



# PUBLIC HEALTH EMERGENCIES OF INTERNATIONAL CONCERN: GLOBAL, REGIONAL, AND LOCAL RESPONSES TO RISK

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## ABSTRACT

The declaration in 2009 that the H1N1 pandemic constituted a public health emergency of international concern (PHEIC) was the first such declaration under the revised International Health Regulations that were adopted in 2005. In the period since then PHEIC have been declared in relation to polio, Ebola, and Zika. This article evaluates initiatives that have been introduced globally, within the Asia-Pacific region, and within Australia, to strengthen preparedness for public health emergencies. Through analysis of evolving conceptualisations of risk, surveillance of zoonotic diseases, and development of public health capacities, the article argues that to date the global community has failed to make the necessary investments in health system strengthening, and that without these investments, global public health emergencies will continue to be an ongoing challenge.

**KEYWORDS:** Global health, International Health Regulations, Pandemics, Risk, Governance, Health emergencies

## I. INTRODUCTION

In November 2016 the Director-General of the World Health Organization (WHO) declared an end to the Public Health Emergency of International Concern (PHEIC)

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caused by Zika virus.<sup>1</sup> Initially declared a PHEIC in February 2016 as a result of concerns over the potential link between Zika and microcephaly,<sup>2</sup> and clusters of cases in the Americas and particularly Brazil, Zika virus became the subject of the fourth PHEIC to be declared since the revisions to the *International Health Regulations* (IHR) in 2005, with earlier emergencies declared in relation to the 2009 H1N1 influenza pandemic,<sup>3</sup> the 2014 outbreak of Ebola in West Africa,<sup>4</sup> and the spread of polio.<sup>5</sup> In addition, in the past few years, the spread of Middle East Respiratory Syndrome coronavirus (MERS-CoV),<sup>6</sup> and an epidemic of yellow fever in Angola,<sup>7</sup> have also posed major threats to human health. A striking feature of the global response to each of these emergencies has been the sense of *déjà-vu* that pervades the global debates, with some commentators arguing that the failure to learn the lessons from past emergencies reveals the need for reform of the IHR.<sup>8</sup> In the wake of each emergency has come global soul-searching over the best way of strengthening our capacity for the future but it remains to be seen whether recent reforms will lead to real strengthening of national, regional, and global health systems.

This article engages with recent efforts at the national, regional, and global level to address the risks posed by the global spread of infectious disease, and the evolving conceptualisations of risk that have been part of these efforts. Building upon these issues, this article considers whether recent reforms to global health governance are adequate to meet the challenges posed by global public health emergencies.

Risk is an elusive concept in management of infectious disease outbreaks. No activity is risk free, and the magnitude of ensuing harms is often unpredictable. This is especially true of any zoonotic disease outbreak showing signs of developing as a

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- 1 World Health Organization, *Fifth Meeting of the Emergency Committee Under the International Health Regulations (2005) Regarding Microcephaly, Other Neurological Disorders and Zika Virus* (18 November 2016) <<http://www.who.int/mediacentre/news/statements/2016/zika-fifth-ec/en/>> accessed 20 February 2017.
  - 2 World Health Organization, *WHO Statement on the First Meeting of the International Health Regulations (2005) (IHR 2005) Emergency Committee on Zika Virus and Observed Increase in Neurological Disorders and Neonatal Malformations* (1 February 2016) <[www.who.int/mediacentre/news/statements/2016/1st-emergency-committee-zika/en/](http://www.who.int/mediacentre/news/statements/2016/1st-emergency-committee-zika/en/)> accessed 20 February 2017. For discussion see, David L Heymann and others, 'Zika Virus and Microcephaly: Why is this Situation a PHEIC?' (2016) 387(10020) *Lancet* 719.
  - 3 World Health Organization, *Evolution of a Pandemic A(H1N1) 2009 – April 2009-August 2010* (2nd edn, World Health Organization 2013).
  - 4 World Health Organization, *WHO Statement on the 1st Meeting of the IHR Emergency Committee on the 2014 Ebola Outbreak in West Africa* (2014) <[www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/](http://www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/)> accessed 20 February 2017.
  - 5 World Health Organization, 'WHO Statement on the Meeting of the International Health Regulations Emergency Committee Concerning the International Spread of Wild Poliovirus' (2014) <[www.who.int/mediacentre/news/statements/2014/polio-20140505/en/](http://www.who.int/mediacentre/news/statements/2014/polio-20140505/en/)> accessed 20 February 2017.
  - 6 World Health Organization, 'Middle East Respiratory Syndrome Coronavirus (MERS-CoV)' (2015) <[www.who.int/mediacentre/factsheets/mers-cov/en/](http://www.who.int/mediacentre/factsheets/mers-cov/en/)> accessed 1 September 2016; Chiara Poletto, Pierre-Yves Boëlle and Vittoria Colizza, 'Risk of MERS Importation and Onward Transmission: A Systematic Review and Analysis of Cases Reported to WHO' (2016) 16 *BMC Infect Dis* 448.
  - 7 Daniel Lucey and Lawrence O Gostin, 'A Yellow Fever Epidemic: A New Global Health Emergency?' (2016) 315(24) *JAMA* 2661.
  - 8 Trygve Ottersen, Steven J Hoffman and Gælle Groux, 'Ebola Shows Again the International Health Regulations are Broken: What Can Be Done Differently to Prepare for the Next Epidemic?' (2016) 42 *Am JL & Med* 356.

potential pandemic. Social theorists such as Ulrich Beck<sup>9</sup> suggest that domestic policy settings have become more risk averse over recent decades, transforming governance.<sup>10</sup> But management of risk is nevertheless central to pandemic preparedness,<sup>11</sup> despite the competing ways of conceptualising it.<sup>12</sup>

While Tom Koch has provocatively suggested that the real pandemic is that of our collective hubris about the adequacy of our pre-planning,<sup>13</sup> this article argues that the challenges of managing risk and the uncertainty associated with risk remain at the centre of preparedness for and responding to public health emergencies of international concern. As we argue here, although there has been considerable strengthening of global public health law over the past decade with the introduction of the revised IHR in 2005, risk continues to be an evolving concept in the context of preparedness for public health emergencies, while the challenge of building capacity, not only at the level of individual countries but also regionally and globally; the continued tensions between global cooperation and national sovereignty; and the balancing of human rights in response to public health emergencies — all continue to present legal and ethical challenges in this area. Without reforms of global health governance to build capacity at the national, regional, and global level to respond to emerging crises, public health emergencies caused by infectious diseases will continue to be a challenge for global health governance and an ongoing threat to human health.

