Conceptualizing Antimicrobial Resistance (AMR) as a Creeping Disaster in Terms of Pace and Space

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Traditionally defined, disasters are understood as relatively limited in duration. Yet we also know that some disasters are of a creeping and indeed perpetual nature – their onsets do not seize to advance. One example is AMR. In theory, it should be easier to respond to such creeping disasters as a result of their slow build up. In reality, however, swift response to creeping disasters rarely materializes due to their perceived lack of acuteness, causing them instead to be left to slowly accumulate in the background – often irreversibly so – until they eventually escalate into full-blown emergencies. AMR reflects just such a phenomenon in that it lacks clearly definable temporal and spatial boundaries. It develops in the natural world and moves across the human, animal, and natural worlds, not limiting itself to sectors or national borders. Each attempt at stopping the creeping disaster simply prolongs it; new forms of antibiotics will eventually also be resisted due to mutations in bacteria. Occasional outbreak episodes invite attention and concern, only for the issue to fade again from the public view. Still, it is unclear how AMR fits into the disaster and crisis literatures. In this chapter we set out to conceptualize AMR as a creeping disaster in terms of pace and space with the purpose of contributing to new insight into the nature of acuteness and perceived urgency. It thus not only contributes with a fresh look on AMR, but it also contributes to new ways of understanding the complex phenomena of crisis and disaster.

Keywords: slow-onset disaster, temporality, spatiality, disaster, creeping crisis, concept

1. Introduction

Antimicrobial resistance (AMR) has been labelled one of the greatest threats to life and well-being currently faced by modern society (Bækkeskov et al., 2020). At the global level, the annual death toll associated with AMR is estimated at over 700,000 and, if current resistance trends should continue, this number is projected to hit upwards of ten million by 2050 (UK Review on Antimicrobial Resistance, 2016). Affecting the entire biosphere as a process of biological evolution, AMR is one example of a truly transboundary process calling for planetary-scale disaster risk governance (Boin, Ekengren and Rhinard, 2021; Peoples, 2021). It has been claimed that we are headed towards a 'post-antibiotic' age, or a new dark age, signalling a return to a time when minor infections become increasingly severe or even impossible to treat. From a global health governance perspective, AMR is recognized as a global health threat and a perpetual one at that, and will require holistic responses ranging from vigilance in use of antimicrobials as well as innovations within existing and new paradigms of treatment. However, its status as a global public health emergency remains unclear. For example, a European Union-level policy mechanism was agreed upon only a decade ago, in 2011, whilst a global-level initiative at the World Health Organization (WHO)-level was agreed upon as late as 2015. These initiatives certainly do not appear emergency declaration-like. One impediment for action is perhaps the realization that the challenge of AMR can never truly be overcome. The ever-pervasive nature of AMR as a fact of biology and as a problem across microbes and contexts also means that AMR and its management is closely connected to how

societies declare emergencies and conceptualize disasters. How to approach AMR as one of the defining challenges of our time is a question that ultimately will guide responses to it and will increasingly become a discussion of vital importance.

In the natural world, microbes and antimicrobial substances have always co-existed and competed against one another—be it inside human or animal bodies or in the wider environment. The slow accumulation of resistance to antimicrobials is part of the very evolutionary process in which all organisms operate. From an anthropocentric viewpoint, only a handful of microbes have lethal potential. Most bacteria, parasites, fungi, and viruses are non-lethal, many even harmless. Yet all of them evolve in distinct ways over time, which includes the evolutionary process by which some microbes acquire varying degrees of resistance to antimicrobials. Antimicrobials refer to the broad range of treatments that eliminate or hinder microbe threats. They have become central to maintaining current levels of prosperity associated with modern society. At the same time, the widespread use of antimicrobials also accelerates the AMR problem. It is a dilemma by definition. AMR is an archetypical crisis of modernity (Beck, 1992); a threat that is at the same time instrumental to current levels of prosperity and also threatens to partially undermine our hard-won gains in mortality and morbidity reduction.

