



COVID-19: Lessons Learnt

- **Lessons Learnt from Previous Health Emergencies;**
- **Lessons We Have Not Always Been Willing to Take on Board;**
- **Actions or Reactions That Might Have Helped**

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Abstract

When dealing with complex, potentially long-term emergencies, URD's response is typically twofold:

Review lessons learnt from previous major emergencies;

Establish mechanisms to observe and evaluate the new emergency in real time, analyze the data and make recommendations on how to respond.

In response to COVID-19, URD established an "observatory" which has issued a series of notes on different aspects of the emergency, or pandemic, as follows:

This is the 13th and final note in the series. It addresses lessons learnt from previous emergencies, and innovations in responding to them. It sums up lessons URD believes should have been learnt from previous emergencies, and the extent to which these lessons have (or have not) been applied in the global response to COVID-19.

Introduction

At the request of France's Ministry of Defence, URD produced in 2020 a report entitled "Mapping unintended future risks" [1]. This report explored future health risks. Our report accurately predicted what occurred. (URD was not alone in sounding the alert.) URD has long experience of major health crises: Cholera in Haiti, Somalia, Chad and Yemen; and Ebola in Guinea, Sierra Leone, Liberia and the Democratic Republic of Congo (DRC). We learnt from successive emergencies about just how they developed and what to take into account in responding to them.

During three days of reflection at URD's 13th Autumn Humanitarian University, in September 2019 the consequences of systemic collapse at a global level were hypothesized and discussed. The debate, bringing together "collapsologists" and experts in disaster management, sketched out several scenarios that were very similar to the one we have been living through since January 2020 and the start of the current pandemic. One of the key elements of managing emergencies to emerge from the debate was the importance of applying lessons from previous crises, adapted as appropriate to new or different contexts. Possible future health crises were among the scenarios envisaged.

Once the pandemic was declared, URD rapidly began work on producing a series of key messages [2], setting up at the same time a COVID-19 "observatory". In March 2020 we issued a compendium of lessons drawn from major health emergencies. Over the following months we published notes on different topics, such as decision-taking in a context of uncertainty, how to identify a health emergency and issue appropriate alerts, the socio-economic impact of emergencies, the politics of pandemics, etc. We now know that we shall need to live with COVID-19 for the long term, although vaccination - the hoped-for solution - will, as in the case of Ebola, make a difference. The September 2021 [Translator's note: c'est correct, cettedate?] Autumn Humanitarian University, on the theme of "The message of the pandemic", was [Translator's note: "will be"? est-cequ'il a eu lieu?] a wide-ranging review of experience thus far.

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This 13th note is intended to sum up the situation thus far, and look ahead, as indicated in the three sub-headings set out above.

Health Emergencies: An Ever-Present Threat

Epidemics are nothing new. They are part of our collective memory. The transmission of disease by travelers is well known, notably the disastrous outcome of contacts between the conquistadores and the indigenous populations of the Americas. However, we see an acceleration of the transmission process because of the increase in the mobility of both people and goods since the devastating Asian 'flu in 1957, followed by Hong Kong 'flu in 1968, then SRAS [Translator's note: should this be SARS?] in 2004 to 2005 and MERS in 2006. Epidemics caused by pathogens that are already known continue to occur (cholera in Haiti, the Marbourg virus in central Africa), others are caused by unknown pathogens [Translator's note: le texte veut dire "threats"? est-ce qu'on veut parler des menaces de tout ordre, ou des maladies?] which challenge our ability to respond: Ebola in the Gulf of Guinea and in the DRC, and now COVID-19 throughout the entire world.

Alas, this is no surprise. For years veterinary schools have been demonstrating in their teaching programs that new methods of production which increase livestock density effectively turn breeding programs into laboratories in which pathogens appear, propagate and mutate, all at high speed. Everyone involved in breeding livestock for sale knows the risks of infection in livestock markets or in other places where herds of livestock mingle together, particularly around watering points. The SRAS epidemics as well as outbreaks of avian and swine 'flu have clearly demonstrated the vulnerability of breeding systems where there are multiple possible methods of contamination, whether within the breeding operations themselves or because of wild animals that carry diseases, sometimes over distances of thousands of kilometers.

