Global Crisis Leadership for Disease-Induced Threats: One Health and Urbanisation

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Abstract
The concept of ‘One Health’ (OH) has gathered momentum among the public health and animal health communities as an important global policy agenda for drawing together these disciplines to inform urban planning and health security policies. OH research, from a risk governance perspective, is generally concerned with identifying preventative programmes that can minimise the threats posed by diseases at the animal-human interface (e.g. Corona virus, Ebola, avian influenza, the Q virus, for example). This article, by drawing on examples of disease threats, discusses the multi-level challenges of establishing OH with a particular focus on urban change. It considers the risks posed by the increasing urbanisation of animal habitats and what this means for achieving OH. The article concludes by discussing why social scientists need to pay greater attention to the concept of OH.

Policy Implications
- The success of a One Health approach to global health security governance requires improvement in local capacities for addressing the health security risks posed by urban living and increased urbanisation.
- The WHO International Health Regulations and UN Sustainable Development Goals should, in future, recognise the strategies required to promote a One Health approach before a crisis or threat manifests in order to, at least, match their work when it comes effective responses to threats.
- The importance of leadership for achieving One Health needs to be recognised and supported more at a meso (national/territorial) and micro (local) levels – not just at a macro (global) level.

This article considers the multi-level governance dimensions of OH, with a particular focus on the risks associated with increasing urbanisation. This discussion concludes that ambitious policy agendas at a global level (for example through the Sustainable Development Goals) need to be matched by ambitious agendas for building national and local governance capacities for drawing together expertise to enable an integrated approach to urban planning and community responses to health security threats.

The article addresses the risks posed by urban living, particularly how urbanisation presents risks of diseases manifesting at the animal-human interface. The World Organisation for Animal Health (OIE) estimates that 75 per cent of infectious diseases in humans (e.g. including Ebola, HIV, and influenza) have an animal origin and, on average, there are five new human diseases that emerge every year and, of these, three are of animal origin (OIE, 2019). Managing zoonoses is one of the most pressing and complex challenges for modern risk governance given they have severe social, environmental, political and economic implications but the degree of success in managing such risks dependence heavily on political priorities and governance capacities (Connolly, 2017). These acute challenges have contributed to the emergence of the OH agenda, which has gained increasing traction in global health security since the turn of the millennium. OH recognises what has been known for many decades, which is that human and animal health is interdependent. Therefore, OH promotes ‘the interrelationship between human, animal and environmental health, which requires multi-stakeholder collaboration across many cultural, disciplinary, institutional and sectoral boundaries’ (Hitziger et al., 2018, p. 211). The 2019–2020 coronavirus (Covid-19), which emerged from China, has served to further restate the need for global health security paradigms which focus on the risks of diseases at the animal-human interface. The suspicion by health authorities was that there was a link to a large seafood and animal market, suggesting that the disease passed from animals to humans (US Centres for Disease Control, 2020). The coronavirus outbreaks serve to highlight that health security is not just about implementing crisis management measures for public health threats but it is also a question of developing planning and responses that are about addressing the ‘causes of the causes’ of infections.

Worryingly, given the context of modern global security and warfare, 80 per cent of agents with potential bioterror use are zoonotic pathogens. Avoiding piecemeal approaches addressing infectious diseases, and the transmissibility of diseases between animals and humans,
requires long-term investment and the breaking down of interdisciplinary silos (Leboeuf, 2011; Lee and Brumme, 2013). OH, however, is one of those concepts that could be accused of being an overly ambitious agenda for policy makers given that there is limited progress towards its consistent implementation across the globe. The OH approach is more than focusing on disease threats and the scientific considerations regarding epistemology but it is also adopt adopting a ‘systems’ perspective to health. This is based on the principle that health security needs to be a ‘whole of society’ approach, which takes into account of eco-systems, socio-economic conditions, and geo-political conditions. Moreover, urbanisation and urban change have implications for the risks of infectious diseases emerging and spreading, which suggests that care and diligence should be applied when it comes to the nature and closeness of the relationship between humans and animals in urban settings. Interestingly, this cautionary note comes in the context of the fact that the social sciences point to the benefits of the complex connectivity between humans and animals (see Dhont et al., 2019).

