A Framework for Social Science in Epidemics

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Abstract: In epidemic preparedness and response, it is now commonly accepted that insights from social science disciplines are important in shaping action. Unfortunately, the role of social science is often confined to risk communication and community engagement (RCCE) efforts. In this article, we propose an analytical framework that would allow researchers and practitioners from different disciplines to employ social science insights to enrich their understanding of epidemics and formulate more effective and sustainable responses. The framework goes beyond simply unpacking social, political, economic and cultural dimensions of context; it situates disease itself – as it is shaped by the contexts in which it circulates – and views it in dynamic relation to response. It also explores how different individuals, social groups and institutions shift their knowledge and practices during an epidemic through power-laden processes of dialogue and learning, or even through silencing and side-lining. It is our hope that this framework will enable responders to engage more deeply and systematically with the contexts of emergencies, so as to ensure activities are more adaptive to local dynamics.

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and practitioner communities. The framework goes beyond simply unpacking social, political, economic and cultural dimensions of context; it situates disease itself – as it is shaped by the contexts in which it circulates – and views it in dynamic relation to response. It also explores how different individuals, social groups and institutions shift their knowledge and practices during an epidemic through power-laden processes of dialogue and learning, or even silencing and side-lining.

We hope this framework will prove useful for operational agencies in epidemic response to reflect on the social aspects of their work. In this article, we briefly describe the framework’s components: disease, context, response – and their interactions – and dialogue and learning. To conclude, we highlight a few operational ‘openings’ that follow from the application of this conceptual framework.

The Framework

The framework consists of the three key dimensions of an epidemic, which are illustrated below in Figure 1 as the points of a triangle: disease, context and response. Each of these elements will have different characteristics, which are summarised in boxes in the figure. The framework also explores three different types of interactions between each of these dimensions (captured in the sides of the triangles): between disease and context, between context and the response, and between the response and the disease. Lastly, the framework shows an emergent dimension as a result of these interactions: dialogue and learning.

Figure 1. The Social Science in Epidemics Framework

Disease

When a microorganism (re)emerges in a particular setting, its socio-biological characteristics will influence the severity of the disease. Its pathogenic characteristics will shape the potential morbidity and mortality rates, the biological susceptibility of particular populations, and the disease’s capacity to move from one species to another. It also determines the latter’s mechanisms of transmission and symptoms. The epidemic disease may have synergistic characteristics appearing alongside other diseases and amplifying its health impacts.

For instance, in the ongoing COVID-19 pandemic SARS-CoV-2 variants – and their transmissibility, morbidity and capacity to evade immune response – are of constant concern. SARS-CoV-2 has syndemic capacity, being considerably more harmful to people with other diseases such as heart conditions, obesity or diabetes (Williamson et al. 2020) or people of older age. These ‘pre-existing’ conditions are themselves shaped by the social (and political) determinants of health of a context.

Context

Infectious disease occurs in a particular social, political, economic and cultural context. This context shapes both disease emergence and its trajectory across different vulnerable groups. Context can be said to have three key dimensions: political economy, social difference and cultural logics. Political economy explores power and politics across different stakeholders in the face of the epidemic. Certain people and institutions will be trusted by different social groups, depending on the social and political histories of the affected communities. Social difference highlights how various social groups are differently vulnerable to infection, illness and mortality by virtue of social roles and practices. Cultural logics refers to communities’ own models of health and illness, explanations of epidemic emergence, as well as local capacities to respond. Health systems often have a plurality of health providers (biomedical and alternative, including faith and traditional healers, drug-sellers, etc.), while different communities have diverse etymologies and disease models, which can overlap or diverge from biomedical models.

Response

A disease can be framed as an ‘outbreak’, as endemic, or ignored altogether by governments or international aid agencies. Outbreak disease framings generate interventions that go beyond the routine running of health systems, with a series of
activities rolled out at different levels and scales by diverse response organisations and institutions. Relationships develop between these responders and local affected populations, which are shaped by the local histories and politics of an area, and by the mode of intervention – whether centralised or decentralised, coercive or participatory, led by local or global actors, etc.

Coercive government responses to epidemics lead to resentment and mistrust. For example, compulsory cremation in Monrovia at the onset of Ebola in 2014 led to mistrust in the response and the proliferation of secret burials (Abramowitz 2017). While the centralisation of response may benefit coordination, decentralisation of response activities carried out by affected communities and promoted by local trusted actors can promote trust and increase the uptake of services. Community Care Centres for Ebola in Sierra Leone or the recruitment of local teams for vaccination deployment are successful examples of the devolution of activities (Ripoll et al. 2018). Epidemic response can become a complex ecosystem of international and national organisations from the public, non-profit and private sectors. Understanding the political dynamics of a response and identifying how different response actors and activities are perceived by different social groups in a context is crucial.

