one technique by which individuals can demonstrate not only 'care for the self,' by seeking to optimize health, but also 'care for the social,' seeking to altruistically protect others from harm via pharmaceutical self-governance of risk, a form of 'responsibilized citizenship' (Barry et al. 1996). Both health and risk have become sites for the entrepreneurial enactment of personal moral responsibility (Petersen & Lupton 1996; Clarke et al. 2010), and in increasingly technoscientific forms of modern day biomedicine, this is also co-constitutive of the emergence of biomedical conceptions of risk (Clarke et al. 2010), potentiating a re-drawing of borders between what and who is risky and what and who is responsibly contained.

The sociological implications of this re-configuring of HIV risk are important both for subjectivity, how people construct their identities based on these new risk categories, and particularly for the ways that these transformations may be de-marginalizing, normalizing, and perhaps even liberatory. Persson (2016)'s work on the use of antiretrovirals preventatively within serodifferent couples in Australia emphasizes the normalizing potential of treatment as prevention. Yet, drawing on Clarke and colleagues (2010), I have also explored the expansion of HIV risk along a continuum into health, into the pre-HIV state, through the construction of the 'undiagnosed' as 'risky,' a finding that brings into focus the intensifying ethopolitical value of entrepreneurial engagement in practices of viral visualization and biomedical containment. Being infected with HIV or being free of HIV viruses in one's blood are no longer the strict demarcations along which HIV risk is being symbolically bounded. Increasingly, yet unevenly and in still morally fraught ways, the symbolic borders around 'responsible selves' and 'risky others' are being re-drawn via treatment as prevention, between the 'virally suppressed' and the 'virally uncontained,' between the 'biomedicalized' HIV risk subject and the 'undiagnosed.' As such, HIV treatment as prevention and the transformations in constructions of risk that it mutually constitutes offer an exemplary site for analysis around the symbolic functions of risk, capable of re-vitalizing the work of both Douglas (1966/1969; 1985; 1992) and Crawford (1994), and particularly for how it is creating the conditions of possibility for a re-drawing of moral borders around HIV risk subjectivity via increasingly technoscientific means.

Theorizing Transformations in Surveillance Practices via Techniques of Viralization

If risk and surveillance mutually construct each other (Clarke et al. 2010), then emerging transformations in the techniques of biomedical surveillance of people living with HIV and the problem spaces of HIV prevention that these techniques make visible and visualizable can be theorized as co-constitutive of the re-configuring of HIV risk. I have sought to illustrate the emerging prioritization of viral load monitoring, the very material practice of visualizing and quantifying the HIV virus circulating in the blood, as a technique for measuring both pharmaceutical compliance to a regime of health and also self-governance of biomedical risk. I assert that this prioritization of the techniques of viral visualization is occurring simultaneously - yet still unevenly - with a displacement, even a disparagement, of practices of CD4 cell count monitoring. This shift in visualization practices is fundamentally one from a concern with immune function and disease progression, a measure of the immune system's control over HIV disease, to a concern with visualizing compliance with pharmaceutical self-governance and of the pharmaceutical transformations taking place at the virological level. This echoes Clarke and colleagues (2010) assertion that biomedicalization is co-constitutive of a shift from a concern with *control over* biological phenomena to *transformations of* them.

Throughout my analysis, I have sought to frame HIV treatment as prevention as a form of biopower (Foucault 1984; see also Rabinow & Rose 2006) that seeks to intervene on life itself, both through techniques for regulating the population as well as modes of subjectification for the disciplining of individual bodies. The transformations in the disciplining gaze of HIV treatment as prevention can be conceived of as a shift from a molar or clinical gaze, one concerned with the clinical presentation of disease in bodies as well as the lifestyles of those bodies in the community, to a viral gaze, marked by a deepening of the surveillance of biomedical compliance and transmission risk to the virological level. This shift is co-constitutive of not only transformations in the techniques of biomedical surveillance - via the increasing prioritization of viral load monitoring - but also of the problem spaces of HIV prevention itself. Echoing Clarke and colleagues' (2010) assertion of the transformations in the problem spaces of biomedicine made possible via the increasing technoscientization of its interventions on life, Rose (2007) argues that contemporary biomedicine is increasingly focusing not only on the molar body, at the level of limbs, organ systems, and tissues, but at the molecular level, via a molecular gaze. What he calls, *molecularization*, is made possible through new technologies, particularly new techniques of visualization, which make 'seeing' into the depths of the body to the molecular level technoscientifically possible.

Inspired by Rose's (2007) elaboration of processes of molecularization, I have coined the term, *viralization*, to describe how the practices for the surveillance of people living with HIV are being transformed via the technoscientific possibilities of visualizing what is in the blood, at the viral level, in order to discipline individual biomedical compliance to HIV treatment as prevention. Specifically, viralization emphasizes how the shifting disciplinary gaze of HIV prevention, from the space of the clinic and interpersonal spaces of the community into the depths of the body to the virological level, is not only made possible by viral load technologies, but is mutually constitutive of them. Techniques of viral visualization form the conditions of possibility for the biomedical surveillance of people living with HIV, and the shifting disciplinary gaze of HIV biomedicine, along with the deepening of the problem space of HIV prevention, justifies these novel modes of virological subjectification and pharmaceutical self-governance. Likewise, these transformations also justify heightened forms of institutional surveillance of those who cannot or will not open up the depths of their bodies to viral visualization techniques. In a paper published ten years before the release of the first clinical trial evidence on the efficacy of HIV treatment as prevention, Race (2001) argues that the (bio)medical technologies of HIV care and treatment, most notably HIV diagnostic and viral load tests, as well as antiretrovirals, mutually construct both the material bodies that they surveil as well as their subjectivities. Looking into the blood is a technique for producing biomedical 'truth' about individual self-governance and about risk, and thus a way of creating knowledge of the self, of marking the self, notably in a highly technoscientific and individuated way (Race 2001).

These processes of *viralization*, that is, the intensifying focus on viral load monitoring as a technique of biomedical surveillance and on the achievement of an undetectable viral load as a signifier of pharmaceutical self-governance, are of particular sociological concern for understanding the transformations in biomedical surveillance that are co-produced via HIV treatment as prevention. When the disciplining gaze of HIV prevention shifts to one concerned less with the molar body, its clinical presentation, and its lifestyle practices and increasingly concerned with the interior spaces in which HIV RNA circulate, then so too do our moral categories and styles of being, the ethopolitics of living with HIV (Rose 2007). Scholarly attention to the modes of subjectification, the techniques for ethopolitical living with HIV, being a "good pozzie" rather than a "bad pozzie," as well as to novel subjectivities made possible, and perhaps compelled, via processes of viralization will be important to trace through future sociological work on HIV biomedical prevention. Further, the increasing technoscientization of HIV care and treatment, including an intensifying reliance on information and computer technologies for clinical and epidemiological surveillance (Clarke et al. 2010) and digital and mHealth technologies for entrepreneurial health self-management for people living with HIV (Marent et al. 2016), opens up a potentially expansive field of sociological inquiry on digital self-tracking of the virological self, an area deserving of scholarly attention recently noted by Lupton (2016).

Yet as talk of "professional stalkers," of inpatient or video directly observed therapy for those who are disengaged from care or non-compliant with treatment, or of the imagined futures of compulsory treatment for those deemed a risk to themselves or others vividly illustrate, more traditional forms of clinical and extracorporeal surveillance of those who cannot or will not be surveilled via techniques of viral visualization have not been entirely displaced. Future sociological analysis of HIV treatment as prevention must include efforts, much more than I have attempted to do in this project, to ‘turn up the volume’ on the experience of failing to be sufficiently biomedically surveilled and disciplined through these techniques of visualization, what it means to be one of the “bad pozzies,” and the very material ways in which some individuals as (perhaps not fully) biomedical subjects may be disproportionately surveilled via institutional practices of domination, including via the legal and criminal justice systems. It must also draw attention to techniques for surveillance and disciplining of those who may intentionally and perhaps creatively *opt out* of the biomedical prevention of HIV, as well as those who will simply be *left out* altogether through misfortune of birth, or poverty, or other ‘technologies of invisibility’ (Biehl 2006), all of which are critical aspects of stratified biomedicalization (Clarke et al. 2010).

Transforming Subjectivity and the Making up of the Biomedical Subject via HIV Treatment as Prevention

I have explored several empirical sites through which ‘being undetectable’ is constructed as an emergent technoscientific identity (Clarke et al. 2010), one which comes to shape both the formation of biosocial communities and also becomes the basis for claims-making to emergent forms of biomedical citizenships. To be virally suppressed is increasingly being constructed as a biomedical state, the inhabiting of which is prized as a virological ideal, incentivized both financially and socially, around which individuals *qua* biomedical subjects can and should organize themselves both individually and collectively. The processes of social incentivization of viral suppression, for example, through celebrations of the attainment of an undetectable viral load in very public ways, and the construction of being virally suppressed as “the new face of HIV,” as for example, in the re-imagining of the symbol of the Red Ribbon by AIDS Vancouver, can be seen as techniques through which subjectivities are being transformed and new biosocial communities are being created.

Drawing on Martin (1994), Clarke and colleagues (2010:181) argue that the transformations that are co-constitutive of biomedicalization engage a form of governance that "is achieved through alterations of biomedicalized subjectivities and desires for transformed bodies and selves. The body is no longer viewed as relatively static, immutable, and the focus of control, but instead as flexible, capable of being reconfigured and transformed." They argue that, working 'from the inside out,' these biomedicalized transformations can be productive of new kinds of technoscientific identities and subjectivities, notably ones that are specifically constructed through technoscientific means. I have posited that 'being undetectable' is not only the so-called "new face of HIV," but is critically, a new mode of technoscientific subjectification. The transformation of the self through the consumption of pharmaceuticals - here, antiretrovirals - in order to achieve a particular biomedical state, 'virally suppressed,' is thus productive not only of emergent identities and social categories, but also new expectations for the performances of biomedical engagement, the very modes of subjectification, which bring into being these identities.

The work of Clarke and colleagues on technoscientific transformations in identities and bodies is echoed by that of Nikolas Rose (2007). For Rose, new ways of being vital subjects entail new ways of making claims to a corporeal identity. In my analysis, I have argued that this in part is taking place through techniques of viralization, through the transformation of the problem space of HIV biomedicine, one that is increasingly concerned with what is made visible and visualizable at the level of viral copies circulating in the blood. These new techniques for biomedical surveillance bring individual bodies and biosocial communities and populations into view in novel ways, ones that place new ethopolitical demands on biomedical subjects. Techniques of viralization not only create the conditions of possibility for new modes of subjectification, but they create new ethical imperatives for both re-fashioning the self in the image of "the new face of HIV" and for the re-assembling of biosocial communities (Gibbon & Novas 2008; Rabinow 1992; 2005). This includes those shaped through practices of making claims both to the right to be undetectable and the right to know one's viral load, an area I argue is of critical sociological significance to theorizing on forms of biomedical citizenship. My analysis of subjectivity raises questions for the implications of the potential displacement of other kinds of identities, such as those based on a shared sense of culture or lived experience of social group membership (e.g. 'living with HIV'), by technoscientific identities ('being undetectable'), and especially for those who cannot or will not transform themselves via an engagement with HIV biomedicine.