There exists no automatic relationship between the severity of a hazard and attention devoted to it (Rubin, 2015). Serious consequences are rarely a necessary or a sufficient condition for a problem to be elevated to emergency status (Spector, 2019). Politics and culture always play a role. So too do characteristics of the hazard itself. Diffuse risks with temporally stretched onsets as well as spatially dispersed impacts do not provide fertile ground for social mobilization and efforts at casting such problems as approaching emergencies often take a long time to take hold and do not always succeed. Building on similar previous work (e.g. Viens and Littmann, 2015; Engström, 2021), this chapter thus argues for the fruitfulness of conceptualizing AMR not just as a global health challenge, but as a creeping form of disaster. Whilst the disaster concept has typically been associated with forms of destruction and suffering that are more immediate and concentrated in time and space, our aim here is to reconcile classical and newer perspectives on disasters and the usefulness of considering the notion of creeping disasters. We argue that a disaster lens centered on the onset dynamics of AMR provides a better understanding of why AMR receives a disproportionately low attention compared to other defining challenges of the 21st century, and also adds nuance to how one can think about feasible responses.

The chapter is structured as follows. In the next section we unpack the disaster term to highlight the need for considering disasters not as necessarily time-bound or place-bound phenomena. The third section then places the global threat of AMR with this discussion, reflecting on how AMR can be fruitfully understood as a creeping disaster. The fourth and concluding section summarizes the salient points raised in the chapter and discusses its wider implications for AMR scholarship and disaster research, including how AMR and similar creeping phenomena can be more effectively tackled.

2. Considering creeping disasters

Disaster researchers have typically centered on the study of disasters associated with immediate, material and geographically limited forms of destruction (Dynes. 2004; Lindell, 2013; Hsu, 2019), with some notable exceptions (for an overview, see Staupe-Delgado 2019a). A considerable body of literature has emerged over the decades attempting to address the question of what constitutes a disaster (e.g. Quarantelli, 1998; Perry and Quarantelli, 2005; Perry, 2018). A common feature of suggested definitions is that a 'disaster' occurs in a geographically limited area and is of a limited duration. Disaster management manuals often organize disasters in terms of 'phases', where disasters consist of a pre-disaster phase, an acute-disaster phase and a post-disaster phase, with some degree of variation (cf. DHS, 2021; IFRC, 2021). A common denominator across many manuals is that disasters are approached according to a onset-impact-aftermath logic. A seminal definition of disaster that emphasizes the temporal delimitation of disastrous phenomena is provided by Charles Fritz (1961: 655), who sees a disaster as:

> an event concentrated in time and space, in which a society or one of its subdivisions undergoes physical harm and social disruption, such that all or some essential functions of the society or subdivision are impaired.

As may be read from this oft-cited definition, disasters are typically understood as distinct occurrences or 'events', as opposed to more pervasive societal issues. AMR breaks with this pattern in quite obvious ways,and arguably this falls outside the scope of disaster research as AMR does not conform to sequence patterns of disaster as they are normally typologized or to classical disaster definitions. Differently put, more elusive phenomena in terms of pace and space, albeit more deadly, are often construed as something other than disasters (e.g. 'social problems' (as sociologists call them), challenges, crises or epidemics). For example, a flooding disaster killing two dozen people will typically be a more salient occurrence (and conform more to how we understand the disaster term) than the slower and more elusive accumulation of hundreds of local deaths per year due to driving, drowning, infectious disease or other less event-like killers (Lindell, 2013).

Although noting that we may be headed towards a time characterized by a blurring between acute conditions and more slow-onset and chronic conditions, Quarantelli noted in the concluding remarks of a roundtable on the topic that the field of disaster research is better served by a spatially and temporally bound disaster concept (Quarantelli, 1998). Several roundtable participants underlined that whilst there are many disastrous phenomena that are neither geographically delimited nor temporally bound, extending the denotational scope of the disaster term to cover chronic and gradual forms of destruction would dilute or add unnecessary ambiguity to the disaster term. Although later roundtables also challenged these claims (Perry and Quarantelli, 2005), a majority of disaster researchers seemed to agree that time-delineated acuteness remains a defining feature of disasters. In other words, the benefits of having a neatly defined disaster concept in terms of denotation (the kinds of phenomena it refers to), has become an accepted argument for restricting the focus of the disaster concept to the sudden and acute, leaving little room for discussing many of the greatest crises faced by modern society.