Ebola emerged in 2015 from tropical forests because of excessive human intervention in primary forest ecosystems, combined with migration to urban centers [3]. This type of scenario is now more and more frequent, leading to an increase in new health emergencies. Each new epidemic gives rise to new questions about transmission modalities, the length of the period during which a symptom-free carrier remains contagious, whether resistance may be acquired and if so how long it lasts, symptoms, etc. Every epidemic has its own specific characteristics, whether it is caused by known pathogens or is the result of new ones. In the case of the former, previous experience helps reduce the level of uncertainty associated with them. For example, the evolution of cholera is known and understood, if it is properly managed in contexts where it is endemic. By contrast, there are more unknowns when an epidemic occurs in a new context, as was the case in Haiti (2010 to 2020) or Yemen (2016). In the latter, although the *Vibrio Bacillus* that causes cholera is regularly active, the health sector was not equipped to deal with the 2016 epidemic, particularly because water and sanitation systems were in very poor repair, a situation which has worsened as the war in Yemen continues [4]. In Africa, Ebola was known in densely forested areas. It was no surprise that it reappeared in the eastern areas of the DRC where there had regularly been serious local outbreaks. However, its appearance in the Gulf of Guinea was unexpected. The COVID-19 pandemic spread across the world in a matter of weeks because of the vast number of international travelers. Management of the pandemic immediately focused on quarantine policies at international borders.

The rapid circulation of COVID-19 within populations then entailed recourse to "lockdowns".

Recent health emergencies have had repercussions well beyond the health sector, affecting society as a whole, encompassing interpersonal relationships, economics, food security, governance, politics and even international relations. On the one hand, the big pharmaceutical laboratories are engaged in a competition amongst themselves to patent tests, treatments and vaccines. On the other, states compete against each other in "soft diplomacy", keen to demonstrate their generosity, eager to show they are contributing to improved global health by stepping up to provide aid in health emergencies. Health emergencies in recent years have increased the need for stronger interventions in the health sector. However, there has been little improvement in the capacity of affected countries to meet that need. COVID-19 introduced a major new dimension by limiting the mobility not only of populations but also of the agencies that provide aid in emergency situations. New modalities of intervening were required.

Epidemics and pandemics have different profiles. Some are relatively easily managed while others have as yet no known treatment protocols. Some involve diseases that are highly contagious, while others do not. With some, a heavy viral load is needed if the disease is to cause serious illness or death, while with others any contact with the pathogen is immediately fatal. Finally, the profile and progress of diseases associated with water are rather different from those of diseases of the respiratory system which are disseminated by airborne particles.

The time needed to identify treatment for new diseases will vary. *Mutatis mutandis*, treatment will entail rehydration of the patient, feeding, respiratory support and sometimes a course of antibiotics to prevent the development of infection. When treating patients, medical and support staff who will often have witnessed numerous deaths may feel powerless, this burdens them psychologically.

The four pillars in responding to major epidemics

From URD's experience, the basic approach to health emergencies is twofold:

Management of the emergency: preparation, warning, response, coordination, moving out of the emergency phase.

Public health and health crisis management: Monitoring, detection, warning, the adoption by health and support teams whether within or outside hospital structures of "crisis mode", the implementation of treatment protocols including vaccination, management of patients, management of those who die and their families, communication.

This approach has enabled URD to identify four pillars for dealing with health emergencies, all equally important.

- Management of the emergency
- Medicine
- Logistics
- Communication

Management of the emergency

Establishing credible early warning systems: Since there is a constant risk of new health emergencies, monitoring and early warning systems need to be reactive, ready to transmit information

to central monitoring structures, often at international level. Early warnings may, however, be politicized: This is a serious problem. Often, an epidemic may be kept from public knowledge, or its seriousness may be denied. Information is frequently manipulated. Lies are told about measures that have been taken, or are being planned. Eventually there comes a point when the seriousness of the situation makes silence or lies untenable but by that point it is often too late.