## II. RISK AND THE IHRs

The backstory to the modernisation of the international health emergency response framework to its current manifestation in the IHR (2005) has been told before.<sup>14</sup> What is less commented on is the unusual model or ‘design’ of those regulations due to the special characteristic of uncertainty associated with the health threats sought to be managed.

As Lakoff observes, pandemic response planning for emerging or uncertain events tends to opt for ‘sentinel’ systems which identify possible warning signs to set in train decision-making protocols or plans, rather than rely on known risk levels to trigger preordained and often ‘disciplinary’ responses such as quarantine.<sup>15</sup> The two main

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9 Ulrich Beck, *Risk Society: Towards a new modernity* (Sage 1992); Ulrich Beck, *World Risk Society* (Polity 1999).

10 Gabe Mythen, ‘The Problem of Governance in the Risk Society: Envisaging Strategies, Managing Not-knowing’ in Urbano Fra.Paleo (ed), *Risk Governance: The articulation of hazard, politics and ecology* (Springer 2015) 43.

11 Terry Carney, Richard Bailey and Belinda Bennett, ‘Pandemic Planning as Risk Management: How Fared the Australian Federation?’ (2012) 19 *J Law Med* 550.

12 Theresa Seetoh, Marco Liverani and Richard Coker, ‘Framing Risk in Pandemic Influenza Policy and Control’ (2012) 7 *Glob Public Health* 717.

13 Tom Koch, ‘Hubris: The Recurring Pandemic’ (2015) 9 *Disaster Med Public Health Prep* 51.

14 David P Fidler, ‘From International Sanitary Conventions to Global Health Security: The New International Health Regulations’ (2005) 4 *Chinese JIL* 325; David P Fidler and Lawrence O Gostin, ‘The New International Health Regulations: An Historic Development for International Law and Public Health’ (2006) 34 *J Law Med & Ethics* 85.

15 Andrew Lakoff, ‘Real-time Biopolitics: The Actuary and the Sentinel in Global Public Health’ (2015) 44 *Econ Soc* 40, 42.

approaches (ie risk management and vigilance) are quite different, as Lakoff<sup>16</sup> nicely explains:

Risk management . . . involves the creation of a common space of calculation through which planners can predict the likelihood of future events; whereas vigilance, in contrast, assumes that the future cannot be known and that one must therefore be prepared for surprise.

However, sentinel devices (such as monitoring shifts in emergency ward admissions or patterns of pharmaceutical use) differ from risk management grounded in historical experience derived from monitoring past experience with known risks in that they:

do not operate on their own but are integrated into a broader system of alert-and-response, one that includes preparedness plans that instruct officials in how to respond and decision instruments that guide governmental intervention as the event unfolds.<sup>17</sup>

Managing uncertainty, then, lies at the heart of pandemic response planning, and the WHO machinery for managing information on possible epidemics, ranging across the spectrum from rumours to information from governments or trawling of electronic sources, is highly sophisticated.<sup>18</sup> Risk communication during public health emergencies remains a highly complex matter, requiring recognition of uncertainty and building of trust with the public.<sup>19</sup>

In terms of the IHR themselves, the 2005 revisions moved away from the narrow focus of the previous IHR which had addressed the reporting of 'known' risks encompassing three diseases only: plague, cholera, and yellow fever. In contrast, the revised IHR reflected a blended approach with reporting to WHO required for certain diseases of known risk (including Severe Acute Respiratory Syndrome (SARS) and new sub-types of human influenza); and assessment of risk using a decision instrument contained in the IHR required for some other diseases of known risk, (including pneumonic plague, cholera, yellow fever, and Ebola), 'that have demonstrated the ability to cause serious public health impact and to spread rapidly internationally'. It should be noted that Ebola, a 'known' disease with which there is some previous experience, and which is listed in the IHR, nevertheless caught the international community by surprise with the scale of the recent outbreak in West Africa, highlighting the fact that even with the revised IHR in place, the international community still struggles to respond effectively to global public health emergencies caused by known infectious diseases. The third approach encompasses, to borrow from Lakoff, the vigilance approach required of an unknowable future event by requiring reporting to WHO of 'any event of potential international public health concern'.<sup>20</sup>

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16 *ibid* 45.

17 *ibid* 46.

18 Valerie November and Yvan Leanza, *Risk, Disaster and Crisis Reduction* (Springer 2015) 37–65; Sara E Davies, 'Nowhere to Hide: Informal Disease Surveillance Networks Tracing State Behaviour' (2012) 24 *Global Change, Peace & Security* 95.

19 Gaby-Fleur Ból, 'Risk Communication in Times of Crisis' (2016) 17 *EMBO Rep* 1.

20 World Health Organization, *International Health Regulations (2005)* (3rd edn, 2016), Annex 2.

Although the revised IHR require countries to report certain public health events within their territory in accordance with the IHR,<sup>21</sup> the 2005 revisions also allow WHO to take account of reports from other sources of events that may constitute a public health emergency of international concern.<sup>22</sup> In doing so however, WHO must request verification of any such reports from the affected country, and offer to collaborate with the affected country in assessing the event and the adequacy of the control measures.<sup>23</sup> This potential for WHO to take account of other sources of information about disease outbreaks or other possible public health emergencies allows information from NGOs, media reports, and social media to inform decision-making about possible global public health emergencies.<sup>24</sup> Importantly, this development moves the revised IHR beyond a binary WHO-country relationship, thus reflecting the multiplicity of actors inherent in the crowded landscape of contemporary global health.<sup>25</sup> As Davies and Youde argue, the changes in the revised IHR ‘introduce a host of new eyes and ears to keep watch and hold governments accountable for their response to public health emergencies’.<sup>26</sup>

Informal reports of disease outbreaks and analysis of social media not only potentially provide some early warning of unusual events, but also make it more difficult for states to hide disease outbreaks,<sup>27</sup> adding new dimensions to risk for states experiencing emerging public health crises from infectious diseases, given the potential for other countries to impose trade or travel restrictions in response to perceived risk.<sup>28</sup> In this context, there are complex relationships between informal and state-based reporting, and engagement by the state with the public.<sup>29</sup> In addition, widespread use of the internet and social media also opens new possibilities for what has been termed ‘digital participatory surveillance’ in which citizens and volunteers report on disease, thus supplementing traditional disease surveillance mechanisms.<sup>30</sup> Finally, of course the traditional media may influence perceptions of risk by the general public through the media’s coverage of public health emergencies.<sup>31</sup>

The need for flexibility and an approach premised on unknowable risk has been evident in the evaluations of preparedness for and responses to the 2009 H1N1 influenza pandemic. Although there was considerable work globally and nationally in the

21 *ibid* art 6.