Recent conceptual work on disasters has begun to question the appropriateness of disregarding gradual processes from definitions of the term. In an attempt to broaden the field without upsetting the terminological landscape, sociologist Eric Hsu (2019) argues for an expanded temporal understanding of disasters. Noting that previous work has tended to exclude diffuse and creeping phenomena from their focus on the grounds that it would create an unnecessarily imprecise concept, Hsu (2019: 904) argues that 'there are ways of theorizing disasters as involving a protracted component that do not completely threaten the wholesale integrity of the concept'. While the problem associated with diffuse phenomena is precisely

that they oftentimes fail to attain emergency status, their cumulative toll can in many cases be manifold that of conventional time-bound and localized disasters. The significant and arguably increasing toll of slow-onset phenomena can thus be considered a good reason for labelling them disasters (Hsu, 2019). This argument is also supported by the work of Matthewman (2015) or more recent work on 'creeping crises' (Boin, Ekengren and Rhinard, 202), who also underline the increasingly complex nature between cause and effect, distribution of losses, and onset dynamics. This has also been increasingly recognized in emerging work aiming to discuss whether AMR can be said to constitute a disaster or crisis and with what implications (e.g. Engström 2021; Viens & Littmann, 2015). The present chaper builds on this work but we take as our point of departure a conceptualization centered on the spatial and temporal dynamics of the creeping disaster of AMR and how these dynamics may shape its governance.

3. AMR as a creeping disaster: pace and space

The classical definition of a disaster, as we have seen, has a temporal and spatial aspect. It suggests a relatively clear beginning and end to disasters, where it is possible to trace where they started, at least in hindsight. This temporal aspect also pertains to common health disasters, such as pandemics, which are temporally bound, at least until becoming endemic (Viens and Littman 2015). Due to the temporal aspects discussed in the previous section, the traditional definitions of crises or disasters fail to grasp ambiguous adversities without such space- and pace-based delineations. AMR is but one case in point. AMR progresses slowly, incubates in various sectors, and occasionally punctuates normalcy by escalating into random large-scale community outbreaks (Engström 2021). Rather than constituting an uniform disastrous phenomena, it is more like an umbrella concept for emerging resistance in a number of contagions (much like climate change is perhaps not one disaster but an 'augmenter of disasters'). Common to these kinds of challenges it is difficult to point out when exactly the emergency began and even more difficult to conceive of a potential endpoint to emerging hardships.

In this section, we will consider some advantages to be derived from conceptualizing AMR not merely as a global public health challenge but as a creeping disaster, recognizing that it lacks some of the temporal and spatial boundaries typically associated with disasters. Following the argument of Veins and Littman (2015), we argue that AMR is unquestionably a slowly emerging disaster unfolding before us, and that it should be treated as such regardless of typical urgency-based understandings of disasters and emergencies. We are also mindful of the trade-offs, however, as disaster-framings may be counter-productive in the context of permanent problems, as a problem may not be able to maintain disaster or emergency status indefinitely (Patterson et al., 2021). An analysis based on pace and space also implies an understanding of the threat as inherently 'glocal' (Robertson, 1995), seeing it as a problem operating across levels of governance (e.g. 'transboundary' (Ansell, Boin and Keller, 2011). The idea of perpetual disaster or emergency risks more than diluting the concepts, it also risks bringing about the paralyzing effects of disaster fatigue. It is in many ways precisely the failure of seeing creeping phenomena as emergencies or disasters that cause them to become large-scale disasters in the first place.

The creeping disaster of AMR can be considered a multi-faceted phenomenon unfolding across sectors and according to different and intersecting spatial and temporal horizons (depending on evolutionary processes in each type of contagion), rendering it quite distinct from disasters falling under the classical definition. In the following analysis we will center on the pace of the disaster, its spatial dynamics as well as its multi-level nature (see Figure 1). Our approach explicitly employs a disaster study lens, as our conceptualization will center on some of the root causes of AMR as well as obstacles to effective action.

