

Round table discussion

Pandemic influenza and its definitional implications

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In his thoughtful analysis, Doshi aptly describes the need for establishing greater definitional precision of “pandemic influenza” as the basis for future public health preparedness and response efforts.¹ Importantly, his assessment highlights a critical ongoing divide between competing perceptions of the very concept of a “pandemic”: namely, between “pandemic” as predominantly a function of geography and virology, versus disease severity.

This is not a minor semantic distinction, but rather one with enormous bearing on planning priorities. For instance, while the United States of America applies an all-hazards approach in its federal, state and local public health emergency readiness efforts, a major piece of 2006 national preparedness legislation was notably called the Pandemic and All-Hazards Preparedness Act.² Such explicit separation between “pandemic” and “all-hazards” in the title reflects a unique concern about a pandemic’s potential impact and severity, with implications for resource-intensive planning efforts among a myriad of stakeholders. Additionally, milder-than-feared global infectious disease events can subsequently engender a dangerous sense of complacency among frontline responders and the general public, erode trust in public health authorities and potentially reduce compliance with essential protective guidance in the face of future threats.

In keeping with these important considerations, Doshi proposes a more severity-driven approach to the declaration of an influenza pandemic. This strategy has certain merits: research suggests that people are more likely to engage in desired protective behaviours in the face of uncertain risk if they perceive the threat to be legitimately severe and relevant to them (and thus motivating), and if they view the recommended intervention as efficacious.^{3–5} This would argue for severity as the main definitional predicate for pandemic declaration, rather than geography and virology.

However, a primarily severity-based trigger for pandemic declaration would involve certain operational challenges that must be acknowledged. In the light of wide global variations in public health response infrastructure, population-specific vulnerabilities and the potentially unpredictable course of “pandemic influenza” itself (however defined), “severity” can be experienced very differently in different places and for different community segments at a given point in time.

At the international level, this variability introduces difficulties in yielding standardized severity-governed definitional criteria as the basis for pandemic influenza declaration. Geographic and virologic criteria thus remain more feasible and realistic definitional drivers, despite their admittedly inherent shortcomings from a risk perception standpoint. At the same

time, however, severity indices do have considerable utility at national and subnational levels, where the above variations can and should factor directly into tailored, severity-based preparedness and response efforts for pandemic influenza.

In a broader sense, Doshi’s assessment speaks powerfully to risk communication as among the greatest challenges in the international response to threats of global public health significance. In the context of pandemic influenza, explicitly establishing a consistent definition is a necessary first step that must be followed by aggressive pre-event education of the global community regarding that definition and its rationale. If we wait to ensure such clarity when the next influenza pandemic strikes, it will simply be too late. ■

Funding: Preparedness & Emergency Response Research Center (PERRC) [CDC/Grant 1P01P00288-01; Grant# 104264]. The funders had no role in content, decision to publish, or preparation of this invited commentary.

Competing interests: None declared.

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Health is more than influenza

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The repeated pandemic health scares caused by an avian H5N1 and a new A(H1N1) human influenza virus are part of the culture of fear.^{1–3} Worst-case thinking replaced balanced risk assessment. Worst-case thinking is motivated by the belief that the danger we face is so overwhelmingly catastrophic that we must act immediately. Rather than wait for information, we need a pre-emptive strike. But if resources buy lives, wasting resources wastes lives. The precautionary stocking of largely useless antivirals and the irrational vaccination policies against an unusually benign H1N1 virus wasted many billions of euros and eroded the trust of the public in health officials.^{4–6} The pandemic policy was never informed by evidence, but by fear of worst-case scenarios.

In both pandemics of fear, the exaggerated claims of a severe public health threat stemmed primarily from disease advocacy by influenza experts. In the highly competitive market of health governance, the struggle for attention, bud-

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gets and grants is fierce. The pharmaceutical industry and the media only reacted to this welcome boon. We therefore need fewer, not more “pandemic preparedness” plans or definitions. Vertical influenza planning in the face of speculative catastrophes is a recipe for repeated waste of resources and health scares, induced by influenza experts with vested interests in exaggeration. There is no reason for expecting any upcoming pandemic to be worse than the mild ones of 1957 or 1968,⁷ no reason for striking pre-emptively, no reason for believing that a proportional and balanced response would risk lives.

The opposite of pre-emptive strikes against worst-case scenarios are adaptive strategies that respond to emerging diseases of any nature based on the evidence of observed virulence and the effectiveness of control measures. This requires more generic capacity for disease surveillance, problem identification, risk assessment, risk communication and health-care response.¹ Such strengthened general capacity can respond to all health emergencies, not just influenza. Resources are scarce and need to be allocated to many competing priorities. Scientific advice on resource allocation is best handled by generalists with a comprehensive view on health. Disease experts wish to capture public attention and sway resource allocation decisions in favour of the disease of their interest. We referred previously to the principles of guidance on health by the British National Institute for Health and Clinical Excellence (NICE),² cited as “We make independent decisions in an open, transparent way, based on the best available evidence and including input from experts and interested parties.”⁸ Support from disease experts is crucial in delivering opinion, scholarly advice and evidence to a team of independent general scientists. But this team should independently propose decisions to policy-makers and be held accountable for them.

The key to responsible policy-making is not bureaucracy but accountability and independence from interest groups. Decisions must be based on adaptive responses to emerging problems, not on definitions. WHO should learn to be NICE: accountable for reasonableness in a process of openness, transparency and dialogue with all the stakeholders, and particularly the public.⁹ ■

Competing interests: None declared.

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The classical definition of a pandemic is not elusive

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Doshi argues cogently that the definition of pandemic influenza in 2009 was elusive but does not refer to the classical epidemiological definition of a pandemic.¹ A pandemic is defined as “an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people”.² The classical definition includes nothing about population immunity, virology or disease severity. By this definition, pandemics can be said to occur annually in each of the temperate southern and northern hemispheres, given that seasonal epidemics cross international boundaries and affect a large number of people. However, seasonal epidemics are not considered pandemics.

A true influenza pandemic occurs when almost simultaneous transmission takes place worldwide. In the case of pandemic influenza A(H1N1), widespread transmission was documented in both hemispheres between April and September 2009. Transmission occurred early in the influenza season in the temperate southern hemisphere but out of season in the northern hemisphere. This out-of-season transmission is what characterizes an influenza pandemic, as distinct from a pandemic due to another type of virus.

Simultaneous worldwide transmission of influenza is sufficient to *define* an influenza pandemic and is consistent with the classical definition of “an epidemic occurring worldwide”. There is then ample opportunity to further *describe* the potential range of influenza pandemics in terms of transmissibility and disease severity. The emerging evidence for A(H1N1) is that transmissibility, as estimated by the effective reproduction number (R , or average number of people infected by a single infectious person) ranged from 1.2 to 1.3 for the general population but was around 1.5 in children (Kathryn Glass, Australian National University, personal communication). Some early estimates of R for pandemic influenza H1N1 2009 may have been overestimated.³

Severity, as estimated by the case fatality ratio, probably ranged from 0.01 to 0.03%.^{4–6} These values are very similar to those normally seen in the case of seasonal influenza.^{7,8} However, the number of deaths was higher in younger people, a recognized feature of previous influenza pandemics.⁹

It is tempting to surmise that the complicated pandemic definitions used by the World Health Organization (WHO) and the Centers for Disease Control and Prevention of the United States of America involved severity^{1,10} in a deliberate attempt to garner political attention and financial support for pandemic preparedness. As noted by Doshi, the perceived

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