Joseph Mimbale, LPMJ 2020, 106:4
DOI: 10.41720032-745X.1000378

La Prensa Medica

Research Article A SCITECHNOL JOURNAL

Impact of DRC Ebola response under the paradigm of scaling science

Joseph Mimbale

Introduction

In 44 years, since the first DRC Ebola outbreak in 1976, the country has experienced 10 waves of the Ebola outbreak _ making it the country that has experienced and suffered the most from the Ebola outbreak. The last outbreak _ of August 2018 _ was the second largest Ebola outbreak after that of West Africa from 2013 to 2015. And unlike many previous outbreaks, the current Ebola outbreak is highly pathogenic and is undergoing major mutations _ posing new challenges for treatment and prevention. While the epidemic has spread rapidly _ with high numbers of casualties to neighbouring countries _ it must be acknowledged that the DRC's response has been overshadowed by a crisis of governance and political legitimacy, the cycle of violence in the eastern part of the country, public mistrust of the Ebola response teams, political transition and conspiracy theories. But anyway, the eruption of the outbreak attracted the attention of several International Relations actors such as national governments, international organizations, NGOs which, altogether, played an important role in the conception and implementation of the DRC Ebola response.

In the face of the epidemic, the DRC Government acted swiftly and took a series of preventive and control measures. These measures include: strengthening outbreak surveillance and establishing Ebola treatment centres; monitoring cases or tracking transmission; quarantining suspected or confirmed cases; raising public awareness; conducting vaccination campaigns; providing safe drinking water in affected areas; supervising safe and dignified burials; and strengthening cross-border surveillance, among other conventional measures that have worked in other areas. However, the limited administrative and management capacity of the DRC Government, as well as insecurity in the affected areas, have frequently rendered these otherwise symptomatic responses ineffective.

In the face of the current Ebola outbreak in the DRC, various international organizations are actively engaged in various forms of international response. First, WHO, the world health authority, is coordinating field operations to mobilize national funding for the Ebola response and the registration of pilot vaccines. WHO is the international organization that has deployed the most resources and personnel in the high-risk areas of the Ebola outbreak in the DRC. Similarly, the World Bank is committed to front-line response, strengthening health systems and preparedness to reduce the risk of virus transmission. The Ebola response in the DRC also involved NGOs, with Médecins Sans Frontières and the Adventist Development and Relief Agency providing expertise on best practices in water, sanitation and hygiene for the Ebola outbreak response in the DRC.

That said, the objective of this paper is to analyse the impact of the DRC Ebola response using the logic of the 'scaling up science' paradigm analysis. In other words, we seek to demonstrate (1) whether Ebola response plans have been properly validated by different stakeholders; (2) whether the implementation of the Ebola response has resolved the problem fundamentally and on an optimal scale; (3) whether the coordination of the Ebola response has been effective; and (4) whether the Ebola response has been continuously subjected to dynamic evaluation. In order to do so, we will begin by shedding light on global perceptions of Ebola international policies. We will then lay the groundwork for an analysis of the 'scaling up science' paradigm _ before discussing scientifically the impact of the DRC Ebola response.

1.1. Global Perceptions of Ebola International Policies

Several researchers approach the Ebola crisis from a wide range of academic perspectives. They examine the domestic, international, and transnational politics of Ebola. The authors discuss Ebola and politics in DRC (and Africa), Europe, and the United States. They show how the outbreak can be decoded through diverse lenses, such as international organizations, public opinion, public health, international law, human rights, security, political behavior, migration, ethnic politics, intersectional analysis, identity, and the politics of care.

In this paper, we address two fundamental aspects of Ebola international policies including : (1) Specific policies around the Ebola outbreak, (2) development aid for health on Ebola.

1.2. Specific policies around the Ebola virus

In 1992, three authors _ Kenneth S. Sherrill, Carolyn M. Somerville and Robert W. Bailey _ published an interesting article entitled 'What Political Science is Missing by not studying AIDS' [1]. This paper has been about denouncing the absence of research in political science on AIDS-related subjects and proposing a research agenda. In 2014, Kenneth Sherrill and Carolyn Somerville _ in their study entitled 'Aids, Ebola, and politics' [2] _ opened representative debate on the politics of Ebola, paying particular attention to West Africa and the United States. They also compare the politics of Ebola to the politics of AIDS. Kenneth Sherrill and Carolyn Somerville have argued that unlike the spread of AIDS, which affecting every country, Ebola emerged in 1976 as a localized disease primarily affecting poor African countries. Western countries' responses to the Ebola virus are virtually the same as those to HIV/AIDS. There are perhaps more continuities than changes.

