

Chapter 24

Global Health Governance and Antimicrobial Resistance



Belinda Bennett and Jon Iredell

Abstract This chapter analyses the challenges and the adequacy of existing frameworks to provide a strong foundation to support global responses to antimicrobial resistance. Calls for global responses are indicative of a growing global commitment to seeking practical means of tackling the growing problem of antimicrobial resistance. While antimicrobial resistance is often conceptualised as an emergency, the application of the International Health Regulations, designed to govern responses to public health emergencies of international concern, remains unclear. Furthermore, there may be challenges for countries in developing and resourcing national approaches to address antimicrobial resistance. Clarity and agreement around definitions of key concepts related to antimicrobial resistance will also be essential to antibiotic stewardship and development of policy in this area. Finally, improvements to health systems as a result of the Sustainable Development Goals may help to support improvements in public health and may play a role in global strategies to address antimicrobial resistance.

Keywords Antimicrobial resistance · International Health Regulations · Sustainable Development Goals

24.1 Introduction

Antimicrobial resistance (AMR) has been described as ‘a global health crisis,’ (Review on Antimicrobial Resistance 2015) ‘a slowly emerging disaster’ (Viens and Littman 2015), and ‘a complex global public health challenge’ (World Health

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Organization 2014: xix). With AMR raising the possibility that we could soon be living in a ‘post-antibiotic era’ (World Health Organization 2014: ix) and with recognition that AMR ‘threatens the sustainability of the public health response to many communicable diseases, including tuberculosis, malaria and HIV/AIDS’ (World Health Assembly 2014), there is increased international dialogue around the need to find practical global solutions for the looming crisis (Laxminarayan et al. 2013). Others have argued for the need for AMR strategies to address equitable access to medicines; *conservation* through stewardship and appropriate use of antimicrobials; and *innovation* to ensure the development of the new antimicrobials, as well as the importance of a binding legal framework addressing these issues (Hoffman, Outterson, Røttingen et al. 2015; Hoffman, Røttingen and Frenk 2015). Proposals have included a new international treaty (Hoffman, Outterson, Røttingen et al. 2015; Anomaly 2010), the establishment of an intergovernmental panel (Woolhouse and Farrar 2014), a range of policy options to support action on AMR (Hoffman, Caleo, Daulaire et al. 2015), and the use of the International Health Regulations as an existing framework for managing global health risks (Wernli et al. 2011). Such is the complexity of the challenge posed by AMR that national and regional approaches alone are unlikely to be effective solutions (Littman et al. 2020). Yet the complex nature of AMR presents considerable challenges for global health governance, and with recent global health crises revealing shortcomings in global health governance, there are clearly significant challenges associated with utilising existing frameworks to address the growing problem of AMR. This chapter analyses these challenges and the adequacy of existing frameworks to provide a strong foundation to support global action on AMR.

24.2 The Rise of Drug Resistance

Severe infection long ago overtook heart attacks in terms of likelihood of hospital admission in developed countries (Seymour et al. 2012). The ability to manage it is essential for intensive care, major surgery and transplantation services that are increasingly routine. Up to 20 million people each year are treated with mechanical ventilation in intensive care (Adhikari et al. 2010). Infection complicates about half of ICU admissions and is an important cause of death in the critically ill (Vincent et al. 2009).

Antibiotics are a cornerstone of treatment of severe infection, with the risk of death increasing in the presence of antibiotic resistance (Review on Antimicrobial Resistance 2016a). In response to the steady rise in antibiotic resistance that began soon after the first introduction of antibiotics and has been quickly accelerating (Davies et al. 2013; Laxminarayan et al. 2013; Review on Antimicrobial Resistance 2016a: 10), experts call for international co-ordination of public policy solutions that include (i) better antibiotic controls in industry, agriculture and medicine (antimicrobial stewardship), and (ii) better surveillance and containment (infection control) (Howard et al. 2013; Laxminarayan et al. 2013; Piddock 2012; Spellberg et al. 2008).