The article is structured as follows. OH as an international policy agenda is discussed in order to preface an overview of the risks to health security stimulated by increasing urbanisation. The article then turns to the gaps in macro-policy initiatives and the gaps that need to be considered, which currently represent a challenge to the OH agenda. The article calls for more of a policy focus on developing capacities at meso- and micro-levels of governance. With this in mind, there needs to be more focus on developing governance systems whereby coordination occurs across macro-, meso- and micro-levels in building effective policy capacities.

One Health as a global policy agenda

Jones et al.’s (2013) systematic review zoonosis emergence and environmental change notes how human population growth, which puts demands on food supply, are drivers for urbanisation, agricultural expansion and produces alternations in habitat. Jones et al. (2013, p. 8402) note that ‘these play an important role in the emergence and re-emergence of infectious diseases by affecting ecological systems at landscape and community levels, as well as host and pathogen population dynamics’.

Poor sanitation, overcrowding and poor infrastructure affect the epidemiology of emerging infectious diseases (Neiderud, 2015). Major examples of contemporary health security crises (such as SARS in 2013), the 2009 flu pandemic in the UK, and the 2014 Ebola crisis West Africa have originated in animal infections. Heymann and Dixon (2013) note that it was most likely that the SARS outbreak emerged from a civet (‘tody cat’) that was the carrier of the coronavirus in a live animal market in a province in South China (Heymann and Dixon, 2013). The 2009 pandemic influenza outbreak, also referred to as ‘swine flu’, also had animal health origins in that the virus was a new strain of H1N1 as a result of a combination of bird, swine and human flu viruses, which was further compounded with a Eurasian pig flu virus (Trifonov et al., 2009).

Thorson and Ekdahl (2005) highlight how the 2005 H5N1 avian influenza outbreak, which spread worldwide in 2005, had public health implications but, according to the World Health Organisation, ‘all cases of H5N1 infection in people have been associated with close contact with infected live or dead birds, or H5N1-contaminated environments’ (WHO, 2019a). Lowe et al (2018) also highlight how the 2015 Zika virus outbreak in Brazil was found to be transferred to humans via Aedes mosquitoes. The 2014 Ebola outbreak in West Africa was most likely due, according to the US Centers for Disease Control and Prevention (2016), to human exposure to bat roost. Ebola is contracted from forest animals (including monkeys and bats) and the severe 2018-19 outbreaks of Ebola in the Democratic Republic of Congo present a reminder of the deadly nature of this disease (US Centers for Disease Control and Prevention, 2019a).

Since the early 2000s there have been growing policy and academic attention given to OH as a way to refocus how health security is considered in the sense that security measures should not be about adopting effective response strategies diseases but more towards a preventative approach in relation to addressing the societal ‘causes of the causes’ of threats. A landmark moment towards the global acceptance of OH as a way of thinking was when the WHO, OIE, and the Food and Agriculture Organisation (FAO) of the United Nations worked with UNICEF and the World Bank to develop a joint strategic framework in response to emerging and evolving infectious diseases (Gibbs, 2014). A number of policy commitments on OH followed, including the setting up of research collaborations and OH projects in developing countries, as well as commitments by supranational institutions, such as the European Union to operate under an OH framework post-2010. In 2012, for example, the Council of the European Union called for Member States to work together to adopt a OH approach to addressing the risks of antimicrobial resistance by taking ‘a holistic risk based approach’ (Council of the EU, 2012). In many senses, the EU’s stance mirrors much of the principles and proposals promoted via the 2005 International Health Regulations (IHRs), which is essentially an agreement between 196 countries to work together in the interests of global health security (WHO, 2005, 2019b).

Through IHR, countries have agreed to build their capacities to detect, assess and report public health events. WHO plays the coordinating role in IHR and, together with its partners, helps countries to build capacities at a local and national level (WHO, 2005).

From an epistemic network-building perceptive, a World One Health Congress has been held every year and this has been an opportunity for researchers from multiple disciplines to come together to share knowledge, which is a positive for improving knowledge integration between stakeholders (Hitziger et al., 2018). From an international public policy perspective, such developments enhance the prospect of the emergence of an OH ‘epistemic community’ (Haas, 1992). The claim to expertise provides such networks
with a potentially significant role in providing lessons for policy makers on how to address complex policy issues. The jury is still out on whether the OH movement can be defined as an epistemic community (see Connolly, 2017) and the evaluation of the effectiveness and the outcomes of OH initiatives, which take account of the multi-factorial and systems-based nature of interventions, is in its infancy and remains a matter for future research (Ruegg et al., 2017).