From another point of view, Meredith Weiss _ in her paper 'mobilizing around a (another) plague' [5] _ considers the possibility of a broader

***Corresponding author:** Joseph Mimbale; Zhejiang Normal University, China; Telephone: +8617857171856 Email: joseph_mimbale@yahoo.com

Received: July 02, 2020 Accepted: July 18, 2020 Published: July 28, 2020

political mobilization around Ebola. In their study on the 2014 Ebola epidemic in West Africa, Steffen Flessa and Michael Marx [6], estimate that the Ebola fever epidemic in Western Africa rather reveals fondamental failures in establishing health policies within those countries as well as in development policies of industrialized nations. In the same vein, Gonsalves Gregg and Staley Peter [7], pointed out that however distinct they are epidemiologically, Ebola and AIDS occupy similar policy terrain. Like AIDS, Ebola is steeped in stigma and fear: the popular understanding of transmission mechanisms is murky. It takes a lot of political mobilization to stop the Ebola epidemic.

1.3. Development aid for health on Ebola

The third part of the literature review includes contributions focusing primarily on international organizations, global health governance, and the international relations of Ebola.

In 'the world health organization and responses to global health emergencies', Jeremy Youde [8] examines the woefully inadequate response of the World Health Organization to Ebola, emphasizing the role of institutional and funding constraints. This very representative paper on the WHO's international policy critique of the Ebola response offers some insight into the gaps that have been revealed in the WHO's response to the current Ebola epidemic in DRC.

In 2014 several authors _ in the critique against WHO _ noted that experts should have realized that traditional containment methods wouldn't work in a region with porous borders and broken health systems [9]. For Ray Sanchez [10], WHO needs to review its response to Ebola despite criticism of its efforts. In his October 19, 2014 investigation, Ray Sanchez delivers the contents of the Associated Press report describing WHO response is as botched and riddled with incompetence. A timeline of the outbreak showed that WHO missed opportunities to stop the spread of the disease after it was first diagnosed in West Africa, the Associated Press reported. The document also said WHO experts failed to recognize that traditional containment methods wouldn't work in the region. The leaked document said that Dr. Bruce Aylward _ normally in charge of polio eradication _ alerted WHO Director-General Margaret Chan via email in June 2014 that national health organizations and charities believed the U.N. agency was 'compromising rather than aiding' the Ebola response. 'None of the news about WHO's performance is good,' Aylward wrote, according to the Associated Press.

In the same vein, Graham E.R. [11] and Sun Lena [12] also addressed the issue of gaps in the WHO's response to the Ebola epidemic. Graham E.R. explains that in 1978, the World Health Organization received a new mandate from its member states under the ambitious heading of 'Health for All by the Year 2000.' Although massive in its scope and idealism, the role assigned to the WHO was straightforward: to provide assistance to developing countries to improve local health systems.

Joshua Busby and Karen Grépin [13] continue this thread and explain WHO's failure on Ebola by referencing tensions in the global public health space, organizational pathologies, and reputational costs. They explain the gaps in the WHO in these terms: The WHO is no longer the organization it once was. As other organizations (e.g., UNAIDS; the Gates Foundation; and the Global Fund to Fight AIDS, TB, and Malaria) have come to play an increasingly prominent role _ particularly in mobilizing finance and setting agendas _ the WHO has evolved into a 'technical agency' capable of developing guidelines but with little ability to mobilize infrastructure or human resources. After the 2008 financial crisis, the WHO experienced a significant decline in resources, including a $500 million budget shortfall and a 20% staff reduction. At the 2012 World Health Assembly, the WHO's crisis and epidemic funding was cut by 50% to $114 million, reducing that staff by almost two thirds. With 75% of funding from voluntary contributions and 91% earmarked for specific activities in 2010-2011, the WHO has been susceptible to donor whims in financing and unable to flexibly reallocate its budget. From this perspective, the WHO's failures are largely attributable to donor interests. Specific organizational pathologies also may explain the WHO's poor response to Ebola. WHO Director-General Margaret Chan suggested that her office was informed of the deficient regional response in late June 2014, two months after Doctors Without Borders warned that it was overwhelmed. Only in August did the WHO declare Ebola a 'public health emergency of international concern'. The updated International Health Regulations of 2005 affirmed the WHO's central role in both warning about and responding to public health events. However, evidence suggests that the WHO no longer is capable of responding adequately to global emergencies, which perhaps necessitates fundamental reform or new structures.