24.3 A Global Approach to AMR?

With the recognition of the problems posed by growing AMR have come calls for a global approach to limiting the spread of AMR and its associated risks. In 2015 the World Health Assembly adopted a global action plan on antimicrobial resistance (World Health Organization 2015a; Ho and Lee 2020) and called on Member States to develop national actions plans on AMR and to ‘mobilize human and financial resources through domestic, bilateral and multilateral channels in order to implement plans and strategies in line with the global action plan’ (World Health Assembly 2015). The global action plan included five strategic objectives:

- (1) to improve awareness and understanding of antimicrobial resistance; (2) to strengthen knowledge through surveillance and research; (3) to reduce the incidence of infection; (4) to optimize the use of antimicrobial agents; and (5) to ensure sustainable investment in countering antimicrobial resistance (World Health Organization 2015a: 1)

The World Health Assembly resolution was followed in 2016 by a declaration by the high-level meeting of the United Nations General Assembly on antimicrobial resistance. The declaration of the high-level meeting included committing to work nationally, regionally and globally to address AMR, and to mobilize funding and resources to support the development and implementation of national plans (United Nations General Assembly 2016).

These calls for global action on antimicrobial resistance indicate a growing global commitment to seeking practical means of tackling the growing problem of antimicrobial resistance. As Wernli et al. have pointed out, this growing focus on AMR ‘also indicates that AMR has transformed into a global governance priority, which requires international co-operation’ (Wernli et al. 2017: 1). The policy discourses around AMR are also complex however, with Wernli et al. identifying five key policy frames that are evident in the debates around AMR, with each of these frames providing insights into AMR and the interdependencies between these policy frames: (i) ‘AMR as a healthcare issue’; (ii) ‘AMR as a development issue,’ reflecting the burden of infectious diseases in low- and middle-income countries; (iii) the relationship between AMR and innovation, which recognises the importance of research and development for new antibiotics; (iv) AMR as a global health security issue; and (v) AMR and the role of a One-Health approach to addressing AMR (Wernli et al. 2017).

International cooperation will clearly play a key role in responding to AMR (Årdal et al. 2016). However, recent global health crises have revealed difficulties in ensuring effective responses to emerging public health crises, leaving the role of global health governance in leading responses to AMR unclear. The remainder of this chapter identifies four key areas that will present challenges for a global response to AMR: (i) the challenge of fitting responses to AMR within other global health governance frameworks that support urgent responses to health crises; (ii) the challenge of developing national and regional capacities to identify and respond to AMR; (iii) the challenge of developing common understandings and definitions of AMR; and finally (iv) the challenge of fitting AMR within the global priorities identified by the Sustainable Development Goals.

24.4 The International Health Regulations, Global Health Governance and AMR

Adopted to manage the international spread of infectious diseases, the International Health Regulations (2005) (IHR) (World Health Organization 2016a) could possibly provide a framework for improved surveillance and reporting of AMR. However, there has been debate over whether the scope of the IHR could include evolving events such as AMR or whether the IHR are more properly focused on emergency situations (Wernli et al. 2011; Kamradt-Scott 2011). It has been argued that AMR may, at least in some instances, fulfil two of the four IHR criteria for a 'public health emergency of international concern' (PHEIC) i.e. those relating to the seriousness of the public health impact of an event, and the potential for international spread of disease (Wernli et al. 2011: 3), with the remaining two IHR criteria being that the event is 'unusual or unexpected,' and that there is 'a significant risk of international travel or trade restrictions' (World Health Organization 2016a: Annex 2). It is certainly the case that the IHR provide a strong normative scaffold for the shared expectations about how both states and the international community should respond to the international spread of disease (Davies et al. 2015), as well as clear processes for reporting progress.

While patterns of AMR vary between countries (Review on Antimicrobial Resistance 2014), AMR certainly poses major risks to public health globally (World Health Organization 2015a). The focus of the IHR on managing global risks to public health, and the inclusion of consideration of whether there is 'a significant risk of international spread' as one of the criteria for determining whether events that may constitute a PHEIC should be notified to WHO (World Health Organization 2016a: Annex 2), provide a global perspective to the risks posed by spread of AMR. As it is now more than a decade since the revised IHR took effect in 2007, the IHR provide a familiar and well-established framework for the global community and, it has been argued that it may be possible to build on existing frameworks rather than building new ones (Wernli et al. 2011: 5). Yet these factors do not necessarily make the IHR an ideal mechanism for addressing AMR (Kamradt-Scott 2011), even though, with the global initiatives referred to above, global health governance seems set to play a key role in addressing AMR.