Yet, not dissimilar to calls for addressing climate change and societal inequalities, OH has gained momentum within international policy language and there is general recognition by policy makers of its value but it is vulnerable to external political and economic change. For example, the opportunity costs for the European Union institutions resulting from Brexit has led to institutions, such as the European Medicines Agency, putting in place business plans to scale back international collaborative efforts on OH activities (EMA, 2018). An interview with the head of regulatory science at the EMA noted that, in practice, this predominantly refers to antimicrobial resistance, which is one of the most significant risks to global health security in modern times (interview with the author, 2018). In this respect, the politics of risk and crisis management has been as much of an enabler (e.g. the general acceptance of the principles of OH by international organisations) as a barrier to the implementation of OH (macro-political turbulence and short-termism). The politics of OH is similar to Hogwood and Gunn’s (1984) arguments about the imperfection of policy implementation in the real world i.e. for ‘perfect implementation’ to occur enough time and resources are available, the right combination of resources are available and deployed, implementation is based on a valid theory of cause and effect, and there is perfect communication and coordination. Kock et al. (2018, p. 28) apply such thinking to OH in an effort highlight the barriers to its implementation:

Efforts and progress towards OH are still restricted by the inertia of long established divisions, institutional and logistical barriers to sharing data and information across institutions (World Bank, 2018), and power and leadership struggles with failure to agree on task and resource allocation issues (Rush ton et al., 2012). Besides a few studies on joint health service delivery (Schelling et al., 2005), brucellosis (Roth et al., 2003), rabies control and laboratory infrastructure (World Bank, 2018), there is a lack of economic evidence and metrics to measure OH gains (Hasler et al., 2014) ... [OH] requires a shift from linear thinking and simplistic medicalisation of health, to systemic transdisciplinary approaches with contributions from a wide range of professionals such as ecologists, agriculturalists, engineers, architects and also social scientists, including political scientists, economists, anthropologists and behavioural scientists, as well as from the stakeholder community and its representatives (Zinsstag et al., 2015).

Network- or systems-based approaches are at the heart of OH on the basis that it seeks to achieve a ‘whole of society’ approach. Systems-based thinking has a significant level of rational orientation in the sense that complex problems require complex processes to solve them. Adopting such thinking in social science raises a number of assumptions – not least that there are the resources, knowledge and political will for the adoption of a functionally collaborative approach. Even the idea of a systems-based approach in the social sciences has been argued to be based on hope, with its advantages exaggerated (Cairney and Geyer, 2017). OH principles could be accused of naivety and avoiding the reality of the fact that each of the candidate disciplines that would be needed for joining up (such as environmental science, public health science, veterinary science, urban planning, for instance) each operate within their own dimensions of complexity – and can be part of different policy subsystems (McGee and Jones, 2019).

Subsystems perspectives give a sense of the constraints around integration and the ‘joining-up’ of organisations and cultures. If, for instance, we consider the health risks of the urbanisation of animal dwellings then who would need to be joined up in order to mitigate risks that animal infections pose to public health? There would need to be a space in which collaboration can take place between environmental health, veterinarians, public health experts and urban planners. Yet matters of space are only important to the extent to which there is leadership of the space and the incentives in which to mobilise stakeholders to work together. The stakeholder that takes responsibility for leading within such contexts will then be accountable for the collaboration. The added complicating factor is that the muddy waters of complex governance systems open up opportunities for culpability avoidance and ‘blame games’ due to unclear boundaries of responsibility (Hood, 2002). That being said, political studies call upon critics of those who might consider the integration of organisations within complex network governance environments to be mindful of the change-making roles of meso-level leaders who can be effective in navigating through relationships across geographical areas, municipalities, and territories within states (Lipsky, 2010; Luke, 1998; Williams, 2012). For a transdisciplinary approach to be considered as a way to address risks at the animal-human interface, there need to be ‘co-leadership’ across boundaries (Hitziger et al., 2018). This is based on the idea that bringing sectors together and exchanging experiential learning leads to public and societal value in that it can help to build trust, strengthen networks for collaboration and even eliminate prejudice (Hitziger et al., 2018). Governance scholars also recognise the links between trust-building, joined up approaches to addressing social problems, deliberative practices and ‘public value’ (Moore, 1995; Stoker, 2006). If we accept, therefore, that implementation remains a developing process which will take considerable commitment for it to be implemented consistently across the globe, there remain questions about how urbanisation plays its part in the increasing vulnerability for diseases to transcend the animal-human interface.
Urbanisation and health security