For Barnett and Finnemore [14], specific organizational pathologies also may explain the WHO's poor response to Ebola. Maryam Deloffre [15] argues that the United Nations Security Council's decision to define the Ebola outbreak as a threat to international peace and security can potentially lead to prioritizing human security, common values, and international law over national interest. However, the response to Ebola is not only a question of international aid interaction, it is also and above all a question of international health aid coordination and community trust.

It is in this context that Rollin P.E. [16], _ in his study on the current Ebola epidemic in DRC _ argues that the leadership and coordination shortfalls, increased insecurity, mistrust, and denial from both the community and the responders are now hallmarks of the response.

Kardas-Nelson M. [17] explains the reasons for this community mistrust of Ebola stakeholders in the following terms: "The population's mistrust of Ebola treatment centres is due to the fact that only 25% of people in the DRC believe that Ebola is real. Several researchers suggests that 'conspiracy theories' are driving the epidemic, but that discounts a very real history of colonial exploitation: the brutal rule of Leopold II of Belgium in the 19th century, the fact that the country's first democratically elected president was killed with the support of the US CIA in 1961.

The Paradigm of Scaling Science

By way of introduction, it should be noted that the paradigm of "scale science" was developed by John Gargani and Robert McLean [21]. This new paradigm is based on a review of IDRC's work that has aimed to advance a scientific or critical approach to scaling. From the perspective of the paradigm of scaling science: scaling impact is a coordinated effort to achieve a collection of impacts at optimal scale that is only undertaken if it is both morally justified and warranted by

the dynamic evaluation of evidence [21]. This definition encompasses four basic axioms: validation, an inclusive approach to coordination, optimal scale and dynamic evaluation. If these axioms are not explicitly observed in the conception, implementation and evaluation of program scale _ then the public interest may be overshadowed by other objectives _ particularly organizational growth.

Axiom 1. Validation

The first axiom, "validation", emphasizes growth pressure and responsibility to others. Researchers may feel pressure from government, investors, funders and peers to increase the use of their innovation or to develop their organization. But in making that decision, innovators also have a responsibility to those affected by their innovation. And part of this responsibility is fulfilled by the way in which scaling up is justified [21]. This is an ethical question, where the scale becomes the object of a value compromise. To address this, innovators _ and those affected by the innovation _ need to establish criteria of scale based on "acceptable risk of impact". In other words, how can you be sure that your innovation will have a positive impact and avoid a negative impact before implementing it on a large scale? In short, all the risks associated with scaling up must be assessed beforehand by the innovators as well as the benefits of the innovation.

Axiom 2. Coordination

The second axiom of the paradigm discussed in this research relates to the 'inclusive approach to coordination' _ whereby the positive impact of scaling up an initiative depends on the partnership, collaboration, inclusion and competition of many actors. The practical challenge facing innovators is how to coordinate the actions of diverse actors with multiple agendas and perspectives to advance the public good [21]. In this sense, if coordination is not commensurate with the challenges of the program, the impact of scaling up the program is more likely to be mixed.

Axiom 3. Optimal scale

The third axiom is the idea that solutions to social and environmental problems have an "optimal scale," and rarely is it the maximum. There are trade-offs when scaling that typically make an intermediate level of scale the most desirable. Understanding optimal scale starts with creating clarity about what exactly impact at scale is and how it will be measured.

Other goals, such as improvements to a program's accessibility for particularly underserved subpopulations or cost-efficiency gains, can greatly increase the overall impact of a program. At the same time, qualitative aims such as sustainability or satisfaction can also deeply improve people's lives. After all, it is entirely plausible that benefit for a population can be greater from doing very well on a small scale than doing less well on a large scale _ and of course, vice versa. Small, slow, and beautiful or big, fast, and flawed _ both can have their merits and their detriments.