Interactions between Disease and Context

Affected communities are diverse, and thus, people within them, have different vulnerabilities to disease. For example, healers and carers are most at risk of infection with Ebola and this risk is heightened when women bear the burden of unpaid care work (Minor 2017; Schmidt-Sane et al. 2021). Low-wage or informal work is also often a major driver of individuals’ (in)ability to follow public health measures during an epidemic. For respiratory illnesses like Influenza or COVID-19, low-paid ‘frontline’ workers – unable to work remotely, having to take public transport and being more likely to live in deprived and overcrowded conditions – have been at higher risk. At a country level, social groups who have been historically marginalised and materially disadvantaged (nomadic populations, migrants, Indigenous peoples, etc.) are more likely to have underlying health issues that amplify their vulnerability (e.g. undernutrition and vulnerability to measles), and have poorer access to health services (Farmer et al. 2013). In the United Kingdom for instance, ethnic minority Black and Asian communities that have faced systemic discrimination contributing to poor health and high exposure have been disproportionately impacted by COVID-19 (Razai et al. 2021).

Biomedical models may differ from local models of disease and approaches taken by alternative health providers, as well as differ in the health-seeking behaviours of patients. However, there may be overlaps, and local models can be dynamic and adaptable. The shift to modified ‘safe and dignified burials’ that met public health goals and symbolic, social and emotional priorities during the Ebola response in West Africa is a good example of this adaptability (Richards 2016).

Interactions between Context and Response

Seemingly ‘technical’ activities like targeting the most affected groups may have unintended consequences if context is not understood. For example, targeted Cholera interventions in Latin America in the 1990s led to victim-blaming and further stigmatisation of those most affected: poor populations and Indigenous groups with inadequate water, sanitation and health service provision. Similarly, other public health measures are not neutral, and have unequal effects. For example, transport and movement bans, and compulsory animal culling in response to Avian Influenza or Rift Valley Fever have had disastrous economic consequences for small-scale animal farmers and pastoralists (Mutua et al. 2017; Scoones and Forster 2008).

Historical grievances and socio-political fault lines inevitably shape causal interpretations of disease. For example, when epidemics circulate in historically marginalised communities (e.g. Ebola in DRC in 2020, Cholera in Mozambique in 2016), people tend to mistrust the response and view government as either the cause of the disease, or a neglectful responder (Démolis et al. 2017). ‘Ebola business’ is a frequently heard term in post-colonial states that have experienced historical and current resource extraction. The Ebola epidemic was seen in DRC as one more way for the government to make money (Freudenthal 2020).

Interactions between Response and Disease

Disease-focussed epidemic responses can help bring in resources but may clash with local priorities. For example, affected communities involved in the Ebola
response in North Kivu in DRC in 2018–2020 were more concerned about protection from violence and having adequate support for problems like malaria and undernutrition. COVID-19-specific responses in lower-income and middle-income countries have had short- and long-term negative impacts on other health outcomes (Hrynick et al. 2021). As mentioned above, disease-specific treatment centres can also lead to stigmatisation. In the case of Cholera, delivering services through broader programmes for diarrheal disease and conducting universal messaging (rather than targeted at already discriminated populations) helped to reduce stigma (Nations and Monte 1996).

Is the aim to eradicate the disease or to return to a ‘manageable’ baseline? Cholera outbreaks addressed through emergency vaccination and symptomatic treatment are likely to recur, unless states deliver appropriate WASH infrastructure. Vaccine inequity in the case of COVID-19 will likely lead to the near eradication of the virus in the Global North, while the disease will remain a constant endemic threat in developing countries. Another concern is the unpredictability of emergence of many diseases. For example, in the case of Rift Valley Fever in Kenya, policymakers have a negative incentive to respond to animal cases, as response is (economically and politically) costly, and human transmission may not occur. Creating agreed-upon policy mechanisms to clarify response strategies based on uncertain evidence can help mitigate these disincentives (CG for RVF Decision Support 2010).

Dialogue and Learning

As a result of the dynamic interactions between pathogens, context and response, different knowledges emerge from a diversity of communities of practice and social groups in each context. They may differently define what the problem is in relation to their priorities, what questions are relevant, what makes ‘good evidence’ and the justifications for changes in practices. This competition over ‘what knowledges count’ in an epidemic is fraught with power. Groups compete with, ignore or align with each other: they either engage in dialogue and learning, or, alternatively, attempt to dominate and silence or side-line one another (with the larger, more powerful groups coming out on top).

Framings of the Disease

Different social groups with different degrees of power will represent disease in different ways: framing it as an outbreak emergency or not, as a medical or political phenomenon, as an individualised or structural problem, etc. For example, when the Ethiopian government framed a Cholera outbreak in the generic terms ‘Acute Watery Diarrhoea’ rather than using the local word for Cholera (daacun), they saved face as a governing party but failed to convey urgency to communities (Carruth 2011). Powerful countries in the Global North may respond to outbreaks with substantial funding, particularly when transmission is likely to spill-over their borders, whilst ignoring long-standing endemic infectious diseases (Dry and Leach 2010).