22 *ibid* art 9.

23 *ibid* art 10. See also Ottersen, Hoffman and Groux (n 8) at 363.

24 Sara E Davies and Jeremy Youde, ‘The IHR (2005), Disease Surveillance, and the Individual in Global Health Politics’ (2013) 17 *Int J Human R* 133.

25 *ibid*.

26 *ibid* at 139.

27 *ibid*.

28 See the discussion below nn 101–104 and related text.

29 Sara E Davies, ‘The Challenge to Know and Control: Disease Outbreak Surveillance and Alerts in China and India’ (2012) 7 *Glob Public Health* 695.

30 Claudia Pagliari and Santosh Vijaykumar, ‘Digital Participatory Surveillance and the Zika Crisis: Opportunities and Caveats’ (2016) 10 *PLoS Negl Trop Dis* e0004795. See also, Gabriel J Milinovich and others, ‘Internet-based Surveillance Systems for Monitoring Emerging Infectious Diseases’ (2014) 14 *Lancet Inf Dis* 160.

31 Tara Kirk Sell and others, ‘Media Messages and Perception of Risk for Ebola Virus Infection, United States’ (2017) 23(1) *Emerging Infectious Diseases* 108; Niamh Stephenson and M Jamieson, ‘Securitizing Health: Australian Newspaper Coverage of Pandemic Influenza’ (2009) 31(4) *Sociology of Health & Illness* 525.

early-mid 2000s to plan and prepare for an influenza pandemic, much of the preparation was for a pandemic caused by the more lethal H5N1 avian influenza virus.<sup>32</sup> Thus, although a pandemic was declared by WHO in 2009 in response to the H1N1 influenza virus, the relative mildness of the disease when compared to the H5N1 virus presented challenges for WHO and for individual countries in adapting their responses during the pandemic in light of evolving information about risk.<sup>33</sup> In response to this, WHO's revised pandemic guidance adopted a more flexible, all hazards approach<sup>34</sup> which has been reflected in updated preparedness plans at the national level.<sup>35</sup>

Recognition of the gradations of risk is also evident in the recent recommendation by the Interim Ebola Panel Report for an 'intermediate level' in the declaration of a public health emergency of international concern. As the Report noted, under the current IHR 'there is either a PHEIC or there is not',<sup>36</sup> with the recommendation for consideration to be given to 'the possibility of an intermediate level that would alert and engage the wider international community at an earlier stage in a health crisis'.<sup>37</sup> Because only PHEICs (along with the IHRs) have any real normative status under international law,<sup>38</sup> this may also promote public understanding of the array of other functions and responsibilities of WHO in coordinating international management of potential pandemic episodes.<sup>39</sup> Furthermore, expert committees appointed to consider the global response to the Ebola outbreak have recommended considerable strengthening of WHO's capacity to respond to global public health emergencies.<sup>40</sup>

This evolution in the conceptualisation of risk recognises the considerable uncertainty that exists in relation to new and emerging infectious diseases and the need for preparedness and response capacity to be flexible and adaptable. The challenges of accurately predicting risk are considerable. The International Health Regulations are

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32 World Health Organization, *Comparative Analysis of National Pandemic Influenza Preparedness Plans* (World Health Organization, Geneva 2011).

33 Belinda Bennett and Terry Carney, 'Planning for Pandemics: Lessons from the Past Decade' (2015) 12 J Bioeth Inq 419.

34 *ibid*; Belinda Bennett, 'Updating Australia's Pandemic Preparedness: The Revised Australian Health Management Plan for Pandemic Influenza (AHMPPI)' (2015) 22 J Law Med, 506, 508; World Health Organization, *Pandemic Influenza Risk Management: WHO Interim Guidance* (2013).

35 See eg Bennett (n 34).

36 World Health Organization, *Report of the Ebola Interim Assessment Panel* (2015), 13.

37 *ibid*.

38 Pedro A Villarreal, 'Pandemic Declarations of the World Health Organization as an Exercise of International Public Authority: The Possible Legal Answers to Frictions Between Legitimacies' (2016) 7 Go JIL 95, 108–113. This does not mean that other parts of the WHO armoury do not have significant normative force, merely that the authority stems from other sources of legitimacy or authority outside international law. For instance the 'name and shame' scheme is an effective means of encouraging compliance with guidelines as well as in reinforcing the international obligations associated with the IHRs (and PHEICs): *ibid* 111.

39 For a recent review of the strengths and limitations of WHO pandemic management capabilities see: Lawrence O Gostin and Rebecca Katz, 'The International Health Regulations: The Governing Framework for Global Health Security' (2016) 94 Milbank Q 264.

40 For discussion see, Lawrence O Gostin and others, 'Toward a Common Secure Future: Four Global Commissions in the Wake of Ebola' (2016) 13(5) PLoS Med e1002042; Belinda Bennett, 'Where to Now for Reform of Global Health Governance?' (2016) 24 J Law Med 7.



designed to empower international leadership (from the WHO) to facilitate coordinated international preparedness for and response to pandemic events. However, commentators have been unflattering of WHO's record of achievement in managing recent international health emergencies, including delays in responding to Ebola in West Africa in 2014, and a perceived over-reaction to H1N1 (swine flu) in 2009–10,<sup>41</sup> leading to suggestions for reform of WHO and global health governance more generally.<sup>42</sup> While the speedy communication and collaboration fostered by the IHRs is credited with enabling a very rapid response to fellow passengers exposed to a MERS carrier on a flight,<sup>43</sup> others are critical of their current adequacy,<sup>44</sup> while common responses such as airport border screening have been panned as ineffective,<sup>45</sup> at least on any scientific basis (what it does for public confidence is another matter). Interestingly, the WHO response to Zika reflects a more proactive response to emerging risk, particularly in the wake of criticisms of its slow response to Ebola,<sup>46</sup> with WHO declaring the cluster of cases of microcephaly to be a PHEIC even before the causal link between Zika and microcephaly was established.<sup>47</sup>

As conceptualisations of risk and infectious diseases have broadened to encompass currently unknown risks, so too has there been a broader approach to the sources of risk. The increasing contributions to emerging disease threats stemming from rising population, urbanisation, de-forestation and other environmental pressures,<sup>48</sup> has put the spotlight on diseases such as Ebola, or swine and bird flu, where the pathogen originated in non-human populations. One consequence has been a broadening of the planning horizon to incorporate paying attention to the ecological context of such diseases. Indeed some commentators argue that current pandemic preparedness plans are too narrow, calling for a more holistic ecological 'one-health' response embracing anthropological, ecological, and veterinary dimensions,<sup>49</sup> though

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41 For discussion see, J Benton Heath, 'Global Emergency Power in the Age of Ebola' (2015) 57 *Harvard Int Law J* 1; Adam Kamradt-Scott, 'WHO's to Blame? The World Health Organization and the 2014 Ebola Outbreak in West Africa' (2016) 37 *Third World Q* 401; Villarreal (n 38).