Axiom 4. Dynamic Evaluation

Impact evaluations assess the effectiveness of an innovation at a given level of scale. They assume stable cause-and-effect relationships, the kind commonly described by logic models and theories of change. In reality, impacts may become stronger or weaker, or qualitatively different, in response to a range of actions and scaling effects. To accommodate this, scaling science uses the principle of "dynamic evaluation," understanding how impacts change with scale. Dynamic evaluation is, in effect, how we manage to drive vehicles at increasing speeds. We use a continuous and adaptive process of gathering, assessing, and acting on the signals we pick up from around us. It is dynamic because it can require changing approaches, frameworks, and theories as we proceed [22].

Impact of the Ebola response in DRC

The current Ebola outbreak in DRC began in August 2018 and has been spreading ever since. Although there were earlier signs of improvement in the control of the outbreak, various factors of instability continue to emerge [23]. In this paper, we attempt to analyse the impact of the DRC Ebola response with reference to the analytical logics of the 'scaling up science' paradigm as previously elucidated.

For in the analysis of the Ebola response in the DRC, it is not enough to describe the contribution of the actors nor to demonstrate the mobilization of the international community in the financing of the Ebola response. The analysis of the impact of the Ebola response needs to go beyond these aspects. Also, a standard international response to the outbreak is necessary, but in DRC it is not sufficient.

Thus, we evaluate the impact of Ebola's response in DRC on the crucible of the axioms below: (1) validation; (2) inclusiveness of coordination; (3) optimal scale; and finally, (4) dynamic evaluation.

Validation or rather invalidation of DRC Ebola response plans

Determining how best to manage an infectious disease outbreak may be hampered by several factors or uncertainties, including: epidemiological uncertainty and operational uncertainty (i.e., about the effectiveness of the response). During infectious disease outbreaks, decision-makers seek to identify and implement the most effective interventions to control the outbreak. It is generally believed that in order to control the spread of Ebola, it is first necessary to pay close attention to the dynamics of the world Ebola virus epidemic and strengthen border quarantine. Suspension of importation of monkeys is mainly restricted to monkeys from infected areas. Suspected patients with bleeding symptoms should be isolated for observation. The diagnosis should be reported to the health authorities as soon as it is confirmed, and the patient should be isolated to the strictest extent possible, i.e. using isolation equipment with air filtration devices. Medical and laboratory staff should wear isolation suits and, if possible, space suits for testing operations to prevent accidents. Those in close contact with the patient should also be closely observed. However, these activities can only be significantly successful if they are conducted in a safe environment.

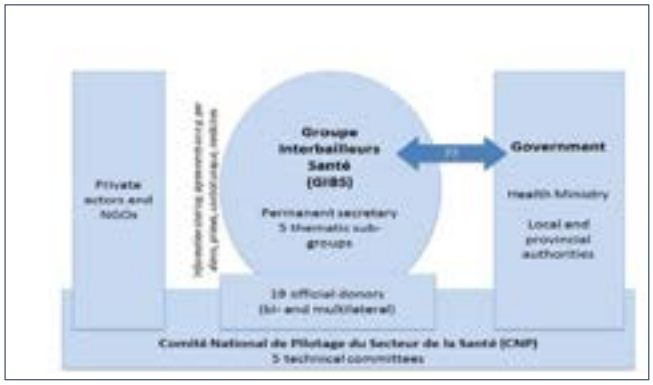
In the light of the evolution of this paper, we can identify several operational risk factors or uncertainties that could hinder the conduct of Ebola response operations, including: a crisis of state authority and insecurity. Several researchers agree that such uncertainties can affect the effectiveness of the response to infectious diseases [24, 25]. It is essential to recognize these uncertainties to avoid over- or underestimating the effectiveness of the Ebola response in DRC.

Inclusivity or rather exclusivity of Ebola Response coordination

In the specific context of our research, we identified three categories of actors involved in the Ebola response in the DRC, including: national governments, international organizations and NGOs. It must be acknowledged that the health assistance provided by each of these actors in the DRC Ebola Response has certainly been of great importance but has been contrasted both by the lack of leadership of the DRC Ministry of Health, the lack of inclusiveness of the actors, and finally, the existence of parallel coordination of the Ebola response.

First, no systematic resource or tool for tracking contributions exists, a situation made more complex because the Ebola response is taking place in the context of a broad set of humanitarian crises with multiple multilateral and bilateral funding mechanisms contributing resources across a spectrum of activities. For the U.S. specifically, while some data are available, the full range of funding information has not been provided. So far, funding for the crisis has not been streamlined or coordinated, making it difficult to track. Funding has been allocated through multiple channels, including the Ebola response plan, humanitarian response support for the DRC, in-kind support, personnel support, and bilateral support for the government.