Prioritize the protection of health workers: All evaluations of disaster management point out how difficult it is when those whose job it is to respond to the disaster are also among the victims. The vulnerable position of health workers has been well understood since the 1918 Spanish 'flu epidemic: They are heavily exposed to contagious patients, and they may themselves be unwitting carriers and transmitters of pathogens. This was confirmed by the Haiti cholera epidemic and again even more dramatically by the Gulf of Guinea Ebola epidemic when hundreds of doctors, nursing staff, ambulance drivers and others died of the disease. Protecting medical staff should be an absolute priority, particularly in the case of COVID-19. Medical staff and support staff such as those who manage logistical aspects of the situation or maintenance workers are central to the response to COVID-19. Allowing them to die, or to lose confidence in the health system they work in, makes it very unlikely that the emergency will be correctly managed. We confronted this problem in France with the mask shortage at the start of the pandemic, and are doing so again now when controversial decisions are being taken about who should be prioritized in the vaccination campaign.

Multi-dimensional responses are needed to manage complex emergencies: A disaster, or an emergency, provides an obvious focus for the initial response. However, there will typically be a “cascade” of secondary effects. Measures taken to deal with these will in turn trigger a chain of reactions, some of which will be positive (social solidarity, better understanding of risk factors and of preventive measures, etc.) while others will be negative (social tensions, economic decline, political hostility, etc.). Managing an emergency is not simply about the response, therefore, but about being ready ahead of time, imagining different possible scenarios, being flexible. Let us not forget Hippocrates: “Primum, non-nocere”. (“The priority is to do no harm.”)

During the Ebola epidemic, OCHA, lead international coordinator of the response to humanitarian disasters, refused the role of coordinator on the grounds that in a health emergency the coordination role belonged properly to WHO. The UN therefore had to create an ad hoc structure (UNMEER) which soon found itself burdened with considerable responsibility. A UN global plan for COVID-19 was issued in September 2020, setting out objectives under three headings: A full, coordinated response on the international level to the health issues; the adoption of policies addressing the devastating socio-economic and human rights consequences of the pandemic; and the preparation of a post-COVID-19 strategy that would ensure that society as a whole would emerge with greater resilience when next confronted with this type of emergency. In France, the socio-economic response to the emergency has worked reasonably well, relying as it has on providing aid for those who have been employed only part-time, as well as support to businesses. However, the health response has been relatively weak. France has been one of the many countries that have failed to coordinate effectively. Over the years we have developed a good understanding of best practice in

coordinating responses to emergencies such as avoiding the vertical or “silo” approach and emphasizing multi-sectoral approaches based locally, with local authorities in the lead but the COVID-19 response has set all that to one side, despite appeals from the local level. Coordination ought to be the de facto responsibility of inter-ministerial mechanisms, with the Interior Ministry or the Prime Minister’s office in charge. However, coordination was left to the Ministry of Health and Solidarity whose staff has little experience of multi-sectoral working, and as a result it has been largely ineffective. As a result, we have created the same sort of problems as with WHO’s role in the Ebola epidemic, or the Yemen cholera epidemic, two health emergencies where the “medical” response was only a small part of the response required.

Mobilize emergency response specialists: In France, emergency response specialists such as fire-fighters and humanitarian aid workers have frequently offered their services, but their offers have largely gone unheeded. Only Médecins sans Frontières (MSF) has carved out a role for itself, mobilizing since April 2020 in nursing homes (EHPADs is the usual French acronym) where about 40% of 2020 COVID-19-related deaths occurred. MSF provided support in 11 departments in three regions: Ile-de-France, Provence-Alpes-Cote-d’Azur and Occitanie. The Institute Bioforce offered help with logistics, in which it has special expertise, acquired during the forty years it has been delivering humanitarian assistance. Canada’s OCCAH, specializing in emergencies and humanitarian assistance, usually works in emergency situations overseas but has been called on by the Canadian government to advice on managing its own national COVID-19 emergency. Particularly striking is the fact that in France the fire-fighting and emergency services, which are the best trained and equipped to deal with emergencies, have been overlooked by the decision-making authorities’ right from the outset of the COVID-19 emergency. The Federation of Sapeurs-Pompiers (fire-fighting and emergency services) has issued a highly critical report giving a grim account of the handling of the emergency, with available resources under-utilized and too much emphasis placed on medical decision-making, which was only part of the response required and rapidly became mired in controversy between medical experts [5].

