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Global Governance and Diplomacy Solutions for Counterfeit Medicines

A Dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

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by

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DEDICATION

This manuscript represents the culmination of years of study and dedication to health research in both my Masters in Health Law and my PhD in Public Health (Global Health), and is dedicated to all the underprivileged and disenfranchised students that have not had the opportunity to pursue their intellectual potential. It is also devoted to my wife, Kinuko Kanda who has tirelessly supported me through years of study; my son Sei Mackey for whom I strive to make a better life for through research and advocacy; my parents Paul and Kazumi Mackey who believed that I could do anything I put my mind to; and Professor Bryan A. Liang who has given me the opportunity to excel in academics.

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ABSTRACT OF THE DISSERTATION

Global Governance and Diplomacy Solutions for Counterfeit Medicines

by

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Perhaps no greater challenge exists for shared global health security and patient safety than fake, unregulated, and/or poor quality drugs, also known as "counterfeit medicines" now endemic in the global drug supply chain. Counterfeit medicines are prevalent everywhere including in traditional healthcare settings, unregulated sectors, and on the Internet. These dangerous medicines are on the rise in both therapeutic and geographic scope, threatening patient lives, potentially leading to antimicrobial resistance, and profiting illicit criminal actors. Yet, despite these clear threats, surveillance is extremely limited, with available data pointing to an increasing

global health crisis worldwide that has yet to be addressed. Efforts by a variety of international organizations have made inroads in combating this illicit trade, but are stymied by ineffectual governance. In this paper, I employ an interdisciplinary research approach to assess the policy environment for this global public health issue for both the physical and digital global drug supply chain. This is accomplished in the first chapter by conducting an analysis of current diplomatic and governance efforts to address the issue. Using analysis from the first chapter, I then formulate governance-based solutions for physical and digital distribution and sale of counterfeit drugs. The results of this research indicate that combating the global counterfeit medicines trade requires engagement, cooperation, and coordination among a wide array of public and private stakeholders. Governance solutions to address this issue must be inclusive and transparent with a focus on crime, public health, and patient safety. To address this global public health crisis, we recommend the establishment of an enhanced governance trilateral mechanism between UNODC-WHO-Interpol for the counterfeit drug trade and incorporating and partnering with existing Internet Governance mechanisms to combat the online trade of counterfeit medicines.

Chapter 1. Global Health Diplomacy and Counterfeit Medicines: An Analysis of Governance Approaches

A. INTRODUCTION

Global health's increased policy impact has given rise to global health diplomacy, which relies on formal and informal, bilateral and multilateral negotiations in health and non-health global forums.(1) Since unilateral State-based actions have multi-State impacts, global health diplomacy focuses on transnational and multidisciplinary characteristics, including health equity, social justice, and global security.(2,3)

The eight international development goals that make up MDGs' global action plan deeply integrate global health diplomacy principles, require cooperation among Member States, and are crucial to foreign health diplomacy.(4,5) With their jointly recognized goals of reducing poverty and improving health, MDGs have been embraced almost universally by Member States. Member States have also recognized that MDG cooperation promotes national security, economic growth, and diplomacy.(6,7) Unfortunately, the increasing presence of counterfeit medicines impedes progress towards these shared internationally-accepted goals, adversely impacting population-based health.(8-10)

Counterfeit medicines are increasingly infiltrating the global supply chain, resulting in patient injury and death.(9,11) For simplification, the term "counterfeit medicines" is herein defined as medical products that are: (a) substandard quality; (b)

not manufactured to current good manufacturing practices ("cGMP"); (c) fraudulently mislabeled; and/or (d) otherwise adulterated, made ineffective, or harmful. Despite universal acknowledgement of widespread transnational organized crime involvement and threat to the safety of the global medicine supply chain, the incidents of injury from counterfeit medicines is rising across countries and origins of sourcing — including least developed countries, Low and Middle Income Countries (LMIC's), and developed nations; and clinics, hospitals, aid efforts, and nontraditional or unregulated sources.(8,11) Consequently, there is an urgent need to assess current governance mechanisms, global regulation and lack of rule of law in order to craft effective strategies to combat counterfeit medicines.

B. OBJECTIVE

The objective of the study is to assess the scope and impact of the global counterfeit medicines trade. The paper will then map out different governance structures, international treaty instruments and other governance proposals using the methodology described below. The purpose of this study is to inform future research and provide information on what mechanisms might be effective in addressing this global health issue.

C. METHODS

The work first assesses efforts to determine the extent counterfeit medicines have infiltrated the supply chain. We used publicly available data sources that provide estimates of the prevalence of the counterfeit medicines trade including data from WHO and the Pharmaceutical Security Institute ("PSI"). Next the work assesses

governance mechanisms utilized by International Organizations ("IOs") to address counterfeit medicines. Inclusion criteria for IOs included: organizations with identifiable and established governance or programmatic activities addressing counterfeit medicines; and organizations that are UN-specialized agencies and/or international intergovernmental organizations recognized by the UN. This selection criteria specifically excluded states, national government agencies, foundations and other IOs that lack formalized programs. In this assessment we relied on IO primary documents and peer-reviewed literature addressing IO engagement.

In addition, the paper assesses the applicability of international treaty instruments that address the global counterfeit medicines trade. Inclusion criteria included: treaty instruments that specifically address trade in pharmaceutical or medical product related commodities/materials and global or regional treaty instruments that have Member State signatories (including those that have not fully come into force). In this assessment we reviewed primary documents and peer-review literature addressing counterfeit medicines and treaty instruments.

Search methods for these criteria included database searches on MEDLINE; Google Scholar; and Google search engine (searched 15-27 February 2013) using key words associated the topics described above. Finally, the paper reviewed a selection of governance proposals from the literature as case studies to further inform results.

D. SUMMARY OF RESULTS

IOs identified included WHO, UNODC, the International Criminal Police Organization ("Interpol"), and the World Customs Organization ("WCO"). Treaty

instruments identified included the Council of Europe's ("CoE") Medicrime Convention treaty, UNODC's United Nations Convention against Transnational Organized Crime ("UNTOC"), UNODC's Single Convention on Narcotic Drugs and its supplementary treaties, and Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal ("Basel Convention"). Governance proposals by Attaran et. al., for a global counterfeit drug treaty, an Institute of Medicine proposal for codes of conduct, and a proposal by Mackey et. al., for enhanced global health governance coordination were also provided as case studies.

This study was not a systematic review, though our initial findings indicate that there is a general lack of discussion of counterfeit medicines governance mechanisms in the peer-review literature. Based on these limitations, findings heavily relied upon primary document analysis. Results are summarized in **Table 1**.

E. THE GLOBAL SCOPE OF COUNTERFEIT MEDICINES

Detected Counterfeits

A wide array of counterfeit medicines infiltrate the supply chain: branded and generic medications, lifestyle drugs, essential medicines (including antibiotics and HIV/AIDS and malaria treatments), lifesaving drugs, contraceptives, vaccines, and drugs for which there are no authentic products (not yet approved).(8-10,12-18) In addition, the illegal trade of dangerous counterfeit medical products extends beyond pharmaceuticals to medical devices, tests and food supplements (containing declared and undeclared active pharmaceutical ingredient ("API")).(8,18-22) These activities

are facilitated by availability and active trading of API and equipment, allowing easy pathways to create and sell finished counterfeit product.(8)

Estimates

Although the criminal nature of the global trafficking of counterfeit medicines creates difficulties in quantifying the problem,(8,23) available data indicates this global public health problem is immense in scope, as it impacts high-income, LMIC, and resource-poor countries alike.(8,21,24,25). WHO has estimated that counterfeit medicines make up >10-30% of the drug supply in least developed and LMIC's.(23) In 2010, the Centre for Medicines in the Public Interest estimated the counterfeit medicines trade to be worth some $75 billion, at the same time that global demand for pharmaceuticals was rapidly increasing.(9) Indeed, worldwide pharmaceutical spending is projected to reach over $1.1 trillion by 2015, with LMICs key stakeholders in this growth, devoting increasing national health resources to pharmaceuticals.(9,26,27) However, this growth has likely resulted in increased counterfeit medicine detections and incidents (which include law enforcement seizures and public health detections of counterfeit medicines during trade, sale and manufacture), particularly in settings where public health infrastructures are weak. As an example, in 2012, researchers estimated that approximately one-third of the malaria drugs in South East Asia and Africa were counterfeit.(28)

Further, publicly available law enforcement data (e.g., seizures), manufacturer-reported detections, and other counterfeit medicines incidents collated by the United States-based PSI show an increase from 1,123 incidents of verified intercepted

counterfeit, diverted or stolen products in 2005 to 1,986 such incidents in 2011, a 79% spike.(29) PSI data also shows counterfeit medicines are not simply limited to "lifestyle" drugs (e.g. drugs that are used for non-life threatening disorders and are primarily meant to improve quality of life) in developed markets: in 2011, 532 different pharmaceutical products were reported, largely concentrated in Asia and Latin America.(30) Although one of the most extensive global efforts, PSI data provides a mere snapshot of the increasing nature of the problem and is limited in its ability to be broadly generalized.

Locales

Counterfeit medicines exist across a host of health delivery systems: hospitals, pharmacies, wholesale markets, global health programs, and unregulated settings (e.g., street markets, bodegas, Internet).(8-10,12-18) Although countries with weak drug regulatory system are at risk, as the recent case of counterfeit Avastin (anti-cancer drug) detected in the United States demonstrates, even highly regulated markets have been compromised.(8,31)

Criminal Incentives

The criminal counterfeit medicines trade is driven by organized actors, high margins, low risk, and lack of regulatory coordination across geo-political borders.(8,21,32,33) The multi-factor problem of cross-border criminal engagement in counterfeit medicines production, sale, and trafficking is a highly difficult social and law enforcement challenge requiring coordination among stakeholders.

Given these challenges, the global health and patient safety risks of counterfeit medicines is a quintessential global health diplomacy issue. It is also a social policy and safety issue requiring urgent coordinated multisector stakeholder efforts to deter the highly organized criminal element behind this trade.

F. DETAILED RESULTS: PROGRAMMATIC EFFORTS BY IOs

WHO

As the UN-specialized agency responsible for international public health, WHO and the World Health Assembly ("WHA"), the decision-making body of WHO, have longstanding interests in the safety of global medicines. In 1988, WHA adopted resolution WHA41.16, directing the Director-General ("DG") to initiate programs for prevention and detection of the export, import and smuggling of falsely labeled, counterfeited, and/or substandard pharmaceuticals.(34)A similar resolution followed in 1994 (WHA47.13), directing the DG to assist Member States' efforts to ensure a supply of good quality medicines and to combat counterfeit medicines.(34) In 1999 WHO issued "best practices" and recommendations for addressing counterfeit medicines.(13,35) Unfortunately, the counterfeit medicines trade burgeoned under the increasingly complex globalized drug supply chain and the emergence of the Internet, leading to subsequent resolutions in 1999 (WHA52.19) and 2004 (WHA57.14).

