
Original Article

Preparedness as a technology of (in)security: Pandemic influenza planning and the global biopolitics of emerging infectious disease

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Abstract This article takes as its starting point the idea that re-emerging infectious disease has become a paradigmatic way of thinking about disease. The framing of infectious disease as a threat to global public health and economic security coincides with preemptive forms of control. A particular type of preemptive regulation is global pandemic influenza planning that entails the governing of an imminent, albeit uncertain, global health event. We examine the discourse of 'preparedness' within pandemic planning documents produced by the World Health Organization from 1999 to 2009. We present key findings on: the construction of the influenza virus in terms of its potential to transform and expand across corporeal and territorial boundaries; and the integration of pandemic preparedness into everyday practices. Our analysis illustrates how the discourse of preparedness links the justification for population-level preemptive approaches to discursive constructions of the virus. By articulating this relationship, this article contributes to understandings of the implications of 'molecular' constructions for the biopolitical regulation of the global population.

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Introduction

From the late 1990s onward, considerable planning and financial investment have been directed toward the mitigation of the social and economic impacts of a



potential influenza pandemic (Sakaguchi, 2005). Spearheaded by the World Health Organization (WHO), the increasing allocation of resources toward this problem has been rationalized, in part, by the prediction that a global influenza pandemic could result in an unprecedented number of deaths worldwide. Pandemic 'preparedness' embodies a preemptive approach to the regulation and control of emerging infectious disease that involves generating responses to predictions concerning a future event that is both exceptional and highly uncertain.

Transnational organizations, such as the WHO, are particularly influential in setting planning priorities for countries and regions that are oriented toward preparedness. Between 1999 and 2009, the WHO published four key planning documents that articulate a rationale for pandemic influenza preparedness and various models of pandemic phases (for example, pandemic, post-pandemic, interpandemic) (World Health Organization (WHO), 1999, 2005, 2009a, b). These phases are used to designate pandemic risk and structure global health activities according to 'preparedness' or 'response' measures. The design of an interpandemic and post-pandemic period means that planning activity and investment may occur before, and following, the actual pandemic event. These documents, which define when viral threats should be considered pandemic and guide the nature of appropriate responses, have changed over time. The model presented in WHO (2005), for example, expands the interpandemic phases to include animal, in addition to human, infection; correspondingly, preparedness plans were re-oriented to focus on both human and animal-human relations. Another key change is the way in which 'non-health' sectors were integrated into planning exercises in the 2009 pandemic influenza plan.

Critical social science research has made important contributions to understanding the development of global responses to emerging infectious disease within the context of global capitalist economies generally, and in relation to theoretical understandings of preemption and securitization (for example, Hinchcliff and Bingham, 2008; Weir and Mykhalovskiy, 2010). This article contributes to this body of critical scholarship by providing an empirical examination of how the global governance of risk for pandemic influenza is conceptualized in WHO pandemic influenza planning documents. Drawing specifically on the theoretical concepts of biopolitics, risk and security, we examine the discourse of 'preparedness' as it is expressed in these documents in order to expose the rationale that is provided for preemptive approaches to pandemic risk management, and explore how this rationale is legitimized. On the basis of a critical discourse analysis (CDA) of these documents, our analysis illustrates how the discourse of 'preparedness' links the justification for population-level preemptive approaches to particular constructions of the virus. By articulating this link, these findings contribute to understanding the implications of particular 'molecular' constructions (for example, of the virus) for the



biopolitical regulation of populations across corporeal and territorial boundaries. Our analysis sheds light on pandemic preparedness as a mode of governing uncertain and unpredictable viral threats to global public health and economic security. Analysis of the objectives and effects of pandemic planning, such as that outlined in WHO preparedness planning documents, opens up a space for critical dialog regarding the broader assumptions and values underpinning such modes of governance.

The article is structured as follows: first, we situate our analysis in relation to literature on the securitization of emerging infectious disease and provide an overview of the theoretical and conceptual framework underpinning this analysis. We then describe the study methodology and present three constructions that emerged from our CDA: (i) viral circulation and pandemic potentiality; (ii) viral expansion and boundary transgressions; (iii) integration of pandemic preparedness into everyday practices and structures. We then discuss the implications of these findings for understandings of pandemic influenza preparedness as a technology of insecurity that necessitates an ongoing preemptive response to a virus that is constituted as uncertain and unpredictable, and as in opposition to the health and economic security of the global body politic.

The Securitization of Emerging Infectious Disease

In the late twentieth and early twenty-first centuries, the emergence and re-emergence of infectious diseases worldwide (for example, AIDS, BSE, SARS and Tuberculosis) has challenged the assumption that chronic diseases should be the primary focus of public health interventions in highly industrialized countries, given developments such as vaccination programs and improved standards of living (Farmer, 1999). Representations of the emergence of novel infectious diseases (for example, SARS) and re-emergence of previously controlled disease (for example, tuberculosis) reflect deep-seated cultural values about geopolitical relations. Notably, pathogens are thought to originate somewhere other than the global North and exert their threat through interconnectedness within the globalized economy (Weir and Mykhalovskiy, 2010; Farmer, 1999) and through international migration, with consequences for nationalist identities and economic agendas (Craig, 2007). In this context, research on the *securitization* of disease (Elbe, 2005; Fidler, 2007; Davies, 2008; Labonte, 2008; Elbe, 2010) examines understandings of infectious disease governance as co-constituted with broader configurations of national security. Focusing on SARS, Hooker and Ali (2009) frame the *securitization* of emerging infectious disease in terms of the 'new normal', which imagines the world as 'newly insecure', with consequences for possible ways of imagining and responding to uncertainty. The 'new normal'

emerges in the context of both neoliberal policies that emphasize and prioritize individual freedom in relation to risk management, and neoconservatism that 'justifies the reimposition of authoritarian government in order to maintain security' (Hooker and Ali, 2009, p. 121). This scholarship recognizes that biosecurity threats are particularly salient in the context of a post-9/11 environment and suggests that the alignment of (national) security issues with infectious disease governance reflects the increasingly blurred boundaries between military security practices (for example, intelligence surveillance) and global health functions (for example, infectious disease surveillance) (King, 2002; King, 2003; Elbe, 2005; Cooper, 2006; Ingram, 2008a, b).