Lead by following: The overwhelming lesson learnt from previous experience: Emergencies must be anticipated, prepared for ahead of time. It is not enough to respond once an emergency has happened. Be prepared but also be ready to adapt to new or changing situations, taking care not simply to plunge in on the basis of previous experience and thereby make mistakes. With a fire you anticipate changes in wind direction. With a flood you calculate the effect of tides on the water levels. With a health emergency, observe its evolution and progress in real time and be ready to put the epidemiological modeling to work according to your analysis of what is going on. Collecting and analyzing data should start as soon as an epidemic is declared, involving epidemiologists, cartographers and experts in Special Interest Groups (SIGs). Data should be collected on the evolution of numbers of cases in specific localities where patients are treated, by geographical zone and also at national level. This allows us to understand the dynamics of the epidemic, particularly the acceleration or deceleration of contamination rates, and also to map its evolution geographically.

Monitoring an epidemic entails testing individuals and thus compiling quantitative data that can be fed into geographical models. Testing was a problem with COVID-19 from very early on in the

pandemic. It takes time to set up a testing system relying on nasal swabs, and it is an expensive process when large populations have to be tested. Testing sites and equipment must be made available on a large scale, along with well-equipped laboratories for analyzing test results, and also transport. Serological tests have recently been used too, but there are doubts about their sensitivity, and concerns too about the fact that the antibodies they detect may appear and disappear at different times. This approach is not new but it is still being worked on since it depends on different immune responses in each individual tested. Other testing or detection methods have been identified, some both rapid and sensitive which could make them useful and effective planning and decision-making tools. From May 2020, trials using sniffer dogs or the analysis of wastewater have yielded promising results [6]. Other countries began testing these methods in mid-2020 but France has only taken them seriously very recently, thereby wasting months in a situation where time is of the essence.

The results of monitoring need to be quickly transmitted to those responsible for taking relevant action. In France, it has been too often the case that mayors, or departmental and regional chiefs, have been left in a fog of uncertainty and have lacked the sound information they need if they are to decide upon and enact commensurate local responses. In a pandemic, limiting access to information is a mistake. We should recall UNESCO's dictum about information sharing in science and technology: "The more we share, the more we have."

We cannot expect information to be provided by local authorities if they are not provided with information in return. Maintaining tight central control of data and information is often characteristic of developing countries but is inappropriate in France. That is, nonetheless, the way France has handled information from the outset of the pandemic. The daily public briefings by central government are intended for the population at large. They are not adequate for decision-making authorities at regional, departmental or municipal level.

The medical challenge

Since a pandemic is a health emergency, it is only logical that the medical response should be a key part of the response overall. Strengthen the capacity of health systems to manage the emergency.

Triage: Triage is particularly difficult in emergency situations where there are large numbers of victim, entailing choices given the limited time and resources available about who will be treated and what type of treatment they will receive. Choices are inevitably made in such situations about who will not be treated. This may mean making choices about life or death. The effectiveness of triage depends on whether there are reliable tests available, and clinical protocols to follow, as well as on the professional competence of medical staff who need to make rapid, safe diagnoses and to be tough enough to say "no" in some cases, sending victims and their families away without hope of treatment. This requires strong leadership, sound technical capacity and the ability to communicate effectively with patients and their families, as well as with medical staff working under great pressure.

Separating "contaminated" from "non-contaminated" zones: It is essential in the management of an epidemic to avoid chains of disease transmission within treatment areas or structures, as well as in everyday life elsewhere. "At risk" zones and "non-contaminated" zones must be identified, and protocols defined for entry and exit

points between zones. Existing health structures are often limited, particularly once there are many patients or suspected cases (contact cases) to manage, not to mention the family or other people who accompany patients in countries where such support is necessary to ensure patients' survival. In such situations other solutions are needed. Other sites may be used for treatment: Schools, stadiums, storage depots, yards or other large spaces. Whatever the site, the demarcation of "clean" and "dirty" zones must be very clear. (This need not necessarily be costly. MSF used flexible building site fencing in their Ebola treatment centers in Conakry from May 2014. Many others have used the same arrangement since.) The hub separating zones needs proper equipment and above all enough staff, a full-time presence, to monitor comings and goings and to ensure that the procedures for keeping them separate are observed at all times by everyone, including those moving medical supplies, or bring food and water for the patients. Vehicles arriving and departing need careful monitoring too: Ambulances bringing in the sick, and hearses removing the dead. In the COVID-19 context, the situation has been complicated by the need for triage and the fact that health systems have been overwhelmed. This has often meant that treatment centers have themselves become risk zones for accelerated transmission of COVID-19. Another consequence has been the cancelling of other interventions (such as surgery) or treatment for other conditions for which COVID-19 has taken up the beds and staff that would be needed for the patients concerned. Only now are we beginning to understand the dramatic long-term impact on numerous health conditions cancers, kidney disease, etc that results from the choices that have been made in allocating resources to treat COVID-19.