In 2004, WHO launched the Good Governance for Medicines Programme ("GGM"), designed to formulate and implement policies for ethical management of pharmaceutical supply chains.(16,36,37). Unfortunately, while GGM has engaged a number of countries in governance assessments, it has been severely limited by lack of

political will and resource constraints.(37) Importantly, failure of each of these WHO-led activities have been attributed at least partially to lack of active stakeholder engagement.(13,38)

A 2006 effort to coordinate global stakeholder activity (including non-Member States) led to the establishment of the International Medical Products Anti-Counterfeiting Taskforce ("IMPACT").(8,23,39) IMPACT was organized under the "Declaration of Rome" as a voluntary group of governments, organizations, institutions, agencies, and associations from developing and developed countries, in the public and private sectors, aimed at sharing expertise, identifying problems, seeking solutions, coordinating strategies and working towards the common goal of fighting counterfeit medicines, particularly in developing countries.(40) It received multisector endorsement by 160 participants (including 57 national drug regulatory authorities, seven IOs, and 12 international patient, provider and pharmaceutical associations) and is a collaboration of Members States, Interpol, Organisation for Economic Co-operation and Development, WCO, World Intellectual Property Organization, World Trade Organization, European Union, CoE, Commonwealth secretariat, the ASEAN secretariat, and a number of NGOs.(34,39)

Unfortunately, divergent Member State interests and lack of support significantly limited IMPACT's effectiveness.(Shashikant, 2010) These differences were highlighted by a 2008 seizure of generic pharmaceutical products in the Netherlands en route from India to Brazil. The product in question was held up in customs in the transit country of the Netherlands for potential IPR infringement,

though they were considered generic formulations according to laws of the India (country of origin) and Brazil (country of destination).(Mackey & Liang, 2011; Shashikant, 2009) This lead to allegations at the 2009 World Trade Organization ("WTO") General Council meeting and dispute settlement body that the seizure violated WTO's General Agreement on Tariffs and Trade and the Trade-related Aspects of Intellectual Property Agreement Doha Declaration. India and Brazil, countries that are large-scale generic manufacturing sources, viewed the seizure as an inappropriate exercise of IPR enforcement. Regrettably, this controversy led to criticism of WHO's support for IMPACT and the negative perception that WHO was actively involved in enforcement of commercial interests.(WHO, 2011b)

In response to this criticism, WHO Member States created a working group of Member States to assess WHO's involvement with SSFFC, and its relationship with IMPACT.(34)This working group examined WHO's role in ensuring access to safe and affordable medicines in the context of prevention and control of SSFFC from a public health perspective (expressly excluding trade and IP considerations)(34) and made specific recommendations to the 64th World Health Assembly in May 2011. In 2012, the 65th WHA adopted resolution 65.19, effectively removing WHO support for IMPACT and replacing IMPACT with a new Member State Mechanism ("MSM").(41)

MSM is a voluntary system open to WHO Member State participation only. Its objectives are broad: establishing global norms, standards and procedures; strengthening national and regional capacity and quality control laboratories;

exchanging information and promoting cooperation; identifying major challenges to access to safe medicines; and preventing SSFFC activities.(41) It is governed by a Member State steering committee, including WHO regional blocks.(42)

This pathway of global policy development under the current governance structures is predictably resulting in a State-centered, politicized health diplomacy and governance process, a result reflected in similar Member State directed initiatives.(43,44) Indeed, attempts to engage in broader stakeholder engagement within the general WHO governance structure through a proposal to create a multi-stakeholder World Health Forum, have also been rejected by Member States in the midst of WHO reforms and a current budget deficit.(44)

The first meeting of MSM, held in November 2012, has already been criticized for lack of transparency and progress.(45) Further, the disengagement of WHO from broader stakeholder inclusion and relegation of non-state actors to invitation-only status for "specific topics" leaves critical (and powerful) stakeholders outside the discussion.(46) It should be noted and emphasized that this exclusion not only applies to corporate entities but extends to other critical stakeholders such as the private foundations who currently fund the majority of global health efforts, and, most importantly, the patient organizations and representatives themselves, who have the most stake in safe access to medicines.

The future effectiveness of MSM is unknown, but it is clear this macro-environment creates significant limitations for any governance approach offered by a Member State-only governance structure.(46) As in the case of WHO refusal to assist

Taiwan during the SARS outbreak, individual State interests are impacting attempts to combat this pressing public health problem and are obstructing the international effort to stop the highly organized trade in dangerous counterfeit medicines.(43) Though constraints of its current governance structure and lack of resources are significant challenges for WHO in addressing global drug safety, its established role as the global public health UN specialized agency continues to necessitate its further engagement.

UN Office of Drugs and Crime

The UNODC is a global leader in the fight against transnational organized crime, including "fraudulent" counterfeit medicines. Established in 1997 by merger between the UN Drug Control Program and Center for International Crime Prevention, UNODC operates on a global scale through an extensive network of field offices. UNODC relies on voluntary contributions, primarily from governments, for 90% of its budget.(47)

UNODC strategically employs international agreements to accomplish its goal to reach organized criminal networks, including the Russian mafiya, Mexican gangs, and Colombian drug cartels.(8,32) Its activities arise from the UN Convention Against Transnational Organized Crime ("UNTOC"), which has near universal ratification.(48)

In April 2011, the UN Commission on Crime Prevention and Criminal Justice ("CCPCJ") Resolution 20/6 (49) requested and empowered UNODC to engage in the fight against the global, organized, criminal nature of the counterfeit medicines trade.

It also empowered UNODC to promote evidence-based solutions for global and regional needs and raise awareness about the dangers of counterfeit medicines.

A relatively new participant in global counterfeit medicines efforts, UNODC has forged collaborations with multiple stakeholders outside of Member States, including Interpol, WCO, the International Narcotics Control Board, and other non-Member State actors, including the national regulatory agencies, the private sector, civil society, and professional associations.(50) Indeed, in contrast to WHO-based efforts, in February 2013, UNODC convened a high-level technical meeting of experts comprised of representatives from this diverse set of stakeholders. This meeting focused on global efforts to fight the transnational organized counterfeit medicines trade. It also sought creative solutions for how UNTOC could be relied upon to facilitate information exchange, investigation, and law enforcement activities.(51)

Recognizing the organized and transnational nature of the counterfeit medicines trade, UNODC has the potential to utilize existing international treaties, global programs on border control and money laundering, and coordination of relevant stakeholders. However, like the MSM system, the outcomes of the UNODC governance approach are relatively new, and its impact is unknown. Further, UNODC lacks a formal governance mechanism to operationalize its CCPJ mandate. Though the recent high-level technical meeting is a start, future activities in the area are not well defined, nor has a specific funding mechanism been established. Hence, without the establishment of formal governance structures to support collaboration and cooperation the impact of UNODC may be limited.

However, because of UNODC's emphasis on the criminal nature of the counterfeit medicines trade and its well-established body of international law to coordinate and provide technical assistance to Member States on crime prevention, UNODC may prove as effective fora to address the issue. By focusing on crime, UNODC can avoid conflicting issues of access to medicines and IPRs. Further, UNODC's decision to engage all stakeholders at the outset, points to a more inclusive governance structure that can leverage respective competencies and resources of all actors to appropriately address counterfeit medicines.

Interpol

Created in 1923, Interpol, the world's largest international police organization with 190 member countries, targets the manufacture, trade and distribution of fake, stolen or illicit counterfeit medicines. In addition, it investigates the links between counterfeit medicines, other criminal activities, and organized crime, focusing on syndicate theft, fraud, illegal diversion, smuggling, trafficking, and money laundering in this illicit trade.(52)

Interpol is funded by its member countries, whose governments pay annual contributions based on their relative economic status and ability.(53) Law enforcement entities also pay search fees to access its information. It has no independent source of funding, and as such, like WHO and UNODC, is heavily dependent on voluntary contributions.(53)

Like UNODC, Interpol is interested in organized crime's role in counterfeit medicines; however, Interpol differs in that it engages in more direct law enforcement

interventions. It coordinates field operations to disrupt criminal networks; provides information and skills training, including police enforcement workshops; and establishes partnerships to develop methods for addressing counterfeit medicines with police, customs officials, health regulators, public health entities, healthcare providers, the private sector, and researchers.(52) Interpol's strategy builds upon existing enforcement operational networks and multisector cooperative mechanisms to facilitate communication and information exchanges to disrupt organized crime networks.(52) It also specifically focuses on illicit online pharmacies, a common source of counterfeit medicines.(54)

However, Interpol is not an UN-specialized agency and does not have normative powers to erect treaty instruments. Further, it is heavily reliant upon voluntary contributions to fund operations, which may lack adequate transparency. Acting primarily as a global law enforcement entity, Interpol also lacks the necessary public health technical expertise to engage in the assessment of the health impacts of counterfeit medicines. Based on these limitations it is clear that Interpol will continue to need to partner with other institutions in order to inform its field-based operations.

Interpol also partners with multiple international stakeholders including WHO, the Permanent Forum on International Pharmaceutical Crime, PSI, the International Federation of Pharmaceutical Manufacturers and Associations, and the Health Sciences Authority, Singapore.(55) Interpol and its partners have employed successive multidisciplinary, multilateral, and multisector enforcement actions against dangerous physical and Internet counterfeit medicines networks. These include Operation Pangea

I-V (aimed at illegal Internet sales), Operation Mamba I-III (enforcement against transnational organized crime in Eastern Africa), Operation Storm I-II (Southeast Asia), and Operation Cobra (Western Africa). Interpol also engages in consumer outreach highlighting risks of online pharmacies.(56) This unique feature of the Interpol "brand" provides a critical tool for education of policymakers and the general public.

In addition, Interpol differs from other IOs in its focus on law enforcement activities and prosecutions. Hence, Interpol is in many ways the implementation arm of coordinated efforts, although it also engages in capacity building and knowledge sharing. Hence, Interpol will play a crucial role in combating counterfeit medicines, but needs its operations to be supported and informed by other IOs that have normative functions with established formal global governance mechanisms.

World Customs Organization

WCO is an independent intergovernmental organization established in 1952 to enhance customs' effectiveness and efficiency. WCO represents 179 global customs administrations processing approximately 98% of all world trade.(57) Given the challenges of porous borders and importance of customs processing and trade inspections in the trafficking of counterfeit medicines, WCO has recently become a key partner in the international counterfeit medicines fight.

One of the key WCO efforts against counterfeit medicines is the Global Container Control Program ("CCP"). Established in 2006, CCP is a joint WCO-UNODC initiative to monitor the movement of cargo shipped by sea. In 2011, CCP

resulted in the seizure of 195 containers of counterfeit medicines and precursor chemicals.(58) In the first half of 2012, CCP led to the seizure of 19 containers with over 100 tons of fake tramadol, a narcotic-like analgesic, all originating in India but seized in West Africa.(58)

WCO also engages in training of specialized joint customs and police port control units to better detect and seize counterfeit medicines.(58) Under a diplomatic cooperative agreement, CCP has 28 operational port control units across 14 countries and is receiving increased interest from the private sector.(59) WCO also engages in a collaborative relationship with the Universal Postal Union to prevent mailing of counterfeit medicines.(60)

In 2010, WCO signed the Cotonou Declaration (a Chirac Foundation initiative calling for the development of anti-trafficking training and systems) to show its commitment to combating the increased trade in dangerous counterfeit medicines.(61) Consistent with this commitment, WCO customs enforcement activities have included Operation VICE GRIPS 2, which employed risk analysis, detection of fraud vectors, and utilization of technology solutions and partnerships with support from the Institute of Research Against Counterfeit Medicines as well as the private sector.(62) This operation led to the seizure of more than 82 million doses of dangerous illicit medicines across 16 African countries in October 2012.(62) The seizures included counterfeit anti-malarial drugs, antibiotics, contraceptives and other medicines, all capable of exposing the patient to tremendous harm through fake or ineffective ingredients, was estimated to be valued at some $40 million.(62)

However, WCO has limitations similar to Interpol in that its operations are generally isolated to customs and trade and it does not have normative functions or formalized governance structures. Its programs are also relatively new, and address all forms of counterfeit products, not only medical products, which may prove controversial in the debate regarding IPR enforcement. Nevertheless, WCO, through its unique sentry role at political and trade borders, is another tool in the global counterfeit medicines strategic effort. Further, its risk and IT profile experience provide additional strategic advantages to combat counterfeit medicines.