While the connection between security and infectious disease regulation historically pre-dates the September 11th terrorist attack on the United States, such occurrences further legitimize the technologization and militarization of public health practices in the management of emerging infectious diseases (Cooper, 2006; Monahan, 2006; Ingram, 2008a, b). Thus, the connection between emerging infectious disease and bioterrorist threats is important for the kinds of interventions it enables in the name of 'public health' (Thacker, 2006), as evidenced by the reallocation of resources toward preemptive biodefence programs. Moreover, the legitimacy of infectious disease threats, accompanied by investment in governing these threats in the global North, can be understood as intimately connected to the security and economic agendas of nation states (Fidler, 2007). In effect, this intersection of public health, national defense and economic priorities has made possible considerable investment in specific interventions of securitization. In the context of declining government intervention and the individualization of responsibility for health and well-being, there has been a corresponding investment of public funds into the stockpiling of vaccines by wealthy countries, which has contributed billions of dollars to the pharmaceutical industry (Monahan, 2006, p. 101). These kinds of public health agendas have replaced social programs that target the underlying causes of health inequalities, and can be understood, further, as creating new speculative possibilities for profit by private interests (Hooker and Ali, 2009).

Contemporary approaches to managing *emerging* infectious disease represent a new form of governing uncertainty and disease in which interventions shift from targeting *known* diseases to those projected to occur at some future time (Weir and Mykhalovskiy, 2010). This form of governing is concerned with both existing and novel sources of threat, and is organized in relation to the *potential* inherent in the biological latency of disease, 'a latency that is also social, political and economic' (Thacker, 2006, p. 4). At the same time, preemptive responses that characterize specific interventions undertaken in the name of collective health represent a widely accepted form of regulation, and, thus, require problematization in terms of their broader effects. The dominance of



preemptive approaches in response to emerging threats, such as infectious disease, acknowledges,

our absolute, uninsurable exposure to an uncertain future...[T]he doctrine of pre-emptive warfare assumes that the only way to survive the future is to become immersed in its conditions of emergence, to the point of actualizing it ourselves. (Cooper, 2006, p. 125)

This insight is key to our analysis, because it suggests that organizations that govern emerging threats, such as the WHO, are implicated in the actualization of conditions of pandemic emergence, a 'reality' that is widely understood as both imminent and a force of 'nature'. As we go on to illustrate, in WHO documents, representations of 'the biological' (and, consequently, emergence) enable and constrain specific possibilities as responses to the problem of a future pandemic.

Our argument is founded on a Foucauldian notion of the relationship between power, knowledge, discourse and materiality (Foucault 1991, 1980b). Discourses do not merely represent social phenomena, such as pandemic. Rather, they constitute phenomena as political, legal, health and/or social 'problems' through their reliance on particular forms of knowledge and expertise (for example, scientific, legal). Discursive framings thus legitimize particular ways of understanding such 'problems' by demarcating their constituents and limits, and place boundaries on the possibilities for what is viewed as legitimate courses of action and intervention. In this sense, discourses on pandemic (for example, that circulate through policy documents or media representations) make particular truth claims about the reality of such phenomena, and thus are implicated in the very creation of pandemic. This *actualization*, as described by Cooper (2006), is brought into sharp relief by the problematization of 'pandemic', which emerged as the target of interventions (for example, preparedness) long before it had materialized as pandemic H1N1 in 2009. By featuring pandemic as a global health issue that required a response, the WHO was central to representing the conditions of reality that framed possible interventions into pandemic, well in advance of its actual emergence. This actualization was enabled by the WHO's connection to pharmaceutical companies that develop and manufacture the anti-viral drugs and vaccine that are central to the proposed response (Cohen and Carter, 2010).

While this article's focus is on WHO documents that position pandemic as the target of intervention, we acknowledge that the conditions of materiality are framed by multiple actors beyond the WHO (see French and Mykhalovskiy, 2013; Stephenson *et al*, 2014). Nevertheless, we contend that the WHO played a central role in summoning nations to increase their preparedness in order to fulfill their obligations within a global system that, as we will go on to suggest, has come to be defined by mutual vulnerability through discursive constructions of viral uncertainty and circulation. In what follows, we examine pandemic

influenza planning as a specific case of governing emerging infectious disease through the discourse of preparedness. We situate our analysis within the theoretical context of the biopolitical regulation of the global population, which we outline below.

Global Biopolitics, Security and Risk

Generally referring to a configuration of modern power that operates through the administration of life, rather than the sovereign tendency to negate or limit life, biopower joins two constitutive axes in the organization of power over life, which is deployed throughout the social body. The first axis includes practices of power that focus on the individual body as the target of disciplinary control (anatomopolitics); the second axis includes technologies of power that focus on the regulation of the population and its vital characteristics (biopolitics). In distinction from disciplinary power, which aims to control the minute details of the individual body through techniques of examination, surveillance and normalization (Foucault, 1975), biopolitics takes the body politic as its object and target. In this sense, biopolitics focuses ‘on the species body, the body imbued with the mechanics of life and serving as the basis of biological processes’ the supervision of which is ‘effected through an entire series of interventions and *regulatory controls: a biopolitics of the population*’ (Foucault, 1980a, p. 139). Such regulatory controls include intervention into biological characteristics that have discernible patterns at the collective level and are enacted with the purpose of securing an optimal state of life in populations as the object of political strategy (Foucault, 2007, 2003). Thus, the main objective of the biopolitical state is the security of the population (in terms of health, longevity and economics).