Figure 2. Overview of Health coordination in the DRC



However, based on our research, there is every indication that the population has not been adequately involved in the Ebola scale-up programme. The first indication of this isolation of the population is perfectly illustrated by the refusal of the population to acknowledge the existence of the Ebola outbreak on its territory. We can appreciate this attitude of the population from two angles. First, as an illustration of the communication gap between the decision-makers of the Ebola response and the population benefiting from the said response. Secondly, this refusal demonstrates the lack of inclusiveness in the development and implementation of the Ebola response in the DRC. But, during the 2014 Ebola outbreak, local actors and international organizations coordinated their efforts. This allowed them to quickly scale up the vaccination program and help bring an end to the crisis. The combined work of scientists, health workers, and aid and humanitarian agencies is truly an impressive feat of collective impact. It is unlikely that organizations fighting Ebola would have achieved similar success had they made independent decisions. However, as the epidemic evolved in the field of operations, the strategy of the Ebola Response in DRC has more or less readjusted _ improving dialogue with local communities _ even if the means employed are basically insufficient.

Strategic response plans for Ebola and the optimization of DRC Ebola response

On this point, progress has been made on the Ebola response in the DRC. The optimal assessment of the response can be seen in the strategic response plans (SRP 1, SRP 2, SRP 3, SRP 4, SRP 4.1). Whether at the level of objectives or at the level of operations to be carried out, it emerges that each strategic response plan _ developed by the DRC government and its foreign health partners _ is always accompanied by an optimal assessment of previous measures and options for responding to the outbreak. However, given the twists and turns in the field of operations and the multiple factors involved, it is difficult to measure the effectiveness of Ebola response plans in the DRC.

However, we can say that despite the many twists and turns on the ground, an adapted response strategy involving expanded ring vaccination around clusters of cases and enhanced community engagement has brought the main hot spots of the outbreak under control, including in particular the Butembo area.

Importantly, this study also suggests that a change in strategy to adapt to a difficult context can lead to a rapid and drastic reduction in transmissibility, tipping the incidence trends and bringing the outbreak closer to control. At this stage, it is unclear which specific elements drove this reduction in cases, but several indicators suggest a combination of different factors may have played a role. For instance, improved community dialogue permitted better access to health zones, reducing the number of health zones that were inaccessible due to hostile groups from six during the disrupted phase to one during the control phase, and the number of health zones with community resistance from nine to three. Better acceptance probably permitted improvements in all aspects of surveillance and intervention. For example, daily fractions of contacts successfully seen increased from 70% to more than 80%, and a drastic reduction in vaccination gaps was observed: between 22 April and 6 May 2019, 75% (n = 124) of vaccination rings could not be opened within the first 72 h following exposure; in contrast, this number dropped to 12% (n = 68) from 25 May to 8 June 2019 [37]. Further modelling work alongside detailed epidemiological and socio-anthropological studies will be needed to disentangle the mechanisms that under-pinned these changes and to improve our understanding of the elements key to controlling Ebola outbreak in highly insecure settings.

Dynamic evaluation of the DRC Ebola response

With regard to DRC Ebola's response, we approach its dynamic evaluation from two angles. First, an evaluation of the Ebola vaccination program. Second, we evaluate the Ebola Response from the perspective of the DRC health system.

Ebola Vaccination Program

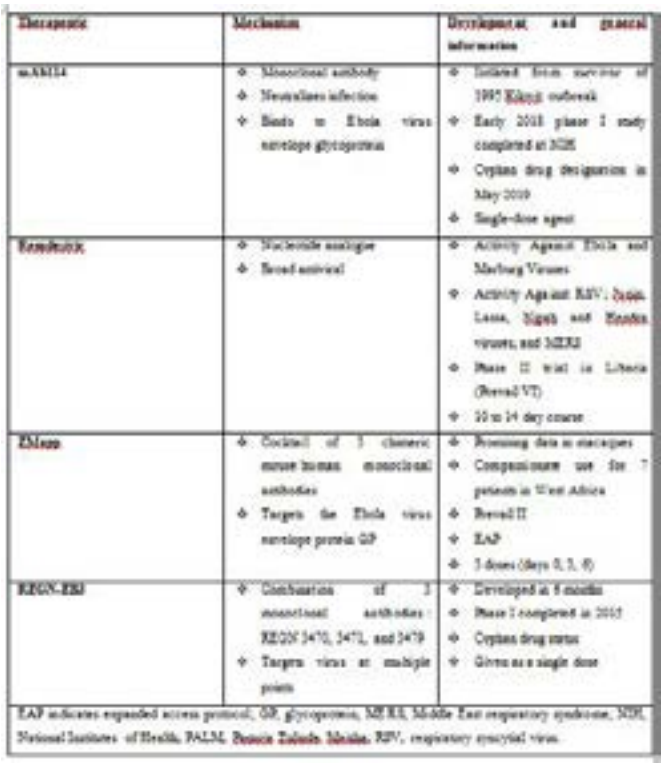
Merck announced Friday that four African countries, including the Democratic Republic of the Congo (DRC), Burundi, Ghana, and Zambia, have approved the Ebola Zaire Vaccine, ERVEBO.