The difficulty of arranging for not only confirmed cases but also their contacts to be isolated has been an additional challenge which is only now being properly taken into account. However, Somaliland, for example, very early on established isolation centers for confirmed cases and also for contacts. By contrast, France took too long to recognize the utility of turning hotels into isolation centers for confirmed but less serious cases or for suspected cases. It appears to have been too late since very few people have benefited.

Establishment of protocols for corpse handling, and funerals: All emergencies illustrate how sensitive the question of the handling of the dead may be. Every culture has death-bed rituals, and rituals governing the disposal of the dead, which are of fundamental importance to the families and to their societies. In the case of Ebola, for example, the situation caused extreme tensions since local populations did not understand why they could not organize their usual funeral rites, or why everything the dead person had owned had to be burned. There were riots and violence, in which people died. Eventually, those in charge of the response to the Ebola epidemic arranged for funerary procedures that were safe from a sanitary perspective as well as affording due dignity to the dead. Experiences of this kind have led in many cases to involving sociologists and anthropologists in the management of epidemics. MSF led the way on this.

With COVID-19, the problem presented itself first in the fact that patients died alone, kept apart from their families by lockdown measures. Then funerals where they were allowed at all had to arrange in order to avoid large gatherings of people. Without going as far as the mass burials that some countries resorted to including the US, in the state of New York, providing proper outlets for grief and mourning is a major challenge. In developed countries, health staff

and support staff were in the front line, often largely on their own, as far as managing death is concerned. They will bear the psychological scars for a long time.

Discharging patients once they are better: Seeing patients leave a treatment facility cured of their disease is one of the greatest joys of those responding to epidemics and pandemics. The “happy shower” given to patients cured in Ebola treatment facilities a final disinfecting shower, often celebrated with a little party and a gift of basic supplies (clothes, personal hygiene products) was one of the most significant and satisfying experiences of the health workers involved. But discharging patients entails taking precautions, too, as we have seen again with COVID-19. The degree of contamination of those discharged from medical treatment facilities is often unknown. Nor may it be clear whether patients have acquired immunity from the disease. Those who have been cured may not necessarily be welcome back in society. “Barrier measures” or “protective measures”, still necessary after discharge, necessitate continued vigilance and careful supervision of discharged patients, their families and the communities to which they return. Health systems and structures are going to need to make a major investment in research on acquired immunity, both individual and collective.

Public health measures: Protective measures, quarantine, lockdown: Managing an epidemic has often necessitated new regulations, sometimes drastic, ranging from a simple requirement for people to wash their hands when entering or leaving a village to the imposition, sometimes by force, or a regime of isolation, or the quarantining of whole areas, in a manner reminiscent of the “plague walls” of the Middle Ages. Basic protective measures are clearly essential: Keeping a physical distance between people, frequent hand washing, avoiding shaking hands, hugging or kissing. The Ebola experience showed that some of these measures are accepted without resistance and catch on quickly: Bumping elbows as a way of avoiding more physical greetings, hand washing in basins provided at the entrance to buildings. Such measures were quickly accepted and adopted in African countries where a culture of response to infectious disease has become increasingly prevalent as a result of decades of health and hygiene education on the part of UNICEF, NGOs, the WHO and of course local health ministries. A helpful mnemonic such as WASH (water, sanitation, health) have been used as a reminder that water, soap, bleach and basins or bowls make hand washing and other protective measures work effectively. It is critical too to determine which of the habits and new practices acquired during the pandemic should be maintained, or even further strengthened, once it is over. Among the Kivus of the DRC who had just emerged from their Ebola crisis when COVID-19 appeared hand washing habits have been maintained and continue to be practiced in response to COVID-19.