G. GOVERNANCE INSTRUMENTS

Medicrime Convention

Diplomatic treaties provide a mainstream global health diplomacy approach to combat counterfeit medicines. One key effort on this front is the CoE's attempt to develop its own counterfeit medical products regulatory regime through the Medicrime Convention.

Because parallel trade in the EU allows for the free flow of goods across borders, EU regulatory and public health agencies have additional challenges when combating counterfeit medicines.(31) Consequently, European bodies, including the CoE, European Parliament, European Commission, the European Medicines Agency and Europol (the EU's law enforcement agency) have partnered to enact the first treaty criminalizing intentional manufacturing, supplying, and trafficking of counterfeit medicines, including the falsification of related documents, as well as unauthorized activities associated with manufacturing, trafficking, diversion/theft, or sale

intentionally bypassing regulatory authorities and requirements (i.e., “similar crimes”).(63)

CoE’s Medicrime is not limited to pharmaceuticals, but also includes medical devices, API, and other illegal medicinal products (i.e., fake supplements). Perhaps most importantly, it contains specific language that it “does not seek to address issues concerning intellectual property rights”, does not criminalize generics that have been authorized for marketing by a competent authority, and does not criminalize non-intentional breaches of quality norms.(63)

The Medicrime Convention was designed to provide health care agencies and law enforcement representatives with a common legal foundation to prevent and prosecute Medicrime-related offenses.(63) It is open to all EU Member States but is attempting to gain universal adoption among non-EU Member States. Medicrime requires a minimum of five countries, at least three of which must be CoE members, to ratify the treaty through domestic legislation. At present, although there are 21 signatories to the treaty, only one (Ukraine) has ratified it.(64)

Although any country may become a Medicrime signatory, the effort at this point appears European-focused, with only Guinea, Morocco and Israel as non-EU Member State signatories.(64) The Medicrime Convention has the potential to emerge as a broader international treaty instrument; however, current lack of ratification by existing signatories, failure to engage a larger number of non-Member States, and the lack of input from non-member countries/entities during treaty negotiations may limit its global applicability. Nevertheless, it may provide a roadmap for future, wider

multilateral global health diplomacy efforts, particularly within the debate over safe access and IP considerations.

UNODC UNTOC and Other Conventions

Adopted in November 2000, UNTOC is the primary international instrument combating transnational organized crime. It empowers UNODC to address serious crimes, such as human trafficking, smuggling, and illicit manufacture and trafficking of dangerous materials; 174 Member States are party to the Convention, giving it near universal adoption. Through UNTOC, UN Member States commit themselves to enact robust domestic laws against organized crime and collaborate in the fight against criminal networks.(58)

Given its global adoption, UNTOC has a broad legal framework to facilitate investigation, law enforcement and multi-stakeholder cooperation to combat the global counterfeit medicines trade. The language of the instrument is sufficiently broad to cover the crime of manufacturing and marketing counterfeit medicines. These activities represent “serious crimes” perpetuated by a transnational organized crime groups and involve money laundering, corruption, and other illegal activities.(48) With its multidisciplinary, multilateral, and multisector health diplomacy and governance systems using traditional, uncontroversial, existing, internationally-binding law, UNODC is uniquely poised to facilitate information sharing and collection, law enforcement cooperation, training and technical assistance. Indeed, CCPCJ Resolution 20/6 underscores its support and central role in creating a

foundation for future law enforcement and judicial capacity building against global counterfeit medicines.

UNODC has a history of high acceptance as a global organization benefiting global safety and has political capital with a wide array of stakeholders from all sectors. Its own inclusionary governance systems and global health diplomacy infrastructures lead to participant acceptance and less controversy around public/private sector cooperation. With a mandate to increase its activities against counterfeit medicines, it can leverage its operational approaches under UNTOC and Resolution 20/6 to strategically improve cross-border counterfeit medicines initiatives.(8,11)

Further, international agreements and treaties, such as the Medicrime Convention if appropriately ratified, could legally complement UNTOC. Moreover, UNODC through UNTOC, could also provide needed expertise for law enforcement efforts against global counterfeit medicines. Other creative applications of UNTOC (e.g., the marking and tracking of firearms) may also be considered in the battle against global counterfeit medicines.

In addition to its power under UNTOC, UNODC has oversight responsibility for controlled substances. For example, UNODC houses the Single Convention on Narcotic Drugs, the Convention on Psychotropic Substances, and the UN Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances. While, these international treaty instruments address illicit controlled substance drugs with abuse

potential, rather than counterfeit medicines generally,(65) they could be used in conjunction with UNTOC to address counterfeit controlled substances.

Though representing existing treaties, the Single Convention and Protocols are limited in applicability to narcotic and psychotropic substances contained in treaty schedules. Hence, non-scheduled drugs that are subject to counterfeiting would not be subject to its requirements. Further, these instruments provide certain exemptions for medical and scientific use that may be exploited by criminal actors.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

Adopted in 1992, the Basel Convention was signed by 178 parties to address international hazardous waste management and movement under the UN Environmental Programme. Though not singularly focused on targeting counterfeit medicines, Annex I of the treaty *specifically* addresses "wastes from the production and preparation of pharmaceutical products" and "waste pharmaceuticals, drugs and medicines".(66) Hence, precursor chemicals, API, and finished pharmaceutical products themselves are all subject to the treaty.

Criminal organizations engaging in the illicit manufacturing and trans-boundary trade of dangerous counterfeit medicines certainly do not appropriately generate, store, transport or dispose of their counterfeit medicines products in an environmentally sound manner as the Convention requires, and are, consequently, guilty of illegal traffic and dumping of hazardous wastes under the Basel Convention. Given that the Convention, and Environmentally Sound Management attention in

particular, have direct relevance to the prevention and control of counterfeit medicines, UN Member States and other IOs should actively pursue inclusion of programs combating counterfeit medicines into the Basel Convention.

In addition, the Basel Convention, although driven by UN Member States, has emphasized broader stakeholder engagement in its technical working groups to strengthen implementation and cooperation of the Basel Convention.(67,68) However, the Basel Convention has certain limitations, most importantly a lack of adequate enforcement mechanisms. It also does not specifically ban the illicit trade of hazardous waste exports. It also utilizes requirements for notice, consent and tracking that may not be applicable to criminal trade. Given these limitations, application of the Basel Convention may only be beneficial when other laws and enforcement mechanisms have been exhausted.

H. GOVERNANCE PROPOSALS

Existing governance proposals vary widely in scope and operation. Proposed governance mechanisms to combat counterfeit medicines vary from international-binding hard law, enhanced governance of existing IO efforts, and development of international soft law guidance.

A proposal that has been widely considered in the international community is the establishment of an international-binding instrument on poor quality and unsafe medicines that endanger public health.(13) The treaty would create an international legal regime that would provide agreed upon definitions of illegitimate medicines, mandate cooperation among states to investigate and enforce against this criminal

trade, set global standards for prevention and control, provide financial and technical assistance for drug regulatory systems in poorer countries, and specifically create a new public health law that would make it illegal to trade in illegitimate medicines.(13) This proposal would establish clear international binding rules and norms and if pursued, would be only the second public health treaty after the WHO Framework Convention on Tobacco Control.

Although laudable, creation of a new treaty is not without difficulties. Establishing appropriate definitions and navigating existing Member State differences are significant barriers in treaty negotiation and eventual consensus building required to support domestic legislative actions to implement treaty requirements. Given the WHO IMPACT experience, it may prove difficult for a public health treaty addressing counterfeit medicines to be administered by WHO. Further, treaty negotiations are expensive, and states may fail to appropriately ratify or implement treaty-based obligations. Another proposal advocates for enhanced governance mechanisms between IO programmatic activities of the WHO, UNODC and Interpol.(38) The proposal recommends that these IOs should concentrate on their respective domains of expertise. This would include WHO focusing on public health aspects of improving access to safe medicines, strengthening health systems and surveillance systems, and conducting needed research on the epidemiology of counterfeit medicines.(38) In conjunction, UNODC would handle policy and enforcement aspects of the organized crime element of the trade, and Interpol would directly engage in law enforcement actions and capacity building exercises on the ground.

This particular proposal emphasizes greater coordination among existing stakeholders and establishing a new governance mechanisms between the IOs to facilitate this cooperation. However, challenges associated with mobilizing coordination and cooperation of different IOs remains difficult. IOs, such as WHO, may not actively participate in newly proposed governance structures given existing mechanisms/mandates in place such as the MSM. Further, a funding mechanism to support such governance and rules to ensure transparency and appropriate stakeholder participation would need to be developed.

Finally, a recent USA Institute of Medicine report on falsified and substandard drugs contained a number of recommendations primarily focused on national drug regulatory strengthening, better surveillance and data collection, application of existing rules and norms on procurement and access to safe medicines, harmonization, and detection technology development.(11) Also contained in this report was a proposal for a governance mechanism of voluntary soft law described as an international code of practice to encourage international action against falsified and substandard drugs.(11) Specifically, the recommendation suggests partnership between WHA, UNODC, and WCO to develop and institute a code of practice for surveillance, regulation, and law enforcement to prevent and respond to medicine quality issues.(11) As soft law, a code of practice could potentially be implemented quicker and at lower cost than other proposals.

This set of recommendations, although involving UNODC and WCO with their inclusive governance, also relies on the WHA—subject to the same barriers faced

by WHO. As discussed previously, current governance structure limitations of the WHO/WHA may limit non-Member State participation and may not adequately mobilize necessary resources. Furthermore, as a substantive matter, soft law, such as a code of practice, is non-binding and lacks enforcement mechanisms. Moreover, crucial stakeholders, such as industry and patient groups, are excluded from the process, and could refuse to participate in these non-binding mechanisms.

The variety of policy proposal attempting to address the dangerous counterfeit medicine trade highlight the diversity of views and opinions on the subject. Each would have its own strengths, weaknesses and associated costs if pursed diplomatically.

I. DISCUSSION

Global health diplomacy is evolving. The globalization of diseases, increasing international trade, and changing roles of public and private sectors all contribute to global health complexities.(2,69-71)

Globalization of the drug supply system encompasses a wide array of stakeholders, including multinational state actors, IOs, civil society groups, and private-sector entities.(8) Activities of these diverse actors range from research and development, to manufacture, regulation, procurement, product registration, trade and commerce, marketing, patient advocacy, criminal enforcement, and establishment of laws, policies, norms and guidance.(8,21) Unfortunately, competing interests within this complex system have effectively blocked progress against global counterfeit medicines.(38,44,72) Moreover, diplomatic efforts have been undermined by factors

ranging from fragmentation, to intellectual property, medication access, and Member State interests and divergent policy considerations.(8,13,73)

These conflicts have even extended to the language used to describe the problem, with inconsistent definitions of what constitutes counterfeit medicines.(13) As an example, WHO uses the term "Substandard/Spurious/Falsely-labelled/Falsified/Counterfeit Medical Products ("SSFFC"); UNODC uses the term "fraudulent" medicines; and the European Commission uses the term "falsified" medical products. Indeed, agreement on establishing a standardized definition is elusive, further exacerbating diplomatic and programmatic efforts to identify potential solutions.

This study indicates that the problem of counterfeit medicines is a multifaceted and complex problem that needs to engage multidisciplinary and multistakeholder groups in public health, patient safety, criminal prevention, law enforcement, trade and customs, and the environmental community. Lack of inclusive governance principles may limit needed collaboration, cooperation and leveraging of resources to effectively address the diverse issues surrounding the global counterfeit medicines trade.