Further, I also explored in my analysis how the claims-making around the right to achieve a particularly desired technoscientific identity - to *be* undetectable - and the right to *know* one's viral load links up with the ethopolitical imperative to do so. I employed the term *biomedical citizenship* as a sensitizing concept (Blumer 1969) to describe these practices through which biosocial communities are taking shape - and being charged with the imperative to take shape - in order to make claims against both the state and non-state actors on the basis of the right to a desired biomedical state and a technoscientific identity. I have intentionally sought to distinguish these forms of biomedical citizenship projects as they have emerged in my data from forms of *biological citizenship*. Drawing on Petryna (2004), I have taken biological citizenships to involve citizenship projects that are advanced to make claims to social, legal and medical entitlements on the basis of a shared biological status or biological risk category. While the emergence of biosocial communities as well as individual and collective responsibilization of the imperative to stake a claim to these rights most certainly also involves claims on the basis of a shared biological status ('living with HIV'), it is fundamentally an individualizing and collectivizing project (Rose & Novas 2005; Rose 2007) underpinned by the constructions of a shared claim to inhabit a virological state, one only achievable via pharmaceutical means and only knowable via techniques of viral visualization. Notably, these techniques are themselves increasingly co-constitutive of the re-configuration of the problem spaces of HIV treatment and prevention. In this way, I argue that HIV treatment as prevention is becoming one exemplary site for theorizing on emergent forms of biomedical citizenships, ones that engage in sociologically meaningful ways with the shaping of technoscientific subjectivities (Clarke et al. 2010) and biosocialities (Rabinow 1992; 2005) as well as with techniques of biomedical surveillance across new planes of visualization and at new points of contact between biomedicine, biomedical subjects, pharmaceutical agents, and biomedical technologies, yet in notably still stratified ways (Clarke et al. 2010).

Imagined Futures of HIV: Treatment as Prevention, the 'End of AIDS,' and an Anticipatory Orientation to the Future

In my final empirical chapter, I attended to the ways that antiretrovirals themselves are being discursively situated in the professional discourses of HIV treatment as prevention. Utilizing Adams, Murphy and Clarke's (2009) theoretical work on anticipation, I argued that antiretrovirals are being made up as part of an evolving technoscientific present through processes of *abduction*, a tacking back and forth between the present, the past, and imagined yet still uncertain futures. This is accomplished via discursively framing antiretrovirals of today as safer and more tolerable, less burdensome, more forgiving and more effective, via a citing of the past. If not for their evolving present and their anticipated continued evolution, treatment as prevention would not be possible. In this way, these very material 'things' are constructed as contributing to potentiating HIV treatment as prevention and also as productive of imagined futures, particularly those made possible by drug delivery via novel methods, such as long-acting injectables. Yet, this evolving present is not left untroubled in anticipation of the biomedicalized future of HIV prevention. Antiretrovirals are also framed as traveling into this evolving present with considerable 'baggage' which disrupts their potentiation as prevention technologies. My analysis of HIV treatment as prevention as a regime of anticipation in which antiretrovirals themselves are of critical material and discursive significance contributes to theoretical work on anticipation in several key ways.

First, Adams and colleagues (2009) discuss a number of exemplary sites of anticipatory practice drawn from their own empirical research, including fertility and reproduction, biosecurity and biodefense, and also 'girlhood' as a particularly gendered anticipatory site, especially via anticipatory claims-making around the marketing of Gardasil, the vaccine administered before sexual activity begins to protect against future HPV infection. They describe sites of anticipatory practice as plentiful and assert that "[a]nticipation thus reterritorializes and expands the domains and sites - not only in space, but also in time - that are called into the future" (Adams et al. 2009:53). HIV treatment as prevention is one particularly salient site of anticipatory practice which seeks to herald in the 'End of AIDS.' Though I have drawn on the work of Adams and colleagues specifically to situate my analysis of how antiretrovirals themselves are constructed as material 'things' which both disrupt and potentiate treatment as prevention, including its imagined futures, I have also touched on how treatment as prevention is productive of an anticipatory orientation to the 'End of AIDS,' drawing on discourse materials disseminated at the 20th International AIDS Conference in Melbourne, Australia. The 'End of AIDS' itself is a regime of anticipation, one that is expanding to include treatment as prevention, as well as pre-exposure prophylaxis, and is one that deserves scholarly attention all on its own. While I have intentionally focused very narrowly on how antiretrovirals are being situated via an anticipatory orientation to these imagined futures, I posit both HIV treatment as prevention, and more broadly, the 'End of AIDS' as exemplary sites of theorizing on anticipation, ones that can expand upon the work of Adams and colleagues, which I plan to elaborate on further in future publications.

However, the present analysis of anticipation and the injunction to anticipate raises questions of what happens both when biomedical citizens-subjects, compelled to anticipate the imagined futures via an engagement with biomedicine, *cannot* anticipate due to deep stratifications in access to both antiretrovirals and biomedicine itself. The highly stratified nature of global treatment access as well as access to viral load technologies makes HIV treatment as prevention a critical site for theoretical engagements with stratified biomedicalization, and particularly for the anticipatory practice of transformations in biomedicalization. This has critical implications for subjectivity, never mind for health and wellbeing, specifically for those across the biomedical divides for whom the antiretrovirals of the present are not yet evolving, and for whom the imperative, the will to anticipate the dawning of a new future, the end of AIDS, remains overshadowed by the will to survive in the present.

My analysis of anticipation also raises critical questions about what happens when biomedical subjects, compelled by the injunction to anticipate, then choose *not* to. Here I want to focus more fully on the active choices of individuals to do other than to anticipate, to willfully fail to anticipate, to actively and thoughtfully choose not to. Adams and colleagues (2009:260) conclude their paper by querying “What would it mean to not-anticipate? What strategies of refusal might be imagined? What is at stake in disrupting or refusing anticipation?” What does it mean to not wish to engage with antiretrovirals in the present, and to not participate collectively in the heralding in of the imagined future of the ‘End of AIDS’? What does it mean to choose a different path, particularly for those who are long-term non-progressors who have faired well without treatment, or those who simply object to taking pills? What do these imagined and highly anticipated futures hold for them and how are antiretrovirals themselves to be situated in these processes of subjectification and perhaps also of invisibilization?

I believe this links up with my discussion above of subjectivity and the making up of the biomedical subject (or not) via undetectability, but it also takes me further, to querying what it might mean to dream of and envision a different future *other than* the one that treatment as prevention as a regime of anticipation compels one to dream of? My empirical findings on the re-configuring of risk and the implications of these ‘mutations’ (Rose 2007) for constructions of the ‘undiagnosed’ creates one pathway along which it becomes possible to conceive of the sociological value of studying those who do *other than* to wilfully and compliantly seek out biomedicalized forms of subjectification, who do not draw themselves into regimes of biomedical surveillance in anticipation of these imagined futures. Future analysis in this area should consider the implications of the failure to anticipate both for subjectification as well as for surveillance, particularly in light of my findings on the practices of heightened forms of institutional surveillance for those who are not adequately biomedicalized through viral suppression.

My thoughts also turn to questions of how antiretrovirals might come to be made up as prevention technologies in the future, *if* the evolving present does not keep its promises. The potentiation of HIV treatment as prevention is dependent, not upon discourse, but upon the very material, embodied trajectories of drugs interfacing with bodies and also the travel between 'information' and 'flesh' (Rosengarten 2009), by which knowledge, experience, pharmaceutical agents, bodies, viruses, and viral load technologies engage with and produce each other. What if the drugs themselves, with longterm use on a broader scale for prevention purposes, prove *not* to be tolerable, safe, forgiving, easy to consume? What if viruses resist, are not compliant, even when bodies are, and large scale drug resistance develops, particularly in the context of a drug development pipeline that is drying up? How do antiretrovirals come to be situated as material 'things' which do not behave as they ought to? These questions point to how ongoing analysis of the constructions of antiretrovirals themselves via analytics of anticipation will remain an area worthy of critical sociological inquiry. Notably, these questions point to the sociological value of querying how pharmaceutical and biomedical monitoring technologies might come to be situated when they 'fail' to perform as anticipated, particularly, if as Boero (2010) explored in her work on bariatric surgery, when biomedicine fails to achieve its objectives, failure comes to be individualized as a matter of personal responsibility for compliance.

Lastly, this analysis of anticipation leads me to query what if the imagined future of the 'End of AIDS' by 2030 never comes to be? What if, on the population level, national governments broadly meet their targets of achieving 90% viral suppression, and yet HIV incidence does not decrease, but perhaps even increases? Increasing patterns of incidence have long been noted even where there have been high levels of treatment uptake, such as in San Francisco, British Columbia, and Australia (Jin et al. 2012; Wilson 2012). Adams and colleagues (2009) assert that anticipatory regimes offer up novel engagements with 'possibility' via imagined futures, but this raises the question of what it might be possible to anticipate *then*, when the highly anticipated does not come to be? Critically, it points to the sociological value of continuing to follow the unfolding of these imagined yet highly uncertain futures and the implications that their unfolding has for those biomedical subjects who have fashioned themselves in anticipation of them.

Limitations of the Research

I designed this study as one that could explore the situation, broadly speaking, in which HIV treatment as prevention as a biomedical prevention approach was emerging into and co-constituting the discourses making up HIV prevention and treatment in the present moment. It was not designed with the aim of achieving representativeness or generalizability of research findings so much as with the aim of making sense of a highly emergent phenomenon and the discourses that are shaping it and being shaped by it within these professional social worlds. As such, there are several cautions that ought to be applied to attempts to extrapolate from these findings and also several gaps in both my methodology and my empirical focus, which I discuss here.

My intention in this project was to explore the discursive emergence of HIV treatment as prevention in the professional social worlds of HIV prevention and treatment. I sought to do this by drawing on interviews with those identified as ‘opinion leaders’ in the situation of HIV treatment as prevention and also by exploring the deployment of narrative, material and visual discourses in those settings where these ‘opinion leaders’ come together to engage in the processes of knowledge dissemination and professional networking, specifically, at scientific conferences. The benefits to such an approach are that I was able to access, via multiple sites, those whose are generally considered to be the ‘movers and shakers’ in global HIV prevention and treatment. This included those individual actors who tend to have their names on all the major treatment as prevention publications, who are at every meeting, who speak on panels and serve on treatment guidelines committees, who know everyone and know what goes on behind the scenes in the backstage spaces that may not be visible or audible to those of us sitting out in the audience, where I myself typically am. The limitation to such an approach is that I broadly drew from informants who were themselves in positions of power, relative to HIV professionals generally, creating important points of access to discourse production, but also leaving a number of discursive silences untroubled.

Even where I interviewed or collected ethnographic data on people living with HIV, they tended to be professional lay people, HIV advocates who worked for HIV organizations, were often highly educated, and had access to the arenas in which public engagement with and contestations of treatment as prevention are taking place. Left out of my data were the voices of those professionals wrangling with treatment as prevention in less public ways, the ones who are not publishing in high impact journals, or are not invited to speak at or unable to travel to global scientific meetings, the ones whose names and faces are not so easily associated with the public discourse on treatment as prevention, but who engage with these discourses nonetheless. Though I sought through the use of various recruitment strategies to sample broadly and globally, in practice, those publishing on, presenting on, or largely engaged with treatment as prevention in the spaces where my data collection took place tended to be English-speaking professionals from the U.S., Canada, Europe (particularly the UK), and Australia, as well as Brazil. Though I sought out individuals that I identified as ‘opinion leaders’ in Brazil, Canada and Australia, I struggled to recruit them to participate in an interview and in the end, all my interview participants were U.S. and UK-based, even when their professional work involved much more global sites.