More than half the world’s population now live in cities and by 2030 six out of every 10 people will be city dwellers, rising to seven out of every 10 people by 2050 (WHO, 2010). The health risks of urbanisation are highlighted by Moore et al., (2003, p. 269) who note that:

Data that are available indicate a range of urban health hazards and associated health risks: substandard housing, crowding, air pollution, insufficient or contaminated drinking water, inadequate sanitation and solid waste disposal services, vector-borne diseases, industrial waste, increased motor vehicle traffic, stress associated with poverty and unemployment, among others. Local and national governments and multilateral organisations are all grappling with the challenges of urbanization.

In terms of disease-induced health risks associated with urbanisation, Mackenstedt et al. (2015, p. 71) note that ‘human induced landscape changes are believed to be an important factor causing modifications in the transmission of some zoonotic parasites, leading to outbreaks of human diseases, both endemic and emerging’. Although Hassell et al. (2017) maintain that anthropogenic pressures can create diverse wildlife-livestock-human interfaces and that such represent a critical point for cross-species transmission, there is a need for interventions to mitigate the risk of disease emergence. The authors maintain that ‘interfaces must be studied as complex, multi-host communities whose structure and form are dictated by both ecological and anthropogenic factors, which is essentially a call for an OH approach. Urbanisation is undoubtedly a structural factor that leads to vulnerability for diseases to spread. Ebola, for example, was a major disease crisis for West Africa in 2014 and the outbreak was driven by urbanisation. In an interview the Head of the Veterinary Medicines Division of the European Medicines Agency, Dr Ivo Claassen, commented that following avian influenza outbreaks in 2003 in Asia:

in recognising the role of the environment, the relationship between human and veterinary health, especially the role of the environment when you look at deforestation, for the first time people were really thinking about where do we see hotspots in the world where with increased urbanisation and increased global travel picking in parts of nature and then encountering new diseases there, Ebola is one of those examples. (Interview with the author, 2018)

The West African outbreaks demonstrated how swiftly the virus could move once it reached urban settings and densely populated slums (WHO, 2015). However, when one thinks of pandemics or health threats at the animal-human interface the automatic perception might be that this is a concern for developing countries, yet developed countries have also saw the risks of diseases spreading from animals to humans as a result of urbanisation. Kruse et al. (2004) note how, in 1999, the West Nile virus was introduced into the United States, most likely via an infected bird or mosquitoes, where it caused the ongoing epizootic in birds with a spillover of infections to humans and horses. Kilpatrick (2011) shows how Culex pipiens (the common house mosquito), which carries the West Nile virus, increase in numbers with urbanisation. In Australia, Firth and Zuelke (2014) discuss how possums are a major source of zoonotic bacteria in drinking water and, also in Australia, Kung et al. (2015) show how the urban presence of ‘flying-foxes’ (pteropod bats) present risks for public health. The species have become increasingly urbanised in the past 20 years due to changes in the rural landscape. The authors report that demographic and lifestyle changes have heightened public health concerns about contracting viruses originating in the bats:

The reasons for this are broadly twofold: firstly, nuisance and loss of social amenity, and secondly, health concerns. The former is a consequence of the noise, soiling and smell typically attendant with large numbers of flying-foxes; the latter primarily reflects public concern about bat-mediated zoonotic diseases such as Hendra virus and Australian bat lyssavirus, both of which have caused sporadic human fatalities. (Kung et al., 2015, p. 24)

