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## Original Article

# Lessons from SARS and H1N1/A: Employing a WHO–WTO forum to promote optimal economic-public health pandemic response

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**Abstract** No formal system exists to review trade restrictions imposed during international public health emergencies rapidly. Failure to put one in place creates disincentives for surveillance and reporting, thereby undermining protection efforts. The 2003 SARS outbreak exposed weaknesses in global governance that caused uncoordinated public health and economic responses. New International Health Regulations (IHR), applied first during the 2009 H1N1 influenza outbreak, demonstrated improvement. Yet they failed to allow for management of public health emergencies in a way that balanced threats to health and those to economies and trade. Establishment of a joint WHO–WTO committee to adjudicate these conflicts might better achieve that balance.

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## Introduction

Globalization through trade, economics, communication, and cultural dispersion has created both benefits and hazards in an increasingly interdependent society. Disease transmission transcends national borders, and conflicts about trade and travel restrictions arise between public health and economic interests.



The conflicts are not new, but we face challenges addressing them. The 2003 SARS outbreak illustrated weaknesses in global responses, including that of the World Health Organization (WHO). Lacking, were timely disease reporting and a forum for coordination with WHO and countries affected.<sup>1</sup> WHO then updated the International Health Regulations (IHR 2005).<sup>2</sup> The 2009 H1N1 influenza provided a systemic test of IHR 2005's effectiveness. Results were mixed. Proactive public health actions to limit spread to countries without disease had questionable impact on health but severe adverse economic effects. It appears that we need better ways to reach consensus on which public health events justify trade and economic restrictions.

We argue that the world needs a robust process to adjudicate conflicts about economic/trade measures in global health emergencies. We propose creating a joint WHO–World Trade Organization (WTO) dispute commission. Its charge would be assessment, coordination, and conflict resolution where global public health emergency measures, including trade and travel restrictions, conflict with economic interests.

### **The First Emergency: SARS 2003**

The SARS outbreak originated in China, then spread rapidly via international travel and trade to more than 37 countries, highlighting global susceptibility to communicable diseases.<sup>3</sup> China failed to report SARS at its onset for fear of economic harm, exacerbating its spread.<sup>4</sup> Epidemiological investigators identified air travel as spreading SARS to other countries.<sup>5</sup> One infected physician from Guangdong was linked to SARS cases appearing in Hong Kong, Vietnam, Singapore, Canada and other countries along air travel routes.<sup>6</sup> Countries with close economic and cultural ties to China, such as Hong Kong and Taiwan, traced the origin of local SARS outbreaks to intra-region travel and business activities.<sup>7</sup>

WHO and the US Centers for Disease Control and Prevention (CDC) announced unprecedented travel advisories, suggesting postponement of all but essential travel to designated outbreak areas.<sup>8</sup> But preliminary analysis of data indicated that travel was only one factor affecting epidemic potential.<sup>6</sup> Spread was also affected by disease transmission



in healthcare settings and local infection control and public health measures, such as quarantine.<sup>7</sup>

SARS 'host' countries reported severe economic consequences from travel and trade restrictions. Economists estimated a 41 per cent decline in East Asia tourism during 2003, loss of 11 billion yuan (US\$1.3 billion) income to China, and loss of 2 billion Canadian dollars to the province of Ontario.<sup>9</sup> Globally they estimated SARS' adverse economic impact at US\$100 billion.<sup>3</sup> Globally, the case fatality rate was estimated at 14–15 per cent.<sup>10</sup> WHO acknowledged that one consequence of travel restrictions against Canada might be failure of other countries to report SARS or other epidemics because of adverse economic consequences. Thus, effectiveness of the IHR came into question.<sup>11</sup>

### The Response: IHR (2005)

The SARS emergency made revising the international regulatory framework urgent. WHO and its member countries adopted IHR 2005 to prevent and respond to globalization of public health risks through international travel and trade restrictions. Its terms bind 194 countries including all 193 WHO Member States.<sup>12</sup> Effective as of 2007, IHR 2005 expands the original IHR beyond specific diseases to include any event that constitutes a public health risk. It requires signatory countries to implement surveillance and reporting measures.<sup>2</sup> It also expanded WHO powers to declare public health emergencies, mandate disease surveillance, and to issue recommendations about travel and trade restrictions.<sup>13</sup> WHO guidelines mandate reporting disease cases or events that may constitute a 'public health emergency of international concern'—specific diseases, such as novel influenza viruses, and natural or human-source disease events such as release of chemical, biological, or radiological materials.<sup>12</sup> The WHO Director-General, in consultation with an Emergency Committee, is to determine whether an event constitutes such an emergency.<sup>4</sup> They will assess risks of disease spread and justifications offered for restrictions on international travel or trade: that is, do they meet the requirements of IHR 2005?<sup>2</sup>