Though I was able to study the emergence of discourses of HIV treatment as prevention in the professional social worlds of HIV treatment and prevention via those who I identified as ‘opinion leaders,’ I also acknowledge that I likely only tapped into the loudest voices in relatively powerful English-speaking scientific worlds. Missing from this analysis are the voices of those professionals outside the English-speaking world, particularly those in locales (Southeast Asia, Sub-Saharan Africa, South America, with the exception of Brazil) far from my ethnographic field sites and working in professional capacities (community nurse, peer adherence supporter, etc.) that present few opportunities for scientific publishing, global conference travel, or other means of engaging with global treatment and prevention discourses. Further, though it was not the aim of this particular research project, the analysis presented here could have been further bolstered by the inclusion of data from people living with HIV outside of professional social worlds.

I specifically sought in this project to draw on three broad sources of data, one-on-one interviews, ethnographic field work at scientific meetings, and also extant narrative, material and visual discourse data both provided to me by research participants and also collected from field sites. In my initial conceptualization of this project, I also considered adding a fourth prong to data collection to include the collection and analysis of blogs and lay press articles on treatment as prevention. Though I did include several blog posts or articles published in the lay press, particularly HIV community magazines, in my analysis, these data were ones that were either collected from a field site, such as the International AIDS Conference, or were given to me in the course of an interview or emailed to me after the fact by interview participants. I did not actively and systematically sample from these sources, and therefore, there is only limited inclusion of these more lay produced sources of discourse data in my analysis. I believe this exclusion likely limited my ability to explore more marginalized constructions of treatment as prevention, such as deeper aspects of biomedical mistrust and pharmaceutical skepticism, that are atypical within the professional social world of HIV treatment as prevention.

Lastly, during the course of data collection and analysis, HIV treatment as prevention has remained an often swiftly moving target. The interviews I conducted at the very start of data collection would likely be very different if I conducted them again today, only two years later. On one hand, it has been a considerable strength of this project that I have sought to capture such a highly emergent phenomenon at such a critical juncture in its history, likely encapsulating perspectives and assertions that are very much situated in the exuberance and uncertainty of the present moment. At the same time, it also makes the findings of this research difficult to generalize and compare across time with that of other social science researchers who have studied treatment as prevention both before and after this point in time, a certain temporal situatedness that is both a strength and also warrants a caution.

Directions for Future Research

This dissertation sought to explore a highly emergent biomedical prevention approach during a contentious, uncertain, yet also thoroughly hopeful time in the history of the epidemic of HIV and AIDS. There were data collected for this project that touched me in highly moving ways, including data on the normalizing and liberatory aspects of non-infectiousness through viral suppression, on the impact of treatment as prevention on HIV-related stigma, human rights and the criminalization of HIV exposure and transmission, as well as more extensive data than I had time to fully present here on the anticipatory orientation to the ‘End of AIDS,’ all of which deserve further analytic attention in future publications.

Further, as I come to the end of this chapter in my career and am beginning the next one - a postdoctoral research position in Social Pharmacy - I have reflected on what it is I can take out of this work that will stimulate the direction of future projects. The work I am taking up in the next chapter of my academic career will not necessarily be exclusively confined to a focus on HIV treatment as prevention or on antiretrovirals. My postdoctoral research will involve the development of a further qualitative study of medication narratives, that is, narratives of medicine taking in every day life as they are ‘emplotted,’ or embedded, within broader illness narratives, the specifics of which I have wide discretion in choosing to fit my research interests and based on an initial one year period of exploratory analysis. For this postdoctoral project, I am not necessarily interested in directly carrying on this work with the use of antiretrovirals preventatively, as I would like to broaden my empirical horizons beyond work on HIV biomedical prevention at this point in my career, while continuing to draw on similar theoretical perspectives. However, what I have come to realize I am taking away from the present project is an interest in exploring the engagements between individuals *qua* biomedical subjects, pharmaceuticals, biomonitoring technologies, and the disciplining work of biomedicine, more broadly. One limitation of the present project is that I perhaps realized quite late in data collection and analysis, even with faithful use of the constant comparative method and theoretical sampling, how intricately viral load monitoring technologies are materially and discursively coming to be entwined with antiretrovirals in the processes of creating biomedical subjects, re-configuring HIV risk and biomedical surveillance, and also shaping anticipation for the future in highly stratified ways.

Moving forward, I anticipate that my work may examine what is happening at those points where biomedical monitoring techniques, for example, of treatment compliance and pharmaceutical failure, and medication consumption rub up against each other in the narratives of those who choose to - or who are compelled to - engage with them both for the management of chronic illness and the enhancement of life itself via increasingly technoscientific forms of present day biomedicine. I think and I hope this will offer an opportunity for me to query along the trajectories of what Marsha Rosengarten calls the travel between ‘information’ and ‘flesh’ (2009), between the informational and the material, including the materiality of blood, drugs, and bodies, and the informational aspects of clinical and pharmaceutical expertise, lay knowledge, and technoscientific practice.

References

Adam, Barry D. 2011. "Epistemic Fault Lines in Biomedical and Social Approaches to HIV Prevention." *Journal of the International AIDS Society* 14(Suppl 2):S2

Adams, Vincanne, Michelle Murphy and Adele E. Clarke. 2009. "Anticipation: Technoscience, Life, Affect, Temporality." *Subjectivity* 28:246-265.

Anglemyer A., G.W. Rutherford, R.C. Baggaley, M. Egger, and N. Siegfried. 2011. "Antiretroviral Therapy for Prevention of HIV Transmission in HIV-Discordant Couples." *Cochrane Database Systematic Review* 5:CD009153.

Armstrong, David. 1995. "The rise of surveillance medicine." *Sociology of Health and Illness* 17(3): 393-404.

Artavia, David. 2013. "Greece Reinstates Forced HIV Testing." HIV Plus Magazine. Retrieved on October 20, 2016 (http://www.hivplusmag.com/case-studies/world-news/2013/07/22/greece-reinstates-forced-hiv-testing).

Attia S., M. Egger, M. Muller, M. Zwahlen M, and N. Low. 2009. "Sexual Transmission of HIV According to Viral Load and Antiretroviral Therapy: Systematic Review and Meta-Analysis." *AIDS* 23:1397–1404.

Barrow, Geoffrey and Christine Barrow. 2015. "HIV Treatment as Prevention in Jamaica and Barbados: Magic Bullet or Sustainable Response?" *Journal of the International Association of Providers of AIDS Care* 14(1):82-87.

Barry, Andrew, Thomas Osborne and Nikolas Rose, eds. 1996. *Foucault and Practical Reason: Liberalism, Neo-liberalism and Rationalities of Government.* London, UK: University College London.

Bell, Susan E. and Anne E. Figert. 2015. "Moving Sideways and Forging Ahead: Reimagining '-Izations' in the Twenty-First Century." in *Reimagining (Bio)medicalization, Pharmaceuticals and Genetics: Old Critiques and New Engagements*, edited by Susan E. Bell and Anne E. Figert. New York, NY: Routledge.

Biehl, João. 2005. “Technologies of Invisibility: Politics of Life and Social Inequality.” p. 248-271 in *Anthropologies of Modernity: Foucault, Governmentality, and Life Politics*, edited by Jonathan Xavier Inda. Malden, MA: Blackwell Publishing.

Biehl, João. 2007. “Pharmaceuticalization: AIDS Treatment and Global Health Politics.” *Anthropological Quarterly* 80(4):1083-1126

Birungi J., J.E. Min, K.A. Muldoon, et al. 2015. “Lack of Effectiveness of Antiretroviral Therapy in Preventing HIV Infection in Serodiscordant Souples in Uganda: An Observational Study.” *PLoS One* 10:e0132182.

Blumer, Herbert. 1969. *Symbolic Interactionism: Perspective and Method.* Englewood Cliffs, NJ: Prentice Hall.

Boero, Natalie. 2010. “Bypassing Blame: Bariatric Surgery and the Case of Biomedical Failure.” Pp. 307-330 in *Biomedicalization: Technoscience, Health and Illness in the U.S.*, edited by A.E. Clarke, L. Mamo, J.R. Fosket, J.R. Fishman, and J. Shim. Durham, NC: Duke University Press.

Boseley, Sarah. 2016. “NHS Can Fund ‘Game-Changing’ PrEP HIV Drug, Court Says.” *The Guardian*. Retrieved on October 20, 2016 (https://www.theguardian.com/society/2016/aug/02/nhs-can-fund-game-changing-prep-hiv-drug-court-says)

Bowker, Geoffrey C. and Susan Leigh Star. 1999. *Sorting Things Out: Classification and Its Consequences.* Cambridge, MA: MIT Press.

Bradley, Heather, H. Irene Hall, Richard J. Wolitski, Michelle M. Van Handel, Amy E. Stone, Michael LaFlam, et al. “Vital Signs: HIV Diagnosis, Care, and Treatment Among Persons Living with HIV - United States, 2011.” *Morbidity and Mortality Weekly Report* (MMMR) 63(47):1113-1117.

British Columbia Centre for Excellence in HIV/AIDS. 2016. “HIV Cascade of Care in British Columbia.” Retrieved on October 20, 2016 (http://www.cfenet.ubc.ca/hiv-cascade-care-british-columbia).

British Columbia Centre for Excellence in HIV/AIDS. 2013. “Momentum Builds Globally as France and Brazil Adopt Treatment as Prevention.” Retrieved on October 20, 2016 (http://www.cfenet.ubc.ca/news/forecast/momentum-builds-globally-france-and-brazil-adopt-treatment-prevention)

British HIV Association (BHIVA) and The Expert Advisory Group on AIDS (EAGA). 2013. “Position Statement on the Use of Antiretroviral Therapy to Reduce HIV Transmission.” London, UK.

Brown, A.E., O.N. Gill & VC Delpech. 2013. “HIV Treatment as Prevention Among Men Who Have Sex With Men in the UK: Is Transmission Controlled by Universal Access to HIV Treatment and Care?” *HIV Medicine* 14:563-570.

Burns, D.N., C.W. Dieffenbach and S.H. Vermund. 2010. “Rethinking Prevention of HIV Type 1 Infection.” *Clinical Infectious Diseases* 51(6):725-731.

Cameron, Sally and John Godwin. 2014. “Barriers to Legal and Human Rights in Australia in the Era of HIV Treatment as Prevention.” *AIDS Education and Prevention* 26(3):202-213.

Cardo D.M., D.H. Culver, C.A. Ciesielski et al. 1997. “A Case–Control Study of HIV Seroconversion in Health Care Workers after Percutaneous Exposure.” *New England Journal of Medicine* 337: 1485-1490.

Castilla J., J. Del Romero, V. Hernando, et al. 2005. “Effectiveness of Highly Active Antiretroviral Therapy in Reducing Heterosexual Transmission of HIV.” *Journal of Acquired Immune Deficiency Syndrome 40*:96–101.

Charlebois, E.D., M. Das, T.C. Porco and D.V. Havlir. 2011. “The Effect of Expanded Antiretroviral Treatment Strategies on the HIV Epidemic Among Men Who Have Sex With Men in San Francisco.” *Clinical Infectious Diseases* 52:1046–1049.

Charmaz, Kathy. 2006. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Thousand Oaks, CA: Sage Publications.

Clarke, Adele E. 2005. *Situational Analysis: Grounded Theory After the Postmodern Turn.* Thousand Oaks, CA: Sage Publications.

Clarke, Adele and Joan H. Fujimara. 1992. “Introduction: What Tools? Which Jobs? Why Right?” Pp.3-44 in *The Right Tools for the Job: At Work in Twentieth Century Life Sciences*. Princeton, NJ: Princeton University.