The biopolitical regulation of the population coincides with the emergence of liberalism in the late eighteenth century, which, according to Foucault (2007), ‘provides the “general framework of biopolitics”’ (p. 383). In this regard, the biopolitical security apparatus organizes and regulates the ‘natural’ features of the populations in relation to the liberal conceptualization of society, in which individual freedom is problematized as the objective of government and as inextricably bound up with mechanisms of unfreedom, control and constraint required to protect the population from internal threats (Foucault, 2007, 2003). Technologies of security target the ‘conditions of variation’ that are thought to produce threat or risk to collective well-being, and are characterized by instruments of control and regulation, rather than the discipline and supervision directed at the individual body (Lemke, 2011, p. 37). Instead of operating from a prescriptive norm, technologies of security operate according to an empirical range that serves to regulate variations through the logic of freedom; security



only operates on the condition that there is freedom of movement, variation or circulation of people and things (Lentzos and Rose, 2009). As Lemke (2011) observes, technologies of security 'do not draw an absolute borderline between the permitted and the prohibited; rather, they specify an optimal middle within a spectrum of variations' (p. 47).

Although not consistently the explicit focus of work on biopolitics and security, the notion of 'circulation' is central to this theoretical approach to infectious disease and other targets of security. The problematic of circulation in biopolitics invokes the tension between disciplinary and regulatory mechanisms in apparatuses of security, which are marked by ongoing judgments and distinctions between that which may circulate and those circulations that require securing because of their threat to the social body (Caduff, 2012). In this way, what comes to be understood as the 'natural' features of the population includes the circulation of things such as, goods, people, risks for disease and information; the objective of security is to regulate such circulations with the goal of ensuring the well-being of the social body (Hinchcliff and Bingham, 2008).

The tension inherent in this problem of circulation emphasizes the interconnectedness of regulatory and disciplinary mechanisms of control, and highlights the complexity of governance of emerging infectious disease, which operates at multiple levels, including the molecular and the population. While the framework of biopower has been used extensively in the study of health governance to focus on self-discipline and self-regulation (for example, Burchell, 1993; Petersen and Lupton, 1996; Rose, 1999; Polzer, 2010), such individualized accounts of the politics of life have occurred at the expense of analyses of a population-centered biopolitics (Weir, 2006). Critical analyses of the governance of health and life at the molecular level, in response to recent developments in genetic testing and biotechnology, have also tended to focus on the ethics of the self (Polzer, 2005, 2010; Rose, 2007), and have privileged consideration of the individualized subject positions and ethical self-relations that are enabled and shaped by these new technologies of the self (Raman and Tutton, 2010). However, further consideration of the role of the molecular in governing emerging infectious diseases, such as pandemic influenza, underscores new topographical complexity in understandings of global biopolitical regulation (Thacker, 2009; Braun, 2007). Clear distinction between governance at the 'molecular' versus 'molar' levels is thus complicated by a 'hybrid of molecular and population categories ... [m]olecular discourses around microbiology and immunology are also being enrolled in the construction of population-based interventions by nation-states and transnational organizations of governance' (Raman and Tutton, 2010, pp. 722–723).

As a theoretical framework, biopolitics has much to contribute to critical analyses of emerging infectious diseases, especially in relation to their governance through risk techniques that attempt to forecast and preempt the future



occurrence of disease. In public health, risk governance renders binary distinctions between 'normal' and 'pathological' obsolete, expanding opportunities for intervention, temporally and spatially, as the display of abstract risk factors is sufficient to justify government (Castel, 1991; Rose, 2007). As a form of reasoning and a means of operationalizing the regulation of populations (Weir, 2006), risk governance operates through epidemiological techniques and systems of surveillance that identify spaces, groups, individuals, behaviors and/or social relations as *likely* sites for the manifestation of risk for some future condition or disease state, and thus as sites for preemptive regulation (for example, screening). The increasing problematization of emerging infectious disease as a security threat that could destabilize national and global organizations has heightened the urgency to deal with such uncertainty in the public health field.

Furthermore, global biopolitics is a useful analytic framework to consider how pandemic preparedness planning constructs molecular risks to global public health and is implicated in contemporary neoliberal approaches to governance by rendering life 'conceivable and calculable in such a way that it can be shaped and transformed' (Lemke, 2011, p. 119). This connection stimulates thinking about how vital characteristics of the population are constructed, organized, rendered governable and capitalized upon (Cooper, 2006), and how desirable and undesirable circulations are harnessed and regulated, in relation to market forces. As our analysis suggests, constructions of biological processes in pandemic preparedness planning incite distinction between desirable and undesirable circulations, and enable economic activity and profit from technologies that promise security through the preemptive management of uncertainty.

In this article, we contribute to perspectives on the molecular biopolitics of life by examining the ways in which: (i) particular understandings of the influenza virus are discursively constructed and mobilized in WHO pandemic planning documents, and (ii) these discursive constructions of the pandemic influenza virus function to legitimize preemptive approaches to the regulation of uncertain future events. The construction of the 'natural' features of all influenza viruses as possessing the capacity for transformation into a pandemic strain, and as transgressing both corporeal and territorial boundaries, are powerful discursive techniques that legitimizes a specific preemptive response. Using pandemic influenza planning as our case study, we maintain that the discourse of 'preparedness', as expressed in WHO pandemic influenza planning documents, constitutes a technology of (in)security, in which specific constructions of the virus advance and justify a particular pre-emptive mode of governance where the exceptional (pandemic) event is integrated into everyday, normal conditions. To contextualize these findings, we begin with a brief overview of the study methodology, including a description of the documents, before moving onto the results of the analysis.



The Study

A Foucauldian-informed CDA was conducted by the first author (SS) of four key pandemic planning documents produced by the WHO between 1999 and 2009 (WHO, 1999, 2005, 2009a, b). From a Foucauldian perspective, discourse refers to ways of understanding and representing the world, and is implicated in the formation and ordering of reality (Cheek, 2004; Parker, 1999). CDA is concerned with exposing the ways in which texts construct objects of knowledge and produce effects that maintain particular practices of power (Foucault, 1969; Gilbert, 2008). Discourse is productive in that it produces truth effects and specifies objects that can be governed through particular actions and strategies that are informed by historically contingent, prevailing political rationalities (Kendall and Wickham, 1999; Robertson, 2001). In this study, documents were analyzed in order to examine how truth claims related to ‘preparedness’ for emerging infectious disease are asserted and naturalized, and how the rationale and activities associated with such ‘preparedness’ are organized. On the basis of this understanding of discourse, a central premise of this work is that pandemic planning documents construct knowledge of pandemic influenza to facilitate particular kinds of responses and obscure others, thus shaping ‘what [it] is possible to know in certain situations’ (Cheek, 2004, p. 1143), along with reasonable actions.