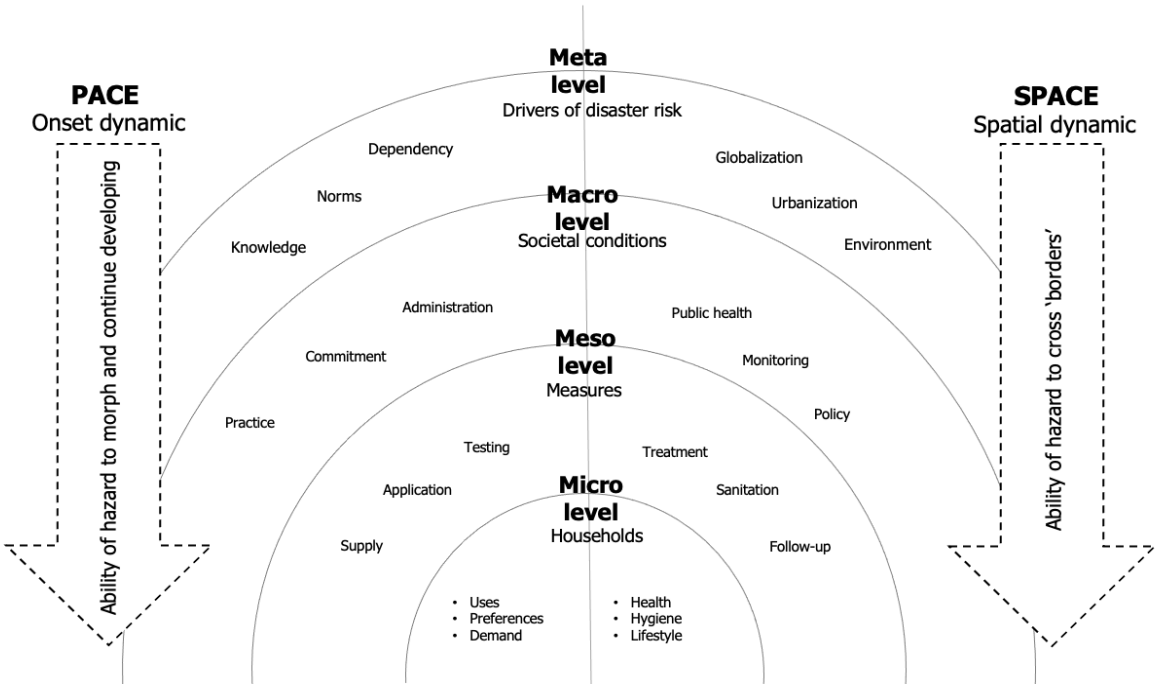

Figure 1. Drivers of the AMR threat from the meta- to the micro-level (authors).

From the figure above we can observe that the temporal and spatial attributes of AMR poses distinct challenges and is driven by processes occurring across levels. At the meta-level we find the drivers of AMR disaster risk. The globalization process augments the disaster risk picture in the form of migration, cross-border integration as well as the internationalization of public health governance. These processes are also related to patterns of urbanization and changes in the environment, including at the microscopic level, where interactions and interchanges are increasingly sped up due to the acceleration of society which in turn increases the potential for new strains to spread quickly and widely. These spatial aspects are part of what characterises transboundary and global-scale crises in general (Ansell, Boin and Keller, 2010). Socio-cultural patterns of antimicrobial dependency and over-use, in turn related to norms and knowledge, also play a major part in driving both the pace and the scope of the problem. The onset dynamics associated with AMR can thus best be understood in terms of the interaction between its spatial dynamics and the pace of its onset(s), depending on if we consider the overall AMR process or degrees of AMR displayed by distinct contagions (AMR as overall phenomenon or varying degrees of AMR as attributes of distinct disease agents).

The threat agents at heart of this disaster are the various microbes that mutate into resistant or extensively resistant 'Superbugs' (Burki, 2018). While this mutation is a natural phenomenon, it is being accelerated by the mis- and overuse of antimicrobials, speeding up its pace. Such acceleration is facilitated by numerous conditions. To mention a few, one crucial concern is the ineffective governance of the excess, access, use and limited discovery of antimicrobials. Regulation that does not sufficiently target responsible production, distribution, and usage of microbes in the systems of healthcare, food production, and pharmaceutical dispensing (World Bank 2019). But conditions also pertain to market forces (the supply and demand for cheap meat) (Laxminarayan et al. 2015), and the individual use of antimicrobials, which is closely related to norms, knowledge of correct use and, as we will explain below, culture. All these conditions exist in increasingly complex and interconnected systems, which makes it difficult or even impossible to trace or identify precisely when and where the disaster came into existence. This impossibility to trace the incubation phase (see: Turner, 1976) illustrates clearly that AMR needs to be conceptualized as a disaster that is not temporally bound, instead qualifying as a slow-onset, or creeping disaster, evolving in time, unstoppably, perpetually—at least in the absence of a paradigm shift in infectious disease medicine.