The matter of lifestyle is a significant driver for urbanisation and the health threats that come with it. Asian avian influenza (or ‘bird flu’) was a global news story in 2003–2004 and there was an element of concern that the transmissibility of the disease from birds to humans. The disease was so virulent that it also infected a number of non-bird species including tigers in a zoo in Thailand. Thorson and Ekdahl (2005) discuss the fact that the disease outbreak led to concern that the world was due another major pandemic given that the 20th century saw three e.g. 1918–19 ‘Spanish flu’ pandemic, the ‘Asian flu’ pandemic of 1957–58, and the ‘Hong Kong flu’ in 1968–69. Between 2003 and April 2019 there were 860 cases reported of bird flu in humans, with 454 fatalities (WHO, 2019b). By way of comparison, the post-millennium bird flu outbreaks have not led to a pandemic of the proportions that have been seen in the past. For example, the 1918–19 Spanish flu caused 20–50 million deaths, with the outbreak related to related swine influenza (Thorson and Ekdahl, 2005). The risk of a pandemic of such proportions, or more, in the modern era remains high in light of the interconnectivity of people, travel, trade, which is aided and abetted by the forces of urbanisation. Neiderud (2015) draws on the example of the SARS and reflects on the fact that the disease originated in food markets in southern China but greater interconnectivity between the ‘urban world and large megacities’ exacerbated the crisis. Furthermore, the most likely root causes of the 2003 Asian bird flu outbreak in humans was the living in close proximity to sick or dead...
poultry and urban cases were significantly more likely to have visited a live bird market, compared with rural cases (Zhou et al, 2009).

Urban living, coupled with the closeness of such living with species that carry diseases presents, therefore presents major risks to public health. Living in close proximity to domestic animals has also been identified as risk factors for parasitic infections. In addition, Neiderud (2015, pp. 3–4), in considering the extensive reach and urbanisation of the disease, notes that the disease affects approximately 8 million people every year, and is an important health challenge in Latin America. He goes on to note that ‘in recent decades, progress has been made to reduce the burden of disease, by vector control, screening blood donors, improved housing, and epidemiological surveillance’ (Neiderud, 2015, p. 3). The risks associated with the urbanisation of animal species and the changing patterns in human geography will heighten evermore so in the future. Policy makers need to be mindful that we will see increasing urbanisation in parts of the world where we have seen bird flu outbreaks (Asia) and Ebola (Africa). In Asia, 48 per cent of the population live in cities and the figure is approximately 40 per cent in Africa. Neiderud (2015) indicates that there will be a significant increase in these percentages by 2050 – the number of city dwellers will be 64 per cent and 56 per cent respectively. This rapid urbanisation also needs to be seen in the context of global health security. It is without question, and this is recognised by global health organisations across the world, that one of the most acute threats to health is antimicrobial resistance (Singh, 2016). The scale of the challenges of successfully tackling the risks of antimicrobial resistance is highlighted by Essack's (2018, p. 27) research who calls for 'implementing measures for its containment on biomedical, clinical, socio-behavioural, drug discovery/diagnostics, and policy grounds'. Problematically, it is currently unclear as to how OH approaches can be best deployed and arranged in different countries with different health systems at different stages of development which have different levels of antibiotic resistance burdens.

Urban policy responses: incentivising individuals and communities

The aforementioned example of bird flu demonstrates how individual decisions by people as part of urban living can make a major difference when it comes to the risks of diseases spreading. This might include how individuals interact with annual specifies, their buying and consumption behaviours, which is an aspect of the OH agenda that has less of a focus in the literature. Similar to contemporary debates about climate change, the focus needs to be more about incentivising and informing the public about the steps that they can take to minimise the risk of diseases taking hold within urban spaces. Kock et al. (2018) cites Houle (2015) when addressing the topic of individual public health and the OH concept. Houle questions the use of health concepts could themselves be ‘unhealthy and maladaptive’ and that they can lead to ‘dependency and passivity’. Taking ownership of health and reducing modifiable behavioural risks has been the thrust of tobacco and alcohol public health communication strategies for decades now as a way to prevent the onset of non-communicable diseases (e.g. cancers, heart disease, diabetes). This degree of public health messaging should also be seen for communicable diseases. The shift in responsibility towards individuals does, however, require incentives and diplomacy. The Jakarta rat eradication programme is an example of how programmes, with incentives, can be used to address health risks caused by the urbanisation of rodents. Van Mead (2016) reported on the rat eradication programme for the Guardian newspaper and documented how, in 2015, there were 40 cases of Leptospirosis (a bacterial infection from rat urine that can be deadly to humans). Rats are also associated with toxoplasmosis, the plague and hantavirus infection. Van Mead noted that the risks of the disease are enhanced by the flooding in region and describes the influx of the rat population to urban spaces:

While rodent populations are highest near markets and their ready supply of waste food, they can be seen almost anywhere in the city. Rats have been spotted in courthouses and government offices, exclusive apartment blocks and expensive restaurants. Wander the streets at 3am and rats can be seen scurrying in and out of drains. They don’t seem too scared of people. The rats gnaw through plastic drainage pipes and electrical wires. It is both a fire hazard and an expensive problem to fix as a broken pipe or chewed through wire could be anywhere – outside, inside or under – that a rat can get.