Dialogues between Different Types of Expertise and Evidence

Different competing explanations of disease and what actions are necessary emerge from different social groups, based on different notions of what is ‘good evidence’. Biomedical and epidemiological ‘expert’ evidence may dominate, but this may contrast with local communities’ models of disease, knowledge from other disciplines, and information from non-experts. The dominance in the COVID-19 response of biomedical and epidemiological knowledge in the United Kingdom has meant assumptions about people’s behaviour have often been incorrect, leading to inappropriate contact tracing and delayed lockdowns, and to failing to build on existing community initiatives (Drury et al. 2020; Leach et al. 2021). The Ugandan response, while largely led by biomedical experts, was layered onto existing socio-political realities, and took place against the backdrop of recent and contentious elections in January 2021. The stringency of the response and its militaristic enforcement were often perceived as political rather than scientific, particularly in marginalised communities at the country’s periphery. These perceptions, however, change over time and depend on context (Parker et al. 2020).

Learning Processes

Communities, organisations and the response as a whole learn and change accordingly as epidemics and responses unfold within a context. There are different forms of learning processes: first-hand empirical observations may be more important than learning from conventional communication methods. When more people know someone who has been sick or died, then risk perception and uptake of public health guidance may also increase. The success of a response may hinge on its capacity to iteratively incorporate community feedback and acknowledge uncertainty.
During COVID-19, UNICEF’s Eastern and Southern Africa Regional Office (ESARO)’s RCCE activities have been informed by a collection and review of social data from radio, hotlines, SMS and face-to-face meetings. These insights ensure that COVID-19 communication is aligned with community concerns and needs (Sommariva et al. 2021). Communities and other actors on the ground can provide local solutions to an epidemic even before the official response is kick-started, as happened in the West African Ebola pandemic (Richards 2016). Another example of learning informing response comes from the 2018 DRC Ebola outbreak. Oxfam field staff systematically sought perceptions of community members on a daily basis, which enabled teams to adapt in real time. For instance, after learning that local people felt uncomfortable engaging with external responders, they helped set up comité cellules – structures of locally elected, trusted community members who facilitated the communication and implementation of action plans at the local level (Oxfam International 2021).

**Openings**
The framework points towards some operational and policy ‘openings’ that come with incorporating social science intelligence in efforts to understand dynamics between disease, context and response, and how particular knowledges, expertise and learning processes emerge throughout an epidemic. These ‘openings’, which require adaptation to specific epidemic contexts, consist of the following factors.

**Advocating for the Devolution and/or Decentralisation of the Response and the Need for Multi-Scalar and Multi-Sectorial Coordination**
Ownership of response activities by affected populations enhances trust and effectiveness. Coordination across sectors (animal and human health, WASH, education, livelihoods) and different scales (global, national, regional, local) is critical.

**Leveraging Existing Community Mechanisms**
Communities, their social structures, movements and initiatives are capacities to build on. That said, it is important to identify fault lines that may exist within local communities, and acknowledge forms of locally trusted public authority, formal and informal.

**Framing of the Response as a Dialogue of Different Forms of Expertise**
A response that includes a diversity of knowledges will get a better picture: epidemiological and medical knowledge, inputs from social sciences, communities’ first-hand knowledge and feedback, insights from local and frontline health providers (including alternative health providers), inputs from big data technologies, etc. (Ripoll et al. 2018; Roberts 2020). Honesty about what is known and what is not known as the epidemic unfolds is crucial.

**Addressing the ‘Behavioural’ and the Structural**
Epidemic response relies on people changing practices that may put them at risk. There are meaningful and rational explanations of why people pursue particular practices. This can include those cases in which the new behaviour is not ‘resisted’ but not taken up because of a lack of appropriate infrastructure to enable that behavioural change, such as the case of adequate WASH infrastructure in the Horn of Africa, or the weakness of health systems in West Africa before Ebola hit.

**Incorporating Social Science Intelligence in Epidemic Preparedness and Response in a Systematic Way**
Despite its usual relegation to RCCE, social science evidence is relevant to all sectors and pillars of epidemic response, and should be integrated within existing capacities and systems of preparedness and response architecture (Bardosh et al. 2020). A good example is the Social Science Analysis Cell which, for instance, conducted operationally relevant social science research across all pillars and sectors of response in North Kivu (see Simone Carter and colleagues’ article in this issue).

**Embracing Uncertainty: Balancing Preparedness with Nimbleness and Adaptability of Response**
There is much biological, epidemiological and social uncertainty during epidemics. This requires nimbleness, responsiveness and adaptability for the response to build on local ideas and innovations, and to handle new and emerging biological threats, unpredictable epidemiological trajectories and social reactions of different communities and institutions (Leach et al. 2021; MacGregor et al. 2020).

**Conclusion**
It is our hope that this social science in epidemics framework will enable responders to engage more deeply and systematically with the contexts of emergencies, so as to ensure that activities are more adaptive to local dynamics. By highlighting some of the operational and policy challenges of adopting
a social science lens to epidemics, we hope this framework will become a good resource to (1) explore the different phases and aspects of past and ongoing outbreaks; and (2) support the ‘contextualisation’ of future emergency interventions and preparedness activities to incorporate the social, political and economic dynamics of the populations at risk; and (3) to allow for interventions that build on the social and cultural resources of the communities they aim to support.

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References


Note
1. You can find the range of outputs (evidence reviews, case studies and tools) here: https://www.socialscienceinaction.org/about/social-science-lessons/.