42 Lawrence O Gostin and Eric A Friedman, 'A Retrospective and Prospective Analysis of the West African Ebola Virus Disease Epidemic: Robust National Health Systems at the Foundation and an Empowered WHO at the Apex' (2015) 385 *Lancet* 1902; Gostin and others, (n 40); Colin McInnes, 'WHO's Next? Changing Authority in Global Health Governance After Ebola' (2015) 91 *Int Aff* 1299; Tim K Mackey, 'The Ebola Outbreak: Catalyzing a "Shift" in Global Health Governance' (2016) 16 *BMC Infect Dis* 699.

43 Kowk-ming Poon and others, 'International Health Regulations (2005) Facilitate Communication for In-flight Contacts of a Middle East Respiratory Syndrome Case, Hong Kong Special Administrative Region, 2014' (2015) 6 *Western Pac Surveill Response J* 62.

44 Rebecca Katz and Scott F Dowell, 'Revising the International Health Regulations: Call for a 2017 Review Conference' (2015) 3 *Lancet Glob Health* e352; Ottersen, Hoffman and Groux (n 8).

45 Linda A Selvey, Catarina Antão and Robert Hall, 'Entry Screening for Infectious Diseases in Humans' (2015) 21 *Emerg Infect Dis* 197.

46 Erika Check Hayden, 'Spectre of Ebola Haunts Zika Response: Agencies Rush to Show That Outbreak Tactics Have Improved' (2016) 531 *Nature* 19.

47 Heyman and others (n 2).

48 Jennifer S Edge and Steven J Hoffman, 'Strengthening National Health Systems' Capacity to Respond to Future Global Pandemics' in Sara E Davies and Jeremy R Youde (eds), *The Politics of Surveillance and Response to Disease Outbreaks: The New Frontier for States and Non-state Actors* (Ashgate 2015); Lakoff (n 15) 51.

49 Benjamin Capps and others, 'Introducing One-Health to the Ethical Debate About Zoonotic Diseases in Southeast Asia' (2015) 29 *Bioethics* 588. As succinctly put by Dr Ali Khan, the former director of the Office

the very breadth of the 'One Health' concept presents challenges for its conceptualisation and operationalisation.<sup>50</sup>

### III. BUILDING CAPACITY

As the WHO has noted:

When the Ebola outbreak in West Africa erupted in the spring of 2014, the global health community was ill prepared to cope. There were no vaccines, no treatments, few diagnostics, and insufficient medical teams and trained responders.<sup>51</sup>

The lack of effective medical countermeasures for Ebola was despite the fact that Ebola was already a known disease.<sup>52</sup> Indeed, in the years since it was first discovered in 1976, there have been more than 20 outbreaks of Ebola in Africa,<sup>53</sup> although the 2014 outbreak was undoubtedly the largest and most widespread to date.

The 2014 Ebola outbreak highlighted the need to be able to develop effective medical countermeasures to respond to an emerging global health crisis caused by infectious disease. During the Ebola outbreak considerable work was undertaken on development of possible Ebola vaccines, with WHO coordinating international efforts for development of new interventions.<sup>54</sup> The potential for crises to harness efforts and innovations for public health is significant as is demonstrated by the announcement in late 2016 of the trial results of a potential vaccine for Ebola.<sup>55</sup>

In 2016, the WHO developed a blueprint for research and development to prevent epidemics,<sup>56</sup> an approach that is in line with the recommendations of the various expert reviews of the Ebola response for accelerated R&D for global public health emergencies.<sup>57</sup> The R&D Blueprint focuses on three approaches: (i) 'improving coordination and fostering an enabling environment', (ii) 'accelerating Research and Development processes', and (iii) 'Developing new norms and standards tailored to

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of Health Preparedness and Response at the US Centres for Disease Control and Prevention, the one health approach to risk involves, 'not just to focus on humans but also the implicated animals and the environment to identify potentially novel prevention strategies', Ali Khan with William Patrick, *The Next Pandemic: On the front Line against Humankind's Gravest Dangers* (Public Affairs 2016) 45.

50 Marcel Verweij and Bernice Bovenkerk, 'Ethical Promises and Pitfalls of OneHealth' (2016) 9 Public Health Ethics 1; Kelley Lee and Zabrina L Brumme, 'Operationalizing the One Health Approach: The Global Governance Challenges' (2013) 28 Health Policy Plann 778.

51 World Health Organization, *An R&D Blueprint for Action to Prevent Epidemics: Plan of Action* (World Health Organization, 2016) 6.

52 *ibid* 7.

53 High-level Panel on the Global Response to Health Crises, 'Protecting Humanity from Future Health Crises' (United Nations, 25 January 2016) 21.

54 World Health Organization (n 51) 7.

55 Ana Maria Henao-Restrepo and others, 'Efficacy and Effectiveness of an rVSV-vectored Vaccine in Preventing Ebola Virus Disease: Final Results from the Guinea Ring Vaccination, Open-Label, Cluster-Randomised Trial (Ebola Ça Suffit!)' (2017) 389 Lancet 505. See also, World Health Organization, 'News Release: Final Trial Results Confirm Ebola Vaccine Provides High Protection Against Disease' <[www.who.int/mediacentre/news/releases/2016/ebola-vaccine-results/en/](http://www.who.int/mediacentre/news/releases/2016/ebola-vaccine-results/en/)> accessed 20 February 2017.