If WHO declares a 'Public Health Emergency of International Concern' it may then issue temporary recommendations for country responses. The drafters intended to minimize interference with international traffic and trade.<sup>2</sup> Since implementation of IHR 2005 in 2007, WHO has declared few such emergencies.<sup>13</sup> IHR 2005 also requires



signatory states to implement systems to strengthen public health surveillance and responses,<sup>12</sup> including at border crossings.<sup>2</sup> National strengthening of capabilities are to be complete by 2012: assessment, plan of action, and full implementation.<sup>14</sup> Extensions may be granted to low resource countries if justified by lack of funding.<sup>13,14</sup> To redress unilateral state imposition of trade and travel restrictions without adequate scientific basis, the IHR 2005 requires states meet a burden of proof to justify economic restrictions.

### **The Second Emergency: 2009 H1N1 Influenza Pandemic**

The 2009 H1N1 influenza pandemic was the first global pandemic since 1968.<sup>15</sup> Fortunately the virus proved less virulent than originally thought<sup>16</sup> and provided an important illustration of IHR 2005 in practice.

The 2009 H1N1 influenza outbreak emerged in Mexico, then spread further into North America and to most countries worldwide. Mexico responded aggressively, instituting broad community mitigation strategies: closure of public places and businesses, and education about sanitation measures, quarantine, and isolation.<sup>17</sup> During the spring of 2009, significant social and economic disruption caused trade losses estimated at more than \$2.3 billion.<sup>17</sup> International health experts found that Mexico acted quickly, proactively, and with transparency.<sup>18</sup> Yet legal and academic public health commentators looked back to question the benefits of Mexico's actions in light of the resulting negative economic and social impact plus possible repercussions, such as discouraging future outbreak reporting.<sup>15,18</sup>

Again disease spread was associated with travel. The United States CDC reported that several countries identified 2009 H1N1 influenza infections in persons who traveled to Mexico 7 days prior to illness onset.<sup>19</sup> Airline transport data showed a strong correlation between countries that received high numbers of passengers from Mexico, and increased risk of disease importation.<sup>20</sup>

Despite Mexico's efforts and the response of the WHO, countries enacted trade and travel sanctions unilaterally. China and Hong Kong imposed quarantine for travelers from North America.<sup>21</sup> Other countries advised against non-essential Mexico travel, and some went further, enacting travel bans to other affected countries.<sup>21</sup>



Some states also restricted exports of pork products, despite lack of support from WHO or the World Animal Health Organization.<sup>13</sup> Twenty countries banned imports of pork and other kinds of meat from Mexico, Canada and the US.<sup>21</sup> Egypt took the extreme measure of slaughtering 400 000 pigs.<sup>21</sup> Mexico attempted to block these scientifically unsupported trade restrictions by filing a statement with WTO. The response was slow and unsatisfactory: a WTO joint statement with other international organizations that pork products were not the source of 2009 H1N1 influenza failed to rule that import bans violated, for lack of scientific evidence, international trade treaties.<sup>15</sup>

Two sorts of questions emerged about the new IHR 2005 regulations. Unilateral state actions, taken without sufficient scientific support or recommendations from relevant United Nations organizations, raised serious questions about IHR 2005 efficacy. Had it prevented trade and travel restrictions disproportionate to the health threat, as the virulence of 2009 H1N1 influenza turned out to be low? Did chronic underreporting in the US and abroad suggest weaknesses in enforcing compliance with IHR 2005 regulations?<sup>22</sup> If 2009 H1N1 influenza had started as, or mutated to, a more virulent form with a higher case fatality rate (such as that of Avian Flu with an estimated case fatality rate of 56 per cent), the consequences could have been disastrous.<sup>22,23</sup> Yet, underreporting of disease outbreaks associated with perceived threats of adverse economic consequences is not limited to SARS and 2009 H1N1 influenza. Developing countries that depend on international trade and tourism but lack adequate disease surveillance capacity have historically underreported or failed to report epidemics.<sup>24</sup> Under the original IHRs, certain WHO Member States failed to comply with reporting requirements. These lapses prompted other countries to impose excessive health measures, including some prohibited by the IHR – creating further disincentives to report, for fear of economic harm.<sup>15</sup>