In addition, it will sometimes be necessary to place extensive areas under quarantine arrangements, confining people to their homes. Confinement, lockdown or “sheltering in place” (to use the several terms in current use) has been used for centuries as a means of containing epidemics. This policy was first stringently applied in China in response to its COVID-19 outbreak, and then increasingly by numerous other countries, which have found it an effective way of reducing the rate of contamination, and also, in our modern societies, of relieving pressure on health systems and facilities. However, complex questions are being posed about how long democratic societies will accept draconian “shelter in place” policies which

deprive people of that most basic of freedoms, the ability to come and go as they please. Such a policy is especially difficult to sustain in the many countries that lack substantial food reserves, whether at national level or at the level of individual households.

In many countries in Africa, the Middle East, Asia and Latin America few families among the poor sectors of the population - whether urban or rural - can last even a few days, let alone weeks, without going to work or without daily trips to buy or sell items in the streets or markets. People who survive on barely one or two dollars a day ahead do not eat if they do not work. Nor do they have the means to buy water. There is certainly no money to buy medicine. Imposing “shelter in place” measures is impossible beyond the short-term in such contexts, even if attempts are made to use force. Street markets and informal sector trading have therefore continued, more or less illegally or surreptitiously. Political protests and food riots are likely to occur sooner rather than later unless mechanisms are rapidly created to support people during the time they are obliged to remain sheltering at home. In some situations, adopting protective measures and behaviors, notably hand washing and maintaining a physical distance between people (a better way of expressing the concept than “social distancing”); represent the only available or possible solution. Inculcating these new behaviors entails informing, explaining, giving instruction. The large-scale demonstrations and protests in January 2021 in Lebanon and Holland show that there is no country that is exempt from the risk of popular uprising in the face of the economic uncertainty entailed by the COVID-19 response. People are likely to wish to draw a deep breath individually and collectively. URD has been pointing out the risk of this disaffection in the notes issued by its observatory since May 2020.

Vaccination: One of the most promising responses to epidemics and pandemics is to research and discover preventive vaccines and make them widely available. This is the surest way of achieving the levels of collective immunity that enable the disease to be contained. With Ebola, “ring” vaccination, which involves vaccinating the family and a maximum number of contacts of someone who has been diagnosed with the disease in order to prevent the number of cases growing, was the approach adopted. The approach may, however, be less appropriate or successful in situations where there are security problems, or where large groups of people are on the move (in migratory societies, for example, or in refugee situations). The “ring” approach may also be deemed socially unacceptable. The vaccination of health workers and of all staff essential to the functioning of the health “pyramid” should be a priority. By giving them priority, the vaccination campaign itself acquires an additional legitimacy in contexts where there may be doubts, or alternative solutions proposed. There are many situations where vaccinating across the whole of an “at risk” area will be the best approach, but such an approach entails considerable financial resources and logistical planning. In any case, vaccination cannot be the only response to a major epidemic. What is needed to manage epidemics and pandemics as the full menu of responses: Vaccination, treatment of the sick, preventive and protective measures, extensive information programs about risks, social mobilization and community involvement? We knew this from our experience in the northern hemisphere with season ‘flu, but tended to lose sight of it in our response to COVID-19.

Integral to anti-‘flu vaccination programs is the identification and production of annual vaccines against the different variants of the ‘flu virus that occur from year to year. Viruses mutate, as research on

molecular structures has shown. The mechanisms by which viruses mutate *via* their RNA, coding and replicating proteins, may often lead to mistakes in their genetic coding. Mutations lead to new virus strains, more or less diverse. Some mutations are neutral, other may invalidate a given DNA thread, and others give the virus a selective advantage and make it more virulent. It was no cause for surprise that SARS-CoV-2 (COVID-19) mutated. Its “spike” proteins, which allow the virus to take hold of human cells, have been the object of much enquiry and research. Capacity to deal with mutations will depend to a great extent on the ability of a country’s health systems and research laboratories to identify them and develop counter-measures. Different molecular sequences have different capacities. Identifying these is critical to managing a virus, which tends to be one or two mutations ahead of the scientists researching them. Given the costs of producing ARN messenger vaccines [Translator’s note: je crois qu’on ne peut dire vaccinations pas virus ici], the acid test for the vaccines that became available in late 2020 is whether they are effective against a single strain of COVID-19 or against variant strains too.

