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Authors

Reynolds, Lindsey J
Camlin, Carol S
Ware, Norma C
et al.

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Exploring critical questions for the implementation of "universal test and treat" approaches to HIV prevention and care

Lindsey J. Reynolds[a,b], Carol S. Camlin[c], Norma C. Ware[d,e] and Janet Seeley[f]

[a]Population Studies and Training Center, Brown University, Providence, RI, USA; [b]Department of Sociology and Social Anthropology, Stellenbosch University, Stellenbosch, South Africa; [c]Department of Obstetrics, Gynecology & Reproductive Sciences, Bixby Center for Global Reproductive Health, and Center for AIDS Prevention Studies, University of California, San Francisco, CA, USA; [d]Department of Global Health & Social Medicine, Harvard Medical School, Boston, MA, USA; [e]Department of Medicine, Brigham and Women's Hospital, Boston, MA, USA; [f]Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK

Introduction

More than three decades into the HIV epidemic in Africa, new biomedical technologies have brought the real possibility of ending the epidemic into view (The Lancet HIV, 2015; UNAIDS, 2015). Drawing on an expanding body of evidence on the effectiveness of treatment-based approaches to HIV prevention (e.g., Cohen et al., 2011; Granich, Gilks, Dye, De Cock, & Williams, 2009; Tanser, Bärnighausen, Grapsa, Zaidi, & Newell, 2013), governments and donors have increasingly focused attention on the 90-90-90 goals (90% of HIV-positive individuals aware of their status, 90% of those on antiretroviral therapy (ART), and 90% achieving effective viral suppression). Following the findings of a series of trials showing the clinical and preventive benefits of early initiation of ART and the efficacy of oral pre-exposure prophylaxis (PrEP) for blocking the acquisition of HIV (The TEMPRANO ANRS 12136 Study Group, 2015; The INSIGHT START Study Group, 2015; Cohen et al., 2015), the WHO released new guidelines calling for immediate treatment for everyone diagnosed with HIV and pre-exposure prophylaxis (PrEP) for people at substantial risk of infection (WHO, 2015).

In this context, the accelerated expansion of testing and treatment programs in affected countries has become a global imperative. In an opinion piece published in *The Washington Post* in January 2016, National Institute of Allergy and Infectious Diseases Director Anthony Fauci argued forcefully that offering immediate ART to infected individuals and pre-exposure prophylaxis to those at risk of infection had become a moral imperative. "Today, we have the tools to end this modern-day plague", he concluded. "We must not squander the opportunity. History will judge us harshly if we do" (Fauci, 2016). Similarly, in *The Lancet*, Kevin De Cock and Wafaa El-Sadr argue that universal access to ART has become "absolutely central to the global HIV response". To achieve universal ART coverage, they point out, would require initiating nearly 22 million additional people living with HIV onto ART (De Cock & El-Sadr, 2016) and providing pre-exposure prophylaxis to many millions of at-risk individuals.

Thus, the key question now is not *if* these biomedical technologies work, but *how* to implement them. A number of large-scale clinical trials and implementation studies are ongoing that test approaches for rapid expansion of HIV testing uptake and immediate or early initiation of ART at the population level, an approach referred to as "universal test and treat" (UTT). In particular, five studies have been examining the effects of implementing UTT on HIV incidence rates in populations in six African countries. They are: the HPTN 071 Population Effects of Antiretroviral Therapy to Reduce HIV Transmission (PopART) trial in South Africa and Zambia; the Sustainable East Africa Research in Community Health (SEARCH) trial in Uganda and Kenya; the Botswana Combination Prevention Programme (BCPP); the MaxART (Early Access to ART for All) implementation study in Swaziland; and the ANRS 12249 Antiretroviral Treatment as Prevention (TasP) trial in South Africa. The special issue draws together a set of articles emerging from social science research conducted across these studies and by others engaged in research on UTT. The papers address key questions in implementing UTT approaches through collaborative, multidisciplinary, social scientific research, and offer insights into the potential immediate effects

CONTACT Lindsey J. Reynolds ✉ lindsey_reynolds@brown.edu

and long-term impacts of these interventions as they are rolled out and scaled up worldwide.

In addition to the diversity of studies represented in the collection, the contributions also present perspectives from a range of disciplinary and methodological approaches within the social sciences and humanities. Some of the contributions explore particular elements of the UTT "package" of interventions, while others focus on particular populations (for instance, men) who might disproportionately comprise the "missing 10 percent" in the 90-90-90 targets. Some explore questions related to the heterogeneous contexts in which UTT interventions are rolled out, examining contextual factors that might shape the differential uptake of the interventions in divergent sites. Methodologically, the papers range from in-depth ethnographic explorations in particular places to quantitative analyses of population-level effects of UTT approaches. Other authors offer humanistic perspectives on UTT efforts, critically examining the forms of knowledge produced or kinds of categories constructed through these trials and other HIV research endeavors. The papers offer both specific insights on the implementation of UTT in particular localities and, together, also begin to highlight important cross-cutting concerns in the implementation and scale-up of UTT-based approaches to HIV prevention.