Clarke, Adele E., Laura Mamo, Jennifer Ruth Fosket, Jennifer R. Fishman, and Janet Shim, eds. 2010. *Biomedicalization: Technoscience, Health and Illness in the U.S.* Durham, NC: Duke University Press.

Clarke, Adele, Janet K. Shim, Laura Mamo, Jennifer R. Fosket, and Jennifer R. Fishman. 2003. “Biomedicalization: Technoscientific transformations of health, illness and U.S. biomedicine.” *American Sociological Review* 68(2): 161-194.

Clarke, Adele and Susan Leigh Star. 2007. “The Social Worlds Framework: A Theory/Methods Package.” Pp. 113-39 in *The Handbook of Science and Technology Studies*, edited by Edward Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman. Cambridge, MA: The MIT Press.

Clayton, Michaela. 2012. “Human Rights Implications and Rights-Based Programming for Treatment as Prevention in the African Context.” Presented at the XIX International AIDS Conference, July 23, Washington, DC, USA. Retrieved July 23 2012 (http://pag.aids2012.org/session.aspx?s=91).

Clayton, Michaela, Lynette Mabote, and Felicita Hikuam. 2012. “Human Rights in an Era of Treatment as Prevention.” Eurasian Harm Reduction Network. Retrieved on October 20, 2016 (http://www.harm-reduction.org/library/human-rights-era-treatment-prevention-0).

Cohen, Jon. 2011. “HIV Treatment as Prevention.” Science 334(6063):1628.

Cohen, Myron S. 2010. “HIV Treatment as Prevention: To Be or Not To Be?” *Journal of Acquired Immune Deficiency Syndromes* 55(2):137-138.

Cohen, Myron S. 2010. “HIV Treatment as Prevention and ‘The Swiss Statement’: In for a Dime, in for a Dollar?” *Clinical Infectious Diseases* 59(11):1323-1324.

Cohen, Myron S., Ying Q. Chen, Marybeth McCauley, Theresa Gamble, Mina C. Hosseinipour, Nagalingeswaran Kumarasamy, et al. 2016. "Antiretroviral Therapy for the Prevention of HIV-1 Transmission." *New England Journal of Medicine* 375:830-839.

Cohen, Myron S., Ying Q. Chen, Marybeth McCauley, Theresa Gamble, Mina C. Hosseinipour, Nagalingeswaran Kumarasamy, et al. 2011. "Prevention of HIV-1 Infection with Early Antiretroviral Therapy." *New England Journal of Medicine* 365(6):493-505.

Cohen, Myron S., Charles Holmes, Nancy Padian, Megan Wolf, Gottfried Hirnschall, Ying-Ru Lo, and Eric Goosby. 2012. "HIV Treatment as Prevention: How Scientific Discovery Occurred and Translated Rapidly into Policy for the Global Response." *Health Affairs* 31(7):1439-1449.

Collins, Simon. 2016. "Treatment as Prevention (TasP) in the UK Supports Access to ART at Any CD4 Count (HIV Treatment Bulletin)." Retrieved on October 19, 2016 (http://i-base.info/htb/ 29594).

Collins, Simon. 2015. "HPTN 052: No HIV Transmissions on Effective ART But Only Limited Data on Viral Failure and Drug Resistance (HIV Treatment Bulletin)." Retrieved on October 19, 2016 (http://i-base.info/htb/28715).

Collins, Simon. 2014. "No HIV Transmissions with Undetectable Viral Load: Interim PARTNER Study Results Show Need for Longer Follow-up (HIV Treatment Bulletin)." Retrieved on October 19, 2016 (http://i-base.info/htb/24904).

Colvin, Christopher J., Steven Robins and Joan Leavens. "Grounding 'Responsibilisation Talk': Masculinity, Citizenship and HIV in Cape Town, South Africa." *Journal of Development Studies* 46(7):1179-1195.

Conrad, Peter and Joseph Schneider. 1980. *Deviance and Medicalization: From Badness to Sickness.* St. Louis: Mosby.

Crawford, Robert. 2006. "Health as Meaningful Social Practice." *health* 10(4):401-420.

Crawford, Robert. 1994. "The Boundaries of the Self and the Unhealthy Other: Reflections on Health, Culture, and AIDS." *Social Science and Medicine* 38(10): 1347-65.

Crepaz, N., C.M. Lyles, R.J. Wolitski, et al. 2006. “Do Prevention Interventions Reduce HIV Risk Behaviours Among People Living with HIV? A Meta-Analytic Review of Controlled Trials.” *AIDS* 20:143–157.

Das, Moupali, Priscilla Lee Chu, Glenn-Milo Santos, Susan Scheer, Eric Vittinghoff, Willi McFarland, and Grant N. Colfax. 2010. “Decreases in Community Viral Load are Accompanied by Reductions in New HIV Infections in San Francisco.” *PLoS ONE* 5(6):e11068.

Davis, Susan. 2012. “HIV Care: The San Francisco Model.” Retrieved October 20, 2016 (http://coe.ucsf.edu/coe/patient/ucsf_hiv_care.html).

Deeks, Steven G. and Andrew N. Phillips. 2009. “HIV Infection, Antiretroviral Treatment, Ageing, and Non-AIDS Related Morbidity.” *British Medical Journal* 338:a3172.

del Rosa, C. 2010. “HIV treatment as prevention. The jury's still out, but current data seem to support the theory that ART use reduces the likelihood of HIV transmission.” *AIDS Clinical Care* 22(1):3-4.

Dey, Ian. 1999. *Grounding Grounded Theory: Guidelines for Qualitative Inquiry*. Bingley, UK: Emerald House Publishing Group.

Dieffenbach, Carl W. 2012. “Preventing HIV Transmission Through Antiretroviral Treatment-Mediated Virologic Suppression: Aspects of an Emerging Scientific Agenda.” *Current Opinion on HIV/AIDS* 7(2):1060110.

Douglas, Mary. 1966/1969. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo.* London: Routledge & Kegan Paul.

Douglas, Mary. 1985. *Risk Acceptability According to the Social Sciences.* New York: Russell Sage Foundation.

Ecks, Stefan. 2005. “Pharmaceutical Citizenship: Antidepressant Marketing and the Promise of Demarginalization in India.” *Anthropology & Medicine* 12(3):239-254.

Ehrenreich, Barbara and John Ehrenreich. 1978. “Medicine as Social Control.” Pp. 39-79 in *The Cultural Crisis of Modern Medicine*, edited by John Ehrenreich. New York: Monthly Review Press.

Farmer, Paul. 1999. *Infections and Inequalities: The Modern Plagues.* Berkeley, CA: University of California Press.

Farnell, Brenda and Laura R. Graham. 1998. “Discourse-Centered Methods.” Pp. 411-58 in *Handbook of Methods in Cultural Anthropology*, edited by H.R. Bernard. Walnut Creek, CA: Alta Mira Press.

Fleck, Ludwig. 1979. *Genesis and Development of a Scientific Fact.* Chicago: Chicago University Press.

Foucault, Michel. 2008. “11 January 1978.” Pp. 1-25 in *Security, Territory, Population: Lectures at the College de France, 1977-1978*. London: Palgrave Macmillan.

Foucault, Michel. 1993. “About the Beginning of the Hermeneutics of the Self: Two Lectures at Dartmouth.” *Political Theory* 21(2):198-227.

Foucault, Michel. 1988. “Technologies of the self.” Pp. 16-49 in *Technologies of the Self: A Seminar with Michel Foucault*, edited by L.H. Martin, H. Gutman and P.H. Hutton. Amherst, MA: University of Massachusetts Press.

Foucault, Michel. 1984. “Biopower.” Pp. 258-289 in *The Foucault Reader*, edited by P. Rabinow. New York: Pantheon Books.

Foucault, Michel. 1982. “The Subject and Power.” *Critical Inquiry* 8(4):777-795.

Foucault, Michel. 1973/1994. *The Birth of the Clinic: An Archeology of Medical Perception*. NY: Vintage.

Fujimara, Joan H. 1992. “Crafting Sciences: Standardized Packages, Boundary Objects and ‘Translation’.” Pp. 168-214 in *Science as Practice and Culture*, edited by A. Pickering. Chicago: University of Chicago Press.

Galletly, C.L. and Z. Lazzarini. 2013. “Charges for Criminal Exposure to HIV and Aggravated Prostitution Filed in the Nashville, Tennessee Prosecutorial Region 2000-2010.” *AIDS and Behavior* 17(8):2624-2636.

Gardner, Edward M., Margaret P. McLees, John F. Steiner, Carlos del Rio, and William J. Burman. 2011. “The Spectrum of Engagement in HIV Care and Its Relevance to Test-and-Treat Strategies for Prevention of HIV Infection.” *Clinical Infectious Diseases* 52:793-800.

Garnett, Geoffrey P. and Rebecca Baggaley. 2009. “Treating Our Way Out of the HIV Pandemic: Could We, Would We, Should We?” *Lancet* 373:9-11.

Gebo KA, Fleishman JA, Conviser R, et al. 2005. “Racial and Gender Disparities in Receipt of Highly Active Antiretroviral Therapy Persist in a Multistate Sample of HIV Patients in 2001.” *Journal of Acquired Immune Deficiency Syndromes* 38:96–103.

Gibbon, Sahra and Carlos Novas. 2008. “Introduction.” Pp. 1-18 in *Biosocialities, Genetics and the Social Sciences: Making Biologies and Identities*, edited by S. Gibbon and C. Novas. New York: Routledge.

Giordano T.P., G. Bartsch, Y. Zhang, et al. 2010. “Disparities in Outcomes for African American and Latino Subjects in the Flexible Initial Retrovirus Suppressive Therapies (FIRST) Trial.” *AIDS Patient Care and STDs* 24:287-295.

Glaser, Barney G. 1978. *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory.* Mill Valley, CA: Sociology Press.

Glaser, Barney G. and Anselm L. Strauss. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine.

Granich, Reuben M., Charles F. Gilks, Christopher Dye, Kevin De Cock, and Brian G. Williams. 2009. “Universal Voluntary HIV Testing with Immediate Antiretroviral Therapy as a Strategy for Elimination of HIV Transmission: A Mathematical Model.” *Lancet* 373:48-57.

Grant, Robert M., Javier R. Lama, Peter L. Anderson, Vanessa McMahan, Albert Y. Liu, Lorena Vargas et al. for the iPrex Study Team. 2010. “Preexposure Chemoprophylaxis for HIV

Prevention in Men who have Sex with Men." *New England Journal of Medicine* 363:2587-2599.

Grennan, J.T., M.R. Loutfy, D. Su, P.R. Harrigan, C. Cooper, M. Klein et al. 2012. "Magnitude of Virologic Blips is Associated with a Higher Risk for Virologic Rebound in HIV-infected Individuals: A Recurrent Events Analysis." *Journal of Infectious Diseases* 205(8): 1230-1238.

Guiliano, Neil. 2016. "The End of AIDS is Within Our Grasp." Retrieved from the San Francisco AIDS Foundation website on October 20, 2016 (http://sfaf.org/hiv-info/hot-topics/from-the-experts/end-of-aids-is-within-our-grasp.html).

Gusterson, Hugh. 1997. "Studying Up Revisited." *PoLaR* 20:114-9.

Haire B. and J.M. Kaldor. 2013. "Ethics of ARV Based Prevention: Treatment-as-Prevention and PrEP." *Developing World Bioethics* 13:63–69.

Hammersley, Martyn and Paul Atkinson. 2007. *Ethnography: Principles in Practice*, Third Edition. New York, NY: Routledge.