The imagery that this quote invokes is rather profound in that it gives a real sense of infestation with the urban environment. The intervention implemented by the authorities in Jakarta was to incentivise the public by offering 20,000 rupiah (£1.20 sterling) per live rat collected. This appears to be a strong incentive when seen in the context of the fact that the average monthly income in Jakarta is 255,463 rupiahs, which is approximately £14 (sterling) (Winarso, 2011). A condition of the payment is that the rat is caught alive to ensure that they have not been poisoned or shot (which are also dangers to the public) and to avoid dishonest claims for dead rodents (Van Mead, 2016). What this indicated is that the OH principles need to include both structure and agency with focus given to the role of individuals living in urban spaces when it comes to minimising the risk of diseases taking hold as a result of the urbanisation of animal species.

At the same time, unintended consequences of using individuals/citizens as crisis responders, need to be something that those in decision-making roles (e.g. at local/municipality or state level) need to be mindful of and
monitor. The German economist, Horst Siebert (2001), introduced the phrase the ‘cobra effect’ to describe the unintended consequences of incentivising people to address diseases in urban spaces. The cobra effect is a shorthand for articulating when an identified solution to a problem only makes the problem worse and exacerbates the original threats. One of the case studies that Siebert documents is the bounty introduced as part of rat eradication programme in Hanoi, Vietnam, when it was under colonial rule. The policy was that rewards would be given for each severed rat tail that was provided. Colonial officials then started to notice rats going about their business with no tails. In short, rat catchers came up with a scheme whereby they would cut off their tails and then release them into sewage systems for them to procreate as part of a business venture! There is no evidence to say this is what has occurred in Jakarta. The scale is much smaller in Jakarta to that compared to what historian Michael Vann (2003) described as ‘the Great Hanoi Rat Massacre’ but the lessons from history are important for the governance and monitoring of incentive-based interventions. The Jakarta rat infestation case is a reminder that disease threats at the animal and human interface are a major, although not exclusive, risk caused by the dysfunctional co-existence of humans and rodents in urban spaces (Meerburg et al., 2009). These are examples of local programmes but there are also questions with regards to the level of priority attached to the risks posed by urbanisation in a global context. This is where the article will now turn.

The SDGs and IHRs: multi-level leadership

The 2030 Sustainable Development Goals (SDGs) are a long-term development initiative under the leadership of the UN to improve development across a number of domains, including addressing poverty, human rights abuses, corruption, environmental degradation, and health inequalities (as well as social and economic inequalities). Health and urbanisation is a major theme that cross-cuts many of the goals. The UN frame the 17 SDGs as an opportunity to continually integrate approaches and organisations under the principle of ‘good governance’. Despite the ‘good’ intentions the SDGs, there have been questions about their level of complexity, including the political and governance capacities for them to be realised (Liverman, 2018). The ‘SDGs provide a key entry point for the OH approach to drive a paradigm shift in policy and practice towards a fully integrated approach’ (Queenan et al., 2017, p. 6). However, Waage et al (2015) cited in Queenan et al. (2017, p. 5) ‘criticises the SDGs for being developed within different sectors and presented by the UN without recognizing the interactions’. Urbanization, and risks of urban animals producing health threats, risk being lost within the web of SDGs given that health and the environment-related SDGs cover a broad range of areas. The SDGs that concern health in the context of urbanisation could also lead to unintended consequences. For example, the overarching SDG 3 (Ensure healthy lives and promote wellbeing for all ages) does not have clear enough links with the ideas of city development contained in SDG 11 (Sustainable cities and communities) and neither of the specific goals underpinning SDG 3 or 11 mention urbanisation in the context of health security, including how urban animals and wildlife adapt to urban development and what the associated health risks might be. Rather, the focus is more on wider environmental and infrastructural matters relating to aspects such as waste management, human settlement planning and transport (UN, 2019a). From a global health security governance perspective, this is very surprising given Ebola alone in West Africa claimed the lives of at least 12,000 people with multiple of tens of thousands of cases reported (US Centers for Disease Control and Prevention, 2016). The only, but broad, ambition of SDG 3 that could relate to the disease-induced risks of urban living at the animal-human interface is that ‘the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks’ should be strengthened (UN, 2019b).