The documents included in this analysis were intended to provide support and guidance for countries to enhance their preparedness against an emerging pandemic influenza virus. The texts were selected because of the key role of the WHO in driving global responses to emerging infectious disease, and their explicit objective of appealing to nation states to increase investment in preparedness activities. The documents develop over the decade of planning, with key changes that include the modification of pandemic phases (which structure preparedness and response mechanisms), as well as an extension of the target audience from the health sector, to include other sectors within society in 2009. In keeping with CDA, these four documents (comprising approximately 200 pages of text) were subjected to multiple, close readings in order to discern the prevailing discursive components of ‘preparedness’. Through this process of in-depth analysis, the way that the virus itself was constructed emerged as central to preparedness discourse. We begin our analysis by outlining the discursive construction of the ‘natural’ predisposition of the influenza virus to circulate, mix and transform. Next, we discuss representations of the virus in terms of its tendency to circulate and expand by spreading across corporeal and territorial boundaries. We then argue that these constructions enable and necessitate a particular form of preemptive response, as proposed by the WHO. Where relevant, we italicize sections of the cited WHO material to emphasize our arguments.



Viral Circulation and Pandemic Potentiality

The ‘features’ of viral activity are consistently addressed throughout the documents, and there is a striking attentiveness to describing and characterizing the influenza virus. Specifically, the virus’ natural predisposition to circulate within nature, along with its corresponding tendency to mutate or reassort, discursively structures the virus as an entity with *potential*. Within these descriptions, the influenza virus’ ‘natural’ propensity to circulate is a recurring theme:

Many *animal influenza viruses naturally infect and circulate* among a variety of avian and mammalian species. (WHO, 2009a, p. 14)

During inter-pandemic periods, *influenza viruses circulate* that are related to those from the preceding epidemic. (WHO, 1999, p. 6)

While viral transmission in animal and bird populations (reservoirs) is presented as a normal state of infection, it is also discursively linked to the potential emergence of new viral strains. That is, the ‘natural’ process of circulation is depicted as a possible source for the emergence of a pandemic virus, which is constructed as ‘dormant’ and ‘hidden’ within animal reservoirs for extended periods of time:

It is certainly *difficult to explain* the close overall similarity between the 1977 and 1950 type A (H1N1) viruses *without invoking ‘dormancy’*, which therefore should be considered, in theory, as a third possible mechanism for emergence of pandemic influenza viruses, *despite the lack of knowledge of how any influenza virus could remain hidden for many years*. (WHO, 1999, p. 44)

The potentiality ascribed to the virus has unpredictability at its core and reinforces the understanding that, while the virus is concealed and in circulation for decades, there remains the risk that it will re-emerge years later.

The virus’ natural tendency to ‘mix’ (that is, reassort or mutate) with other flu viruses or sub-strains (for example, in animal and human populations) is discursively linked to the production of new viral strains of influenza: ‘*a subtype that has not circulated* in humans for at least several decades and to which the great majority of the *human population therefore lacks immunity*’ (WHO, 2005, p. 6). This definition of a ‘new’ virus subtype constructs the cause for concern not in relation to the ‘natural’ process of viral circulation – that is, that which is considered ‘normal’, and desirable even, when it occurs relatively regularly and results in increased immunity in a given population. Rather, viral circulation is deemed ‘risky’ if the virus is novel and has not circulated within a certain time frame. This is a significant focus of WHO (1999) where the description of viral



circulation serves as a key technique in enabling the forms and logic of preemption that are elaborated further in the later planning documents. At the same time, and as described below, the processes of circulation and transformation also characterize ‘normal’ viral activity during temporal periods in between pandemics, referred to in the documents as the ‘interpandemic’ period:

During inter-pandemic periods, influenza viruses circulate that are related to those from the preceding epidemic. The viruses are spreading among people with varying levels of immunity from infections earlier in life. Such circulation, over a period of usually 2–3 years, promotes the selection of new strains which have changed enough to again cause an epidemic among the general population. (WHO, 1999, p. 6)

What is significant about these characterizations is that the potential for pandemic emergence is constructed discursively in terms of the same processes that are presented as ‘natural’, ‘normal’ and innocuous. Descriptions of the potential reassortment and mutations that result from the flu virus’ ‘natural’ tendency to circulate in animal and human populations characterize the virus as a continually transforming and dynamic force. At many points in the texts, viral circulation is presented as necessary for the possible emergence of a pandemic virus:

While the H5N1 virus is currently the most visible influenza virus with pandemic potential, it is not the only candidate. Wild birds form a reservoir for a large number of other influenza viruses and influenza viruses are found in other animal species as well. Any one of these other viruses, which normally do not infect people, could transform into a pandemic virus. (WHO, 2009a, p. 14)

Viral Expansion and Boundary Transgressions

Thus far, we have described a particular framing of the virus as having a natural tendency to circulate and as simultaneously possessing pandemic potentiality. The second discursive construction articulates potentiality in relation to the virus’ tendency to transgress boundaries between people, people and animals, and territories, which are demarcated as sites of risk for the transmission of infection, and consequently to expand across nation states and populations.