Through these diverse perspectives, this collection offers important contributions to urgent programmatic and policy debates regarding the effectiveness of strategies for scaling up HIV treatment and prevention in different contexts. Further, the articles offer insights into the potential immediate effects and long-term impacts of these interventions as they are rolled out and scaled up worldwide. Finally, the special issue also offers a broader set of reflections on the role of social scientific inquiry in HIV experimental science and in global health research more broadly.

The place of social science in HIV experimental research

This special issue has emerged out of a broader engagement among social scientists involved in UTT trials and studies in sub-Saharan Africa, who came together in 2015 to form the "Social Science of Universal Test and Treat Network" (SSUTTN). The objectives of the network are to evaluate the lessons to be learned from social science research being conducted in the context of each of these UTT studies, to develop cross-trial, comparative analyses drawing on existing data from different studies, and to foster new social science inquiry and cross-study research collaborations.

As MacQueen has noted (2011), the success of HIV biomedical prevention has created space for the integration of broader social science research agendas within HIV experimental science that can address challenges to the scaling up of new prevention technologies. Social scientists hold different positions and perform different roles within UTT trials and studies, and HIV experimental science more broadly. In some studies, social science aims have been integral to trial design, with social scientists involved during the planning phase and represented in trial leadership teams, while in others the social science agenda is still nascent or more external to the trials' aims. However, MacQueen argues that social science still has not been fully integrated into "the science of biomedical HIV prevention", as trials rarely engage in "in-depth, reflexive social science research on the broader implications of interventions for the communities and health systems within which they may be delivered" (2011, p. S2). Through collaborative engagements and cross-trial comparisons, our network aims to facilitate such in-depth social scientific inquiry on the successes, challenges, and effects of UTT interventions. The papers in this special issue represent a first step towards this broader aim.

As treatment-based prevention technologies are tested and taken to scale in different communities, it becomes increasingly important to understand the heterogeneous social, political, economic, historical, and health systems contexts that shape whether and how these strategies work in various settings. Both anticipated and unanticipated factors in these "real-life" contexts can mediate the effects of UTT interventions on desired outcomes (Camlin et al., 2016). Understanding and accounting for these complex dynamics and "social contextual" factors is essential to the success of UTT interventions and related approaches to HIV prevention and care.

It is equally important to pay attention to the effects of these interventions on individuals' everyday lives, on social processes and community relations, and on health systems and governmental structures more broadly. New biomedical technologies do not in themselves necessarily lead to social goods. When distributed unevenly or inappropriately, they can amplify existing inequalities and lead to greater health disparities (e.g., Zhu, Lu, & Hesketh, 2009). By contrast, when implemented effectively, health interventions can lead to other positive social changes (e.g., Bor, Herbst, Newell, & Bärnighausen, 2013). Such concerns are made particularly urgent in HIV research where the populations and groups involved (generally those facing high HIV risk or living with HIV/AIDS) are often already economically, socially, or politically disadvantaged. In an editorial on the

WHO's expanded treatment guidelines, *The Lancet* suggested that "by not specifying how the most vulnerable will access the recommended measures of health care, this guideline risks failing those most at need" (*Lancet*, 2015). Attending to the ways in which UTT interventions and related approaches engage with, reinforce, or transform existing hierarchies of gender, generation, race, and socioeconomic status is thus of central importance for the implementation of UTT and for the conduct of ethical and just global health research and interventions more broadly.

Social science research conducted within and across UTT trials and studies can provide insights that help us to understand how social, economic, historical, and political dynamics shape the effectiveness of UTT interventions as they are implemented across different contexts. Further, social scientists can trace how such interventions affect and (re)shape everyday life and broader social, economic and political structures as they unfold.

Cross-cutting themes

The special issue draws together a set of papers that address the challenges and implications of implementing UTT and related approaches to HIV prevention and care in diverse contexts in sub-Saharan Africa, thus offering key insights that can inform the scale-up of UTT-based interventions. In this section, we summarize several cross-cutting themes that emerge both from the set of papers presented here and from recent meetings between researchers in SSUTTN.

We have chosen to use the term "universal test and treat" rather than "treatment as prevention" (TasP) or "treatment for prevention" because we find the term to be a more accurate description of the central components of the intervention packages we are studying, which are centered on increased HIV testing and early or immediate access to ART. In addition, the term "UTT" avoids some of the potential dangers of communicating the concept of treatment as being for prevention only. In their article in this volume, Vernooij and colleagues describe how researchers and community members involved in planning the MaxART study in Swaziland raised concerns about the exclusive focus on prevention implied in the use of "TasP" terminology. Study participants pointed out that the term could be taken to suggest that the intervention aimed only to prevent transmission to others and *not* to improve the health of the individual being initiated on treatment, and saw this as a barrier to effective implementation. Thus, participants in their study actively resisted framing HIV treatment *as* prevention, preferring to focus on the benefits of early treatment for all and the importance of taking responsibility for one's own health (Vernooij, Mehlo, Hardon, & Reis, 2016).