Communication: Critical to the response

Mass communication strategies: A public health responsibility:

For years, public health advice depended on advertising or information posted in public places such as schools, markets, hospitals, bus stations, etc. In many countries, that is still the way it works. National and local radio stations may also be used to broadcast messages and information. Songs may be part of the messaging campaign. This approach has been used successfully with COVID-19 in many countries, although has been largely absent in the northern hemisphere. [Translator’s comment: J’ai entendu beaucoup de messages utiles ici en France : ex. France Musique, multiples fois par jour ... Mais ça dépend des groupes cibles, je crois, parce que les gens écoutent moins le radio de nos jours!] It is in many ways surprising that the potential of visible, accessible messaging and information campaigns have been so little used in health sector policy. Sometimes, with COVID-19, a small sign encouraging hand washing will be positioned next to a bottle of hand sanitizer: This is not highly visible and is likely to have little impact. This is one of the lessons that we can undoubtedly learn from African countries. In dealing with a complex danger or emergency, mass communication of information is important. The countries of the northern hemisphere have tended to give too much importance to television presenters whose messaging, based on notes prepared by their editorial teams, is often all over the place, providing little insight into the reality of the situation. We seem to have forgotten what matters when communicating about emergencies: Truth, humility, acknowledgement of the limits of our information, questions that still need answers. Scientific debate is of course needed and should be as transparent as possible, based on some agreed rules. These rules of debate have too often been set aside or forgotten in the many medical discussions on radio, television, etc which priorities presentation and the presenters themselves but are inimical to the collective intelligence of a health sector working under pressure.

In a world that is increasingly connected, in both hemispheres, information circulates fast. Thus we are faced with the phenomenon of “infocipation” [Translator’s note: un jeu de mots français qui n’a pas d’équivalent anglais], that is a misleading information overload. False rumors sometimes spread more quickly than legitimate communications on measures to be taken to contain the pandemic. Measures are needed to counter “fake news”. In Guinea, during the Ebola crisis, false rumors did not come from practitioners

of witchcraft or shamans but from the typical Conakry family bombarded by messages about “the business motives behind Ebola” or “get-rich-quick international aid agencies”, messages that claimed that the Ebola virus had been unleashed to make money, or that it was an attack by US secret services.

The same type of rumor appears whenever there is fear or uncertainty among the population, when a crisis may be perceived as a method of manipulating them. This was an issue in the Trump era in the US but it is widening in reach as “anti-vaccines” gain in influence, with the “Big Pharma is watching you” syndrome and fears about the new technologies associated with vaccines.

Understand, act, and communicate: The role of the social scientists: Social scientists are vital for the management of epidemics, but too rarely called upon to contribute. It can be a major constraint in managing an emergency if there is inadequate knowledge or information about the ideas and spiritual beliefs of those affected, not least their attitude to death. Lack of knowledge in these areas may even be dangerous. Social scientists were called upon too late in the Ebola epidemic in Guinea but were quickly brought in to provide support and advice in the DRC and proved themselves to be almost as indispensable as doctors. They helped explain the behavior of societies when faced with pain, death or contagious disease. They also helped develop strategies that facilitated the acceptance of those working to contain the epidemic by the societies they were there to assist. They understood that the arrival of masked and gloved health workers, in their brightly colored protective gear, who forbade people to say goodbye to the dying or to bury the dead according to customary rituals, could be totally traumatizing unless carefully explained in terms adapted to the society concerned, and the situation.

Logistics: Operationalizing the response

Medical science apart, it cannot be emphasized enough how far the management of a large-scale health emergency or a pandemic depends on logistics. Logistics underpin the management of those receiving treatment, support for health workers, transport in affected zones and the evacuation of the sick.

The COVID-19 emergency and its accompanying constraints will make it more difficult to work in the numerous parts of the world where there are conflicts or naturally occurring emergencies. Systematic closures of borders and airports prevent experts from travelling and limit the delivery of supplies such as medicines, personal protective equipment, respirators. Such supplies are not widely available in African health systems, so the means of providing them had to be devised. The WHO suggested setting up humanitarian corridors for the transport of medicines, respirators and other equipment, and testing kits. However, the most original idea was the humanitarian air-bridge initiative, which originated with the French Foreign Minister, the European Commission and a network of French NGOs. The air-bridge sent masks, respiratory equipment and staff to several countries in severe straits. These supplies were followed by provisions from the World Food Program which is responsible for the UN’s contribution to airborne humanitarian assistance programs.