56 World Health Organization (n 51).

57 *ibid* 13. For discussion see Lawrence O Gostin and others (n 40).



the epidemic context'.<sup>58</sup> The publication in 2016 by WHO of *Guidance for Managing Ethical Issues in Infectious Disease Outbreaks* will assist these efforts by providing guidance on a range of important issues including research during emergencies, data-sharing, biobanking of samples, and emergency use of unproven interventions,<sup>59</sup> issues which all came to the fore during the Ebola outbreak.<sup>60</sup>

While pandemic response capacity in terms of R&D is being addressed globally, IHR core capacities are specified at the national level. The building of such capacity at the national level is multi-layered and resource demanding, so countries vary greatly in their ability (or willingness) to build capacities such as having enough or sufficiently proximate access to testing laboratories.<sup>61</sup> This is especially the case for developing countries in regions such as South-East Asia, where implementation of the IHRs is patchy due to resource and logistical challenges.<sup>62</sup> To assist the region to meet the IHR's mid-2014 deadline for development of core capacities, the Asia-Pacific Strategy for Emerging Diseases (APSED) was developed, originally in 2005 and updated in 2010.<sup>63</sup> APSED has provided a valuable framework to support development of IHR core capacities in the region with 19 out of 27 States Parties reporting that they have met the IHR core capacity requirements,<sup>64</sup> and a 2015 evaluation showing establishment of event-based surveillance by 85% of Member States; with 92% having 'a rapid response team and risk communication plans for emergencies; and 95% of national reference laboratories have participated in external quality assessment'.<sup>65</sup>

The challenges associated with building capacity are significant. Although the IHR require countries to build certain core capacities within their health systems, the achievement of IHR core capacities remains uneven<sup>66</sup> sparking debate over the best means of ensuring compliance with IHR requirements, including consideration of the

58 World Health Organization (n 51) 14.

59 World Health Organization, *Guidance on Managing Ethical Issues in Infectious Disease Outbreaks* (World Health Organization, 2016).

60 Abha Saxena and Melba Gomes, 'Ethical Challenges to Responding to the Ebola Epidemic: The World Health Organization Experience' (2016) 13(1) *Clinical Trials* 96; Emily A Largent, 'EBOLA and FDA: Reviewing the Response to the 2014 Outbreak, To Find Lessons for the Future' (2016) *JL & the Biosciences* 1.

61 Edge and Hoffman (n 48); Sara E Davies, Adam Kamradt-Scott and Simon Rushton, *Disease Diplomacy: International Norms and Global Health Security* (Johns Hopkins University Press 2015).

62 World Health Organization, *Implementation of the International Health Regulations (IHR 2005) and the Asia Pacific Strategy for Emerging Diseases (APSED), Report of a Regional Meeting, Bangkok, Thailand, 24–26 June 2014* (2014).

63 World Health Organization, *Asia-Pacific Strategy for Emerging diseases (APSED)* (2010) 7.

64 World Health Organization, Western Pacific Region, *Report of the Regional Director: The Work of WHO in the Western Pacific Region, 1 July 2015-30 June 2016* (World Health Organization, 2016) 30.

65 *ibid* 33.

66 World Health Organization, *International Health Regulations (2005): Summary of States Parties 2013 Report on IHR Core Capacity Implementation - Regional Profiles* (World Health Organization 2014). In 2016 the WHO Director-General noted that although progress had been made on IHR core capacities, 'the actual level of capacity is uncertain in some countries and efforts to ensure that these capacities remain operational will require continuous strengthening of infrastructure, procedures and human resources.' World Health Organization, *Implementation of the International Health Regulations (2005): Annual Report on the Implementation of the International Health Regulations (2005): Report by the Director-General (WHA 69/20)* (18 May 2016), at para 15.

best means of assessing the national capacities required by the IHR. Commenting that 'When the health of all is at stake, information must be validated through some form of peer review or other external assessment',<sup>67</sup> the Ebola Interim Assessment Panel considered the system of voluntary self-assessment of IHR core capacities to be 'unacceptable' and recommended costed and independently assessed plans for development of IHR core capacities, an approach that has also been recommended by other international expert panels.<sup>68</sup> Importantly, there has been a shift away from viewing IHR compliance as a point-in-time assessment of compliance to one of on-going capacity building and continual improvement. Noting with concern the fact that 'only approximately one-third of States Parties have indicated that they have met the minimum [IHR] core capacity requirements', the Report of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation concluded that 'work to develop, strengthen and maintain the core capacities under the IHR should be viewed as a continuing process for all countries'.<sup>69</sup> The Review Committee also recommended external evaluations rather than self-assessment.<sup>70</sup>

Following from these recommendations the WHO has developed a Joint External Evaluation Tool to assess the capacity of countries to prevent, detect and respond to public health threats.<sup>71</sup> Under the Joint External Evaluation the process of evaluation begins with completion of a survey by countries using their own self-reported data, which is provided to the joint external evaluation (JEE) team of national and international experts. Following a visit by the JEE team to the host country the JEE team draft a report on the country's capabilities and challenges.<sup>72</sup> National capacity to meet IHR core capacities is assessed on a 5-point scale: (i) no capacity, (ii) limited capacity, (iii) developed capacity, (iv) demonstrated capacity, and (v) sustainable capacity.<sup>73</sup> The resulting report is shared with the host country, and with the country's permission, stakeholders, in order to facilitate international support for implementation, circulate best practices, and promote accountability.<sup>74</sup>

The development of the JEE tool is an important step towards greater transparency and accountability of the assessment of IHR core capacities. However, without substantial funding to support the realisation of core capacities, it is likely that many countries will continue to struggle to strengthen their national capacities.

For low resource countries, regional cooperation may provide important opportunities to build capacity and preparedness. In South-East Asia for example, many countries within the region have limited resources. The region has also been the location for the emergence of a number of communicable diseases in recent years including

67 World Health Organization (n 36) 11.

68 Gostin and others (n 40). For discussion see also, Bennett (n 40).

69 World Health Organization, 'Implementation of the International Health Regulations (2005): Report of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation - Report by the Director-General (WHA68/22 Add.1)' (2015) at para 20-21.

70 *ibid* at para 43.

71 World Health Organization, *Joint External Evaluation Tool: International Health Regulations (2005)* (World Health Organization, 2016).

72 *ibid* at 2.

73 *ibid* at 2-3.

74 *ibid* at 2.