Whilst not being temporally bound, the phenomenon also defies national borders (Boin, 2019), allowing for the slow progress of the disaster to continue despite local responses in one place. While the former paragraph discussed the incubation period and slow accumulation of the problem over time, it is crucial to also outline the process of transmission, which not only contributes to the disaster moving across the human, animal and natural world, but also to its progress towards quick escalation. When antibiotics are then used to treat an infection, only the antibiotic resistant bacteria will survive, leaving them without competitors (Ali, Rafiq and Ratchcliffe, 2018). Resistance in this way builds up and accumulates over time, within and between bodies and borders. In the context of the current study, this is the process where the threat agent at heart of the crisis morphs and develops its threat potential over time.

One aspect that makes the phenomenon of AMR hard to respond to is precisely the temporal aspect. This is because it is an endemic condition, influencing other endemic diseases. Endemic diseases, as opposed to epidemic or pandemic diseases, evolve constantly and change at a slow rate – sometimes over months or years. They are our timeless maladies. While it can influence large numbers in a population and cause a high burden of disease, it does not cause immediate burden on health systems that stress them beyond normal operating capacity. Epidemic or pandemic diseases can cause a rapid increase of cases within a short period of time, as recent pandemic experience illustrates. Although AMR in itself is not an epidemic or pandemic condition (it may be better understood as an umbrella term covering a number of distinct but

related processes), the phenomenon of AMR is recognized as a considerable disaster risk for the future as a growing number of common infections become increasingly difficult to treat. In terms of severity, we can consider the growing health disaster potential of AMR on a continuum ranging from resistant microbes that are possible to address with small changes to existing treatment practices on one side of the scale, to truly resistant 'superbugs' that do not respond to any treatment on the other.

At the macro-level, societal conditions connected to how public health administration functions nationally or regionally impacts not only the degree of comittment to international attempts at formulating treaties to address the emerging disaster, but also forms practice and ultimately upholds norms operating at the meta-level. Policy guidance at the national level, albeit often lagging behind international comittments at the WHO-level (Engström 2021), lays the foundation for better monitoring and a culture of integrating AMR concerns within wider discussions of public health within the national health system.

Because of the complexity and interconnectedness of systems, several possibilities exist for the threat to transmit across levels as well as between individuals, humans and the environment, making it difficult to tie the issue to a distinct spatiality. This means that mitigation, much like with any disaster risk, begins at the local level with support and incentives from higher levels, but with more issues related to issue ownership Engström 2021). Further, AMR as an endemic condition changes the existing disease landscape and associated morbidity dynamics. While resistant infections can influence large numbers in a population and cause a high burden of disease, it does not cause immediate burden on health systems that stress them beyond normal operating capacity. In fact, without quality data, slowly simmering health disasters can be difficult to even detect and conceptualize in terms of emergency (Staupe-Delgado, 2019b). These kinds of elusive outbreaks of resistant microbes may well be more susceptible to the politics of attention and prevailing cultural frames in a society, as their existence as emergencies only become clear after deliberately looking for them.

Indeed, the emergence of resistant bacteria has been growing rapidly over the last seven decades. The first case of methicillin-resistant Staphylococcus aureus (MRSA) was first discovered in the UK in 1962 (Sengupta, Chattopadhyay and Grossart, 2013). However, resistance has accumulated, and all pathogens have now developed resistance towards one or multiple antibiotics. Some bacteria already show concerning resistance levels – such as Klebsiella pneumonia, Escherichia coli (E. Coli) and Staphylococcus aureus (UK Review on Antimicrobial Resistance, 2016). What currently is believed to pose the largest threats are the pathogens Staphylococcus aureus and Enterococcus. MRSA kills more people in the United States annually than HIV/AIDS, emphysema, Parkinson's disease and homicide combined (Gross, 2013), but AMR is not even among the top 100 risks and threats dreaded by the American public (Friedman, 2019).