In the documents there is considerable focus on the viral transgression of boundaries between humans, and close contact between humans is understood as a precondition for viral transmission and, thus, pandemic. The documents repeatedly convey the understanding that, in order for a pandemic to occur, there must be ‘high person-to-person transmissibility of the new virus’ (WHO, 1999, p. 6)



and ‘sustained chains of human-to-human transmission leading to community-wide outbreaks’ (WHO, 2009a, p. 14). The understanding that the pandemic virus will spread easily and rapidly among people is reflected in the definitions of the pandemic phases, which are distinguished, in part, through the articulation of possible transmission scenarios. For example, in WHO (2005), transmission between close human contacts signals a ‘pandemic alert period’ (p. 6). The problematization of intercorporeal boundaries as sites of increased risk for viral spread are also evidenced in the documents in recommendations for non-pharmaceutical public health interventions, such as contact tracing and voluntary quarantine. At the same time, WHO (2005, p. 42) directives generally avoid recommending measures that restrict mobility and social gatherings. Rather, the implementation of ‘population-wide measures to reduce mixing of adults’ are presented as *possible* risk reduction methods for national bodies to consider in their pandemic preparedness planning (WHO, 2005, p. 43), with such ‘social distancing’ mechanisms buttressing efforts to develop vaccines and vaccinate populations, which are presented as essential response mechanisms.

Animal–human boundaries are also identified in WHO planning documents as points of potential transgression by novel viral strains, and thus as sites of risk for pandemic flu events. In WHO (1999), concerns around the ‘coinfection of animals [to occur] with human, avian and swine viruses’ are initially articulated in relation to the idea that such activity would enable the emergence of new reassorted viruses that could lead to a pandemic strain (p. 44). In the 2005 document, there is explicit acknowledgment that risk to humans is linked to animal infection:

The presence of animal infection caused by a virus of known human pathogenicity may pose a substantial risk to human health and justify public health measures to protect persons at risk. (WHO, 2005, p. 6)

This is also reflected in the pandemic alert phase presented in WHO (2005, 2009a), which is defined as beginning at the point at which an animal virus acquires the ability to infect humans. Following this, the expansion of the virus throughout the human population by sustained transmission is linked to an elevated risk of pandemic.

Endemic H5N1 infection in avian populations is identified specifically in the WHO (2005) document as a concern for viral expansion through the transgression of species boundaries.¹ By 2009, the H5N1 virus is presented as a particular and pertinent case of continuous animal infection:

Since its widespread re-emergence in 2003–2004, this avian virus [H5N1] has resulted in millions of poultry infections and over four hundred human cases. (WHO, 2009a, p. 14)



Although the actual spread of human disease from H5N1 was limited in 2005 and 2009, statements regarding the persistence of disease in poultry flocks are linked discursively to the aforementioned concern that the virus has the potential to undergo a transformation and thus result in increasingly widespread human infection. As of 2009, the rare transmission of H5N1 from bird-to-human or human-to-human is represented as occurring primarily when there is little separation between close social contacts or when individuals come into close physical contact with infected poultry. WHO (2009a) constitutes infection transmission as occurring primarily through human exposure to domestic birds, those who work with infected chicken and poultry, or caregivers of infected humans (p. 14). Consequently, the risk of acquiring H5N1 is represented as linked primarily to practices involving close proximity of humans and animals.

Because potential risk is constructed as occurring in interactions involving people and animals (for example, traditional farming practices), increased scrutiny of spaces where these bodies intersect and converge is described as necessary in order to intervene in the possible viral transgression of species' boundaries. The objective of animal-human boundary regulation, as presented in this sample of documents, involves the prevention of transmission and 'mixing' of viruses between animal and human populations, which could result in a new and more sinister viral strain. This regulation relies on the ongoing retrieval and updating of knowledge, and, thus, the cooperation of various organizations involved in animal and human health surveillance. The WHO (1999) document identifies a need for increasing knowledge and research on the interrelationship between animal and human viral strains and identifies the WHO Collaborating Centres in particular as focusing on the integration of animal-human viral transmission into the network of surveillance (p. 9). The document identifies further collaboration as necessary in previously more distinct sectors of research and surveillance:

Co-operation between veterinary, public health and biological regulatory authorities is needed to respond quickly to cases of apparent animal-to-human spread of a severe form of influenza of a novel sub-type. (WHO, 1999, p. 31)

The control of viral activity within animal populations is an additional objective of animal-human boundary regulation, to be achieved through partnership and collaboration of the WHO Collaborating Centres with relevant organizations, such as the Food and Agricultural Organizations of the United Nations (FAO) and the World Organisation for Animal Health (OIE) 'for issues relating to infection in animals' (WHO, 2005, p. 9).

The emergence of pandemic is also represented as an exercise in territorial expansion through the transgression of national boundaries, as suggested by

descriptions of the pandemic phases. In WHO (1999), the viral crossing of national and regional territorial borders by the virus corresponds with a heightened risk of pandemic alert, with the designation that: 'The pandemic will be declared when the new virus subtype has been shown to cause several outbreaks in at least one country, and to have spread to other countries' (p. 14). The WHO (2005) document also constructs risk for pandemic in relation to the potential transgression of geographic boundaries, where the sharing of national and other political borders is referred to in order to understand and explain the spread and patterns of infection. Here, localized spread of the virus within smaller geographic spaces does not constitute an actual pandemic, but rather suggests the need for some level of containment. Furthermore, geographically connected areas are linked in terms of common scenarios of infection, where the physical proximity of these areas indicates some level of shared risk in terms of the spread of disease. By 2009, pandemic declaration is defined entirely according to territorial spread (WHO, 2009a). Pandemic phase 5 (the phase preceding pandemic designation) is determined by 'sustained community level outbreaks in two or more countries in one WHO region' and pandemic phase 6 is characterized by the same criteria plus 'sustained community level outbreaks in at least one other country in another WHO region' (WHO, 2009a, p. 11).

Such representations of pandemic emergence thus construct the virus in terms of its potential for expansion within human populations and across territories and problematize risk in terms of the proximity of bodies and transgression of corporeal boundaries (both human-human and animal-human). The depicted tendency of the virus to expand in the human population and across geographic regions through multiple boundary transgressions further constructs the influenza virus as having the capacity to colonize individual bodies, territories and populations. As we discuss in the following section, this construction of the virus is presented as necessitating particular responses that account for viral potentiality and the mutual vulnerability associated with viral expansion across bodies and national borders.