SARS, avian influenza (HSN1), and Nipah virus.<sup>75</sup> The tropical climate of many South-East Asian countries also means that vector-borne diseases such as dengue and chikungunya pose ongoing threats to public health.<sup>76</sup> The cluster of cases of microcephaly in the Americas not only led to it being declared a public health emergency of international concern—an emergency that has since been declared over—but also to concern over its potential impact on low resource countries in other regions<sup>77</sup> and on vulnerable members of society.<sup>78</sup>

Regional initiatives include the Asia Pacific Strategy on Emerging Diseases,<sup>79</sup> which ‘serves as a key regional tool to help countries meet their IHR core capacity requirements’<sup>80</sup> although a recent review noted that challenges still remain in strengthening capacity within the region.<sup>81</sup> Other regional initiatives for infectious diseases include the Pacific Public Health Surveillance Network, and the East African Integrated Disease Surveillance Network.<sup>82</sup> Still other initiatives exist at the sub-regional level. These include the Mekong Basin Disease Surveillance initiative, which covers ‘Cambodia, Lao PDR, Myanmar, Thailand, Vietnam and the Yunnan and Guangxi provinces of China’.<sup>83</sup> In addition to helping to build regional capacity, in the context of emergencies, existing networks may also be utilised to provide a framework for decision-making. For example, during the Ebola outbreak in West Africa, the WHO African Vaccine Regulatory Forum provided a forum ‘for regulators, ethics committees and sponsors to reach consensus on key ethical and regulatory questions’.<sup>84</sup>

Bond et al<sup>85</sup> describe three phases in the development of these sub-regional disease surveillance networks. The first phase, from 1996–2007, was one during which the networks were established and attention was largely focused on diseases of local concern and training of personnel. During phase two, which was from 2003–2009, the focus shifted to national and cross-border surveillance to address diseases in border regions including HIV/AIDS and regional threats such as SARS. This was also the period during which the revised IHR were adopted and came into effect, which also focused national and regional commitment on IHR compliance. Finally, in phase three, which began in 2006 and continues to the present, Bond et al note growing co-operation between regional networks, a focus on strengthening preparedness for

75 Richard J Coker and others, ‘Emerging Infectious Diseases in South-East Asia: Regional Challenges to Control’ (2011) 377 *Lancet* 599.

76 *ibid.*

77 Isaac I Bogoch and others, ‘Potential for Zika Virus Introduction and Transmission in Resource-Limited Countries in Africa and the Asia-Pacific Region: A Modelling Study’ (2016) 16(11) *Lancet Inf Dis* 1237; Editorial, ‘Zika’s Emerging Threat for the Asia-Pacific Region’ (2016) 388 *Lancet* 1026.

78 Sara E Davies and Belinda Bennett, ‘A Gendered Human Rights Analysis of Ebola and Zika: Locating Gender in Global Health Emergencies’ (2016) 92(5) *Int Aff* 1041.

79 World Health Organization (n 63). For discussion see Coker and others, (n 75).

80 World Health Organization (n 62) at 1–2.

81 *ibid.*

82 Katherine C Bond and others, ‘The Evolution and Expansion of Regional Disease Surveillance Networks and Their Role in Mitigating the Threat of Infectious Disease Outbreaks’ (2013) 6: 19913 *Emerg Health Threats J* <<http://dx.doi.org/10.3402/ehth.v6i0.19913>>, at [2].

83 Melinda Moore and David J Dausey, ‘Local Cross-Border Disease Surveillance and Control: Experiences from the Mekong Basin’ (2015) 8  *BMC Res Notes* 90 at [2]. See also, Coker and others, (n 75).

84 World Health Organization (n 51) 28.

85 Bond and others (n 82).

pandemic influenza, and the establishment of Connecting Organizations for Disease Surveillance (CORDS) to share expertise and learning between regional networks.<sup>86</sup>

There are a number of important advantages to these networks. Sub-regional disease surveillance initiatives provide a 'bottom-up' approach to transnational cooperation,<sup>87</sup> and are in contrast to the 'more formal networks in geographic regions designated by the World Health Organization'.<sup>88</sup> Surveillance networks can also play an important complementary role, supplementing more formal disease surveillance programs at the national, regional, and global level.<sup>89</sup> Bond et al also argue that disease surveillance networks can assist capacity building in low and middle-income countries:

Regional disease surveillance networks prioritize building trust-based relationships that enable informal reporting and the rapid sharing of sensitive information; and enabling cross-border collaboration and the strengthening of technical capacity to detect and respond to infectious diseases in peripheral border areas with marginalized populations.<sup>90</sup>

Furthermore, they argue that network systems provide a multidimensional approach that is well-suited to responding rapidly to the changing conditions of infectious disease outbreaks by allowing for local, multidisciplinary, and cross-sectoral engagement that may be needed for effective disease outbreak response and research.<sup>91</sup> Finally, Bond et al argue that networks allow for maintenance of national sovereignty, allow professionals to engage cooperatively, and foster trust and collaboration,<sup>92</sup> although they acknowledge that 'language and cultural differences, along with the broader geopolitical context, often present barriers to effective cooperation'.<sup>93</sup>

Clearly, the challenge of building national capacity for disease surveillance and response, particularly within low income countries, remains. As outlined above, regional and sub-regional cooperation offers one possible approach to assist with capacity building in response to shared risks, although it remains to be seen as to whether such regional initiatives can adequately address the current weaknesses that exist at a national level in many countries in terms of IHR core capacities

#### IV. GLOBAL COOPERATION AND NATIONAL SOVEREIGNTY

The adoption of the revisions to the IHR in 2005 represented a significant achievement in global health.<sup>94</sup> At its heart the IHR represented agreement in the international community on the importance of strengthening the systems for global public health. However, in the decade since the adoption of the IHR it has been clear that tensions continue to exist between global cooperation and national sovereignty. Although

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86 *ibid.*

87 Moore and Dausey (n 83) at [1]-[2].

88 Bond and others (n 82) at [1].

89 *ibid* at [5].

90 *ibid* at [7].

91 *ibid.*

92 *ibid.*

93 *ibid* at [8].