The IMPACT case study serves as an important negative example. Though IMPACT was successful in engaging a coalition of stakeholders who could provide the necessary technical expertise, information sharing mechanisms, capacity building, and law enforcement activities, its success was severely limited by WHO's governance limitations, in particular, its inability to build necessary consensus and collective action among its Member States which govern the organization. Yet, given

the complexity of the global drug supply chain, the need for better data collection from all sources, and the need for formalized multistakeholder governance structures, it appears that alternative governance solutions need to be assessed

While all of the IO's reviewed have competencies to contribute, UNODC is uniquely poised to lead the fight against counterfeit medicines given its status as a specialized agency of the UN with existing normative powers and a mandate to fight counterfeits. These advantages can enable it to avoid contentious disagreement between Member States by focusing on the criminality of the trade. By focusing on the criminal activities and enforcement, UNODC can align differences in interests that have previously focused on more contentious issues such as access and IPRs. Consequently, UNODC should actively engage in the development of a multilateral, multistakeholder governance mechanism in the global fight against counterfeit medicines. Moreover, UNODC support under Resolution 20/6, UNTOC, and other well-accepted, ratified, treaties uniquely situates it to promote global health diplomacy on the counterfeit medicines issue.

UNODC existing pathways of coordination and partnership with IOs such as WHO, Interpol and WCO would allow efficient allocation of resources to avoid overlapping efforts, improve areas such as education, consumer outreach, capacity building, and potentially improve data collection. This would also allow WHO to maintain its crucial role as the premier international public health organization, and focus its efforts on analysis of the public health implications of counterfeit medicines on the drug supply chain, methods to change behavior to avoid exposure/consumption,

activities to promote access and reduce reliance upon pharmaceuticals, and approaches to strengthening public health and drug regulatory infrastructures. Similarly, Interpol and WCO could continue to focus efforts on field-based operations and technical capacity building, informed by UNODC leadership and public health data from WHO.

J. CONCLUSION

Dangerous counterfeit medicines have been identified as a global concern as early as the 1st century yet, more than a millennia later limited progress has been made.(8,35,74) Current diplomatic and governance efforts are fragmented across a multitude of different stakeholders. Though cooperation between IOs has commenced, lack of a formalized multistakeholder governance mechanism to leverage resources and technical expertise persists. Instead, shared values and goals embodied in global health diplomacy should be applied by the global community towards solutions to ensure equitable access to safe medicines while at the same time combating this form of transnational organized crime. As global counterfeit medicines continue to spread, the public becomes increasingly vulnerable to the adverse health outcomes of these fraudulent commodities. Only through shared diplomatic efforts and sound governance can progress on combating counterfeit medicines be achieved.

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Table 1: Counterfeit Medicines Diplomacy and Governance Mechanisms

INSTITUTION	NAME	MECHANISM	ADVANTAGES	WEAKNESSES
World Health Organization	*International Medical Products Anti-Counterfeiting Taskforce ("IMPACT")*	Multi-sectorial collection of voluntary group of some 40 public and private sector actors including member states, organizations, institutions, agencies and associations, manufacturers and law enforcement. Activities organized into five subject-based working groups.	Includes broad participation from both public and private sector members and can act as a forum for collaboration and coordination on specific subject areas targeted at combating the counterfeit drug trade.	Viewed by certain member states as inappropriately engaged in IPR enforcement and effectively no longer has WHO support/participation.
	WHO New Member State Mechanism ("MSM")	Voluntary mechanism open to all member states. Governed by steering committee including representation from WHO regional blocks.	Has WHO and member state support with objective of establishing global norms, standards, and procedures for addressing SSFFC.	New mechanism criticized for lack of transparency. Does not actively engage necessary non-member stakeholders.
UN Office of Drugs and Crime	*Commission on Crime Prevention and Criminal Justice Resolution 20/6*	Resolution by CCPCJ establishing member state support for UNODC engagement in combating transnational organized crime of fraudulent medicine trade.	Allows for collaboration with other organizations and provides member state support for UNODC technical assistance, capacity building, and research on fraudulent medicines not previously formalized.	Recent resolution. Not a formal governance mechanism and limited in scope of requests/implementation.
	United Nations Convention against Transnational Organized Crime ("Palermo Convention")	International treaty adopted by 174 member states to combat transnational organized crime.	Near universal adoption by member states. Broad enough to be applied to transnational organized crime of fraudulent medicines. Contains important enforcement and cooperation mechanisms for law enforcement and other stakeholders. Can also complement other counterfeit drug treaty instruments.	Structurally limited in applicability to transnational organized crime. Though fraudulent medicines trade is largely a transnational, not domestic-only crime so would have potential wide-spread applicability depending on interpretation.
	Single Convention on Narcotic Drugs, the Convention on Psychotropic Substances, and the UN Convention Against Illicit Traffic in Narcotic Drugs	Set of international treaty instruments to address illicit controlled substance drugs with abuse potential informed by recommendations by WHO.	Well established international treaties that contain strong enforcement provisions against illicit traffic and trade of controlled substances.	Limited in applicability to narcotic and psychotropic substances contained in schedules. Non-scheduled drugs that are counterfeited would not be subject to treaties. Also has exemptions for medical and scientific use that may be exploited by criminal actors.
Interpol	*Interpol Operations: Pangea, Mamba, Storm and Cobra*	Multi-agency global ground operations coordinated by Interpol.	Direct multidisciplinary enforcement actions targeted against physical and Internet counterfeit drug networks.	Primarily an enforcement mechanism with limited data collection. Unclear effectiveness.

Table 1: Counterfeit Medicines Diplomacy and Governance Mechanisms (cont.)

INSTITUTION	NAME	MECHANISM	ADVANTAGES	WEAKNESSES
World Customs Organization	*Operation VICE GRIPS 2 and Global Container Control Program*	In partnership with IRACM and UNODC, provides for	In partnership with IRACM (VICE GRIPS2) and UNODC (CCP), provides mechanisms for field operations and capacity building in customs enforcement against counterfeit drugs. Multisectorial in operation.	Operations are isolated and have not been instituted as formalized programs. CCP program is new and addresses all forms of counterfeit products, not only medical products.
Council of Europe	*Medicrime Convention*	First international treaty that criminalizes activities associated with supply/trafficking of counterfeit medicines.	Regional treaty with 21 signatories but open globally to other countries. Not limited to pharmaceuticals applies to other medical products. Specifically does not address issues concerning IPRs.	Lacks sufficient state participation for ratification. Has already been negotiated, which may limit future participation from larger non-member states.
United Nations Environmental Programme	*Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*	International treaty that addresses issue of international hazardous waste management and movement.	International binding treaty with wide adoption by 178 parties. Annex specifically includes pharmaceutical products and waste as categories to be controlled. Can apply also to API and precursor chemicals.	Lack of adequate enforcement mechanisms. USA not a participating country. Limited in enforcement applicability to wastes and disposal where criminal laws may be more effective.

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Chapter 2. Improving Global Health Governance to Combat Counterfeit Medicines

A. INTRODUCTION

A global debate has emerged on the appropriate means to address what has traditionally been known as "counterfeit medicines." Ideological and economically-motivated arguments over public health concerns, intellectual property rights ("IPRs"), and equitable access to medicines have resulted in a plethora of related but varying terms attempting to define this problem, including: "spurious," "substandard," "falsified," "falsely-labeled," "fraudulent," "counterfeit," "fake" and the collective term "substandard/spurious/falsely-labeled/falsified counterfeit medical products" ("SSFFC"). The variety of terms utilized illustrates the numerous, complex, and fractious intersecting political and policy issues embedded within the term "counterfeit medicines." (1,2)

However, ongoing arguments over terminology have distracted attention from the actual global health crisis – the continued widespread availability of counterfeit medicines that are dangerous to public health. At present, no inclusive global health governance structure exists to mobilize health diplomacy and the multitude of stakeholder resources to combat the spread of counterfeit medicines.

With ongoing breaches to the global drug supply chain and increasing detection, it appears that key global policymakers have begun to recognize the significant public health risks associated with counterfeit medicines. This includes renewed activities by UN specialized agencies and other international organizations,

patient safety groups, law enforcement, civil society, and the private sector to name a few.(3-8) Though momentum for international action against this public health hazard is building, existing and emerging initiatives lack policy coherence and have failed to coalesce around a unified purpose to protect patient safety and effectuate necessary international cooperation. As these problem, policy, and political streams join together, they provide the opportunity for exploration of enhanced global health governance structures to address this preeminent global health concern.(9)

B. GLOBAL SCOPE OF TRADE IN COUNTERFEIT MEDICINES

Harm arises from a wide spectrum of detected counterfeit medicines across therapeutic classes, with quality, manufacturing, and/or provenance issues that make the product ineffective and/or harmful. These dangerous counterfeit medicines place all patients at risk, from developed to developing countries, from rural clinics to tertiary care centers, from resource-poor to high-income settings.(1,10)

Yet, global trafficking of counterfeit medicines is difficult to quantify, largely due to the criminal element of the trade.(1) Previous estimates crudely claimed that 10% of global medicines are counterfeit, although experts acknowledge the imprecision, regional variation, and general paucity of data behind this claim.(11,12) An Organisation for Economic Co-operation and Development ("OECD") report also highlights the difficulty in assessing counterfeit medicines due to lack of data, divergent terminology, and standard tenet that covert illegal activity is difficult to measure.(13)

However, in 2010, available estimates placed the global market for counterfeit medicines at $75 billion, a 90% increase from 2005 levels.(11) OECD also notes increases in both volume and diversity of medicines counterfeited, and an increasing counterfeit presence in supply chains of even highly regulated countries.(13) Finally, WHO itself estimates that the prevalence of counterfeit medicines range from less than 1% in developed countries, to 10-30% in developing markets, and up to 50% or more of websites that conceal their physical location.(10,14)

Safety dangers are further amplified by technology advancement and frenetic pace of globalization rendering international borders defenseless. Indeed, a primary mechanism for counterfeit medicine distribution and sourcing is the Internet, which is rarely subject to effective international oversight.(15) Instead, persons from virtually any country with online access can search and potentially purchase pharmaceuticals ranging from essential drugs, vaccines, controlled substances, life-saving drugs, and lifestyle products, all from the convenience of a computer or even mobile device.(1,13,15-21) Addressing online counterfeit distribution using multi-sector efforts such as the International Criminal Police Organization's ("Interpol") enforcement action Operation Pangea I-V has resulted in millions of counterfeit pill seizures, but have not stemmed the continued proliferation of illicit online pharmacies.(22)

Private sector data provided to us from the Pharmaceutical Security Institute ("PSI"), a not-for-profit organization of pharmaceutical industry security directors collecting and analyzing information on global counterfeit medicine incidents, also

shows evidence of the rapid progress of this pharmaceutical crime: an alarming 123% overall global increase in incidents of counterfeit medicines were verified from 2005-2010 (878 to 1,961 incidents). PSI information is based on an incident-based reporting system, verified in a similar fashion to information collected by law enforcement agencies. To be included, a counterfeit product, using WHO definitions, must be supported by factual information validated by a team of criminal analysts from PSI.(23)

Additional PSI data indicates all global regions are experiencing an increase in counterfeit medicines activity, with Asia (246%), Europe (131%) and the Near East (105%) experiencing the greatest increases (**Table 2**). Further, counterfeit medicines treating non-communicable diseases with high global disease burden have had detected increases in counterfeit medicine incidents, including cardiovascular (196%), central nervous system (119%), genitourinary (132%), and metabolic disease (110%) (**Table 3**).