The UTT approach is not in fact an entirely novel prevention technology. Rather, it represents a set of strategies that aim to advance a broader project of expanding HIV testing and scaling up access to ART, with concerns for the health and rights of those living with HIV at its core. Over the last decade and a half, ART programs in Africa have begun to scale up and shift in line with changing WHO guidelines from an exclusive focus on the treatment of those who were severely immunocompromised to include more and more HIV-positive individuals as the importance of earlier initiation of treatment for both clinical outcome and preventive effects has been increasingly recognized. As this shift has taken place, HIV researchers have also increasingly focused on developing strategies for implementing the series of steps involved in diagnosing, treating, and keeping HIV-positive individuals engaged in ongoing care (e.g., Gardner, McLees, Steiner, del Rio, & Burman, 2011), often referred to as the "treatment cascade" or "care continuum". The UTT approach could be seen in a sense as encompassing a set of interventions to move large numbers of people more quickly and effectively along this continuum. Some papers in this special issue thus examine individual and community responses to particular steps in the process.

In their contribution, Orne-Gliemann and colleagues explore how community perceptions about repeat HIV testing, the essential first step in the care cascade, changed as the TasP trial implemented a new, intensified strategy for HIV testing in rural South Africa. Although repeat and regular HIV testing was generally well received by most participants, most participants were not able to appreciate or articulate reasons why people might want to test regularly or repeatedly, apart from individual sexual risk-taking. While overall willingness to test was encouraging, community members also reported "perceptions of stigma and prejudice regarding repeat HIV testing and HIV testing in general (Orne-Gliemann et al., 2016, p. xx). This finding, like that of Vernooij and colleagues, highlights the importance of careful messaging and education around the potential benefits of UTT, and the need for sensitivity to local understandings and social consequences in implementing these health technologies.

The next step in the cascade, linkage to care, has been one of the most challenging elements in the effective implementation of UTT. In their paper emerging from social science research conducted with traditional health practitioners in the TasP trial community, Moshabela and colleagues describe some of the motivations behind individuals' decisions to seek care from traditional health practitioners, rather than accessing treatment at HIV clinics. Despite a system of referral cards implemented by the Department of Health, traditional health practitioners reported that many of their clients refused to present at health facilities due to fears of labeling, stigma and discrimination due to accidental disclosure at HIV-only clinic sites.

Two other articles in the collection focus on subsequent steps in the cascade: engagement in care and provision of ART. In an article exploring the implementation of Government of Uganda guidance to providing ART in a clinic serving women at high-risk of HIV-infection in Kampala, Mbonye and colleagues point to the challenges some women face in starting treatment, and emphasize the need for adequate support and counseling for test and treat programs.

Again from the TasP trial group, the contribution by Boyer and colleagues describes patterns of ART initiation and associated factors. They find that health systems factors – including staffing capacity and healthcare practices – influenced the degree to which high CD4 count patients initiated ART. In high HIV prevalence settings in which health care resources are stretched to capacity, they suggest, providers may continue to prioritize ART initiation in patients with the lowest CD4 counts.

Also focusing on provider-level decision-making in delivering UTT, Wademan and Reynolds explore how the HIV care continuum is implemented by community-based caregivers in one trial site in South Africa. In addition to their roles in testing and linking to care, they show that caregivers carry out many others tasks to support people living with HIV that "stretch the terms of their care work beyond the explicit care practices contained within the care continuum model" (Wademan & Reynolds, 2016, p. xx). Wademan and Reynolds argue that these additional roles, often linked to forms of emotional labor, should be recognized as a necessary part of the effective implementation of the care continuum.

These papers show how effective implementation of UTT is shaped both by individual life circumstances and broader social and structural dynamics in the places where the interventions are rolled out. To understand these dynamics, it is also important to explore the effects of gender, age, and other social categories and hierarchies. Three articles in the special issue focus on the gendered nature of experiences with UTT interventions. In their analysis using qualitative data collected in the SEARCH trial's first year, Maeri and colleagues describe the highly gendered consequences of disclosure of an HIV-positive status. While the study documented multiple benefits of disclosure among HIV-positive individuals overall, the findings also highlight a continued disproportionate vulnerability of HIV-positive women in discordant couples to the negative consequences of disclosure. The authors argue that accelerated efforts to assist couples with disclosure processes are urgently needed, but these must be sensitive to, and account for, men's and women's differing needs, preferences, and social vulnerabilities.