94 Fidler (n 14); Fidler and Gostin (n 14).

WHO arguably has a global leadership role in coordinating responses to global public health emergencies, its limited powers and limited funding hamper effective responses, and reform of WHO has been part of the recommendations of recent expert review committees.<sup>95</sup> In terms of WHO's powers, as James Hodge has noted, 'In reality, WHO lacks comprehensive, enforceable legal powers to require member states to do much of anything beyond what their leadership agrees to undertake voluntarily'.<sup>96</sup> Although WHO has established a Contingency Fund for Emergencies,<sup>97</sup> the willingness of Member States to provide support for the Fund in the longer term remains to be seen. What is clear is that without funding to support its emergency response capacities, and in the absence of enforcement mechanisms, WHO will continue to be hampered in its emergency response, despite expectations for WHO to take a more operational approach in its responses to global public health emergencies.<sup>98</sup>

Article 43 of the IHR requires that any additional health measures introduced by countries in response to either a specific public health risk or a public health emergency of international concern should be no more restrictive or invasive 'than reasonably available alternatives that would achieve the appropriate level of health protection'<sup>99</sup> and be based on scientific principles; available scientific evidence about risk; and any guidance or advice from WHO.<sup>100</sup>

Despite these requirements, there were some cases of the use of travel restrictions during the 2009 H1N1 pandemic<sup>101</sup> and more recently during the outbreak of Ebola in West Africa in 2014 with the Interim Ebola Panel Report noting that:

during the Ebola outbreak, more than 40 countries implemented additional measures that significantly interfered with international traffic, outside the scope of the temporary recommendations issued by the Director-General on the advice of the Emergency Committee. As a result, the countries affected faced not only severe political, economic and social consequences but also barriers to receiving necessary personnel and supplies. These consequences constituted a significant disincentive to transparency.<sup>102</sup>

The lack of enforcement mechanisms to address actions taken that are not in accordance with the IHR is one of the IHR's noted weaknesses<sup>103</sup> and the Interim Ebola

95 Gostin and others (n 40).

96 James G Hodge, 'Legal Myths of Ebola Preparedness and Response' (2015) 29 *Notre Dame JL, Ethics & Pub Pol'y* 355, 358.

97 For discussion see, Gostin and others (n 40); Bennett (n 40).

98 For discussion see, Gostin and others (n 40); Bennett (n 40).

99 World Health Organization (n 20) art 43(1).

100 *ibid* art 43(2).

101 Rebecca Katz and Julie Fischer, 'The Revised International Health Regulations: A Framework for Global Pandemic Response' (2010) 3(2) *Glob Health Gov* 1; World Health Organization, *Strengthening Response to Pandemics and Other Public Health Emergencies: Report of the Review Committee on the Functioning of the International Health Regulations (2005) and on Pandemic Influenza (H1N1) 2009* (World Health Organization, Geneva 2011) 62; Davies, Kamradt-Scott and Rushton (n 61).

102 World Health Organization (n 36) 11.

103 Ottersen, Hoffman and Groux (n 8) 378–79.

Panel Report recommended that consideration be given to disincentives for countries taking action beyond that recommended by WHO.<sup>104</sup>

These tensions between global and national interests are some of the most challenging ones in contemporary management of global public health emergencies<sup>105</sup> and their resolution is vital for effective responses to shared risks. The recent Ebola Interim Panel Report noted:

Whereas health is considered the sovereign responsibility of countries, the means to fulfil this responsibility are increasingly global, and require international collective action and effective and efficient governance of the global health system.<sup>106</sup>

Indeed, such is the shared nature of global public health that the Panel has suggested that ‘countries must have a notion of “shared sovereignty”’.<sup>107</sup>

It has been suggested however that conceptualising global health governance in terms of shared responsibility for disease is a flawed approach as it does not clearly define roles, allocation of responsibilities, and accountabilities.<sup>108</sup> This ‘shared’ approach thus contributes, according to Clare Wenham, to challenges with enforceability of the requirements for global health, including the IHR.<sup>109</sup> Indeed, Wenham argues that ‘a core problem with the global health framework as it stands is the very concept of shared responsibility’.<sup>110</sup> Referring to other examples in global health in which responsibilities are articulated more clearly, including the Framework Convention on Tobacco Control, Wenham argues:

There should be delineated roles and responsibilities, where each actor in the framework has a designated position within the global disease control matrix and understands what their responsibilities are for and to whom.<sup>111</sup>

Wenham suggests three possible recommendations for the development of clearer designations of responsibility in global health. First, she suggests learning from other governance arrangements in global health including, for example, the clear goal setting that accompanied both the Millennium Development Goals and the Sustainable

104 World Health Organization (n 36) 6.

105 Many factors have been suggested to account for undermining of global cooperation in public health, including public panic over Ebola (that ‘those who live in the developing world are dangerous vectors of contagion needing to be kept at bay’) and the legacy of messages about never allowing a repetition of the delayed response to HIV: Michael S Sinha and Wendy E Parmet, ‘The Perils of Panic: Ebola, HIV, and the Intersection of Global Health and Law’ (2016) 42 *Am J Law Med* 223, 224, 225, 235; and the symbolism of ‘borders’ as a response to uncertainty: Alison Bashford, ‘Quarantine and the Imagining of the Australian Nation’ (1998) 2 *Health* 387.

106 World Health Organization (n 36) 10.

107 *ibid* 10.

108 Clare Wenham, ‘Ebola Respons-ibility: Moving from Shared to Multiple Responsibilities’ (2016) 37 *Third World Q* 436.

109 *ibid* at 439.

110 *ibid* at 445.

111 *ibid* at 445.



Development Goals, as focusing attention on areas of need. As Wenham argues, ‘multiple devolved arrangements with clearer tangible goals between actors bilaterally or multilaterally could provide a more fruitful result than broader normative calls for global shared responsibility for improving global health security’.<sup>112</sup> Secondly, Wenham argues for improved financing to support global health security, and finally, for the development of enforcement mechanisms or incentives to support IHR compliance.<sup>113</sup>

Clearly national sovereignty plays a critical role in strengthening global health security. Cooperation between WHO Member States is vital to the development and implementation of a common global approach to infectious diseases. Yet without the clarity of responsibilities advocated by Wenham, and the associated accountability and enforcement mechanisms necessary to ensure that countries are meeting their obligations under the IHR, global health governance of risk management for infectious diseases will remain patchy and imperfect.

## V. HUMAN RIGHTS AND EXECUTIVE POWER

Human rights principles referred to in the IHRs are one check against excesses of state power in preparedness for and the management of public health emergencies,<sup>114</sup> but those rights are framed quite loosely, leaving much doubt about the level and form of protection intended.<sup>115</sup> Furthermore, the need to take account of social vulnerability<sup>116</sup> and gender<sup>117</sup> in emergency preparedness and response reveals the need for broad and inclusive understandings of human rights in the context of public health emergencies. Despite the importance of human rights in public health emergencies it has been argued that the international community failed to engage with the human right to health during the Ebola outbreak, meaning that ‘a chance was lost to further advance the right to health by itself and international law by utilizing the human rights dimension’.<sup>118</sup>

The risk of abrogation of human rights in pandemic response management is heightened because the urgency of the situation calls for exercise of executive rather than of judicial or legislative powers under emergency laws.<sup>119</sup> This is true of the powers entrusted to the Director-General of the WHO when declaring PHEIC and issuing temporary (3 month) recommendations about how to deal with it. While the Director-General operates within a procedural framework (including advice from an

112 *ibid* at 446.