So how does the threat agent constantly evolve and morph at a slow rate over time? Although the development of antimicrobial resistance is a natural phenomenon, it is being facilitated by and accelerated by conditions related to antimicrobial exposure and inappropriate use. This entails the excess, access, use, and governance across different sectors, industries, and institutions. As formerly mentioned, the more antibiotics we use, the more resistance we will develop. This gives the agent time to morph over time. We can refer to this as 'AMR incubation'. The irrational use of antimicrobials is facilitated not only by macro-level conditions, but also by meta-level and lower-level conditions, as shown in the previous figure.

The agent at heart of the crisis emerges in complex systems containing a high number of parts with relations between them. Meanwhile, as these complex systems are increasingly interconnected, transmission is facilitated. The more complex the system, the more relations between its parts, the more likely it will be that the threat agent moves across the systemic parts. It is in these complex systems that such minor disturbances occur—initially slowly—and before

long potentially reaching all corners of the world. In the case of AMR, the disturbances are the mis- or overuse of antimicrobials, which in turn allows for 'AMR incubation', hence time for the threat agent to morph over time, between sectors, people and places.

After morphing, societal and environmental conditions often facilitate and accelerate the epidemic potential of the contagion. The disaster risk will have built up over time and will be further shaped by opportunities and constraints related to the lives of the contagion's hosts. Because of the complexity and connectedness of different systems, there is not only enough time for microbes to develop resistance unnoticed, but also several possibilities for the agent to spread across different individuals, systems and sectors. Once resistance is observed these strains are often found all over the world shortly after. Certain societal conditions also facilitate the spread of contagion. Such spatial conditions are those conditions that facilitate the agent's onward transmission and pose a challenge for efforts to limit the prevalence of resistance locally. These conditions are associated with prevailing urbanization trends, mobility patterns, migration, international gravel and so on. Metropolitan cities are generally connected in such a way that contagions appearing in one of them can appear in one or all of them in less than a day (Zhou and Coleman, 2016).

Although AMR is an endemic creeping disaster that simmers under the surface, constantly changing and evolving over a long period of time, there might be sudden outbreaks of resistant infectious diseases that appear more like sudden ruptures. These outbreaks hit local communities and hospitals, but may well originate in distant lands or other communities. In 2019, for instance, the WHO was informed about several cases of infections caused by antibiotic-resistant Pseudomonas aeruginosa in US hospitals. The majority of the patients were hospitalized due to complications associated with infections that they have obtained following invasive procedures in Tijuana, Mexico (WHO, 2019). Hospital outbreaks have been reported from different geographical areas. However, far from all cases of superbug infections and deaths caused by such infections are reported and many thus go unnoticed.

The multilevel efforts to combat the AMR issue began over two decades ago but gained momentum only recently with the Global Action Plan on Antimicrobial Resistance process under the auspices of the World Health Assembly in the mid-2010s. There are some outbreaks that might have influenced the increased attention by the international community at this time. One being the Pakistani Typhoid fever outbreak in 2016 that quickly transmitted internationally. The Enterobacteriaceae Klebsiella pneumoniae is also a superbug that has caused several outbreaks throughout the US and worldwide during the last two decades, beginning in New York City in the early 2000s. This superbug has also been deemed as one of the highly critical superbugs by US authorities and the WHO.

Not only particular outbreaks seem to have influenced the high level political actors - also individual superbugs might have influenced their sudden action in the 2010s. Candida auris and the so-called Iraqibacter (A. Baumannii) are examples of two that have been portrayed in the media as being invasive enemies to humans. The Indian superbug NDM-1 was also portrayed as being dangerous for humans UK and US print media. Judging from news reports alone, it appears that AMR is increasingly gaining an emergency status in the press.

Research suggests that the media discourse on superbugs began to shift in the late 1990s (Capurro, 2020). Earlier media reports had mainly reproduced rhetoric from the medical literature but increasingly started to portray the superbugs in apocalyptic terms (Brown and Crawford, 2009). The late 1990s was also the time when WHO first started addressing the AMR issue, although initially only modestly.