Approvals by these African countries signify continued, ground-breaking progress in advancing the future of global public health preparedness against Zaire ebolavirus disease, made possible by the unprecedented collaboration between the World Health Organization (WHO), the African Vaccines Regulatory Forum (AVAREF), African governments, the European Medicines Agency (EMA), and Merck. These approvals were the result of the successful implementation of the WHO's Roadmap for introduction and roll-out of Merck rVSV-ZEBOV Ebola virus disease vaccine in African countries. The roadmap, designed to coordinate actions and contributions toward the licensing and roll-out of ERVEBO, helped facilitate near-parallel regulatory reviews and led to the approvals of the vaccine in several at-risk countries within 90 days of WHO.

The development and evaluation of therapeutics against Ebola Virus Disease has been the outbreak's other great success story. The Pamoja Tulinde Maisha study was a large consortium therapeutics trial with the primary objective of looking at the 28-day mortality

of investigational therapeutics (mAb114, remdesivir, REGN-EB3) compared with ZMapp as the control arm (Table 1).

Table 1. Overview of therapeutics used in the PALM Trial



Therapeutic	Mechanism	Development and general information
mAb114	❖ Monoclonal antibody ❖ Neutralizes infection ❖ Binds to Ebola virus envelope glycoprotein	❖ Isolated from survivor of 1995 Kikwit outbreak ❖ Early 2018 phase 1 study completed at NIH ❖ Orphan drug designation in May 2019 ❖ Single-dose agent
Remdesivir	❖ Nucleotide analogue ❖ Broad antiviral	❖ Activity Against Ebola and Marburg Viruses ❖ Activity Against RSV, Nipah, Lassa, Nipah and Hendra viruses, and MERS ❖ Phase II trial in Liberia (Revised VT) ❖ 10 to 14 day course
ZMapp	❖ Cocktail of 3 chimeric mouse human monoclonal antibodies ❖ Targets the Ebola virus envelope protein GP	❖ Promising data in macaques ❖ Compassionate use for 7 patients in West Africa ❖ Revised II ❖ EAP ❖ 3 doses (days 0, 3, 6)
REGN-EB3	❖ Combination of 3 monoclonal antibodies: REGN 3470, 3471, and 3479 ❖ Targets virus at multiple points	❖ Developed in 9 months ❖ Phase I completed in 2015 ❖ Orphan drug status ❖ Given as a single dose

EAP indicates expanded access protocol; GP, glycoprotein; MERS, Middle East respiratory syndrome; NIH, National Institutes of Health; PALM, Pamoja Tulinde Maisha; RSV, respiratory syncytial virus.

Source: Brayden SCHINDELL; Jason KINDRACHUK, AND Krutika KUPPALLI, 'What the 2018 DRC Ebola Epidemic Taught Us About Outbreak Response and Experimental Countermeasures,' Contagion Live _ Infectious Diseases Today, April 2020, https://www.contagionlive.com/publications/contagion/2020/april/what-the-2018-drc-ebola-epidemic-taught-us-about-outbreak-response-and-experimental-countermeasures.