Even under IHR 2005, this pattern continued with SARS and 2009 H1N1 influenza. Conflict between public health and trade and travel interests have included:

- beef import bans for bovine spongiform encephalopathy (BSE),
- travel restrictions due to infectious disease outbreaks in developing countries, and
- the recent ban on imported vegetables during the European Union *E. coli* outbreak.<sup>25–27</sup>



Hence, legal and public health observers currently share the concern that unnecessary trade, travel, and human rights restrictions (such as humane treatment of extensively drug-resistant tuberculosis patients) may continue to impede reporting under IHR 2005.<sup>4,13</sup>

## Gaps in Global Governance

IHR 2005 relies on Member States to define appropriate emergency protective health measures. However, there is no formal system to review rapidly trade restrictions imposed during public health emergencies. A country has no specific international forum or mechanism to turn to for review of economic sanctions imposed by other countries during an emergency, as in the case of Mexico during the 2009 H1N1 influenza.<sup>15</sup> Lack of mandatory dispute resolution or enforcement mechanisms within IHR 2005 and reliance upon WTO dispute adjudication make redress and enforcement unlikely. These deficits create further disincentives to report outbreaks and to comply with IHR 2005.<sup>13</sup> IHR 2005 permits WHO to suggest that states engaged in overly restrictive health measures ‘reconsider’ their approaches, review restrictive measures within 3 months (taking into account WHO recommendations and IHR 2005) – and within 48 hours of implementation, inform WHO of restrictive measures, the health rationale, and the scientific evidence.<sup>2</sup>

Given the confusing mix of state underreporting and imposition of unsupported trade and travel restrictions, plus the need to report rapidly Public Health Emergencies of International Concern, analysts have called for exploring new solutions.<sup>3,4,13</sup> Building on lessons learned from SARS and 2009 H1N1 influenza outbreaks pre- and post-IHR 2005, we propose a WHO–WTO policy solution.<sup>13,15</sup>

## WTO and Health

WTO has long involved itself in public health. WTO agreements directly impact health and trade globally. Such agreements include the

- Sanitary and Phytosanitary Agreement (SPS),
- Agreements on Technical Barriers of Trade (TBT), and
- Trade-Related Intellectual Property Rights (TRIPS).



All recognize that public health considerations may take precedence over trade. They allow members to manage international trade policies in a way consistent with national health objectives.<sup>28</sup>

Both the TBT and SPS Agreements permit public health-based trade restrictions, provided they do not unnecessarily infringe on trade.<sup>28</sup> SPS specifically allows states to impose trade restrictions to ensure food safety and protection from infectious diseases, when supported with scientific evidence.<sup>28</sup> TRIPS and the Doha Declaration deal primarily with access to drugs at affordable prices through globalized intellectual property regimes, including the option for states, under certain circumstances, to grant compulsory licensing for production of products to meet public health needs.<sup>28</sup>

Trade restrictions related to public health have generally been considered compatible with WTO agreements; when time-limited and minimizing collateral disruption of trade.<sup>15</sup> Prior to IHR 2005, commentators suggested that WTO, using its dispute settlement mechanism, was an appropriate forum to address concerns about trade restrictions emanating from SPS-based health measures.<sup>29</sup> Assessment of what constitutes a health risk, however, differs across WTO agreements, varying in scope and in the evidence needed to support restrictive trade measures.<sup>28</sup> The result has been fragmented trade and public health regulation, lacking consistency and systematic public health input from WHO.

IHR 2005 is compatible with many WTO agreements on many health topics:

- infectious disease control,
- food safety,
- pharmaceutical access,
- tobacco control, and
- health services.<sup>28</sup>

Yet, WTO Agreements do not address public health emergencies as a separate, unique category. Dispute mechanisms under WTO Agreements lack coherence. They concentrate on trade, not public health. During the 2009 H1N1 influenza, Mexico and other countries could not use them to adequately resolve conflicts with countries that imposed what Mexico (and others) felt to be unwarranted trade restrictions. Hence, we propose creation of a forum, that uses the expertise of WTO and WHO, dedicated to balancing health and economic interests.



## Balancing Public Health

Existing dispute resolution processes are not designed for public health emergencies; a more effective method to adjudicate these conflicts is necessary. Given WTO's authority in international trade, even with IHR 2005, WHO lacks authority to govern use of trade restrictions in disease outbreak.<sup>15</sup> WTO has fora to address member trade restriction disputes, but it has no specific system to assess public health aspects of travel restrictions or advisories with potential economic impact. Mediation procedures of WTO's Dispute Settlement Body (DSB) are lengthy and fail to address immediate economic injury suffered during public health emergencies.