113 *ibid* at 446–47.

114 As Davies and Youde note, ‘The IHR (2005)’s emphasis on human rights adds a useful counterweight to the increased surveillance measures that are promoted as a core capacity requirement for states to meet their IHR obligations.’ Davies and Youde (n 24) 141.

115 Andraž Zidar, ‘WHO International Health Regulations and Human Rights: From Allusions to Inclusion’ (2015) 19 *Int J Human R* 505.

116 Belinda Bennett and Terry Carney, ‘Vulnerability: An Issue for Law and Policy in Pandemic Planning?’ in Michael Freeman, Sarah Hawkes and Belinda Bennett (eds), *Law and Global Health: Current Legal Issues Volume 16* (OUP 2014) 121.

117 Davies and Bennett (n 78); Sophie Harman, ‘Ebola, Gender and Conspicuously Invisible Women in Global Health Governance’ (2016) 37 *Third World Q* 524.

118 Robert Frau, ‘Law as an Antidote? Assessing the Potential of International Health Law Based on the Ebola-Outbreak 2014’ (2016) 7 *Gott JIL* 225, 271.

119 James G Hodge and Evan D Anderson, ‘Principles and Practice of Legal Triage During Public Health Emergencies’ (2008) 64 *NYU Ann Surv Am L* 249.

Expert Committee, consideration of views of affected nations, and an algorithm-based decision-instrument) the powers are unfettered beyond going through that minimally consultative process. While those internal WHO processes certainly help to regularise decision-making by reducing the risk of arbitrary or idiosyncratic exercise of the Director-General's powers, it does not overcome the criticism that there is no merits review or other check, or overcome concerns that undue weight may be given to expert scientific input at the expense of political or other considerations,<sup>120</sup> suggesting that a 'global governor who operates in the space between expertise and political decision risks taking action that cannot be justified on either ground'.<sup>121</sup> Heath therefore argues for what may be termed deliberative democratic (or 'transparency') reforms,<sup>122</sup> though paradoxically others see a human rights benefit in confining the grounding of exercise of IHR powers to such objective *scientific* material.<sup>123</sup>

The domestic laws of nation states likewise rely heavily on executive action at the outset, with any judicial or independent merits review scrutiny reserved to an 'after the fact' role.<sup>124</sup> The executive issue to a person of a biosecurity control order and the subsequent internal review rights by the Director-General under Australia's *Biosecurity Act 2015* (Cth)<sup>125</sup> is a case in point. The provision of rights to a subsequent merits review by the Administrative Appeals Tribunal (AAT)<sup>126</sup> and a speedy decision by the AAT within no more than an initial 7 days or any extended 7 day period<sup>127</sup> establishes an avenue of external review of this power, and this arguably meets relevant human rights expectations.<sup>128</sup> Nevertheless, the proportionality balances are fine ones, as illustrated in other spheres such as civil commitment powers in respect of mental illness (or alcohol and drug addiction) where similar debates arise between models requiring judicial authority to detain and those empowering executive action by clinicians, subject to post-admission external review.<sup>129</sup>

Of course responding to a genuine emergency necessarily involves some modification to standard human rights and their manner of protection, but as Zidar points out, there are two main models of what international law requires: a 'limitations' model

120 Heath (n 41). As Villarreal elaborates, there is an important conceptual distinction between the role of experts in processes of issuing pandemic declarations and the weight given to technocratic as against political considerations: Villarreal (n 37) 115 [arguing that a perception of undue weight accorded to political considerations undermined the legitimacy of the WHO's H1N1 Declaration].

121 Heath (n 41) 12.

122 *ibid* 42.

123 Zidar (n 115) 510–511.

124 Gillian Triggs, 'Freedom, Parliament and the Courts', *Speech to the Annual Human Rights Dinner, co-hosted by Justice Connect and the Human Rights Law Centre (Melbourne, 5 June 2015)* (2015) <<https://www.humanrights.gov.au/news/speeches/freedom-parliament-and-courts>> accessed 20 February 2017; Hodge and Anderson (n 119).

125 *Biosecurity Act 2015* (Cth), ss 60–74.

126 *ibid* ss 75–77.

127 *ibid* ss 78–79.

128 Zidar (n 116) 514. It is also worth noting that the recent WHO guidance on ethical issues in disease outbreaks includes the need for due process protections, stating *inter alia*: 'If it is not feasible to provide full due process protection before the restrictions [on liberty] are implemented in an emergency scenario, mechanisms for review and appeal should be made available without excessive delay.' World Health Organization (n 59) 27.

129 Terry Carney and others, *Australian Mental Health Tribunals: 'Space' for Fairness, Freedom, Protection & Treatment?* (Themis Press 2011).

which ‘shrinks the framework of protection . . . from the full to a limited scope’ based on tests including rational relationship to legitimate public health aims and proportionality, and a ‘derogations’ model that temporarily *suspends* human rights other than certain inviolable ‘core’ rights.<sup>130</sup> As Zidar explains, in contrast to the linear (what Zidar refers to as ‘monocentric’) approach encompassed by both the limitations and derogations models, the approach encompassed by the IHR in responding to a public health emergency of international concern is polycentric and fluid (‘indeterminate and elusive’): that is there are many actors and variables in play, and responsive flexibility is the order of the day.<sup>131</sup> One consequence is that there is room for both models, depending on the pandemic scenario or point in its trajectory, though the civil rights of respect for individual dignity and that of non-discrimination are suggested as being inviolable while rights to privacy, liberty and freedom of movement engage the proportionality principle of the limitations model.<sup>132</sup>

## VI. CONCLUSION

As this article has argued, risk remains a central concern in planning for and responding to global public health emergencies. However, while conceptualisations of risk have become increasingly sophisticated and more flexible in recent years, preparedness for unknown risks remains challenging and the measures used to respond to those risks remain hampered by insufficient public health capacities and tensions between national sovereignty and global cooperation, while further work remains on the articulation of human rights in emergency contexts. As public health emergencies in recent years have illustrated dramatically, infectious diseases pose continuing threats to human health. To prepare for and respond to these threats there is a need for strong public health institutions at the national, regional, and global level with the ability to identify and respond to emerging risks at an early stage. Without investment in the capacity building needed to strengthen these institutions, management of the risks associated with infectious diseases is likely to be an on-going challenge for global health governance and for the global community more generally.

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130 Zidar (n 115) 507.

131 *ibid* 509.

132 *ibid* 511–12, 517.