Despite the promise that initially heralded the adoption of the revised IHR in 2005 (Fidler and Gostin 2006), recent global health crises have revealed significant shortcomings in contemporary global health governance including, inadequate capacity building of national health systems, a failure by countries to comply with the IHR 2005 through the imposition of trade and travel restrictions contrary to WHO recommendations, and a lack of funding to support an effective global response to global public health emergencies (Gostin et al. 2015, 2016; Moon et al.

2015; Ottersen et al. 2016). Furthermore, the suitability of the IHR as a mechanism for addressing AMR remains unclear, with the primary focus of the IHR being on the global capacity to deal with global public health emergencies (Kamradt-Scott 2011). With the IHR's focus being on acute emergencies, rather than issues requiring sustained response over a prolonged period, their utility as a framework for coordinating global responses to AMR appears less certain (Wernli et al. 2017: 5; Kamradt-Scott 2011).

While a new treaty may provide a clear mechanism for addressing the challenges posed by AMR (Anomaly 2010; Hoffman, Outterson, Røttingen et al. 2015), as has been noted, 'Reaching such an ambitious legal agreement will take leadership, skill, and perseverance from a wide range of actors' (Rochford et al. 2018: 1977). A treaty would also need to balance stewardship of antibiotics and innovation with recognition of lack of access to antibiotics for many people, particularly in low and middle income countries (Padiyara et al. 2018: 3). Furthermore, as discussed below, the issue of capacity building remains an enduring challenge, particularly in low resource countries.

24.5 Building Capacity

A further difficulty associated with using the IHR as a mechanism for addressing AMR is in the challenges faced by many countries to meet their IHR core capacity requirements (Davies et al. 2015: 126-132; World Health Organization 2015b). The IHR require Member States to develop core capacities within their national health systems to 'detect, assess, notify and report events' that are within the scope of the IHR (Article 5). These national capacities required by the IHR will provide an important step in building surveillance capacities for AMR (Wernli et al. 2011). Countries were required to achieve the core capacity requirements of the IHR by 2012 i.e. within 5 years of the IHR coming into force, with some extensions possible, but many countries still had not achieved their core capacity requirements (World Health Organization 2016b). Although global collaboration (Goff et al. 2017) and regional networks may provide an additional mechanism for capacity building, particularly in developing regions (Bennett and Carney 2017), the challenge of building strong public health systems remains a key one for global health (Gostin et al. 2016; Moon et al. 2015).

In addition, although the World Health Assembly has urged its Member States to develop national action plans for antimicrobial resistance (World Health Assembly 2015), the results of 2013–2014 WHO survey showing that few countries reported having comprehensive national AMR plans (World Health Organization 2015c: 1), suggests that there may be considerable work to be done in many countries. More recently, a self-assessment survey of countries and their progress in

developing and implementing national AMR plans also shows that considerable work remains, with only 60% of countries having a national multisectoral action plan on AMR, although a further 33% had plans in development (World Health Organization et al. 2018: 7). In addition, although 125 countries reported having awareness raising activities about AMR risks and human health, only 36 had campaigns in animal health (World Health Organization et al. 2018: 12). While 103 countries reported having a national surveillance system in humans, only 41 countries had systematic data collection in animals, and most countries have no surveillance system in place in the plant and environment sectors (World Health Organization et al. 2018: 15).

One key difficulty is that although the IHR require countries to develop their national capacities to deal with potential global public health emergencies that arise within their borders, poorer countries may have difficulty in finding the resources to support such capacity building (Gostin and Katz 2016: 276-277; Davies et al. 2015: 126-132), leaving many countries unable to achieve the capacities required by the IHR. There is renewed interest in developing sustainable mechanisms for global health financing, including financing of global public goods such as addressing antimicrobial resistance (Ottersen et al. 2017; Mendelson et al. 2016; Moon et al. 2017). Clearly there is a need for investment to address shared vulnerabilities in global health (Gostin 2017). Global commitments and the development of effective financing mechanisms will be key to the development of effective responses to AMR. Without them we may see a repeat of the difficulties in building IHR core capacities, with poorer countries lacking the resources to develop their national capacities.