Hardon, Anita and Hansjörg Dilger. 2011. "Global AIDS Medicines in East African Health Institutions." *Medical Anthropology* 30(2):136-157.

Hayes, Richard, Helen Ayles, Nulda Beyers, Kalpana Sabapathy, Sian Floyd, Kwame Shanaube, et al. and The HPTN 071 (PopART) Study Team. 2014. "HPTN 071 (PopART): Rationale and Design of a Cluster-Randomised Trial of the Population Impact of an HIV Combination Prevention Intervention Including Universal Testing and Treatment: A Study Protocol for a Cluster Randomised Trial." *Trials* 15:57-74.

"HIV Treatment as Prevention - It Works." *Lancet* 377(9779):1719.

Hoare, A., D.P. Wilson, D.G. Regan, J. Kaldor, and M.G. Law. 2008. "Using Mathematical Modelling to Help Explain the Differential Increase in HIV incidence in New South Wales, Victoria and Queensland: Importance of Other Sexually Transmissible Infections." *Sexual Health* 5:169-187.

Holtgrave, D.R. 2010. “Is the Elimination of HIV Infection Within Reach in the United States? Lessons from an Epidemiologic Transmission Model.” *Public Health Reports* 125:372–376.

Holtgrave, D.R. 2010. “Potential and Limitations of a ‘Test and Treat’ Strategy as HIV Prevention in the United States.” *International Journal of Clinical Practice* 64(6):678-681.

Hoppe, Trevor. 2014. “From Sickness to Badness: The Criminalization of HIV in Michigan.” *Social Science & Medicine* 101:139-147.

Howson, Alexandra. 1998. “Surveillance, Knowledge and Risk: The Embodied Experience of Cervical Screening.” *Health* 2(2):195-215.

Hull, Mark W. & Julio S.G. Montaner. 2013. “HIV Treatment as Prevention: The Key to an AIDS-free Generation.” *Journal of Food and Drug Analysis* 21(4):S95-S101.

Hull, Mark. W., Zunyou Wu and Julio S.G. Montaner. 2012. “Optimizing the Engagement of the Care Cascade: A Critical Step to Maximize the Impact of HIV Treatment as Prevention.” *Current Opinion on HIV/AIDS* 7:579-586.

Inda, Jonathan Xavier. 2014. *Racial Prescriptions: Pharmaceuticals, Difference, and the Politics of Life.* New York: Routledge.

INSIGHT START Study Group. 2015. “Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection.” *New England Journal of Medicine* 373(9):795-807.

International Treatment as Prevention Workshop. 2016. Retrieved on October 20, 2016 (http://www.treatmentaspreventionworkshop.org/)

Jaworski, Adam and Nikolas Coupland. 1999. *The Discourse Reader.* London: Routledge.

Jin, F., J. Jansson, M. Law, M., G.P. Prestage, I. Zablotska, J.C. Imrie et al. (2012). “Per-Contact Probability of HIV Transmission in Homosexual Men in Sydney in the Era of HAART.” *AIDS* 24:907–910.

Joint United Nations Programme on HIV/AIDS (UNAIDS). 2016. “Global AIDS Update 2016.” Retrieved on October 20, 2016 (http://www.unaids.org/sites/default/files/media_asset/global-AIDS-update-2016_en.pdf)

Joint United Nations Programme on HIV/AIDS (UNAIDS). 2014. *90-90-90: An Ambitious Treatment Target to Help End the AIDS Epidemic* (JC2684, English original, October 2014).

Joint United Nations Programme on HIV/AIDS (UNAIDS). 2014. *The Last Climb: Ending AIDS, Leaving No One Behind, Speech by Michel Sidibé, 20 July 2014.* Geneva, Switzerland.

Johnston, Karissa M., Adrian R. Levy, Viviane D. Lima, Robert S. Hogg, Mark W. Tyndall, Paul Gustafson, Andrew Briggs, and Julio S. Montaner. 2010. "Expanding Access to HAART: A Cost-Effective Approach for Treating and Preventing HIV." *AIDS* 24:1929-1935.

Jones, Justin and Jen Hecht. 2012. "Beyond Doctors and Drugs: Adapting Evidence-based, Treatment-as-Prevention Interventions to Peer-based, Holistic, Client-centered Services for People Living with HIV." Presented at the XIX International AIDS Conference, July 23, Washington, DC, USA. (http://pag.aids2012.org/session.aspx?s=634).

Kalichman, S.C., C. Cherry, M.O. Kalichman, et al. 2011. "Integrated Behavioral Intervention to Improve HIV/AIDS Treatment Adherence and Reduce HIV Transmission." *American Journal of Public Health* 101:531–538.

Kévin, Jean, Marie-Claude Boily, Christine Danel, Raoul Moh, Anani Badjé, Annabel Desgrées-du-Loû, Serge Eholié, France Lert, Rosemary Dray-Spira, Xavier Anglaret and Eric Ouattara. 2016. "What Level of Risk Compensation Would Offset the Preventive Effect of Early Antiretroviral Therapy? Simulations From the TEMPRANO Trial." *American Journal of Epidemiology*. doi: 10.1093/aje/kww127.

Knight, Rod, Will Small, Kim Thomson, Mark Gilbert & Jean Shoveller. 2016. "Implementation Challenge and Opportunities for HIV Treatment as Prevention (TasP) among young men in Vancouver, Canada: A Qualitative Study." *BMC Public Health* 16:262-272.

Krellenstein, James B. and Sean Strub. 2012. "The Ethical Implications of 'Treatment as Prevention' in the United States." *HIV/AIDS Policy and Law Review* 16:11-14.

Latour, Bruno and Steve Woolgar. 1979. *Laboratory Life: The Social Construction of Scientific Facts.* Princeton, NJ:Princeton University Press.

Lemke, Thomas. 2002. “Foucault, Governmentality, and Critique.” *Rethinking Marxism* 14(3): 49-64.

Lester, Rebecca J. 1997. “The (Dis)embodied Self in Anorexia Nervosa.” *Social Science and Medicine* 44(4):479–489.

Lillie-Blanton M., V.E. Stone VE, A.S. Jones, et al. “Association of Race, Substance Abuse, and Health Insurance Coverage with Use of Highly Active Antiretroviral Therapy Among HIV-Infected Women.” *American Journal of Public Health* 100:1493-1499.

Lippman, S.A., S.B. Shade, A.M. Ayadi, J.M. Gilvydis, J.S. Grignon, T. Liegler et al. 2016. “Attrition and Opportunities Along the HIV Care Continuum: Findings from a Population-Based Sample, North West Province, South Africa.” *Journal of Acquired Immune Deficiency Syndrome* 73(1):91-99.

Lloyd, Karen C. N.d. “A Grounded Theory Study of HAART Initiation Decision-Making Among HIV-Positive Women.”

Loewenson, Rene and David McCoy. 2004. “Access to Antiretroviral Treatment in Africa: New Resources and Sustainable Health Systems are Needed.” *British Medical Journal* 328(7434):241-242.

Losina Elena, Ingrid V. Bassett, Janet Giddy, Senica Chetty, Susan Regan, Rochelle P. Walensky. 2010. “The ‘ART’ of Linkage: Pretreatment Loss to Care After HIV Diagnosis at Two PEPFAR Sites in Durban, South Africa.” *PLoS One* 5(3):e9538.

Lupton, Deborah. 1999. *Risk.* New York: Routledge.

Lupton, Deborah. 2016. *The Quantified Self.* Malden, MA: Polity Press.

Maman, S., J. Mbwambo, NM Hogan, GP Kilonzo and M Sweat. 2001. “Women’s Barriers to HIV-1 Testing and Disclosure: Challenges for HIV-1 Voluntary Counselling and Testing.” *AIDS Care* 13(5):595-603.

Marant, B., F. Henwood, and M. Darking. 2016. “Imagining Health(care) in the Digital Society: A Multi-Site Case Study of the Introduction of mHealth Technologies for HIV Care.” Paper presented at the British Sociological Association Medical Sociology Annual Conference, September 7, Birmingham, UK.

McKinlay, John B. 1975. “A Case for Refocusing Upstream: The Political Economy of Illness.” Pp. 7-17 in *Applying Behavioral Science to Cardiovascular Risk.* New York: American Heart Association.

McNairy, Margaret and Wafaa M. El-Sadr. 2014. “A Paradigm Shift: Focus on the HIV Prevention Continuum.” *Clinical Infectious Diseases* 59(Suppl 1): S12-S15.

Martin, Emily. 1994. *Flexible Bodies: The Role of Immunity in American Culture from the Days of Polio to the Age of AIDS.* Boston: Beacon.

Matheson, Rebecca, Suzette Moses-Burton, Amy C. Hsieh, Sophie Dilmitis, Margaret Happy, Eunice Sinyemu, et al. 2015. “Fundamental Concerns of Women Living with HIV Around the Implementation of Option B+.” *Journal of the International AIDS Society* 18(Suppl 5): 20286.

Messer, Lynne C, E. Byrd Quinlivan, Heather Parnell, Katya Roytburd, Adaora A. Adimora, Natasha Bowditch and Nancy DeSousa. 2013. “Barriers and Facilitators to Testing, Treatment Entry, and Engagement in Care by HIV-Positive Women of Color.” *AIDS Patient Care and STDS* 27(7):398-407.

Médecins Sans Frontières. 2013. “Putting HIV Treatment to the Test: A Product Guide for Viral Load and Point-of-Care CD4 Diagnostic Tools.” Retrieved on October 21, 2016 (https://www.msf.org.za/system/.../putting_hiv_treatment_test.pdf?).

Middelkoop K., L.G. Bekker, L. Myer, L.F. Johnson, M. Kloos et al. 2011. “Antiretroviral Therapy and TB Notification Rates in a High HIV Prevalence South African Community.” *Journal of Acquired Immune Deficiency Syndrome* 56:263–269.

Mills, C. Wright. 1956. *The Power Elite.* New York, NY: Oxford University Press.

Mocroft, A., MJ Gill, W Davidson and AN Phillips. 2000. “Are There Gender Differences in Starting Protease Inhibitors, HAART, and Disease Progression Despite Equal Access to Care?” *Journal of Acquired Immune Deficiency Syndrome* 24(5):475-482.

Mofenson L.M., J.S. Lambert, E.R. Stiehm, et al. Pediatric AIDS Clinical Trials Group Study 185 Team. 1999. “Risk Factors for Perinatal Transmission of Human Immunodeficiency Virus Type 1 in Women Treated with Zidovudine.” *New England Journal of Medicine* 341:385–393.

Montaner, Julio S.G., Robert Hogg, Evan Wood, Thomas Kerr, Mark Tyndall, Adrian R. Levy, and P. Richard Harrigan. 2006. “The Case for Expanding Access to Highly Active Antiretroviral Therapy to Curb the Growth of the HIV Epidemic.” *Lancet* 368:531-536.

Montaner J.S., V.D. Lima, R. Barrios, B. Yip, E. Wood et al. 2010. “Association of Highly Active Antiretroviral Therapy Coverage, Population Viral Load, and Yearly New HIV Diagnoses in British Columbia, Canada: A Population-Based Study.” *Lancet* 376: 532–539.

Montoy, Juan Carlos C., William H. Dow, and Beth C. Kaplan. 2016. “Patient Choice in Opt-in, Active Choice, and Opt-Out HIV Screening: Randomized Clinical Trial.” *British Medical Journal* 352:h6895.

Mosse, David. 2006. “Anti-social Anthropology? Objectivity, Objection, and the Ethnography of Public Policy and Professional Communities.” *Journal of the Royal Anthropological Institute* 12:935-56.