There is nothing problematic about the SDGs if we consider them to be an example of an attempt to crystallise principles of ‘good governance’ as a macro-level set of ideas but what is needed is leadership at a meso-level in order, in Guy Peter’s terms, to ‘move down the ladder of generality’ (Peters, 2013, p. 126). That is to say that meso-level leadership at state level (or underneath) is needed to build capacity for the delivery and evaluation of the SDGs for urban and city in order to minimise conceptual stretching (Peters, 2013). More specifically, a meaningful way to enhance the OH agenda is to invest in UN-led/funded, geographically focused, city planning programmes that draw together professional knowledge from the veterinary, public health and ecology disciplines. The focus of several of the SDGs concern environmental issues, and that is a useful backdrop, but there remains a governance gap between macro-level thinking and what could be seen as more applied leadership at a systems level given that it is in this policy space where there are opportunities for ‘catalytic leadership’ (Luke, 1998). The 2005 WHO IHRs also promote a multi-level view, and imperative, around ensuring there are capacities to plan, survey, and report on health security threats a local and national level. In this sense, the WHO recognised the importance of meso-level leadership. What is less clear from the IHRs and, accordingly, the SDGs, are the possible strategies and leadership initiatives that can instil an OH interdisciplinary mind-set before a crisis or threat manifests and what the WHO can do to unlock capacities in this respect – the focus has been on establishing public health emergency response plans by drawing in ‘multi-disciplinary/multi-sectoral teams to respond to events’ (see WHO, 2005, p. 41). Much can be learned from the recommendations put forward by Firth and Zuelke (2014) who, in their analysis of urbanisation and health, maintain that ‘taking steps to improve urban disease surveillance, developing effective prevention measures and initiating appropriate education campaigns will allow us to significantly reduce the impact of
Emerging infectious diseases. Working across disciplines to implement local measures to minimise anthropogenic animal movements is another important preventive measure that should be part of planning and contingency strategies (see Kruse et al., 2004). In governance terms, this warrants the need for city leadership to form an important part in building OH strategic capacities. The thinking in relation to climate action and leadership, in terms of the emphasis on ‘city networks’, is a candidate for conceptual refraction with OH debates given the city network perspectives have transcended ‘beyond municipal collaborations towards more complex networked governance arrangements’ (Davidson et al., 2019). For such network arrangements to be effective, however, there needs to be trust been stakeholders, transparent disease reporting processes and generally ‘good governance’ – all of which were called into question with regards to the Chinese government’s response to the 2020 coronavirus (Kynge et al., 2020).

Furthermore, the value of knowledge integration can be seen by the lack of it in the early stages of an urban outbreak of Q fever in the Netherlands in 2008. Schimmer et al (2010) note how in May 2008 local health authorities in an urban area of the southeast of the country were alerted to a cluster of human cases of Q fever. Analysis showed that a single dairy goat farm was the source of the outbreak. There was an effective range of the airborne Coxiella burnetii for people living within 5 kilometres of the farm, affecting an area that become increasingly densely populated by humans and dairy farms over the previous decade. In an interview with the author, the Head of the Veterinary Medicines Division of the European Medicines Agency, Dr Ivo Claassen, who is also from the Netherlands, reflected on the lessons regarding the weaknesses of preparedness for the outbreak of Q fever, suggested that an OH approach, particularly ensuring knowledge integration between human and veterinary medicine experts, would certainly not have had severe or adverse implications for the crisis management response:

From my own experience I would say the Netherlands is one of these examples; we had outbreaks of Q fever, a disease in goats which caused a lot of problems in humans and still does. Again that was not recognised initially as a zoonotic disease and only at very late stages. It could have been one of the big examples of how human and veterinary work together in dealing with it, but when you look back into that, the lack of knowledge at the time or lack of understanding or recognising the knowledge that was there caused some delay… Coxiella burnetii was not recognised directly as the causative agent of syndromes in humans. Individual researchers may have said, this is the case, there’s a real risk there – it was simply denied by other people in research or by the government at the time. It was not taken seriously, let’s put it that way, whether it was denied, you know, I can’t say. (Interview with the author, 20th March 2018)