24.6 Understandings and Definitions

Understandings of the mechanisms of development of AMR as well as definitions of key terms relating to infection and antimicrobial use are critical to effective policy response for AMR. Even the term ‘antimicrobial resistance’ may be poorly understood (Mendelson et al. 2017). The two pillars of the health policy response to antimicrobial resistance relate to control of its spread (‘infection control’) and to reduction of inappropriate antibiotic use that promotes it (antimicrobial stewardship) (Davies et al. 2013; Laxminarayan et al. 2013).

Measures of success and failure of public health policy are heavily contingent on definitions. The definition of ‘inappropriate prescribing’ remains poorly informed by research into antibiotic effects and is therefore regarded as a public policy research priority in the area of antibiotic resistance (Spellberg et al. 2011). Similarly, the definition of ‘severe infection’ or ‘sepsis’ is subject to major revision (Fullerton et al. 2017) and new definitions may alter the cohort included in this definition, especially at initial point of care where health policy must drive effective immediate responses (Fullerton et al. 2017).

These definitional questions are of key importance to policy initiatives such as antibiotic stewardship. AMR is an example of the tragedy of the commons in which overconsumption of a common resource harms the common good (Hollis and Maybarduk 2015; Giubilini and Savulescu 2020). For this reason, stewardship and the preservation of key antimicrobials is an important strategy in addressing AMR (Laxminarayan et al. 2013). Yet the development of policy responses for AMR is a particular challenge as there is a need to limit inappropriate use of antibiotics, (which assumes well-developed understandings of ‘inappropriate prescribing’), while simultaneously ensuring equitable access to medicines (Laxminarayan et al. 2013, 2016; Padiyara et al. 2018; Selgelid 2007). An antibiotic that is harmful to the public health in terms of driving resistance in the longer term may be thought to have specific benefit to the individual for whom it is prescribed. This may lead to direct conflict between public health policy needs and the needs of an individual and means in turn that antimicrobial stewardship may be cast in a policing role.

These challenges may be described as ones of ‘understandings’ and of ‘definitions.’ To address these challenges additional funding is required to support research on the mechanisms for acquiring resistance to further our understandings of this important area. Agreed international standards for data collection on AMR (World Health Organization 2014) are also vital if surveillance is to be comprehensive and effective, making definitional issues ones of critical importance.

24.7 AMR and the Sustainable Development Goals (SDGs)

When the Sustainable Development Goals (SDGs) (United Nations 2015) were adopted by the United Nations General Assembly in September 2015, AMR was not listed amongst the 17 goals, although it is mentioned in the SDG declaration (World Health Organization 2015d: 103). Nor was there the inclusion of a broader SDG goal on global health security, which might have also provided a focus for action on AMR (Kickbusch et al. 2015). However, this is not to suggest that the SDGs will be irrelevant for global responses to AMR. For example, addressing antimicrobial resistance will clearly be important to achieving SDG3 (‘Ensure healthy lives and promote well-being for all at all ages’), while the goal of universal health coverage in SDG3.8 will help to ensure the existence of strong health systems (Gostin 2017: 194). International trade of animals or products, the complexity of addressing both overconsumption and lack of access to medicines, and the relevance of trade agreements and intellectual property arrangements to research and development for new antimicrobials, all highlight the importance of considering the relevance of trade to the development of solutions to antimicrobial resistance (Hanefeld et al. 2017). Access to water and sanitation were also included as SDG6 (United Nations 2015). As the UK’s Review on Antimicrobial Resistance has noted, improved water and sanitation can help to reduce antibiotic consumption by helping to prevent infections that may then be treated with antibiotics (Review on Antimicrobial Resistance 2016a: 21-23;

2016b). The association between poor sanitation, infections and antibiotic use shows that broader public health goals and improvements can play an important role in global strategies to prevent AMR (Review on Antimicrobial Resistance 2016a; 2016b).

24.8 Conclusion

Developing effective mechanisms to address the growing threat of AMR will be essential to safeguarding public health into the future. To achieve this will require, amongst other things, strong mechanisms for global health governance to support coordinated programs and building of capacity at the national, regional and global levels. The commitments to the development of national plans for AMR along with suggestions for new financing mechanisms to support capacity building and the funding of global public goods reflect a promising prioritisation of AMR. Whether we can develop practical and effective means of addressing AMR remains to be seen.

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