Nader, Laura. 1972. “Up the Anthropologist: Perspectives Gained from Studying Up.” Pp. 284-311 in *Reinventing Anthropology*, edited by Dell H. Hymes. New York, NY:Pantheon Books.

NAM AIDSmap. 2014. “The Treatment Cascade.” Retrieved on October 20, 2016 (http://www.aidsmap.com/The-treatment-cascade/page/2835702/).

National AIDS Trust. 2013. Policy Briefing: Changes to Employment Restrictions for Healthcare Workers with HIV. Retrieved on October 20, 2016 (http://www.nat.org.uk/media/Files/Publications/Healthcare_workers_brief_Aug_2013.pdf)

New York State Department of Health. 2016. “Ending the AIDS Epidemic in New York State.” Retrieved on October 20, 2016 (https://www.health.ny.gov/diseases/aids/ending_the_epidemic/).

Nguyen, Vinh-Kim. 2005. "Antiretroviral Globalism, Biopolitics and Therapeutic Citizenship." Pp. 124-144 in *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, edited by A. Ong and S.J. Collier. Malden, MA: Blackwell Publishing.

Nguyen, Vinh-Kim. 2010. *The Republic of Therapy: Triage and Sovereignty in West Africa's Time of AIDS*. Durham, NC: Duke University Press.

Nguyen, Vinh-Kim, Natalie Bajos, Francoise Dubois-Arber, Jeffrey O'Malley, and Catherine M. Pirkle. 2010. "Remedicalizing an Epidemic: From HIV Treatment as Prevention to HIV Treatment is Prevention." *AIDS* 24:1-3. doi:10.1097/QAD.0b013e3283402c3e.

O'Bryne, Patrick and Paul McPherson. 2016. "HIV Treatment as Prevention in Men who Have Sex with Men: Examining the Evidence." *Canadian Medical Association Journal* 188(3): 198-203.

Office of National AIDS Policy. 2015. *National HIV/AIDS Strategy for the United States: Updated to 2020*. Washington, DC: The White House.

Office of National AIDS Policy. 2015. "5 Major Changes Since 2010." Retrieved on October 20, 2016 (https://www.aids.gov/federal-resources/national-hiv-aids-strategy/nhas-update-5-things.pdf).

Panel on Antiretroviral Guidelines for Adults and Adolescents. 2014. "Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents." Washington, DC: US. Department of Health and Human Services. Retrieved on April 18, 2014 (http://aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf).

Paoli, Marina Manuela de, Elizabeth Anne Mills, and Arne Backer Grønningsæter. 2012. "The ARV Roll Out and the Disability Grant: A South African Dilemma?" *Journal of the International AIDS Society* 15:6-15.

Peabody, Roger. 2013. "Undiagnosed HIV Infection." NAM AIDSmap. Retrieved on October 20, 2016 (http://www.aidsmap.com/Undiagnosed-HIV-infection/page/2804267/).

Pellowski, Jennifer A., Seth C. Kalichman, Karen A. Matthews and Nancy Alder. 2013. “A Pandemic of the Poor: Social Disadvantage and the U.S. HIV Epidemic.” *American Psychologist* 68(4):197-209.

Pence BW, J. Ostermann, V. Kumar, K. Whetten, N. Thielman, and M.J. Mugavero. “The Influence of Psychosocial Characteristics and Race/Ethnicity on the Use, Duration, and Success of Antiretroviral Therapy.” *Journal of Acquired Immune Deficiency Syndromes* 47:194–201.

Petersen, Alan & Deborah Lupton. 1996. *The New Public Health: Health and Self in the Age of Risk.* London: Sage Publications.

Perrson, Asha. “‘The World has Changed’: Pharmaceutical Citizenship and the Reimagining of Serodiscordant Sexuality Among Couples with Mixed HIV Status in Australia.” *Sociology of Health and Illness* 38(3):380-395.

Perrson, Asha, Christy E. Newman, Limin Mao, and John de Wit. 2016. “On the Margins of Pharmaceutical Citizenship: Not Taking HIV Medication in the ‘Treatment Revolution’ Era. *Medical Anthropology Quarterly* 30(3):359-377.

Petryna, Adriana. 2004. “Biological Citizenship: The Science and Politics of Chernobyl-Exposed Populations.” *OSIRIS* 19:250-265.

President’s Emergency Plan for AIDS Relief. 2016. “Defining the ABC Approach (Guidance).” Retrieved on October 20, 2016 (http://www.pepfar.gov/reports/guidance/75837.htm).

Quinn, Thomas C., Maria J. Wawer, Nelson Sewankambo, David Serwadda, Chuanjun Li, Fred Wabwire-Mangen et al. for the Rakai Project Study Group. 2000. “Viral Load and Heterosexual Transmission of Human Immunodefiency Virus Type 1.” *New England Journal of Medicine* 342:921-929.

Rabinow, Paul. 1992. “Artificiality and Enlightenment: From Sociobiology to Biosociality.” Pp. 234-252 in *Zone 6: Incorporations*, edited by J. Crary and S. Kwinter. New York: Zone Books.

Rabinow, Paul. 2005. “Artificiality and Enlightenment: From Sociobiology to Biosociality.” Pp. 181-193 in *Anthropologies of Modernity: Foucault, Governmentality, and Life Politics*, edited by J.X. Inda. Malden, MA: Blackwell Publishing.

Rabinow, Paul & Nikolas Rose. 2006. “Biopower Today.” *BioSocieties* 1:195-217.

Race, Kane. 2001. “The Undetectable Crisis: Changing Technologies of Risk.” *Sexualities* 4(2): 167-189.

Rangarajan, S. J.C. Donn, T. Giang, D.D. Bui, H. Hung Nguyen, P.B. Tou, et al. 2016. “Factors Associated with HIV Viral Load Suppression on Antiretroviral Therapy in Vietnam.” *Journal of Virus Eradication* 2(2):94-101.

Rodger, Alison, Tinna Bruun, Valentina Cambiano, Petro Vernazza, Vincete Estrada, Jan Van Lunzen, Simon Collins, Anna Maria Geretti, Andrew Phillips, Jens Lundgren for the PARTNER Study Group. 2014. “HIV Transmission Risk Through Condomless Sex If HIV + Partner on Suppressive ART: PARTNER Study.” Paper presented at the Conference on Retroviruses and Opportunistic Infections (CROI), March 2014, Boston, MA.

Rose, Nikolas. 2007. *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century.* Princeton, NJ: Princeton University Press.

Rose, Nikolas and Peter Miller. 1992. “Political Power Beyond the State: Problematics of Government.” *British Journal of Sociology* 43(2):173-205.

Rose, Nikolas and Carlos Novas. 2004. “Biological Citizenship.” Pp. 439-463 in *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, edited by A. Ong and S.J. Collier. Malden, MA: Blackwell Publishing.

Rosengarten, Marsha. 2009. *HIV Interventions: Biomedicine and the Traffic Between Information and Flesh.* Seattle, WA: University of Washington Press.

Sayles, Jennifer N., Jacqueline Rurangirwa, Min Kim, Janni Kinsler, Rangell Oruga and Mike Janson. 2012. “Operationalizing Treatment as Prevention in Los Angeles County: Antiretroviral Therapy Use and Factors Associated with Unsuppressed Viral Load in the Ryan White System of Care.” *AIDS Patient Care and STDS* 26(8):463-470.

Sayles, J.N., MD Wong and WE Cunningham. 2006. “The Inability to Take Medications Openly at Home: Does it Help Explain Gender Disparities in HAART Use?” *Journal of Women’s Health* 15(2:173-181.

Schechter, M., R.F do Lago, A.B. Mendelsohn, R.I. Moreira, L.H. Moulton, and L.H. Harrison for the Praca Onze Study Team. 2004. “Behavioral Impact, Acceptability, and HIV Incidence among Homosexual Men with Access to Post-exposure Chemoprophylaxis for HIV.” *Journal of Acquired Immune Deficiency Syndromes* 35: 519-525.

Scott, Sue and G.H. Williams, eds. 1991. *Private Risks and Public Dangers.* Aldershot: Avebury.

Shapiro R., M.D.Hughes, A. Ogwu A et al. 2010. “Antiretroviral Regimens in Pregnancy and Breastfeeding in Botswana.” New Engl Journal of Medicine 362:2282–2294.

Shapiro, MF, SC Morton, DF McCaffrey, et al. 2000. “Variations in Care of HIV-Infected Adults in the United States: Results from the HIV Cost and Services Utilization Study.” *Journal of the American Medical Association* 281:2305-2315.

Shim, Janet. 2010. “The Stratified Biomedicalization of Heart Disease: Expert and Lay Perspectives on Racial and Class Inequality.” Pp. 218-241 Pp. 242-262 in *Biomedicalization: Technoscience, Health and Illness in the U.S.*, edited by A.E. Clarke, L. Mamo, J.R. Fosket, J.R. Fishman, and J. Shim. Durham, NC: Duke University Press.

Sperling R.S., D.E. Shapiro, R.W. Coombs, et al. Pediatric AIDS Clinical Trials Group Protocol 076 Study Group. 1996. “Maternal Viral Load, Zidovudine Treatment, and the Risk of Transmission of Human Immunodeficiency Virus Type 1 from Mother to Infant.” *New England Journal of Medicine* 335:1621–1629.

Sood, Neeraj, Zachary Wagner, Amber Jaycocks, Emmanuel Drabo, and Raffaele Vardavas. 2013. “Test-and-Treat in Los Angeles: A Mathematical Model of the Effects of Test-and-Treat for the Population of Men Who Have Sex with Men in Los Angeles County.” *Clinical Infectious Diseases* 56(12):1789-96.

Star, Susan Leigh. 1989. *Regions of the Mind: Brain Research and the Quest for Scientific Certainty*. Stanford, CA: Stanford University Press.

Star, Susan Leigh and James R. Griesemer. Institutional Ecology, “Translations” and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907-1939. *Social Studies of Science* 19:387-420.

Stevenson, Angus, ed. 2010. *Oxford English Dictionary, Third Edition.* Oxford: Oxford University Press.

Strauss, Anselm L. 1978. “A Social Worlds Perspective.” *Studies in Symbolic Interaction* 1:119-128.

Strauss, Anselm L. 1987. *Qualitative Analysis for Social Scientists*. Cambridge, UK: Cambridge University Press.

Strauss, Anselm L. and Juliet M. Corbin. 1990. The Basics of Qualitative Analysis: Grounded Theory Procedures and Techniques (1st. Edition). Newbury Park, CA: Sage.

Strauss, Anselm L. and Juliet M. Corbin. 1998. The Basics of Qualitative Analysis: Grounded Theory Procedures and Techniques (2nd Edition). Thousand Oaks, CA: Sage.

Strub, Sean. 2010. “Antiretroviral Treatment as HIV Prevention?” Poz Blogs, Retrieved August 10, 2015 (http://blogs.poz.com/sean/archives/2010/04/test_and_treat.html)

Sullivan, P.S., K. Kayetinkore, and E. Chomba. 2009. “Reduction of HIV Transmission Risk and High Risk Sex While Prescribed ART: Results from Discordant Couples in Rwanda and Zambia.” Paper presented at the 16th Conference on Retroviruses and Opportunistic Infections, Montreal, Canada.