Integrating the Exceptional (Pandemic) into the Everyday

The uncertainty that characterizes the problematization of pandemic emergence (that is, any influenza virus might theoretically develop into the pandemic virus) justifies the need for the ongoing production of knowledge about viral strains. Together, these constitute an 'early warning' approach to pandemic planning, which is illustrated by changes made in pandemic phases from 1999 to 2009. As discussed above, pandemic phases are presented in WHO planning documents to structure the preparedness and response mechanisms of nation states



according to the ‘imminence’ of pandemic emergence. Of particular note is the way in which risk for pandemic is defined in the ‘interpandemic’ period in relation to shifting notions of viral circulation and expansion, where interpandemic is used to designate phases that precede a pandemic. From 1999 to 2005, there is an integration of animal infection into the interpandemic phases; whereas the first preparedness level in the 1999 interpandemic² period makes no reference to animal infection, the 2005 plan incorporates animal infection in the absence of human infection into the first two interpandemic phases.

Also of particular note is that, by 2005, there is no longer an interpandemic phase that designates a period of inactivity; there is no longer an imagined temporal period not defined by its relation to pandemic possibility or the need for preparedness. Consistent with the discursive blurring between the emergence of pandemic viral strains and normal viral circulation, the pandemic phases thus effectively integrate conditions of (exceptional) pandemic into the everyday, reflecting Cooper’s (2006) observation that the logic of preemption involves immersing ourselves in its conditions of emergence. The acknowledgment in 2005 that influenza subtypes that have caused or could cause human infection are omnipresent in animals legitimizes the conviction that, even if such viruses go undetected, inaction cannot be justified within the logic of preparedness. Between 1999 and 2005, there is a significant development in the conceptualization of pandemic such that the ‘natural’ state of infection characterized by ongoing animal infection with influenza becomes incorporated into pandemic planning as constituting a level of risk that necessitates action.

The necessity for action during interpandemic periods is evidenced as early as 1999 where early warning is presented as an objective of surveillance mechanisms that target novel viruses in order to ‘increase[e] the time to organize a response’ (WHO, 1999, p. 31). By 2005, this focus is even more pronounced, and emphasis on the early pandemic phases is promoted as crucial to ‘gain time’ to intervene through various ‘preparedness measures’, including the development and stockpiling of vaccines to contain the spread of new, uncertain and potentially pandemic influenza strains:

Redefinition of the phases was needed to address the public health risks of influenza infection in animals...and *focus on early events during a “pandemic alert” period* when rapid, coordinated global and national actions might help to possibly contain or delay the spread of a new human influenza strain. Even if not successful in containing spread, *this approach should gain time to develop vaccines against the new strain, and to implement other pandemic preparedness measures that had been planned in advance.* (WHO, 2005, p. 1)

The understanding that a 'lack of recognized animal and human infection does not mean that no action is needed' (WHO, 2005, p. 6) effects a shift in the temporality of intervention, relocating the possible future occurrence of pandemic within the present through the discourse and exercise of preparedness. The focus on early warning and associated necessity of preemptive intervention is maintained in the WHO (2009a) document, and surveillance and containment of an emerging virus continue to receive substantial attention before the pandemic phases:

The goal of situation monitoring and assessment is to *collect, interpret, and disseminate information on the risk of a pandemic before it occurs...* [I]t will be important to *monitor the infectious agent*, its capacity to cause disease in humans [and] the patterns of disease spread in communities...*to collect data on influenza viruses, the genetic changes taking place and consequent changes in biological characteristics.* (WHO, 2009a, pp. 28–29)

As suggested by this quote, the constant monitoring and evaluation of pandemic risk through surveillance activities is necessitated by, and contributes to, constructions of the virus as uncertain and ever-changing. Over the decade of planning, there is also an extension of the pandemic phases that organize 'preparedness' and 'response'. The pandemic phases in WHO (2005, 2009a) involve five phases of pandemic alert that precede the global pandemic period, effectively increasing the number of preemptive measures that can be initiated before the actual designation of pandemic. Through this extension, a vast range of possible early warning actions is necessitated that directly and indirectly implicate (often unspecified) actors in preparedness. Examples of such actions include: the 'enhanced animal and human surveillance based on the WHO, FAO and OIE recommendations;' the 'urgent [transmission of] representative isolates from suspected human cases of infection;' and the 'serological surveillance of farmers (including their families) and animal workers involved in containment of outbreaks of animal influenza' (WHO 2005:17).

The second approach to preparedness response mechanisms entails the monitoring of shared borders and identification of mutual vulnerabilities. This focus on shared vulnerability is linked to the construction of the virus as transgressing and spreading across corporeal and territorial boundaries. For example, by 2009, it is suggested that national assessment of pandemic risk be determined by considering the status of 'neighboring countries' and those in 'close proximity', in addition to the internal effects of the 'potential pandemic virus':

In addition to the globally announced pandemic phase, *countries may want to make further national distinctions based upon their specific situations.* For example, countries may wish to *consider whether the potential*



pandemic virus is causing disease within their own borders, in neighbouring countries, or countries in close proximity. (WHO, 2009a, p. 26)

The sharing of national borders and travel-related contact are thus identified as important targets for surveillance. From 1999 to 2009, increasing attention is paid to preparedness planning across borders (for example, national borders as political and territorial boundaries), with an emphasis on *consistent* planning and *collaboration* between governments and other bodies. The 2003 experience of SARS is mobilized in the 2005 plan to buttress the importance of a ‘coordinated global and national effort[s]’ for a timely response to a future pandemic (WHO, 2005, p. 4).

The ‘whole-of-society’ approach to pandemic preparedness planning, introduced and elaborated in the 2009 planning document, attempts to integrate actors and agencies outside of the health sector into the project of preparedness. This approach establishes various ‘sectors’ as necessary to achieve ‘preparedness at all levels’ (WHO, 2009b, p. 7) by identifying their connectedness as possible sites of economic and social vulnerability in the future event of pandemic. A central feature of this model is that the possible ‘failure’ of one sector must be taken into account in preparedness plans: ‘Pandemic plans should take into account potential failures generated by interdependencies. These include failures of individual businesses or small numbers of businesses representing the sole providers of an essential good or service’ (WHO, 2009b, p. 10). The assumption that planning responses will be inadequate if they do not consider intersectoral boundaries through coordination is a key foundation of this approach. Identifying these points of connectedness allows for various social sectors to introduce contingency measures and flexible plans, such as ‘business continuity checklists’ that would remediate possible ‘failures’ and that, more broadly, account for the uncertainty inherent to pandemic, and the influenza virus (WHO, 2009b, p. 17). These propositions reinforce the idea that, without adequate planning and contingency mechanisms, the interconnectedness and mutual vulnerability of each sector may lead to ‘social and economic disruption’ (WHO, 2009b, p. 5).