However, these measurements are likely an underestimate, even beyond challenges in assessing criminal activity. Regions such as Africa suffer from low surveillance and reporting; counterfeit medicines often impact greater than one country; and the complex web of the global counterfeit medicines trade allows for clandestine activities and resulting harm that goes undetected worldwide. Further, measurement limits such as difficulty in detection, reporting bias across regions, and lack of comprehensive data surveillance sources, mean conclusions from such data are limited. These limitations emphasize the need for better data collection, more robust

monitoring and surveillance and requiring mandatory reporting at the individual country level to better inform researchers and policymakers about the scope of this global health problem.

C. LIMITATION OF CURRENT PUBLIC HEALTH EFFORTS

Although available data outlining the problem of global counterfeit medicines is less than robust, there is broad international consensus that this criminal trade is a serious global public health issue and needs immediate action.(1,2) Recent investigations and law enforcement efforts have uncovered large-scale illegal manufacturing in emerging markets, ties to organized crime and terrorism, and record global seizures in both producing and consuming countries, all associated with patient deaths worldwide.(1,3,13,22)

Several key international entities have attempted to address the global counterfeit medicines issue. These include WHO, the United Nations Office of Drugs and Crime (UNODC), Interpol, and the World Customs Organization ("WCO"). Most notably, as early as 1988 WHO, the world's preeminent international public health organization, has been actively engaged in developing policies, programs, resolutions and governance activities in an attempt to ensure access to safe medicines and combating counterfeit drugs.(24)

However, WHO has recently struggled in effectively tackling this problem due to divergent member state concerns, incompatible ideologies between public health and commercial IPRs, limitations of its current member state driven governance structures, and lack of adequate resources.(25,26) These conflicts have severely

hampered a global response to the counterfeit medicines trade and has necessitated the entry of new international organizations, such as the UNODC and Interpol, due to criticism of WHO previously led efforts and the need for active enforcement against criminal networks.(27)

WHO's prior attempts to combat this illicit trade and engage a broader base of stakeholders has garnered harsh criticism. For example, the WHO-chaired International Medical Products Anti-Counterfeiting Taskforce ("IMPACT") brought together a number of governments, international organizations, civil society groups, private sector actors, law enforcement agencies and others to combat this activity in 2006.(28) Yet, the future of IMPACT is in serious question, with the recent establishment of a new member state mechanism ("MSM") by the World Health Assembly in response to criticism regarding perceived associations of WHO with enforcement activities including its relationship with IMPACT.(29)

Importantly, the MSM is a new governance structure driven exclusively by Member State participation and does not include active inclusion of important non-Member State stakeholders that have been instrumental in combating this trade.(30) This regression is symptomatic of larger contextual governance problems within WHO. This includes failure of the WHA to adopt inclusive governance reforms (i.e., the World Health Forum proposal) to ensure adequate funding and transparency in current reform efforts.(31) This reflects the reality that WHO is significantly limited in its ability to engage with a broader array of key actors, lacks enforcement capability, and has deficient resources to address the issue programmatically.

D. FILLING THE GAP: UNODC, INTERPOL AND OTHER ORGANIZATIONS

In response to WHO governance limitations, other international organizations are filling the gap in institutional capability that WHO is unable to provide. This includes the United Nations Office on Drugs and Crime ("UNODC"), which specializes in establishing policy and coordinating actions in combating illicit trade and trafficking of illicit drugs, crime prevention, criminal justice, corruption and terrorism.(32) All these elements have direct ties to the trade of counterfeit drugs, and UNODC's expertise has already made inroads in the fight against this form of globalized crime. Further, UNODC administers international treaties that can be extended to criminal activities involving dangerous counterfeit medicines, such as the UN Convention against Transnational Organized Crime, which has wide-spread international adoption.

Fortunately, UNODC is no stranger to engagement in global health, evidenced by its mandate to participate in HIV/AIDS prevention through its "Think AIDS" campaign and other health activities.(33,34) In addition, a Resolution 20/6 by the UN Commission on Crime Prevention and Criminal Justice specifically requested UNODC to engage in the fight against "fraudulent" counterfeit medicines by conducting research, providing technical assistance to member states, and to cooperate with other international organizations.(4) This resolution in conjunction with a recent UNODC high-level conference of experts on fraudulent medicines makes it clear that

UNODC now has an important role to play in global governance responses to dangerous counterfeit medicines.(32)

UNODC has also effectively partnered with other international organizations, such as Interpol, WCO and key actors in the public and private sector to lead initiatives directly targeting pharmaceutical crime including through multisector law enforcement and border control programs.(35) Importantly, UNODC resolutions have historically supported broad and inclusive stakeholder engagement, extending beyond traditional Member State-only inclusion. Avoiding acrimonious Member State disagreement and competing state interests by focusing on the transnational criminal aspect of counterfeit medicines, UNODC represents a more effective forum for stakeholder collaboration and cooperation that has yet to be fully leveraged.

In addition to UNODC activities, Interpol has had a long-standing and effective role in training, capacity building, investigations, enforcement, and prosecutions against dangerous counterfeit drug purveyors regionally and globally, and should be actively partnered with in any response. Interpol has the ability to mobilize law enforcement, customs and border assets, and also engage with both the public and private sector (e.g., scientific experts, financial institutions, laboratory facilities, and the pharmaceutical industry) to develop “intervention packages” to support on-the-ground operations that directly disrupt the trade of counterfeit medicines in both the regulated and unregulated global drug supply chain.(36,37) Indeed, Interpol has been the central actor in large global seizures of dangerous drugs, and has recently initiated the creation of the 4.5 million euro Interpol Pharmaceutical

Crime Programme as a comprehensive anti-pharmaceutical crime initiative in partnership with 29 of the world's largest pharmaceutical firms.(38)

Hence, both UNODC and Interpol have demonstrated an ability to engage effectively with other non-member state stakeholders on counterfeit medicines where WHO has experienced challenges. This more inclusive approach has resulted in tangible results, including global cooperation in field operations that have led to counterfeit drug seizures, illicit website closures, arrests, and ongoing investigations.(22)

E. ENHANCED GOVERNANCE: TRILATERAL COOPERATION MECHANISM

Currently official programmatic activities of UNODC, WHO and Interpol are operated in isolation or through ad hoc partnerships that lack a formal governance mechanism. Indeed, neither UNODC nor Interpol have observer status in the new WHO MSM. This is despite the fact that UNODC and Interpol have institutional experience cooperating with WHO through initiatives like IMPACT and Interpol operations.(27) This lack of an active cooperation mechanism is worrisome and provides an indication that WHO may no longer be seeking active engagement with other international organizations and actors outside of its Member State Mechanism at a time when it is crucial to have broader engagement.

In order to move forward, the respective technical expertise, international legitimacy, resources, and existing network of partnerships of these organizations needs to be leveraged in a cohesive governance framework. Given UNODC's

strengths as an open governance forum for broader stakeholder mobilization, a trilateral governance mechanism under the auspices of UNODC with active participation of WHO and Interpol should be established.(27)

This could be accomplished by creating a Permanent Trilateral Intergovernmental Working Group comprised of UNODC as the chair, and WHO and Interpol as strategic partners ("Trilateral WG") that would enable coordination and cooperation all within the respective mandates of each organization. A similar governance structure was explored by the WHO's working group of member states on SSFFC in September 2011 but was not further pursued.(39)

The structure could also allow the different organizations to manage appropriate relationship with their own stakeholders, including civil society, private industry, and academia, all within their respective domains (e.g., WHO could manage public health, drug regulatory authority and access to medicine stakeholders; UNODC could interface with private sector actors, customs agencies, and international crime and justice groups; Interpol could primarily engage with law enforcement officials and engage in public outreach/education campaigns).

This structure would encourage specialization of tasks at a high-level and reduction of duplicative efforts. Further, taking a page from law enforcement systems, each organization could establish its own national single point of contact ("SPOCs") within these subject-area domains to enable more effective communication and information sharing from the Trilateral WG to relevant national authorities. Resources to fund activities of the trilateral mechanism and SPOCs could be procured from a

variety of sources subject to individual organizational requirements. Hence, WHO could limit participation and funding that might prove controversial, while UNODC and Interpol might more freely engage in funding mechanisms from both Member and non-Member States. A minimum percentage of collected funds could also be earmarked to support general operations of the Trilateral WG's similar to other proposals for global health governance and financing reform.(31)

The Trilateral WG could also develop specific technical working groups to address key risk and policy factors in the counterfeit medicines trade requiring immediate attention and targeted expertise of select participants. These groups could include programmatic areas of: (1) global surveillance and data collection; (2) regulatory, legal and policy (to strengthen rule of law, enforcement and drug regulatory systems); (3) public outreach and education; and (4) information technology and cybercrime group (to address specific risk factors of Internet-based sourcing).

Specifically, UNODC's recent emergence as an international forum to lead enforcement action against dangerous counterfeit medicines provides an opportunity for better balancing of global health governance through the trilateral mechanism under UNODC's leadership. Using UNODC as the international agency charged with the task of assessing and coordinating actions against transnational criminal activity involving counterfeit medicines can allow WHO to operate as the technical agency it is. WHO can assess and recommend measures to promote public health issues arising from counterfeit medicines and contribute specialized scientific and public health

knowledge to this effort. This could include concentration on core issues of improving safe medicines access, strengthening health systems for better surveillance, developing monitoring and evaluation protocols for sourcing safe drugs, and collecting data and studying the epidemiology of counterfeit drugs to *enhance* UNODC and Interpol efforts, rather than attempting to duplicate them. This could also include enhancement of data collection under the WHO's SSFFC Global Surveillance and Monitoring Project, by harmonizing reporting fields and collecting information from a variety of sources (including drug regulatory and law enforcement authorities) to form a centralized database that would provide a better evidenced-base of global counterfeit drug prevalence.(40)

In addition, this would allow UNODC, in direct partnership with Interpol, to lead the effort on global enforcement against dangerous counterfeit medicines independent of contentious IPR considerations, focusing instead on established criminal activities.(27) WHO could objectively identify incidents that present a global public health danger, without consideration of IPRs, and relate these findings to this enforcement partnership for further action. Hence, WHO's involvement would provide crucial public health information to guide these efforts. UNODC can also actively coordinate and enact policy addressing pharmaceutical transnational crime (including potential applicability of UNTOC), with Interpol mobilizing global law enforcement resources and actively disrupting criminal actors.(27)

Trade and IPR disputes would continue to be heard by the World Trade Organization ("WTO") and World Intellectual Property Organization ("WIPO").

Drugs not fitting the parameters of the dangerous counterfeit drugs group that potentially violate IPRs would be subject to WTO and WIPO dispute resolution procedures and assessed outside of the scope of public health and criminal activity considerations of the Trilateral WG. However, any such assessment should also recognize public health priorities expressed by other international treaties, specifically WTO Trade-Related Aspects of Intellectual Property Rights ("TRIPS") Doha Declaration.(41) These agreements reaffirm rights of member states to exercise TRIPS flexibilities in response to a national health emergency in ensuring equitable access to medicines.

Such division of labor lends itself to better specialization of UN agencies, leveraging their respective institutional strengths and resources, and establishing better global health governance to combat counterfeit drugs. The union of these UN agencies under UNODC leadership through the Trilateral WG mechanism would also bring global coverage to the issue and greater legitimacy to actions given they are multilateral in nature and not merely regional arrangements. Most importantly it separates contentious policy issues such as organized crime and public health from IPR and trade into appropriate international forums that may act collaboratively towards shared social welfare, equity, and justice goals.