The last part of this quote, if taken optimistically, is a case of where research evidence on the need for an OH approach has not been met with the appropriate policy response. A weak relationship between evidence and policy is, however regrettable, not uncommon (Oliver and Cairney, 2019). Taken pessimistically, the insights of the interviewee could be taken to be a case of institutional paralysis caused by weak governmental leadership and deniability, which is also not uncommon in times of crisis (Boin et al., 2016), nor when it comes to managing disease-induced outbreaks (Connolly, 2016). Nevertheless, it is fair to say that the case for knowledge integration has got much stronger and risen up the global policy agenda in recent times. A way forward is for city planners and policy makers to pay more attention to the benefits of long-term collaborations given the ever-present risks posed by urban animals in the context of economic development.

Conclusions

This article has discussed OH, urbanisation and disease threats in the context of global governance. There is no doubt that OH provides a positive and optimistic perspective for ensuring that systems and knowledge are integrated in order to allow policy makers and practitioners to best address such threats (e.g. Ebola, avian influenza), yet the approach can be criticised for its catch-all view of complex problems. In some senses this is why the global development initiations, for example, through the UN’s SDGs, reflect this overly optimistic ambition, which warrants the need for governance leadership for addressing urban change and health at a lower level in the system, supported by programmes to facilitate interdisciplinary knowledge exchange between professional groupings (such as vets, public health experts/medics and ecologists). The article also shows the adverse consequences of not adopting an integrated approach to health security, as demonstrated by the urban outbreaks of Q virus in the Netherlands (and others). Even if the individual citizen represents the key local responder by participating in animal/rodent control or eradication programmes (as we saw in the Jakarta example), then there can be unintended consequences of such approaches. Having said that, in some instances, such as rat infestations, there is often no choice but to incentivise people to look after themselves and the communities in which they live.

In short, OH is possible if there is a degree of strong mutuality of commitment to the agenda at international macro, meso, and micro (local/individual levels). This will be needed as the forces of globalisation become ever further enhanced (such as the leading role of China and other Asian markets in the world) and as countries grow rapidly, in economic terms, despite the persistence of acute levels of poverty and infrastructural problems (for example, India is likely to be the world’s fifth global economy in 2020). The need for a long-term OH approach is clear but its implementation is far from easy as it is very much a hostage of short-term political considerations. There is evidence that major critical
junctures in politics and governance represent barriers to long-term collaborative efforts to address wicked and multi-faceted health challenges – Brexit politics is a very contemporary example (see Connolly, 2019). In a similar way to Sir Michael Marmot’s call for long-term strategies to address acute health inequalities, by investing in initiatives to tackle the ‘causes of the causes’ of inequality (e.g. poor sanitation, habitation, poverty and societal inequalities) (Marmot and Wilkinson, 2005), there needs to be a similar approach to urban planning in light of the fact that those at most risk of being infected by diseases hosted by animals are those who tend inhabit impoverished urban areas. Those living at the lower ends of society will be the ones more prone to the risks of infections due to low nutrition levels/generally poorer health who also tend to undertake jobs which can increase exposure to poor sanitation. In this context, the presence of urban animals, and the health consequences of urbanisation, will become ever more important areas for social science research. The priority for global health security must be on the leadership and coordination activities which build policy capacities at macro-, meso- and micro-levels.

Notes
1. As of 7 February 2020 the coronavirus infected upwards of 30,000, with the vast majority of cases in China where more than 630 have died from contracting the virus and the cases are spreading rapidly across the globe (Nature, 2020).
2. The US Centers for Disease Control and Prevention (2019b) notes that: ‘Q fever is a disease caused by the bacteria Coxiella burnetii. This bacteria naturally infects some animals, such as goats, sheep, and cattle. C. burnetii bacteria are found in the birth products (i.e. placenta, amniotic fluid), urine, faeces, and milk of infected animals. People can get infected by breathing in dust that has been contaminated by infected animal faeces, urine, milk, and birth products. Some people never get sick; however, those who do usually develop flu-like symptoms including fever, chills, fatigue, and muscle pain’.

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