Takuva, Simbarashe, Alison Brown, William MacLeod, Yogan Pillay, Valarie Delpech and Adrian J. Puren. 2015. “Disparities in Engagement Within HIV Care in South Africa.” Paper presented at the Conference on Retroviruses and Opportunistic Infections, Seattle, Washington (http://www.croiconference.org/sessions/disparities-engagement-within-hiv-care-south-africa)

Tolley, Elizabeth E., Kevin McKenna, Caroline Mackenzie, Fidele Ngabo, Emmanuel Munyambanza, Jennet Arcara et al. 2014. “Preferences for a Potential Longer-Acting

Injectable Contraceptive: Perspectives from Women, Providers, and Policy Makers in Kenya and Rwanda." *Global Health Science and Practice* 2(2):182-194.

Townsend C.L., M. Cortina-Borja, C.S. Peckham, et al. 2008. "Low Rates of Mother-to-Child Transmission of HIV Following Effective Pregnancy Interventions in the United Kingdom and Ireland, 2000–2006." *AIDS* 22:973–981.

Truong, H.H., T. Kellogg, J.D. Klausner et al. 2006. "Increases in Sexually Transmitted Infections and Sexual Risk Behaviour Without a Concurrent Increase in HIV Incidence Among Men who have Sex with Men in San Francisco: A Suggestion of HIV Serosorting?" *Sexually Transmitted Infections* 82:461-466.

Turner, Bryan S. 1997. "From Governmentality to Risk: Some Reflections on Foucault's Contribution to Medical Sociology." Pp. ix-xxii in *Foucault, Health and Medicine*, edited by Alan Petersen and Robin Bunton. London and New York: Routledge.

Ulett, Kimberly B, James H. Willig, Hui-Yi Lin, Justin S. Routman, Sarah Abroms, Jeroan Alison, et al. 2009. "The Therapeutic Implications of Timely Linkage and Early Retention in HIV care." *AIDS Patient Care and STDs* 23(1):41– 49.

Valle, Carlos Guilherme. "Biosocial Activism, Identities and Citizenship: Making Up 'People Living with HIV and AIDS' in Brazil." *Vibrant: Virtual Brazilian Anthropology* 12(2):27-70.

Vernazza, Pietro, Bernard Hirschel, Enos Bernasconi, and Markus Flepp. 2008. "Les Personnes Séropositives ne Souffrant d'Aucune autre MST et Suivant un Traitment Antirétroviral Efficace ne Transmettent pas le VIH par Voie Sexuelle." *Bulletin des Médecins Suisses* 89(5):165-169. (English translation, including translator's affidavit, available at: http://tinyurl.com/cpyt5n).

Vittinghoff, E. J. Douglas, F. Judson, D. Mckirnan, K. MacQueen, and S.P. Buchbinder. 1999. "Per-contact Risk of Human Immunodeficiency Virus Transmission between Male Sexual Partners." *American Journal of Epidemiology* 50(3):306-311.

Wang, Lu, Zeng Ge, Jing Luo, Duo Shan, Xing Gao, Guo-wei Ding, et al. 2010. "HIV Transmission Risk Among Serodiscordant Couples: A Retrospective Study of Former

Plasma Donors in Henan, China." *Journal of Acquired Immune Deficiency Syndromes* 55(2):232-238.

Williams, Brian, Robin Wood, Victor Dukay, Wim Delva, David Ginsburg, Martinus Stander, Robert Sheneberger, Julio Montaner, and Alex Welte. 2011. "Treatment as Prevention: Preparing the Way." *Journal of the International AIDS Society* 14(Suppl 1):56-61.

Wilson, David P. 2012. "HIV Treatment as Prevention: Natural Experiments Highlight Limits of Antiretroviral Treatment as HIV Prevention." *PLoS Med* 9(7): e1001231.

Wilton, James and Logan Broeckaert. 2013. "The HIV Treatment Cascade: Patching the Leaks to Improve Retention." Retrieved on October 20, 2016. (http://www.catie.ca/en/pif/spring-2013/hiv-treatment-cascade-patching-leaks-improve-hiv-prevention)

Wohl, A.R., J. Carlos, J. Tejero, et al. 2011. "Barriers and Unmet Need for Supportive Services for HIV patients in Care in Los Angeles County, California." *AIDS Patient Care and STDs* 25:525–532.

World Health Organization. 2016. "Global Health Observatory (GHO) data: Number of Deaths Due to AIDS." Retrieved on October 20, 2016 (http://www.who.int/gho/hiv/epidemic_status/deaths/en/)

World Health Organization. 2015. *Guideline on When to Start Antiretroviral Therapy and on Pre-exposure Prophylaxis for HIV, September 2015.* Geneva, Switzerland: World Health Organization.

World Health Organization. 2012. *WHO HIV Drug Resistance Report.* Geneva, Switzerland. Retrieved on October 20, 2016 (http://www.who.int/hiv/pub/drugresistance/report2012/en/).

Yin Zheng, Alison E. Brown, Gwenda Hughes, Anthony Nardone, O.Noel Gill ON, Valerie C. Delpech VC et al. 2014. "HIV in the United Kingdom 2014 Report: Data to End 2013." Public Health England, London.

Young, I., P. Flowers, and L.M. McDaid. 2015. “Key Factors in the Acceptability of Treatment as Prevention (TasP) in Scotland: A Qualitative Study with Communities Affected By HIV.” *Sexually Transmitted Infections* 91:269-274.

Zola, Irving Kenneth. 1972. “Medicine as an Institution of Social Control.” *Sociological Review* 20:487-504.

Appendix A: Written Informed Consent Form

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Study Title: The HIV Treatment as Prevention Opinion Leaders Study

This is a research study about the emergence of HIV treatment as prevention approaches across the scientific, policy and clinical practice arenas. The study researchers, Karen C. Lloyd, from the UCSF Department of Social and Behavioral Sciences, along with her faculty advisor, Dr. Shari Dworkin, also from the UCSF Department of Social and Behavioral Sciences, will explain this study to you.

Research studies include only people who choose to take part. Please take your time to make your decision about participating, and discuss your decision with your family or friends if you wish. If you have any questions, you may ask the researchers.

You are being asked to take part in this study because in your professional role as a researcher, policy maker or medical provider, you have been identified as an opinion leader in the area of HIV treatment as prevention.

Why is this study being done?

The purpose of this study is to understand the emergence of HIV treatment as prevention approaches, their implications and their broader impact on the professional arenas of HIV research, policy making and practice and on the lives of persons living with HIV/AIDS. These findings may inform future biomedical research, policy and clinical practice utilizing HIV treatment as prevention. This is a doctoral dissertation study funded by departmental and personal funding sources.

How many people will take part in this study?

About 50 people will take part in this study.

What will happen if I take part in this research study?

If you agree, the following procedures will occur:

- ❖ You will speak privately with the researcher for about 1-1.5 hours in a mutually agreed upon private space (your office, a private conference room, or another private space you agree to) or over the phone/via Skype.
- ❖ You will be interviewed about your work in the field of HIV prevention and in utilizing HIV treatment as prevention approaches, including your beliefs about HIV treatment as prevention, your anticipation of the future of this prevention approach and any implications you foresee for your work specifically, the field as a whole, as well as the health and wellbeing of people living with and at risk for HIV.
- ❖ The interview will be digitally audio-recorded. After the interview, someone will type into a computer a written transcription of what is on the audio recording and will remove any mention of names or other identifiers. All audio recordings will be destroyed at the end of the study.
- ❖ During the interview, the researcher will be taking hand-written notes to record her thoughts and observations. These notes will remain confidential.

- After reviewing the recordings and notes from the interview, the researcher may request a second interview with you to clarify information you have given or to pursue a new topic that has come up because of the research being done. This second interview is voluntary and can occur at a time/place of your choice. This second interview will last no more than 1 hour.

How long will I be in the study?

Participation in the study will take no more than approximately 3 hours over the course of about 6months. This includes the time it takes to screen you to determine if you are eligible to participate, to review the purpose of the study and the study consent form, and to participate in either one interview, or two interviews if you agree to be contacted for an additional follow-up interview. If you participate in the follow-up interview, it will likely take place approximately 3- 6 months after the initial interview.

Can I stop being in the study?

Yes. You can decide to stop at any time. Just tell the study researcher or staff person right away if you wish to stop being in the study. Also, the study researcher may stop you from taking part in this study at any time if he or she believes it is in your best interest, if you do not follow the study rules, or if the study is stopped.

What side effects or risks can I expect from being in the study?

- You may feel uncomfortable discussing aspects of your professional life, including any frustrations with the current nature of the HIV prevention field, any obstacles or challenges you may have personally faced in this work, and your opinions about the trajectory of your work as well as that of colleagues and the field as a whole.

- You may also feel uncomfortable offering critiques of the work of your colleagues or your employers or of disclosing 'inside information' into the workings of an organization. You may feel anxious about disclosing this information and may worry that it could affect your employment, your reputation and your relationships with your colleagues.

- The time needed to participate in the study, including completing the screening questionnaire, the consent process and the interview(s) may be a burden for your or make it difficult to keep other commitments.

- You may worry your privacy is at risk, particularly if you discuss private details about your life or your professional work.

You should remember that you can decline to answer any questions you do not wish to answer and that you can stop the interview at any time. If you have questions about any of these risks, you should feel free to ask the researcher.

Are there benefits to taking part in the study?

There will be no direct benefit to you from participating in this study. However, the information you provide may enable greater insight into the emergence of HIV treatment as prevention approaches as well as the development of HIV treatment as prevention policy and its implications. These findings may inform future biomedical research, policy and clinical practice utilizing HIV treatment as prevention and they may also inform future social and behavioral research on this approach by both this research team and others.

What other choices do I have if I do not take part in this study?

You are free to choose not to participate in the study. If you decide not to take part in this study, there will be no penalty to you.

Will information about me be kept private?

We will do our best to make sure that the personal information gathered for this study is kept private. However, we cannot guarantee total privacy. Your personal information may be given out if required by law. If information from this study is published or presented at scientific meetings, your name and other personal information will not be used.

Organizations that may look at and/or copy your research records for research, quality assurance, and data analysis include the University of California, San Francisco.

What are the costs of taking part in this study?

You will not be charged for any of the study treatments or procedures.

Will I be paid for taking part in this study?

In return for your time, effort and travel expenses, you will be paid with a $20 (or its equivalent in foreign currency) gift card for taking part in this study. If you are contacted about participating in a second interview and you agree to participate, you will be paid with an additional $20 (or its equivalent in foreign currency) gift card to participate in the second interview.

What are my rights if I take part in this study?

Taking part in this study is your choice. You may choose either to take part or not to take part in the study. If you decide to take part in this study, you may leave the study at any time. No matter what decision you make, there will be no penalty to you in any way.

Who can answer my questions about the study?

You can talk to the researcher(s) about any questions, concerns, or complaints you have about this study. Contact the researchers, Karen C. Lloyd and Dr. Shari Dworkin at 415-476-3964 (U.S.) or 07811050705 (UK).

If you wish to ask questions about the study or your rights as a research participant to someone other than the researchers or if you wish to voice any problems or concerns you may have about the study, please call the Office of the Committee on Human Research at 415-476-1814.

CONSENT

You have been given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. You have the right to decline to be in this study, or to withdraw from it at any point without penalty or loss of benefits to which you are otherwise entitled. If you wish to participate in this study, you should sign below.

______________	____
Date	Participant's Signature for Consent
______________	____
Date	Person Obtaining Consent

Appendix B: Verbal Consent Script for Phone Interviews

The HIV Treatment as Prevention Opinion Leaders Study
Verbal Consent Script

Participant #_________

Before we get started, I just wanted to remind you of the purpose of the study and make sure that you are comfortable participating. The reason I wanted to talk with you is because I am interested in your experiences as an HIV prevention scientist/policy maker/clinician and particularly utilizing the strategy of HIV treatment as prevention in your work. More specifically, I am interested in your professional experience with HIV treatment as prevention approaches, what it means for HIV prevention as a whole, and the implications of this approach for the field of HIV prevention science/policy/clinical practice and for people living with HIV themselves.