F. CONCLUSION

Recognition, coordination, and active engagement of key stakeholders is essential to combat the global health crisis of dangerous counterfeit medicines. Enhanced global health governance and shared responsibility through the

establishment of a UNODC-WHO-Interpol Permanent Trilateral Intergovernmental Working Group may provide a plausible way forward to promote global health security and ensure safe access to medicines.

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Table 2: Regional Increase in Counterfeit Medicine Incidents

Region	2005 Counterfeiting Incidents	2010 Counterfeiting Incidents	% change 2005 to 2010
Africa	21	31	48%
Asia	287	992	246%
Eurasia	164	214	30%
Europe	109	252	131%
Latin America	172	233	35%
Near East	63	129	105%
North America	62	110	77%
Total	**878**	**1961**	**123%**

Table 3: Therapeutic Category and % Increase in Counterfeit Incidents

Therapeutic Category	% change 2005 to 2010
Alimentary	69%
Anti-Infectives	82%
Cardiovascular	196%
CNS	119%
Genito-Urinary	132%
Hormones	12%
Metabolism	110%
Musculo-Skeletal	43%
Respiratory	76%
Other	116%

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Chapter 3. Pharmaceutical e-Marketing and Governance: Illicit Actors and Challenges to Global Patient Safety and Public Health

A. BACKGROUND

Health-related technologies are undergoing an evolution, spurred by the rapid emergence and dominance of the Internet. According to the International Telecommunications Union ("ITU"), there were 2.4 billion worldwide Internet users online in 2011.(1) This growth has led to the development of new concepts in health, including "e-Health", i.e., a multidisciplinary "intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies."(2) Similarly, the concept of "Medicine 2.0" is used to describe interactive social network and consumer-directed use of health-related applications, services, and tools.(3)

These developments have highlighted the benefits of e-Health platforms and related technologies. E-Health can potentially improve health education, outreach, disease surveillance, collaboration, and communication between patients and providers, and support clinical decision-making.(3-9) This can result in improved access and delivery of healthcare services (including in low-income and rural settings), reduce associated healthcare costs, and improve health outcomes through technology investment.(3-9) Consequentially, although challenges remain for its full potential to be realized, e-Health technologies are expanding in global use.(5,7,10)

Indeed, it is clear that the online user is a health information consumer. A

recent Pew Internet survey showed 72% of USA users search for health and medical information online; ~1/3rd use the Internet to self-diagnose their health problems;(11) and recent work indicates one in two Internet users from a survey conducted in 12 different countries self-diagnose health issues.(12)

Yet, e-Health also permits health-related digital marketing and promotion that is of questionable quality, origin and authenticity.(13,14) Globalization and advocacy for free and open information exchange have given rise to an era of pharmaceutical digital marketing ("e-Marketing") and forms of digital direct-to-consumer advertising ("eDTCA"), with the potential to fuel pharmaceutical product demand and pose unaddressed regulatory and public health problems.(13-17) Unfortunately, despite repeated studies demonstrating quality of online health information to be highly suspect, the Internet is increasingly accessed and used for self-diagnosis and treatment by the public.(1,18)

Perhaps most disturbing, vulnerabilities in the current global e-Marketing/eDTCA regulatory structure provide fertile ground for driving dangerous illicit online sales of purportedly safe, legitimate product that may in fact be counterfeit of substandard.(15,19-28) Indeed, an interagency task force has identified these types of fraudulent cybercrime activities as the "crime of the 21st century."(29) Hence, these illegal online pharmacies have been identified as both a global public health and cybersecurity threat.(20,28) Online criminal actors use e-Marketing and eDTCA to drive illicit sales, co-opting legitimate mediums and using them to illegally market their suspect products.(13,28)

Further, as a policy matter, eDTCA oversight has not been well articulated. Policymakers around the world are continuously falling behind the increasing regulatory gap in addressing eDTCA and social media use by both actual manufacturers and illicit online pharmacies.(13,14,23,30) In combination, these sources may together pose unique public health risks based on inappropriately-induced demand, misrepresentation, and exposure to dangerous medicines forms.(13,14,17,22,31-38)

Given these unaddressed concerns, it is essential to map corporate eDTCA to begin estimating its marketing scope, magnitude, reach, and, consequently, potential support of illicit online pharmacies. Further, this evaluation should also take into account the potential mechanisms and infrastructures of illicit online pharmacies to determine characteristics needed to craft effective strategies against them. Importantly, in combination, these assessments can provide insights into governance evaluation and approaches, as well as some guidance for reform.

Consequently, we first assess the growth trends in corporate eDTCA promotion. We then analyze the potential public health risks and patient safety dangers associated with illicit online pharmacies. On this basis, we subsequently review key current global governance efforts attempting to address this issue. Finally, we propose a global governance approach that can provide a foundation to tackle eDTCA, illicit online pharmacies, and their adverse, downstream public health risks.

B. eDTCA TRENDS

IMS Health estimates the global pharmaceutical market to have been worth some $956 billion in 2011.(39) Pharmaceutical firm spending and growth in marketing, including professional promotion (i.e., in-person marketing aka “detailing” to healthcare professionals), product samples, and, importantly, direct-to-consumer-advertising of medical products (“DTCA”) have driven this growth.

Among developed countries, DTCA is legally permitted only in the USA and New Zealand, though forms of direct and indirect promotion to consumers clearly occur outside these settings (e.g., promotional materials, reminder advertisements, “infomercials,” and unbranded advertising campaigns).(13,14,40) Importantly, DTCA has been identified as transmitting across borders in television, lay print media, medical journals, and other marketing, with receiving countries experiencing adverse impacts on healthcare costs and safety.(13-17,41-43) Negative outcomes include dissemination of questionable or misleading medicine information, unnecessary use of expensive prescription products, promotion of pharmaceuticals with questionable safety profiles, as well as negative patient-physician interactions.(14,17,32,36-38,42-46)

Much debate has surrounded pharmaceutical firm DTCA, primarily due to its growth and diversity compared to other forms of promotion.(14,42) Indeed, from 1996-2005, DTCA expenditures rapidly increased 330%; and in the USA alone, an estimated $4 billion was spent on DTCA in 2009.(42) Hence, criticisms have been leveled against the industry and calls for limits on DTCA have emerged.(47) Indeed, calls for DTCA reform mimic the 25 year old WHO Ethical Criteria for Medicinal

Drug Promotion ("WHO Criteria") that first recommended the general prohibition of DTCA.(48)

Yet these arguments – and potential domestic and global regulatory policies based thereon – are dated. Recent information from the market research company Nielsen Co. show USA-based DTCA expenditures declining approximately $900 million from 2005-2010, significantly reversing earlier growth (**Graph 1**). Other top line open data sources and market research firms, including IMS Health and Kantar Media, show similar declines over this period. There may be even greater reductions in specific categories; however, access to detailed marketing data is not publicly available. Indeed, marketing consulting companies other than Nielsen Co. (i.e., SDI, IMS Health, Cegedim, and Kantar Media) have not responded to academic requests for DTCA data for research purposes.[*]

Even this rather limited data allows conclusions to be drawn. Expenditures are dropping because direct, focused Internet use is clearly the emerging, preferred marketing tool, both to increase catchment and decrease costs.(13,47) Although overall DTCA spending has indeed declined on the order of a billion dollars, Internet-based eDTCA has in fact experienced an *increase* of 109% from available data covering 2005-2009 (**Table 4**). eDTCA is steeply rising because it effectively and efficiently markets to consumers where they increasingly seek health information and products – online.

[*] Data requests were made by the authors to these marketing firms in January 2013 with follow up requests made in March to email contacts. These requests went unanswered other than by the Nielsen Co. in January 2013.

Consequently, this shift has most likely captured millions, if not billions, of additional consumers across geopolitical borders through Internet-based DTCA. Indeed, the FDA recently conducted a survey of some 6000 adult Internet consumers and found that 23% of them reported purchasing a prescription medicine online.(24) Of these online drug consumers, 15% reported they would consider purchasing from an online pharmacy outside the USA, despite the fact that WHO, FDA, various other organizations, and 70% of the very people reporting that engage or would engage in this activity, viewed the medications as a health risk.(1,24)

Cross-border eDTCA marketing has not been actively restricted in receiving countries.(2,13,14) Moreover, with growth in Internet forms outpacing other forms of medicines promotion,(49) the practical and technical limitations of the ability for individual countries to control proliferation of eDTCA in all its forms is questionable. This lack of digital regulation also allows for the entry of illicit online pharmacies that utilize existing and innovative eDTCA marketing and hence represents a unique, dangerous phenomenon unaddressed in global e-commerce.

C. eDTCA and ILLICIT ONLINE PHARMACIES

Coalescence and Expansion of Illicit Marketing

Beyond identified manufacturer DTCA and its potential adverse impacts, expanded and globalized eDTCA has resulted in the coalescence of authorized manufacturer-based eDTCA and illicit eDTCA by illegal online pharmacies. This has created the perfect storm of global marketing, but with limited ability of consumers to differentiate from these disparate sources.(13,14,18,28) Both manufacturers and illicit

online actors now confusingly advertise the same, high demand medicines needed in both developed and developing countries. This subjects vulnerable patient populations with limited access and resources to a wide range of counterfeits, including medicines subject to global shortages, WHO essential medicine vaccines, non-communicable disease medicines, contraceptives, as well as medical screening and diagnostic tests.(13,15,26,50-55)

The problem of illicit online pharmacies using eDTCA is particularly reified by the massive and widespread illegality of these sellers. In March, 2013, the USA National Association of Boards of Pharmacy ("NABP") released its study of approximately 10,000 websites, reporting 97% of them did not meet adequate pharmacy laws and practice standards and 86% of these not requiring a valid prescription.(56) This most recent assessment by the NABP reveals that there has not been a reduction in the presence of suspect providers.(56) An earlier World Health Organization ("WHO") report also estimated greater than 50% of websites failing to disclose their physical address sell dangerous misrepresented, illicit forms.(18) These illegal vendors use a variety of means to induce illicit purchases, but, as most research suggests, the majority focus on "no prescription required" approaches.(13,14,18,20)

In addition, increasingly social media forms of eDTCA have been identified as a platform for the promotion of illicit online pharmacies. This includes the use of popular and globally visited sites of Facebook and Twitter that have widespread global use.(13-17,57,58) A recent study examined the vulnerabilities associated with social media technologies, and found that illicit eDTCA promotion by a fictional online

pharmacy was easily accessible and reached a number of global users in diverse countries, including developed countries, low-and-middle income countries ("LMICs"), as well as emerging "BRIC" countries (Brazil, Russia and China).(59)

Governance Priority: Illicit eDTCA

Although there is potential for harm from both legal manufacturer and illicit online pharmacy eDTCA, the illicit online marketing sphere should be the priority in global health diplomacy and governance efforts. There is, for the most part, no domestic means to ensure accountability for illegal and harmful actions by these criminal actors originating across geopolitical lines.(13-15) Practically speaking, even assuming there are empowering applicable laws, online pharmacies with a physical or infrastructural presence outside of a nation's jurisdiction may not be reachable to regulate or police, compared with legal companies that are multi-national and accountable to regulatory mandates given their long term goals of market presence and sales.(18,20,28,29) In comparison, illicit online pharmacies completely bypass domestic criminal laws, national medicines regulatory systems, local law enforcement, and traditional public health access controls (e.g., protecting children and adolescents), since they are digitally virtual, easily anonymized, and market and sell directly to consumers outside professional oversight.(18,20,28)