Two papers examine the dynamics behind men's lower rates of participation in HIV testing and slower engagement in care. Camlin and colleagues describe structural and cultural barriers, including men's labor opportunities that often require extended absences from households, and gender norms valorizing risk-taking and discouraging health-seeking behavior, that contributed to men's lower participation in HIV testing relative to women in Kenya and Uganda. Despite these barriers, however, the authors argue that gender norms related to HIV testing and care-seeking appear to be transforming as the promise of ART to improve health and livelihoods grows more apparent. Chikovore and colleagues investigate how masculinity affects engagement with HIV care in the context of the TasP trial in KwaZulu-Natal, South Africa. They describe the factors that hinder men from accessing care and point to the imperative of providing services at times and places where men can be reached, rather than depending on men accessing support at primary health centers. Key insights into UTT implementation can be revealed through examining the individual life trajectories of people living with HIV and those around them, which both shape the implementation of UTT technologies and are shaped by these new biomedical interventions. Through a narrative analysis of letters related to HIV and sexual relationships in an agony aunt column in South Africa, the paper by Viljoen and colleagues offers a unique view into individuals' perceptions of and decisions around HIV, risk, love, and sex.

Several papers in this special issue take up issues that have been explored previously in HIV research. However, the contributions to the volume are unique in aiming to explore how social understandings, practices and discourses related to gender, stigma, and sexuality are affected by the pace of change in communities undergoing rapid ART scale up. High on the research agenda, as these programs expand, is documenting the effects of this massive scale-up of testing and treatment on individuals, communities, and broader structures. The contribution by Thirumurty and colleagues offers a unique window on this. The article compares survival and health expectations before and after the implementation of UTT interventions, finding that HIV-negative adults and HIV-positive adults with undetectable viral loads were significantly more likely to have favorable expectations about survival to 60 years than HIV-positive adults with detectable viral load (Thirumurthy et al., 2016). The findings suggest that HIV-positive individuals who realize the health benefits of ART update their expectations about future health, a change that could have important effects of health behavior, risk-taking and other important life choices.

In sharing observations and findings as the trials and interventions progress in divergent communities, it is important to explore the "differences that make a difference" to the effectiveness and effects of UTT, as Bond and colleagues phrase it in their contribution to this issue. Differences are important across at least two levels. Firstly, differing contextual dynamics can shape the distribution and reception of testing, treatment and other services. In their paper, Bond and colleagues aimed to assess the importance of "contextual heterogeneity" in the implementation of a UTT intervention in different communities within one trial, positing that differing contextual dynamics shaped the distribution and reception of testing, treatment and other services. By reducing a series of complex variables to four meta-indicators, linked to an open/closed typology, the authors aim to account for differences in the uptake of elements of the UTT intervention package in Zambia.

Secondly, a key broader initial aim of our cross-trial comparative work has been to begin to document the heterogeneity of approaches to the implementation of "universal test and treat". While UTT is often characterized as a coherent approach, we've found that the package of interventions included in "UTT" differs across each of the major trials and studies. For instance, while all the trials offer some form of expanded access to HIV testing, the strategies employed to roll out testing vary from home-based delivery of HIV testing to community-level health screening campaigns and hybrid approaches. These strategies have changed over time in response to shifting national treatment guidelines, broader health systems shifts, and other changes within study communities. Further, as the interventions have progressed, small-scale differences in everyday implementation between different study communities within trials have become increasingly apparent. Documenting these differences will be essential to understanding and interpreting trial results.

Next steps, lessons and implications for policy and practice

The papers in this volume demonstrate the vital engagement of social scientists in, and with, current biomedical HIV research. Important new biomedical discoveries have ushered in a new era of HIV prevention that prioritizes "implementation, effectiveness, and the effect of combination prevention at the population level" (Padian et al., 2011). Thus, it is a moment for biomedical HIV research, in turn, to recognize the centrality of social science to its mission and endeavors. The optimism of the current era, premised upon the promises of ART to prolong lives and curb the spread of the epidemic, has been hard-earned. Yet the social reality in many resource-poor settings is one of vexing social, economic and health systems challenges. Continued engagement of social scientists in HIV research will be critically important for understanding the social processes and mechanisms (whether anticipated, or unanticipated) through which UTT and broader combination HIV prevention and treatment expansion efforts succeed or fail in various settings. Social scientific inquiry can shed light especially on challenges in the most "difficult" settings, with the most "difficult" populations, including the remaining "10%" that are likely to continue to fall outside of the 90-90-90 targets. Whatever the outcomes of these trials, important lessons for future HIV research and global health efforts, will be drawn from an in-depth understanding of the social processes and ethical and moral concerns that influence the trials' implementation, individuals' responses, and the long-term effectiveness of such interventions.

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