Discussion: Pandemic Influenza Planning as a Technology of (In) Security

Our analysis sheds light on *how* pandemic influenza has been conceived of as a political problem by the WHO and, by extension, one that requires a particular form of intervention. The texts analyzed here construct specific versions of reality that are implicated in both the problematization of, and the solution to, a future pandemic. This in-depth empirical work contributes to contemporary



understandings of biopolitical regulation by exposing the organizing logic underpinning preparedness, and by considering the possible implications of this imagining for intervention into a future global pandemic. The construction of the natural features of the influenza virus in terms of its *potential* to transform into the next pandemic virus and spread across multiple boundaries, necessitates the integration of preparedness activities (characterized by flexibility and contingency) into everyday practice. Thus, the potentiality and inherent uncertainty of the virus becomes at once the target of intervention and representative of the underlying reasoning of response mechanisms.

Pandemic preparedness discourse operates as a technology of (in)security that renders the uncertainty of pandemic emergence governable. The threat of pandemic influenza to the health of the global population is conceived of, and responded to, through specification of the very features of the virus and its potential to disrupt society in numerous ways. The construction of the virus, both in terms of its pandemic potentiality and its capacity to transgress corporeal and territorial boundaries, is key in this regard; these features reveal the interconnectedness of territories, and how such interconnectedness constitute zones of vulnerability to pandemic emergence, and thus threats to global health.

This study contributes to recent critical social science work analyzing the framing of pandemic influenza and corresponding preparedness and response mechanisms in terms of: securitization (Kamradt-Scott and McInnes, 2012); the extension of public health intelligence activities beyond traditional means (French and Mykhalovskiy, 2013); understandings of 'vulnerability' by the public and within national and sub-national planning (Stephenson *et al.*, 2014); and the governing of uncertainty through potential or future biosecurity threats (Samimian-Darash, 2013; Thomas, 2014). Our interpretation also resonates with other work that critically examines technologies of security, which are presented as a panacea in environments increasingly marked by insecurity (Aas *et al.*, 2009). As Zedner (2009) points out, technologies of security frequently result in greater insecurity for many individuals or social groups (for example, checking of ID cards of immigrants and refugees). Similarly, we have demonstrated the mutually constitutive way in which pandemic preparedness, as a technology of (in)security, discursively constructs new vulnerabilities, increasing both the demand for security solutions and insecurity of those deemed unable to protect themselves against emerging threats (for example, through the purchase of pharmaceuticals or the stockpiling of non-pharmaceutical resources).

Furthermore, we have analyzed the ways in which the molecular level of the 'viral' is discursively implicated in the organizing logic of pandemic preparedness at the scale of the global population, which enables the implementation of interventions at the national and transnational level (Raman and Tutton, 2010). The 'natural' potentiality of the virus implicates all viral strains in a future



pandemic and constructs multiple possibilities for the source and origin of emergence of the *next* pandemic virus. The discursive linking of pandemic and non-pandemic viral activity poses a problem for risk governance; the uncertainty that is constituted by these blurred distinctions creates a need for the continuous differentiation between these possibilities. In this way, pandemic planning constitutes society as 'insecure' because of the ongoing possibility that 'normal' viruses will transform and spread across bodies and territories, a threat that preparedness simultaneously aims to preempt in the objective of global security. Thus, these viral constructions also serve as a key technique in enabling the forms and logic of preemption that characterize preparedness, and necessitate the *continuity* that drives ongoing global pandemic influenza governance – if every influenza virus has the potential to transform and become *the* pandemic virus, then preemptive intervention is required to respond to this risk.

The integration of pandemic into everyday processes is co-constituted with the viral object. The viral potentiality and ubiquity of risk, which occurs in the interconnections or boundaries that constitute the social world, and in the viral circulations that we know as 'natural', also expand the possibilities for the temporality and territory of intervention. Risk is rendered governable through the ongoing engagement with the possibility of the exceptional pandemic, rather than through the calculation of probabilities. This integration is most apparent in the 2005 restructuring of pandemic phases to include the 'normal' state of, animal, infection (not necessarily accompanied by human infection). The logic of preparedness, while still oriented toward a future event, is no longer focused on the prevention of specific or isolated disease outbreaks or events by precluding certain risks that may lead to these undesirable outcomes (for example, pandemic), but is rather focused on securing uncertainty through the regulation and control of emergent risk via ongoing engagement and adaptation (Dillon, 2007; Lakoff, 2007).

In pandemic planning, biopolitical regulation targets not simply circulation characterizing the (human) population, but also as it pertains to the 'natural' tendency of the influenza virus to circulate and expand. Of particular concern is the regulation of those 'between' spaces that present a potential conduit for transmission of the virus between bodies and species, as well as across territories. While between spaces and the social relations that are implicated in their creation are constituted as sites of potential risk because of possible viral transgression, and consequently as possible targets of surveillance and control, the final objective of this form of regulation is not immobilization, or the restriction of circulation.

Instead, national bodies and other actors are called upon to account for shared or proximate borders that are constituted as sites of vulnerability in terms of the possible spread of disease across such boundaries. Response to viral threat is framed in terms of the mapping of vulnerabilities in a 'society' that is imagined



largely along organizational lines, for example, in terms of the interconnectedness of businesses or governmental ministries. Thus, much of the reference to the restriction of movement involves the recourse to discretion on a case-by-case basis, and at various levels of governance (for example, national, local and individual). This control is a crucial feature of global biopolitical regulation, which involves the calculation of 'the extent to which life must be incited to be free, or subjected to scrutiny and discipline' (Kiersey, 2009, p. 41).