The global vacuum of effective governance and regulatory approaches against illicit online pharmacies and their eDTCA has predictably attracted large criminal networks. Consequently, illicit online pharmacies threaten state sovereignty and global security due to their association with transnational organized crime syndicates, as well

as cybercrime and cybersecurity threats.(13,28) For example, in one detected and prosecuted case, the Russian Mafiya used online pharmacy distribution, massive email spam, and introduction of computer viruses to produce greater than $150 million in profits from illicit online pharmacy operations before it was brought down.(60) Yet this is a case of *successful* detection and prosecution of an illicit online pharmacy eDTCA effort. The majority of pharmaceutical crime goes undetected and/or undeterred. This unappealing but sobering conclusion is supported by NABP results and the growing and extensive e-Marketing observed through spam and other solicitations that act as a vehicle for fraud, phishing scams, viruses, malware, and spyware, often targeting vulnerable consumer groups.(13-15,18) Indeed, close to 1/3rd of spam messages are health-related, generally eDTCA originating from suspect online pharmacies.(61)

Ineffective Governance Efforts

Virtually all stakeholders, including WHO, the UN Office of Drugs and Crime ("UNODC"), the International Criminal Police Organization ("Interpol"), the USA Food and Drug Administration ("FDA"), NAPB, the USA Federal Bureau of Investigation ("FBI"), the International Pharmaceutical Federation ("FIP"), the European Federation of Pharmaceutical Industries and Associations, the Pharmaceutical Research and Manufacturers of America, the Generic Pharmaceutical Association and numerous other public and private sector groups have specifically recognized the global challenges posed by the Internet and suspect online

pharmacies.(20,40,62-68) Yet few solutions have emerged to confront this form of globalized pharmaceutical crime.(13,18,28)

Further, strategic approaches are complicated given the unclear applicability of domestic laws and enforcement in the Internet service sector. For example, although this criminal activity is perpetrated by a host of clearly criminal actors, other players, including Internet Service Providers, search engines, social media platforms, hosting companies, payment processors, etc., are supporting illicit online pharmacy activities. These other organizations often span multiple jurisdictions and legal regimes (including those that exempt them from liability, such as in the United States) making it difficult to detect, prevent and engage in enforcement efforts against illicit online pharmacies at the domestic level. (13,14,20,42,47),

D. SOVEREIGN REGULATORY EFFORTS

Sovereign Regulatory Vacuum: WHO Global Observatory for e-Health Survey

Legislative responses from national governments to address the proliferation of illegal online pharmacies and their marketing have been largely absent. Though sovereign drug regulatory authorities usually regulate prescription drugs and medical products sold by traditional brick-and-mortar pharmacies, most have failed to regulate online pharmacies as a distinct category.(18,42)

For example, a recent Member State survey by the WHO Global Observatory for e-Health ("GOe") found 66% of respondents had no legislation either explicitly allowing or prohibiting Internet pharmacy operations.(18,47) Of those countries

regulating online pharmacies, a mere 19% prohibited this practice, and indeed, 7% allowed it without adequate law enforcement considerations.(18,48)

Importantly, developing countries, with fewer resources, were more likely to be silent on regulation of this public health risk.(13,18,47) Indeed, the vast majority of respondents (86%) did not regulate, accredit, or certify Internet pharmacy sites, and 75% had no regulations permitting or prohibiting the online purchasing of pharmaceuticals from other countries, a practice which has already been identified as creating significant and demonstrable health risks.(18,20,24) Even among the few countries that prohibit online foreign sourcing, only 20% of this group had specific law enforcement consequences from such practice.(18)

Sovereign Regulatory Inadequacy: USA

Even if a country has enacted specific legislation, such efforts may be inadequate and outdated to effectively deal with the rapidly changing pace of the Internet environment. As an example, the USA, which has a strong drug regulatory regime, including extensive technological access and sophisticated detection knowledge, enacted the Ryan Haight Online Pharmacy Consumer Protections Act in 2008, regulating the online sale of controlled substances.(20,23) Yet on closer inspection, this law has significant limitations given the online sphere.(20)

For example, the Act is limited in scope to only USA Drug Enforcement Administration-scheduled controlled substances, not the wide variety of dangerous, unregulated communicable and noncommunicable medicines currently being illicitly sold over the Internet.(20,23) It also limits its oversight to those illicit sellers in the

USA, despite the observation that the bulk of these illicit marketers and sellers are outside the country.(20,23) Further, it attempts to address the concern of illicit access by mandating prescriptions by these online pharmacies.(20,23) Yet this simply provides additional eDTCA opportunities for profiteering by these criminal actors, who now also advertise and sell illegitimate prescriptions together with their illicit medicines.(20)

E. VOLUNTARY MECHANISMS

There have been voluntary guidelines issued to address DTCA and other form of medicines promotion. For example, the WHO Criteria for Medicinal Drug Promotion provides basic aspirational tenets.(48) While these criteria were focused on legitimate actors, the principles contained therein are relevant, if not somewhat prosaic, to current illicit online pharmacy promotional activities. These guidelines indicate that DTCA medicines promotion should: (a) be reliable, accurate and truthful; and (b) not contain misleading statements or omissions that would give rise to risk.(69)

Despite their seeming uncontroversial, foundational nature, decades after introduction of the WHO Criteria, WHO surveys have found a tremendously large fraction (~1/3rd) of countries have little to no regulatory oversight over pharmaceutical promotion.(40,43) Further, even more concerning, fewer countries have adequate capacity or resources to regulate either licit or illicit pharmaceutical promotion,(40,43) exposing their citizenry to the well-recognized harms associated with DTCA and eDTCA.

Crucially, the WHO Criteria also does not specifically address the emerging challenges of the Internet as a medium. Its voluntary nature highlights certain global governance limitations for illicit online pharmacies where criminal actors dominate this space. Since guidelines only hold potential influence for good faith actors, these voluntary efforts, and those such as the NGO HealthOntheNetFoundation Code of Conduct ("HONcode") recommending that websites voluntarily adhere to certain principles and undergo certification to ensure quality of online health information, fail to address the criminal source of the problem.(18)

Other voluntary efforts are marginally better because they identify specific, legitimate online pharmacies that have undergone credentialing and necessary inspection requirements. For example, credentialing agencies partnering with national drug regulators, such as NABP and the Royal Pharmaceutical Society of Great Britain, have created their own programs. They also maintain lists of suspect online pharmacy websites for consumer use.(18,20,25) The European Parliament has attempted to specifically address illegal Internet sales of drugs through Directives developing enforcement measures and differentiating illicit actors from legitimate sources through credentialing and a common logo.(70) However, participation in these programs has been limited, and consumers have limited knowledge of the value of these programs in online sourcing behavior.(18,20)

F. GLOBAL CRIMINAL ENFORCEMENT EFFORTS

Although national online pharmacy legislation and voluntary governance initiatives to regulate global pharmaceutical promotion have been limited in

effectiveness, criminal law enforcement efforts targeting illicit online pharmacies coordinated by international organizations such as Interpol and the UNODC have shown promise.

Recently, Interpol, the world's largest international police organization, announced a comprehensive multimillion-dollar global initiative to fight pharmaceutical crime in cooperation with 29 of the world's largest pharmaceutical companies.(71) This follows Interpol anti-counterfeit activities such as "Operation Pangea V", a multi-stakeholder initiative involving law enforcement, the pharmaceutical and wholesaler industries, the Internet service sector, credit card companies, health regulators and customs agencies cooperating to target enforcement against illicit online drug sellers.(64) Operation Pangea V resulted in 3.75 million illicit and counterfeit drugs confiscated, shut down of greater than 18,000 websites, and placed under investigation or arrested 80 individuals.(64) This success represents a marked increase in online enforcement activity since Operation Pangea II in 2009, which resulted in shut down of 153 websites and 12 arrests/individuals under investigation.(64)

UNODC has also taken an active role in the global fight against transnational organized crime involved in the trafficking of counterfeit medicines.(72) A recent partnership with the International Narcotics Control Board called upon governments to engage in enforcement against illicit online pharmacies. (73) The emphasis was on enforcement and prevention of online pharmacy use of social media marketing to

target youth and children, one of the few times there has been international recognition of the emerging threat of illicit use of eDTCA.(73)

Despite Interpol and UNODC-led international efforts, the lack of global coordination toward sustained and internationally agreed upon multilateral/multistakeholder mechanisms for proactive identification, prevention, and enforcement against illicit online pharmacies, their marketing, and their global sales has allowed these highly organized virtual criminal actors to remain active worldwide and the flow of dangerous counterfeit medicines to go largely unchecked. However, Operation Pangea is a potentially successful model of partnership and collaboration among the wide range of digital global medicines supply stakeholders and may be leveraged for future efforts. Indeed, without multilateral/sector cooperation, it is simply impossible to target and disable all relevant technologies supporting illicit online pharmacies.(28)

Operation Pangea is not the only successful public private partnership model ("PPP") governance mechanisms in the battle against criminal syndicates in the counterfeit medicine trade. WHO's International Medical Products Anti-counterfeiting Task Force ("IMPACT")(74) was a watershed moment in global health diplomacy, coordinating 160 different public, private, non-governmental, and patient groups. Unfortunately, it failed due to the political and economic self-interests of WHO Member States.(74) WHO Member States have since terminated WHO's participation in IMPACT and have replaced it with a new Member State-only governance mechanism.(75)

Other PPPs have begun to emerge. For example, the Alliance for Safe Online Pharmacies ("ASOP") and the Center for Safe Internet Pharmacies ("CSIP") are attempting to coordinate efforts focusing on illicit online pharmacy marketing and sales.(77,78) In addition, countries such as China have also engaged in public-private collaboration, recently forming a partnership between Chinese search engine Baidu and the State Food and Drug Administration to provide online certification and search results identifying legitimate online pharmacies.(79) However, without coordination across geopolitical lines, the effectiveness of these programs remains to be seen and could be limited at best.

G. GLOBAL GOVERNANCE

These results indicate sovereign-based online pharmacy regulation, voluntary efforts, and PPPs have not been adequate to effectively identify nor address illicit online pharmacies, expanding unregulated eDTCA, or associated global criminal activities that adversely impact public health. Illicit online pharmacy use of eDTCA explicitly involves criminal actors that utilize false and misleading information meant to induce unjustified and unsafe use of medicines, concerns that are clearly outside of the general principles of ethical standards enshrined in the WHO Criteria. Improved global governance is therefore urgently needed.

Inclusive governance infrastructures to combat the IT and financial forces behind the highly organized trafficking of counterfeit medicines over the Internet are imperative.(13,28) Illicit global trafficking of these unsafe products online directly impacts individual patient and population-based health outcomes. Consequently,

although a public health concern, combatting it must engage law enforcement strategies and specialized partners to reflect the criminal nature of the perpetrators, global networks of conspirators, technical nature of the crime, and health harms that ensue from these illicit activities.

An effective solution begins with enhanced and inclusive governance mechanisms engaging multidisciplinary actors from public health while coordinating with IT and law enforcement entities empowered to fight transnational organized forms of cybercrime. Leveraging existing Internet governance structures, raising awareness of the cybercriminal nature, and creating a new paradigm for "e-Health Governance" can be part of an overall strategy to address this digital pharmaceutical crime.

Existing Global Internet Governance

"Internet governance" is a relatively new phenomenon. Conceptually, it is defined as the establishment of shared principles, norms, rules, decisionmaking procedures and programs developed by governments, the private sector, and civil society on the use and evolution of the Internet.(80) Reflecting a heretofore unseen decentralized, multi-stakeholder, multi-country, interconnected, vulnerable, and autonomous group of actors, the UN has made Internet governance a global priority despite its highly challenging nature.