Both WHO and WTO recognized the importance of public health for the global economy. The Doha Declaration, which recognizes the need to take public health interests into account and assess links between trade and health policies, offers a way to reach policy coherence and coordinated multilateral efforts. These two specialized agencies can better address public health emergencies and trade concerns together: WHO would provide objective risk assessment with data and epidemiological information about outbreaks, and coordinate global health efforts in public health emergencies. WTO would assess the appropriateness of trade restrictions, and WTO's enforcement system already has extensive global support.

## WHO–WTO Governance

A WHO–WTO process could improve governance by streamlining existing WTO dispute settlement infrastructure (such as DSB) to review of public health emergencies rapidly. WHO would join a WHO–WTO Standing Committee for Emergency Preparedness and Response to assess public health and economic impact, and adjudicate public health emergency-related economic trade disputes. The Committee would have equal representation from each agency and reach conclusions about the reasonableness of any action, and determine what alterations are needed.

A decision-making framework and regulations agreed upon by WHO and WTO, developed specifically for public health and trade disputes, would guide operations. WTO enforcement would support Committee decisions, including orders to comply with a ruling, compensation, or limited trade sanctions.<sup>30</sup> Settlement between the parties prior to a





formal ruling would be the best outcome.<sup>30</sup> Committee decisions would be made by simple majority vote. WHO and WTO would establish an independent panel of agreed-upon experts to resolve split votes – and the panel would consult with the Committee in an attempt to resolve a dispute before casting the deciding vote.

The Committee would learn from and propose policies based on previous public health emergencies, to ensure that public health policy comports with evidence-based findings, and to allow for integration of research showing better means of evaluation (for example, of disease transmission and travel).<sup>31</sup> It could also issue rulings to guide adjudication, policy and best practices. Joint research and scientifically-based policymaking would be critical to the success of these processes.

## Incentives for Reporting

To encourage countries to report early, and to share necessary resources, those states using the WHO–WTO dispute resolution processes must, at a minimum, agree to:

- Adhere to IHR 2005, especially the 24-hour reporting requirement of possible Public Health Emergency of International Concern;
- Adhere to WHO recommendations on host country response to such an emergency, including providing WHO with specimens for assessment;
- Be members of either WHO or WTO and acknowledgment that parties will be bound by WHO and WTO recommendations and applicable international regulations for the particular Public Health Emergency of International Concern;
- Submission of public health rationale and scientific evidence to justify proposed trade and travel restrictions; failure to do so would result in a presumptive ruling for the affected host country; and
- Provide an assessment of economic and social effects of proposed trade/travel restrictions. (Scaled ratings illustrating potential impact, based on macro-economic modeling of health emergencies have been used before).<sup>3</sup>

The Committee will perform quantitative and qualitative assessment of virulence of the disease, the likelihood of change, the ease of transmission of disease or agent, and other public health factors, plus the



appropriateness of the proposed economic trade action for a ‘Public Health Emergency of International Concern’.

WHO must take into account equity when evaluating ‘substantial compliance’ with minimum obligations of IHR 2005, because of differing capacity of middle and lower income countries to build national public health systems.<sup>21</sup> To make compliance feasible for these countries, they and the global community will need to build up their public health and surveillance infrastructure.

## Exemptions

Immediate actions to address clear and present dangers to health and economic activity should be permitted for: (a) disease outbreaks identified as high risk/high virulence; and (b) clear, unilateral trade or travel restrictions portending large, unjustified negative economic impact on a host country. The Committee should consider these and other exemptions regularly. Affected countries should be given the right to request an assessment and review of economic trade actions and adjustments (similar to *ex post* due process hearings in the US).<sup>32</sup>

## Conclusion

Global travel is increasing. In the first 4 months of 2011, 268 million people participated;<sup>33</sup> their numbers illustrate the vast scale of threat that global travel presents for disease transmission.<sup>34</sup> Social and economic impact from SARS 2003 and 2009 H1N1 influenza heightened concerns about future outbreaks and their consequences for the global economy.<sup>3</sup> A formalized, joint WHO–WTO process that integrates IHR 2005 and relies on evidence-based global decision making can increase the likelihood that the next public health emergency will be addressed effectively and that scarce economic resources will be preserved.

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