The construction of viral potentiality and expansion across social boundaries is complicated by the parallel functioning of epidemic as operating 'for' or 'against' the people, a point that recognizes the processes of circulation as intrinsic to the population (Thacker, 2009). Preemptive responses to this threat allow for the ongoing distinction between desirable and undesirable forms of circulation.

The problematization of the pandemic influenza virus according to its potential to transgress boundaries and expand across states and populations opens up multiple possibilities for intervention. For example, the positioning of risk in relation to animals encourages the surveillance of animal populations that often culminates in culling, regardless of whether all of the animals are infected. While such interventions are positioned as justifiable in order to manage viral circulation and potential disease outbreaks, they may have significant economic consequences for those involved in the farming and trade of livestock. Moreover, intensive surveillance may also result in the stigmatization of human bodies closely connected to infected animals. Finally, the positioning of particular nations and pan-national regions (for example, nations that are linked through proximity, shared borders or trade partnerships) as inadequate in the tracking and containment of the natural mutability of the virus justifies certain exclusionary practices. For instance, this construction legitimizes the closing of borders to protect against products and beings from these 'uncontained' regions, enacted as a last resort. It also justifies global surveillance and other containment measures within national borders that aim to ensure the 'global good' while condemning those nations unable or unwilling to undertake such preparedness activities.

At the global level, this mode of governance diverges from the disciplinary mechanisms that attempt to bring individuals in-line with the norm, through various forms of expert knowledge (Lemke, 2011). Instead, uncertainty is taken as the given in terms of the emergence of pandemic viral strains, and rather than prevent emergence, security mechanisms attempt to regulate this uncertain, yet imminent, event. This securitization is to be achieved through a recourse to freedom (Lentzos and Rose, 2009), which allows for the circulation of viral strains (among other entities) and responds primarily through the adaptation of existing infrastructure and networks (for example, vaccine production networks) in order to mitigate the negative effects of the pandemic. In line with Cooper's (2006) observation, discourse concerning the potential threat posed by the virus



entrenches wealthy nations in the very process of emergence to the point of actualizing it through the production of a global stockpile of anti-virals and other materials, with significant consequences for economic profit from an unrealized event.³

Central to Foucauldian interpretations of security apparatuses is their position as ‘counterparts to liberal freedom and [as] the condition for its existence. Security mechanisms are meant to secure and protect the permanently endangered naturalness of the population, as well as its own forms of free and spontaneous self-regulation’ (Lemke, 2011, p. 47). Technologies of security are aimed at protecting the whole from the internal threats that exist within the social body, which is always at risk. Our analysis illuminates how molecular constructions operate in service of global security and freedom, in addition to the disciplinary mechanisms discussed earlier in this article. The ubiquitous risk of a pandemic virus that could disrupt the ‘naturalness’ of circulation of living and non-living things (for example, humans, goods, information) necessitates an ongoing response to all possibilities of viral activity in order to mitigate or minimize disruptions within networks of circulation (for example, by targeting/accounting for advisories around social gatherings, work/school attendance and travel). This is substantiated by predictions that illness because of a global pandemic could result in GDP losses between 0.5 (£8.4 billion) and 4.3 per cent (£72.3 billion) in the UK alone (Smith *et al*, 2009). These estimates would increase when accounting for changes in routine such as widespread school closures or prophylactic absenteeism (Smith *et al*, 2009; Smith *et al*, 2011). Thus, the threat to the imagined ‘whole-of-society’ is in the undesirable disruption to the circuitous arrangement of global capitalism and the interruption of economic and social functioning. The possible closure of borders, restriction of movement through quarantine and other measures, or the cancellation of social events, in response to a transgressive virus threaten the neoliberal conception of individual rights and freedoms that is so highly valued in the West.

Our analysis offers a detailed examination of the imagining of pandemic preparedness within WHO global policy documents. The naturalization of specific understandings of pandemic, such as those related to viral potentiality, imparts particular worldviews at the expense of others. Our approach challenges these taken-for-granted versions of reality, and encourages further inquiry that more closely examines the implications of these constructions for global health inequalities. The constitution of nation states and other social configurations (that is, the whole-of-society) as ‘mutually’ vulnerable because of interconnect-edness operates as a powerful legitimizing device for the requirement of global ‘preparedness’. Further investigation might examine how the naturalization of nation (and other) states as similarly vulnerable to the transgressive virus,

invokes certain kinds of duties or responsibilities, and lends itself to specific forms of global health intervention over others.

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Notes

1 In 1997, H5N1, a highly pathogenic strain of avian influenza, infected humans following a poultry outbreak in Hong Kong. This discovery caused general concern that the virus would



mutate, becoming increasingly adapted to humans and consequently more efficiently transmitted, despite the lack of human-to-human transmission at the time. In 2003 and 2004, a widespread re-emergence of H5N1 appeared in avian populations, and the virus spread from Asia to other continents. Until April 2009, this virus, which is presently endemic in domestic and wild fowl populations in parts of Asia, was considered the likely source of a future pandemic.

- 2 'Interpandemic' and 'pandemic alert' are used to designate risk phases preceding a pandemic (whereas 'post-pandemic' describes the phases following a pandemic). The use of terms to describe pandemic and non-pandemic periods varies throughout the documents. Of significance to this analysis is that in WHO (1999) there are three phases that come before the pandemic designation, whereas in WHO (2005, 2009a) there are five phases that precede *the* pandemic phase.
- 3 In 2009, Tamiflu sales hit a high of US\$3 billion because of stockpiling by countries to protect against pandemic (Pierson and Humer, 2013). By the 2009 pandemic, the United States had stockpiled 50 million anti-viral treatment courses (Dimitrov *et al*, 2009; Patel and Gorman, 2009). As of April 2014, the United Kingdom had spent an estimated \$710 million, and the United States approximately \$1.5 billion, on influenza anti-viral stockpile, despite controversy about the efficacy of pharmaceuticals in responding to these emerging threats (Van Noorden, 2014).

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