Ebola's response and the DRC's health system

If the Ebola crisis in the three West African countries (Guinea, Liberia and Sierra Leone) was a surprise, this cannot be the case for a country like the DRC, which has almost 43 years of history of responding to the Ebola outbreak on its territory. To govern, however, means to make plans. Governing means anticipating. To govern is to foresee _ and to foresee is to act. But from the progress of this paper, it seems that the DRC's health system has been caught off guard. It was not at all prepared to control and respond to the brutality of a major Ebola outbreak. It's a shock. Shock at the level of the DRC's health system. Shock at the level of customs and traditions. Shock at the level of the population that _ if they were well informed, if they were more involved in the development of specific public health policies _ they would play an important role in the response to Ebola. It is therefore a shock in which none of the health actors in the DRC imagined it. And responding to a major Ebola pandemic in the literal unpreparedness of health systems is like launching a real race against time.

The health system is an essential element in the response to Ebola. Because Ebola virus disease carries symptoms of both social and political disorder. So in order to be able to effectively respond to the epidemic, it is necessary to be medically, socially, structurally, politically ready and therefore, it is necessary to be systematically ready.

Limitations and future directions of research on this theme

Our research focused on "DRC Ebola's response". We assessed the Ebola response on the crucible of the science scaling paradigm developed by John Gargani & Robert McLean. Four structural-functional axioms were used to scrutinize the different aspects of the DRC Ebola response : validation, inclusiveness of coordination; optimal scale; and dynamic evaluation. We do not pretend to exhaust the substance of this research. Further research should focus on the details of the Ebola response including: (1) the challenges of coordinating information, (2) the evaluation of the response objectives according to the different actors; (3) the evaluation of the implementation of the response plans; (4) the problem of strengthening the DRC's health system; etc. There are additional opportunities to build on research on those topics, similar to the work of other researchers. Future research could be conducted over a longer period, using these findings as a foundation. Finally, our research was carried out in the context of the constantly evolving Ebola outbreak. We were also time limited in conducting this research given the urgency due to the need to respond to an emergency. DRC Ebola Response is a difficult concept to operationalize. We encourage other researchers to build on our methods and findings to improve the DRC Ebola Reponse. We also see value in research that considers additional manifestations of Ebola Response, such as DRC behavior or international players behavior in Ebola Response. Additional research on congolese people trust should be conducted on the DRC side.

Conclusion

First of all, this study considers that the contributions of actors in the Ebola response in DRC is an essential element in alleviating the suffering of the Congolese people against Ebola. However, a closer look at the situation reveals a gap between what the Ebola response predicts in theory and what is actually being done on the ground. The definition of an effective response to outbreaks involves several variables and factors (medical research, technology, infrastructure, human resources, financial resources, coordination of the response, health governance, etc.). And to understand why the DRC Ebola response is ineffective, we will have to start there.

Second, the problem with the Ebola response in the DRC is that actors are focusing more on the effects rather than on the causes of Ebola outbreaks in the DRC. The causes behind the recurrence of Ebola outbreaks in the DRC are distant, varied or diverse _ such as poor governance, poverty, inadequate health system, lack of investment in scientific research, etc. Most stakeholder responses to the DRC Ebola outbreak are urgent but sporadic and unsustainable. Thus, the effects of Ebola outbreaks are mainly addressed, but the causes of Ebola in DRC are not eliminated. As a result, Ebola may disappear today, but it will return tomorrow. Like a vicious circle, the DRC will still not be prepared to respond effectively against Ebola when it reappears.

Thirdly, there is a need for the country to invest in scientific research because, as we have shown, only scientific innovation - following the logic of the science scale-up paradigm - can solve the immeasurable problems of the DRC's health sector. In the sustainable fight against Ebola, the mobilisation of actors alone is not enough _ the scaling up of science being focused on the scale of impact rather than on actions. It is based on the experience of researchers rather than politicians.

It promotes the creation of new knowledge, its application to a real challenge, and the assurance that the solution is aimed at optimal impact. In other words, the DRC should use scientific research to guide specific policies on the Ebola response; improve the quality of field interventions and promote dialogue with communities benefiting from the Ebola response.

And finally, the recurrence of Ebola outbreaks has highlighted the shortcomings of the actors' response. It also revealed the inadequacy of the DRC's health system and the need for investment to meet the health needs of the population. This recurrence is also an opportunity to invite the actors of the Ebola response to rethink the management of the DRC's health system, to reduce vertical or helicopter interventions and to work with a view to strengthening the DRC health system.