Beginning in 2005, the UN-initiated World Summit on the Information Society ("WSIS") established the Internet Governance Forum ("IGF") to engage, in an open and inclusive manner, multiple stakeholders around an Internet governance policy

dialogue.(81) Importantly, IGF led to inclusion of an expanding set of international Internet policy issues for debate. Originally, Internet governance focused narrowly on technical aspects (e.g., protocols, infrastructure), but now has evolved to include international policy development on issues such as security, stakeholder information exchange and engagement, and, crucially, finding solutions to issues arising from the misuse of the Internet.(82)

IGF has been successful in engaging a wide array of stakeholders, including national governments, the private sector, civil society, academia, and other technical communities.(82) Importantly, these include public health, law enforcement, and Internet experts and groups such as ICANN, Interpol, ITU, WHO, the World Wide Web Consortium, Council of Europe (with its own counterfeit medicines treaty, the Medicrimes Convention, open for any country to sign and ratify(83)), Hewlett-Packard (which has developed its own mPedigree mobile medicines authentication system), and numerous others that participate in the WSIS.(84)

As a UN Summit, WSIS is relatively flexible, allowing primary agenda setting by UN Member States, broad engagement with other UN agencies, while intergovernmental organizations, accredited civil society and private sector entities, and other associated entities can participate as observers.(81) However, IGF's structure is much more developed and inclusive, with a Multistakeholder Advisory Group comprised of members from national governments, civil society, the private sector, as well as academic and technical communities that provide information directly to the UN Secretary General on programmatic activities.(85)

A Foundational Proposal: e-Health Governance

Extant Internet governance approaches are very useful in addressing online health activities. WSIS and IGF's structures and WSIS's plan of action all have stated goals of building an "inclusive Information Society" promoting international and regional cooperation, incorporating PPP models into its action plans, promoting e-Health technologies and quality of online health information, and *expressly* noting the need to take appropriate measures to combat illegal and harmful media content.(86)

Building upon this emerging Internet governance framework, we believe an enhanced "e-Health Governance" model can be created, beginning a coordinated and focused effort to address the illicit online pharmacies and their fraudulent and misleading eDTCA. Foundationally, this would entail promoting global health diplomacy efforts in all Internet governance activities, consistently considering how to counter criminal online pharmacies, international crime networks, and eDTCA misrepresentation while promoting public safety and protection surrounding e-Health.

At the beginning, e-Health governance should be shaped like the more inclusive IGF infrastructure and include its broad membership. This is both most acceptable and apt, as IGF stakeholders have already begun a discussion regarding eDTCA regulation, counterfeit medicines in developing countries, pharmaceutical authentication technologies, and fraudulent commercial practices of illicit online pharmacies in the context of international trade, privacy and security, digital access, and improving Internet governance.(87-89) IGF is an extant, well-accepted, functional, and a broadly competent group that can garner efficiencies as well as avoid

limitations of Member State-centric exclusive governance approaches such as the WHO new Member State Mechanism on substandard/spurious/falsely-labeled/falsified/counterfeit medical products.(75,90)

However, beyond IGF infrastructure and membership, crucial to the success of e-Health governance must be a focus on illicit online pharmacy networks, transnational crime, and cybersecurity. Here, the UNODC is well situated to coordinate IGF partner efforts.

First, UNODC is the lead UN agency combatting global organized crime networks, including trade in counterfeit medicines. Importantly, it has widespread political support.(91) Second, UNODC is empowered by the UN Convention against Transnational Organized Crime ("UNTOC").(63,92) UNTOC allows UNODC to address serious global crimes, including human trafficking, smuggling, and illicit manufacture and trafficking of dangerous materials.(63) UNTOC also has near universal global adoption; 174 Member States are party to the Convention. Under UNTOC, UN Member States commit themselves to enact domestic laws against organized crime and collaborate internationally to fight against criminal networks.

UNODC and UNTOC have recently converged regarding addressing illicit online pharmacy and fraudulent eDTCA cybercrime–focused issues. At the 2011 20th Session of UN Commission on Crime Prevention and Criminal Justice, three resolutions were adopted that clearly have reinforced global empowerment of UNODC to fight illicit online pharmacy activities and its fraudulent eDTCA: Resolution 20/4, "Promoting further cooperation in countering transnational organized

crime," Resolution 20/6, "Countering fraudulent medicines, in particular their trafficking," and Resolution 20/7, "Promotion of activities relating to combating cybercrime, including technical assistance and capacity-building."(93) Each Resolution contemplates and calls for UNODC leadership based on its unique capabilities, empowerment, transnational experience and/or its successful, inclusive partnerships with other stakeholders.

Leveraging its support and empowerment, UNODC could engage IGF and WSIS stakeholders to promote e-Health Governance investigation, detection, and coordination activities against illicit online pharmacies and their misleading eDTCA.(94) Further, a UNODC-IGF infrastructure could spearhead additional legal and enforcement capacity by creating model national legislation to address criminal oversight of online pharmacies, particularly given the current absence of regulatory development in the vast majority of countries worldwide.(18)

Once established, several matters could be on its early agenda. We believe five fundamental matters should be addressed as permanent agenda items in UNODC-led e-Health Governance efforts, and particularly at the outset. They focus upon security, diplomacy, partnerships, credentialing, and criminal surveillance strategies.

1. *e-Health Security.* Establish a Dynamic Coalition Working Group to urgently develop a "best practices" or similar available set of recommendations regarding Internet health security and access. This will be a living document that should be revisited as experience grows in this sector.

2. *Global Health Diplomacy.* UNODC-IGF coalition should have permanent membership on the Multistakeholder Advisory Group to advise the UN Secretary General. As such, it should also participate in and advocate for e-Health Governance in future WSIS regional preparatory meetings, WSIS+10 High Level Meeting in 2014, and Overall Review of the Implementation of WSIS Outcomes in 2015, focusing the serious public health and cybersecurity concerns from illicit online pharmacies.
3. *PPPs.* The spectrum of stakeholders adversely impacted by illicit online pharmacies and fraudulent eDTCA is wide. Consequently, UNODC-IGF should engage a similarly dynamic set of stakeholders as part of UNODC's broadly accepted mandate to address this issue. PPPs that specifically address the cybersecurity and criminal aspects of illicit online pharmacies through active participation of UNODC, Interpol, WHO, the global and generic pharmaceutical and wholesaler industries, the Internet service sector, as well as other stakeholders should be the first priority in creating these PPPs.
4. *Credentialing for Consumers.* The extant systems and experiences of credentialing safe, legitimate online pharmacies should be explored for patient safety purposes. The NABP VIPPS program as well as EU systems should be compared and determination of a potential global standard considered. Other alternatives that promote easy consumer verification of legitimate entities should also be explored.

5. *Internet Criminal Surveillance.* Because of its unique technical expertise regarding the Internet and transnational organized crime experience, UNODC-IGF should identify and incorporate current global communication technology surveillance and enforcement strategies. These could include, for example, web crawlers for detection, anti-spam filters, IP blocking, suspension of electronic financial transactions/processing, possible utilization of generic top-level domains for accreditation purposes, as well as other strategies to combat illicit online pharmacies and their fraudulent eDTCA marketing.

Through this infrastructure and permanent agenda, dynamically adjusted and amended, a UNODC-IGF governance solution can begin the process of creating effective legal and technical barriers against global illicit online pharmacies and their eDTCA use.

H. CONCLUSION

As illicit online pharmacies continue to proliferate and target patients globally with misleading and fraudulent forms of eDTCA, multistakeholder-based governance efforts must be created to effectively address this dangerous form of cyber and public health crime. The focus of any e-Health Governance approach must be on ensuring appropriate competencies and leadership are included, leveraging of resources, and the coordination and cooperation between public health, information technology, and law enforcement entities. Using UNODC in combination with IGF provides such an opportunity. It is essential that the world moves together to address the unprecedented

threat illicit online pharmacies and their eDTCA represent. By promoting health and security in all forms of Internet governance, eHealth governance systems can develop dynamically to ensure global patients are safe from dangerous, misrepresented medicines online today, tomorrow, and for future generations to come.

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Table 4: % Change in Categories of USA DTCA Expenditures (2005-2009)

DTCA Category	Percentage Change (2005-2009)
Total television*	-13.20%
Total print media^	2.18%
Total radio outlets#	-30.65%
Outdoor ads	-12.06%
Internet	108.98%
Total DTCA expenditure	-7.83%

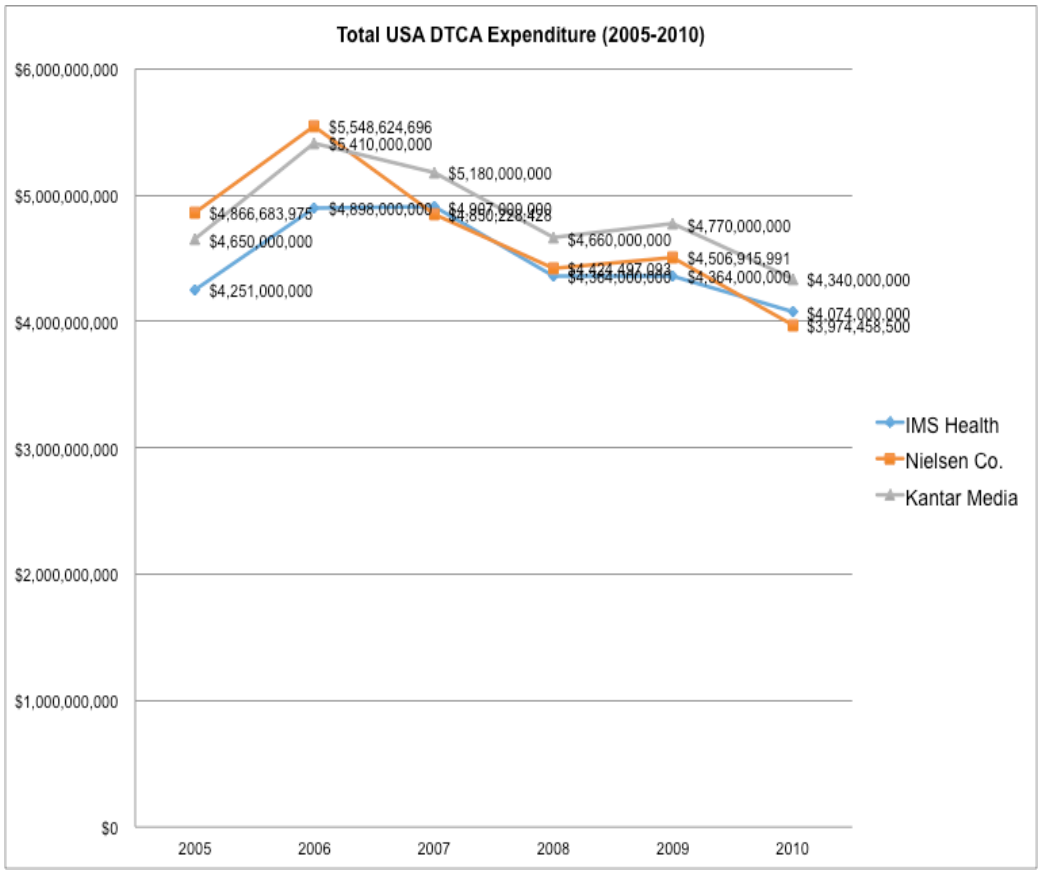
* Includes network, cable, sydicated, and spot TV ads. Excludes Spanish Language

^ Includes national magazine, local magazine, national Sunday supplement, local Sunday supplement, national newspaper, and local newspaper

Includes network and spot radio ads

Source: Nielsen Co. data sourced from fee-based PharmLive Report

Graph 1: Total USA DTCA Expenditure (2005-2010)



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