The AMR issue is complex as it follows transboundary trajectories and occasionally explodes in local concentrated manifestations in the form of 'outbreaks'. These outbreaks are precursor events that might have the potential to draw attention to the problem, albeit only momentarily. However, as many outbreaks are not reported, occurring in distant lands, the

origin and pathways of the threat are hard to follow and attention is difficult to sustain. The spatially and temporally diffuse nature of the emergency render it difficult to cast the threat in disaster terms, at least when classical definitions are applied. Fuerther, the fact that AMR is rather an umbrella term for a number of individual health emergencies related to all kinds of contagions and associated diseases does not help in conceptualizing AMR in disaster terms. All of these factors ultimately contribute towards rendering the threat elusive and making it difficult to maneuver the menacing threat in the policy world. There is a clear interface of the spatial and temporal aspects of AMR. Both the beginning of the accumulation and paths of transmission are difficult to trace and define. This prompts the discussion whether this disaster should rather be conceptualized as a creeping disaster despite having temporal and spatial attributes that challenge classical conceptions of disaster.

4. Concluding remarks

One obstacle to overcoming response and attention inertia in the context of slow onset crises is the lack of clearly observable precursor events, lack of direct experience of accumulating disaster impact, and the elusive and spatio-temporally diffuse nature of the onset. This renders AMR as a societal issue highly influenced by prevailing cultural frames in society as many of the key obstacles to addressing it are inherently behavioral. Many health systems around the world are ill-equipped to deal with global health crises, particularly these crises are elusive and ambiguous. A general scarcity of well-trained health personnel gives rise to a constant capacity shortage where hard priorities are made on a hard basis. Given such conditions, it is difficult to find an appropriate balance between the seemingly acute and less acute. Faced with difficult life or death dilemmas, practitioners will be hard pressed to prioritize an issue with no clear short-term gain, such as changing the prevailing prescription and treatment culture. We noted in the introduction that AMR is a crisis of modernity. It is precicely its importance and usefulness that has also exacerbated the problem in the form of overuse. Antimicrobials have in many ways improved the life of humans, including food security, but has at the same time contributed to risky dependency.

When it comes to complex cultural and social aspects of the creeping disaster, the issues related to the misuse of antibiotics and posterior resistance, is greatly connected to the behavioural aspects of the society, which in turn is conditioned by their cultural, political, and economic dynamics. This is mostly because personnel operate within their country-specific regulatory environments and cultural frames of what the issues and non-issues are, shaping aggregate global adherence to guidelines. However, and since the relationship between antibiotic use and the emergence of resistance is complex, antibiotic use in clinical practice cannot explain the emergence of resistant organisms on its own, even though the excessive clinical use is responsible to some extent for the escalating rates of resistance. On the other hand, self-medication is also influenced by over-the-counter sale of antibiotics, which is still common in large parts of the world, being a practice that significantly contributes to inappropriate use and the emergence of resistant bacteria. As a result, actual antibiotic consumption patterns in many countries remain difficult to measure and monitor, which further obscures the problem in many contexts and thus also lowering its issue salience.

Cultural practices associated with illness and treatment thus directly shapes AMR as a problem and solutions to it. In the contemporary culture of care there is a significant focus on ‘taking something’ to feel better or ‘giving something’ as a way of caring. These notions tend to develop into misuse, which becomes integrated into the local culture. Similarly, societal addiction to cheap meats and dairy exacerbates the disaster in the agricultural sphere. The market-centered logic of most cultures in the 21st century has given rise to a demand for practices that speed up the onset of AMR in contagions.

To summarize, AMR is an umbrella term covering a number of biological processes happening in a variety of microorganisms, it remains somewhat unclear whether AMR is one single disaster or a series of creeping disaster processes. While many microorganisms are currently demonstrating varying degrees of resistance to some, most or all available medical treatments, even those who currently do not demonstrate high levels of resistance could develop resistant strains eventually as part of the evolutionary process. Conceptualizing AMR as a creeping disaster obscures the fact that resistant contagions may also manifest in more sudden outbreaks. It is a disaster that operates across multiple sectors and temporalities, as well as at different levels of governance. The root causes of the problem are woven into our increasingly complex and interconnected market and cultural systems, which makes it hard to determine concrete solutions within the prevailing cultural maneuvering space. In this way, AMR demonstrates a number of similarities with other disasters looming on the horizon, including climate change and other creeping phenomena.

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