Reference

1. Kenneth S. Sherrill, Carolyn M. Somerville and Robert W. Bailey, 'What Political Science is Missing by not studying AIDS,' Political Science and Politics, Vol 25, No 4, Dec 1992, pp. 688-693.
2. Sherrill, Kenneth & Somerville, Carolyn, 'AIDS, EBOLA, AND POLITICS,' Political Science and Politics, Vol 48, No 1, 2014, pp. 4-5.
3. Bruntland Gro Harlem, 'Global Health and international security,' Global Governance, Vol 9, No 4, Oct–Dec 2003, pp. 417-423.
4. Zaryab Iqbal and Christopher Zorn, 'Violent Conflict and the Spread of HIV/AIDS in Africa,' The Journal of politics, Vol 72, No 1, Jan 2010, pp. 149-162.
5. Kenneth Sherrill and Carolyn Somerville, 'mobilizing around a (another) plague,' Political Science and Politics, Vol 48, No 1, 2014, pp. 5-6.
6. Steffen Flessa and Michael Marx, 'Ebola fever epidemic 2014: a call for sustainable health and development policies,' The European Journal of Health Economics, Vol 17, No 1,Jan 2016, pp. 1-4.
7. Gonsalves, G., & Staley, P., 'Panic, Paranoia, and Public Health _ The AIDS Epidemic's Lessons for Ebola,' New England Journal of Medicine, Vol 371, No 25, pp. 2348–2349.
8. Jeremy Youde, 'the world health organization and responses to global health emergencies,' Political Science and Politics, Vol 48, No 1, 2014, pp. 11-12.
9. Cheng Maria. 'UN: We Botched Response to the Ebola Outbreak,' Associated Press, October 17. https://www.timesofisrael.com/un-we-botched-response-to-the-ebola-outbreak/, accessed 09 Feb 2020.
10. Sanchez Ray, 'WHO to Review Ebola Response amid Criticism of its Efforts,' CNN, 2014,
11. Graham E.R., 'International organizations as collective agents: Fragmentation and the limits of principal control at the World Health Organization,' European Journal of International Relations, Vol 20, No 2, 2013, pp. 366–390.
12. Sun Lena H., Brady Dennis, Lenny Bernstein, and Joel Achenbach, 'Out of Control: How the World's Health Organizations Failed to Stop the Ebola Disaster,' Washington Post, 2014, https://www.worldhunger.org/out-of-control-how-the-worlds-health-organizations-failed-to-stop-the-ebola-disaster/, accessed 8 Feb 2020.
13. Joshua Busby and Karen Grépin, 'What accounts for the world health organization's failure on Ebola?' Political Science and Politics, Vol 48, No 1, 2014, pp. 12-13.
14. Barnett Michael N. and Martha Finnemore, 'The Politics, Power, and Pathologies of International Organizations,' International Organization, Vol 53, No 4, 1999, pp. 699–732.
15. Maryam Zarnegar Deloffre, 'Human security, humanitarian response, and Ebola,' Political Science and Politics, Vol 48, No 1, 2014, pp. 13-14.
16. Rollin P. E, 'Ebola in eastern DRC,' The Lancet Infectious Diseases, Vol 19, No 10, Aug 2019.
17. Kardas-Nelson M., 'Ebola in Sierra Leone and DRC: lessons learnt,' BMJ, Aug 2019, Vol 366, No 15012.
18. J. GARGANI and R. MCLEAN, 'Scaling Science.,' Stanford Soc. Innov. Rev., 2017.
19. Michael Quinn Patton, Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use, New York: Guilford Press, 2010.
20. Lu Qiang, 'Progress in the fight against the Ebola outbreak in the DRC,' People's Daily (PRC newspaper), Edition 17, October 15, 2019
21. Runge MC, Converse SJ, Lyons JE, 'Which uncertainty? Using expert elicitation and expected value of information to design an adaptive program,' Biol. Conserv., 144, 2011, pp.1214–1223,
22. Williams BK, Brown ED., 'Technical challenges in the application of adaptive management,' Biol. Conserv., 195, 2016, pp.255–263, doi:10.1016/j.biocon.2016.01.012.
23. Chinese Ministry of Trade, DRC _ Guide for foreign investment and cooperation countries (regions), 2019.
24. NURITH AIZENMAN, 'What will It take to finally end Congo's Ebola Outbreak in 2020?' National Public Radio, January 2020,
25. WHO, 'End in sight, but flare-ups likely in the Ebola outbreak in the Democratic Republic of the Congo,' Newsroom, 6 march 2020,

Author Affiliation

Top

Zhejiang Normal University, China