I just want to remind you that your participation in this interview is completely voluntary. You should feel free at any time to let me know if you need a break or if you don't want to talk about a certain topic. You can also let me know if you want to stop the interview at any time.

Did you receive the informed consent form that we sent via email? [Record answer: Y/N] And did you have a chance to read it thoroughly? [Record answer: Y/N] Do you have any questions about anything in the consent form or about the interview today or the study before we get started? [If yes, answer questions]

Do you consent to participate in this research study? [Record answer: Y/N]

Appendix C: Initial Interview Guide

The HIV Treatment as Prevention Opinion Leaders Study Interview Guide

Participant #__________

Hello. Thank you so much for taking the time to speak with me today.

Before we get started, I just wanted to remind you of the purpose of the study and make sure that you are comfortable participating. The reason I wanted to talk with you is because I am interested in your experiences as an HIV prevention scientist/policy maker/clinician and particularly utilizing the strategy of HIV treatment as prevention in your work. More specifically, I am interested in your professional experience with HIV treatment as prevention approaches, what it means for HIV prevention as a whole, and the implications of this approach for the field of HIV prevention science/policy/clinical practice and for people living with HIV themselves.

I just want to remind you that your participation in this interview is completely voluntary. You should feel free at any time to let me know if you need a break or if you don't want to talk about a certain topic. You can also let me know if you want to stop the interview at any time.

Do you have any questions for me?

Okay, great, so let's get started now.

Tell me a little bit about your work as an HIV prevention researcher/policy maker/medical provider.

- How long have you been working in this capacity?
- How did you come to do the work you're currently doing?
- In what other capacities (if any) have you worked in the HIV/AIDS field?

When I say 'HIV treatment as prevention' what does this mean to you?

- When did you first hear about this prevention concept?
- Where?
- What are your first impression of or initial reaction to the idea when you first heard about it?

Has it affected at all the work that you do? How so?

For HIV scientists, how has the idea of HIV treatment as prevention changed the HIV prevention research field?

- How has it changed the type of work you do, if at all?
- How has it changed funding for HIV research, if at all?
- How do you see it affecting the research you do in the future?
- Do you feel it might affect certain types of research or research with certain populations more than others? Why is this so?
- Have you see any resistances to the idea of HIV treatment as prevention in your field of research or among your fellow research colleagues? What form has this taken? What was your reaction, if any?

For HIV policy makers, how has the idea of HIV treatment as prevention changed HIV policy-making?

- How has it changed the type of work you do, if at all?
- How has it changed policy development and policy implementation, if at all?
- How do you see it affecting the type of policy work you can do in the future?
- Do you feel it might affect certain areas of policy making or policies targeted to certain populations or communities more than others? Why is this so?
- Have you seen any resistance to incorporating HIV treatment as prevention approaches into prevention policy? What form has this taken? What was your reaction, if any?

For HIV medical providers, how has the idea of HIV treatment as prevention changed how you practice with your patients?

- How has this approached changed the clinical encounter with your patients?
- Are there issues you discuss more with your patients or services you provide now more so than before?
- How have your clinical priorities changed as a result?
- Has HIV treatment as prevention had any effect on your practice administratively?
- What have your patients' reactions to these changes been?
- How have you see it affect outcomes in your patients? Physically? Psychologically? In terms of social needs?
- Have you seen any resistance to incorporating these approaches into clinical practice among your fellow clinicians? What form has this taken? What was your reaction, if any?

How have you seen HIV treatment as prevention applied in the populations or communities you work with?

- How do your colleagues talk about it?
- How are things being done differently there, if they are?

Why do you think this idea emerged when it did?

- How do you feel the reaction to the approach has been in the HIV field as a whole?
- Where have you heard the most praise of the idea of HIV treatment as prevention? Who seem to be its biggest champions? Why do you think this is so?
- Are there any organizations or institutions you see as the major players in the field who have influenced where the field of HIV treatment as prevention is going?

How do you think HIV treatment as prevention will affect people living with HIV?

- Are there any specific people, populations or communities that you think stand to benefit the most?
- Is there anyone you think might be left out or who might not benefit as much?
- Do you have a sense of the perspective of people living with HIV on HIV treatment as prevention, on the idea of taking antiretrovirals for prevention purposes, not only for clinical need? Is it something that people in the community are even aware of at this stage? If so, how is the idea talked about? How do you think PLWHA feel about it?
- If you could talk directly to PLWHA about HIV treatment as prevention, what would you tell them or what do you tell them?

What critiques of or challenges to the idea of HIV treatment as prevention have you heard?

- Who are the people or institutions making these critiques?
- How do you feel about these critiques or challenges?
- What are their implications for the future of HIV treatment as prevention?

If you were to fast forward 10 years into the future, where do you anticipate we might be in terms how we are ‘doing’ HIV treatment as prevention in a decade’s time?

- What will the research look like?/What will the policies we’re developing and implementing look like?/What will your clinical practice look like?
- Is there anything that would surprise you?
- What would disappoint you?
- What would you hope for?

Is there anything else you would like to tell me to add to anything we have already talked about? Is there anything you would like to ask me about this research project?

We are also hoping to reach out to additional researchers, policy makers and providers for participation in this study who are referred to us by current participants. Do you have any colleagues you work with that you would recommend we speak with for this study?

One last thing, we are interested in following up with a smaller sample of interview participants at a later date for a second interview either in-person, via phone/Skype, or simply via email, to provide some feedback on the initial findings of our data analysis. Would you be interested in participating in a follow-up interview, even if just via email? If yes, record affirmative response and participant contact information on participant contact sheet.

Thank you for taking the time to speak with me today.

Appendix D: Revised Interview Guide

HIV Treatment as Prevention Opinion Leaders Study Revised Interview Guide

Participant #_________

General Questions:

Tell me a bit about what you do.

What does treatment as prevention mean to you?

When did you first hear of or begin to think about treatment as prevention?

What was your reaction to that?

Thematic Questions:

Balance between public health and individual health goals - How are you seeing the balance between TasP as a public health strategy and TasP as an individual level benefit wrangled with? How do you think the preliminary results of the START Study have impacted this?

Stigma and Combatting Stigma - Do you think treatment as prevention has the potential to be de-stigmatising or potentially even re- or more stigmatising?

START Study - What was your reaction to the preliminary results of the START study being released? Generally, what has been the response among your colleagues?

Criminalisation of HIV - What impact do you think TasP potentially will have on the criminalisation of HIV and the persecution of positive people?

Registered Trademark on Treatment as Prevention - The BC Centre for Excellence in HIV/AIDS (Julio Montaner's research centre) has registered a trademark on the term, Treatment as Prevention. I'm wondering if you know anything about this, why it was trademarked, or if you have any reaction to that?

Pharmaceutical Company Engagement - Have you had an personal experience in interacting with pharmaceutical companies or device manufacturers on issues related to TasP? Or have you seen examples of pharmaceutical companies or technology firms, such as testing kit manufacturers, utilising treatment as prevention in their marketing strategies?

Women in TasP: How are you seeing women and women's experiences with treatment enter into the discussion around treatment as prevention?

Affording to do TasP in the U.S.: How affordable is treatment as prevention in the U.S.? The CDC says we should be offering it to everyone on diagnosis, but who is paying for it. How is that working?

T**raditional prevention approaches aren't working:** I've had a few people say to me that they felt like more traditional behavioral approaches to HIV prevention, like condom use, monogamy, abstinence, etc., haven't worked or haven't worked as well as we'd hoped, and they felt that treatment as prevention offered a real promise of something more effective, or at least that that was why it seems so much more appealing. What do you think of this?

Pills are more attractive than condoms: Some have said that the reason that TasP appeals to many is because taking a pill is more acceptable or appealing than using a condom, that there is something sleek and modern and not messy about pharmaceuticals that makes them more attractive. What do you think of this? How do you think our perceptions of pills or of being on treatment is changing? How will this affect TasP?

Phamaceuticalisation and normalisation: Some folks have talked to me about how they felt taking pills, generally, is becoming more normal, like that everyone takes pills for their blood pressure or cholesterol, particularly as we all age, and that they feel that antiretrovirals will just become one more pill like everyone else takes, that it holds the potential to normalise taking antiretrovirals and perhaps normalise or combat the stigma of HIV.

TasP as designed to be aspirational or to create hype (possibly for treatment scale-up)

TasP as rationale for treatment scale-up

Reframing of what it means to have safer sex - that safer sex is any kind of sexual practice when the positive partner(s) has an undetectable viral load, regardless of behavior, including being irrespective of condom use.

Normalising HIV - That TasP has the potential to normalise what it means to have HIV, to change public perceptions of HIV-positive people and to change how people feel about themselves (not a threat to their partners, not to blame), to live a normal life and do normal things like conceive a child the old fashioned way or to

Reframing the undetectable body as the safe body (and the unknown status body as dangerous) - someone said, I'm positive but I've been undetectable for 5 years, so I'm your safest bet, much more so than someone who says they are negative, but may be in primary infection or may be undiagnosed with a high viral load, folks using their status as undetectable as a way to describe themselves in online hook-up or dating profiles.

Resistances and Counter-discourses - What resistances or challenges to TasP have you heard? Have these changed over the years?

Imagining the Future of TasP - Where do you think we'll be in 10 years time in terms of how we're doing treatment as prevention?

Appendix F: Ethnographic Field Note Record

HIV Treatment as Prevention Opinion Leaders Study Ethnographic Field Note Record

Event:
[Name of Formal Conference Session, Brief Identifying Description of Field Event or Documentary/Material/Visual Data Source, also include Assigned Field Event ID No.]

Place:
[Location of Data Collection]

Time & Duration:
[Date, Time & Duration of Field Event]

Formal Description of Event (if any):
[Official Description of Event in Conference Programme or in materials provided by Presenter or Sponsor (if applicable)]

Summary of Field Note:
[Summary of key events, quotes, activities, and analytic comments for quick reference during data analysis.]

Setting & Atmosphere:
[Appearance and ‘feel’ of field setting, including sights, sounds, textures, smells, tastes, as applicable]

Raw Field Notes:
[This is the space where brief jottings, quotes, key phrases, key actors and actants present, and raw description of the activity being observed will be recorded.]

Related Audio/Transcript/Video/Photos:
[If audio files of conference sessions are recorded, the name of the audio file and the name of the transcript document will be recorded here for cross-referencing. Any video or photographic data of an object or activity will also be recorded here, along with the associated file names for cross-referencing. Written description of related data will also be recorded]

Personal Response to Field Activity:
[Here I will bracket my own personal experience of and reaction to the field event and experience of collecting this data, including what felt comfortable or uncomfortable about this event, personal interactions with informants, and concerns or worries, or anything that ‘went wrong’]

Analytic Comments:
[Discussion of what was learned from this field event, how it relates to the research questions guiding this study, any emerging patterns, concepts, or themes noted, linkages to other field events or sources of data, including cross-reference to other field notes, documentary/material/visual data, and analytic memos]

Questions and Ideas for Future Research:
[Here I will pose questions for myself raised by this field event, including questions to follow up on in future data collection experiences, questions to ask of presenters or other conference attendees, questions to research independently, as well as ideas for future data collection or analysis.]

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Author Signature____Date ___11/30/2016____