Providing food for populations in lockdown was one of the greatest challenges, in both the developing south and in the developed north. Food banks multiplied, needing ever-increasing resources to meet the needs of large sections of the population in different countries that found them falling into poverty. Logistically, these quasi-humanitarian systems largely depended on volunteers food

banks, Emmaus, etc or on spontaneous initiative launched by groups of young people, women, trade unionists, social workers, etc. This was as true in India or Africa as it was in France or the US. Hundreds of millions of willing hands collected, sorted, transported and distributed thousands of tons of food: An absolutely vital contribution.

Transport of the sick is another important logistical challenge, as we saw with the use made of medicalized trains and airports during the “first wave” in Europe, to transport patients from zones where hospitals and clinics were already full to others which still had capacity to treat COVID-19 patients. In some areas, getting tests from where they had been administered to laboratories for analysis entailed complex logistical operations while elsewhere the challenge was to set up “one-stop testing centers” where people arrived in their own vehicle, stayed there while their tests were administered and received the result very soon afterwards by text message or email. The most recent of the logistical challenges relates to vaccines, with chains of production to be set up as well as facilities for putting the vaccines into vials, storage and transport to be arranged, in some cases necessitating very specific conditions, including cold storage at very low temperatures. Forward planning is key to successful logistical operations. The success or failure of vaccination programs have largely depended on the extent to which they were planned ahead of time.

Conclusion: Be Ready Ahead of Time

Large-scale epidemics and pandemics are now part of the landscape of emergencies affecting communities, regions, countries, indeed the entire planet. Health policies and the tools for managing epidemiological crises need to be reviewed, as do the methods for reducing epidemiological risk. In both north and south, those involved in crisis management or emergency responses must prepare for future crises on the basis of lessons learned from those of today. The humanitarian sector must carefully re-examine its role and capacities.

National emergency preparedness plans should be strengthened. Major research must be commissioned, on disease treatments and vaccines that are safe and effective for use on people. Previous epidemics and pandemics have had an impact. Pre-Ebola in the Gulf of Guinea, few were competent to deal with dangerous pathogens, or had the resources or treatment protocols to do so: Among them were the CDC in Atlanta, some laboratories with P4 units, the army and civil protection units working on disease risks, MSF as a result of its earlier experience of Ebola in the DRC and the Government of Uganda which had set up mobile Ebola teams. The 2014 to 15 Ebola crises saw a major mobilization of personnel, particularly in Geneva and Brussels, who were trained in the use of personal protective equipment and the protocols for working in “Hot Zones”. Some humanitarian agencies should be recognized as having specific capacity to respond to certain emergencies. These agencies are characteristically flexible, well trained and organized, and comprise

health workers, logistical support, social and anthropological analytical capacity and experience in communication including *via* social media. Such agencies, however, may lack financial resources and often fail to attract political support. This represents a major challenge.

The countries of the northern hemisphere have shown clearly that epidemics and pandemics only really interest them when their own security and their own citizens are threatened by them. COVID-19 badly affected countries supposed to have robust health systems and have forced them to assess their weaknesses and to review many of their paradigms.

Over the past 20 years, the international community has learnt a good deal about the management of SRAS-type infections. It has ten years of Ebola experience and has been confronted by multiple cholera epidemics. Such health emergencies destabilize society and cause economic breakdown. So what can be done in terms of managing the health, human, social and economic consequences? How many public health systems be improved so that they become more alert, prepared and capable of managing crises which put them under intense pressure? The realization of the ease with which epidemics cross borders and continents have led to international cooperation but also to new forms of competition.

Managing epidemics and pandemics requires political decision-making, some of it difficult, often painful at many levels, with part of the difficulty being the general uncertainty and the many unknowns of a health emergency. Each country's individual controversies and the controversies between one country and another represent both an opportunity this is a chance for a citizens' debate and a danger. We have seen the power controversies have to promote alternative truths and conspiracy theories and to put obstructions in the way of measures required as a response to the emergency. In this context, we have also seen and noted the importance of honest, unpretentious discourse. We have seen the value of forward planning, of political courage. These are integral parts of the social dialogue. Without them, even the best of vaccines will not protect us.

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