

KEY MESSAGES



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EPIDEMICS, PANDEMIC AND HUMANITARIAN CHALLENGES:

LESSONS FROM A NUMBER OF HEALTH CRISES

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The present 'Key Messages' document is dedicated to all those who have given their lives caring for others in the response to major epidemics and pandemics during this century.

GROUPE URD

Founded in 1993, Groupe URD is an independent think tank that specialises in analysing practices and developing policies for humanitarian action and fragility management. Our multi-disciplinary expertise, based on continual field visits to crisis and post-crisis contexts, provides us with insight into the functioning of the sector as a whole. We believe in sharing knowledge and collective learning, and we help aid actors to improve the quality of their programmes. We work on the reinforcement of health systems in crisis and post-crisis contexts, and contexts where there is fragility. We have conducted numerous missions on this topic, in Afghanistan, Sierra Leone and Mali, and notably on the cholera epidemics in Haiti and Yemen, as well as the Ebola outbreaks in the Gulf of Guinea and DRC.

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Groupe URD produces strategic documents as part of an agreement with the French Ministry of Foreign and European Affairs and the French Development Agency. These aim to improve the quality of interventions before, during and after crises, and cover topical issues within the sector. The contents of these documents are the sole responsibility of the authors.

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Entry to the contaminated zone of the Ebola Treatment Centre in Kenema, Sierra Leone (© Groupe URD)

INTRODUCTION

THE OBJECTIVE OF THIS DOCUMENT

For more than 20 years, Groupe URD has been evaluating humanitarian response and crisis management, which almost always has a 'health' component. In all of these contexts, from Afghanistan to Colombia, by way of the Middle East, Africa and the Caribbean, we have observed how health systems react to crises, whether it be in terms of war and disaster medicine¹, regular public health systems², or the management of major health crises, such as cholera and Ebola³. Our work on collapse scenarios, which recently figured in our review *Humanitarian Aid on the Move*⁴, shows how seriously we should take such health crises⁵ due to the disastrous cross-border, or global impacts that they can have.

In the context of the COVID-19 pandemic, we decided to bring together the lessons from our work on major health crises so that they can be shared.

METHOD

We focused on our different research and evaluation projects including both in-depth literature reviews (see annexes) and field work (Haiti, Chad and Yemen for cholera; Guinea, Sierra Leone and the Democratic Republic of Congo for Ebola).

During these research and evaluation projects, dozens of practitioners were interviewed in the field and at the headquarters of the agencies involved (UN agencies, NGOs, donors, and the Health ministries and institutions in the countries concerned). The content of this lesson-sharing document is largely based on these interviews. Additional content is from a study for the Global WASH Cluster on providing WASH assistance in extreme situations.

¹ http://www.urd.org/wp-content/uploads/2018/09/Groupe_URD_evaluation_ECHO_Haiti_final_SA_FR.pdf
http://www.urd.org/wp-content/uploads/2018/10/The_health_response_in_Haiti_after_the_earthquake_Some_food_for_thought.pdf

² https://www.urd.org/wp-content/uploads/2019/12/PASFASS_DiagnosticSocioAnthropo_GroupeURD_2019.pdf
<https://www.urd.org/fr/publication/revue-du-secteur-de-la-sante-en-afghanistan-2001-2006/>

³ <https://www.urd.org/fr/publication/rapport-ebola-le-cout-dune-mauvaise-gouvernance-humanitaire-mondiale-dans-le-domaine-de-la-sante-2015/>

⁴ <https://fr.calameo.com/read/00368008686e705bebc1>

⁵ <https://www.urd.org/en/review-hem/ebola-cholera-and-chikungunya-health-risks-of-the-past-the-present-and-the-future/>

1. A VERY UNCERTAIN HEALTH

1.1. OLD DANGERS, NEW DANGERS

Major pandemics are not a new phenomenon. They are part of humanity's collective memory (plague, cholera, Spanish flu, etc.) and have devastated certain regions of the world, including Europe, on several occasions. The history of these major epidemics is closely linked to the increased mobility of goods and people, diseases transported by explorers and traders (tuberculosis, syphilis, measles, etc.). When explorers began to travel between the continents, this had a devastating impact on native populations. Their demographic impact on entire regions, such as Latin America and the Caribbean, shaped their history, wiping out their 'initial inhabitants'. This, to some extent, explains the major symbolic weight, passion even, that these events bring, making them so sensitive to manage. A form of the H1N1 virus, a name that is regularly in the news, was responsible for the Spanish flu pandemic (1918-1919) which killed around fifty million people just after the 1st World War; more than the conflict itself.

There has been a growing number of global health crises in recent decades. The Hong Kong flu (also known as the 1968 flu pandemic) is the most recent of the major flu epidemics. The third pandemic of the 20th century after the 'Spanish flu' and the 'Asian flu' (2 million dead in 1957), it spread around the world between the summer of 1968 and the Spring of 1970, killing approximately a million people according to the estimations of the World Health Organisation (WHO). Having been largely forgotten, the health sector only began to show interest in it again when the new pandemic linked to the emergence of the H5N1 virus began to develop. Patrice Bourdelais⁶, who specializes in the history of public health at the École des hautes études en sciences sociales, writes: 'At the end of the 1960s, people had confidence in progress in general, and medical progress in particular. There was still a lot of infectious mortality in developed countries, but the majority of epidemics had disappeared thanks to vaccinations, antibiotics and hygiene. It was expected that, inevitably, the flu would disappear'. The Hong Kong pandemic was therefore a shock for the scientific community: 'It raised the alarm, bringing back the fears of the 1918 disaster, and boosted research into the virus'. Epidemiologists see the Hong Kong flu as the first pandemic of the modern era, with its globalized exchanges and rapid air travel. It was also the first to be monitored by an international network. Indeed, it is the foundation of all modelling that aims to predict how a future pandemic will develop over time. The Hong Kong flu circled the earth within a year before coming back to Europe. Subsequent pandemics would do the same within a few months.

The way societies have evolved and ecosystems have been modified has created new ways for pathogens (some of which are known, others which are not) to emerge and spread, with new lines of vulnerability: tropical rainforests are increasingly being invaded by humans; biodiversity, which creates biological barriers that stop the circulation of pathogens, is decreasing; warming in taiga regions means that the permafrost is melting and releasing not only methane, but also old pathogens.

The development of increasingly industrialised livestock production systems, leading to changes in diet and overcrowding among animals, as well as animals and humans living in close proximity, has increased the risk that new infectious diseases will emerge.

⁶ *Les Epidémies terrassées, une histoire de pays riches*, La Martinière, 2003.

The sharp rise in international travel in the last thirty years and the growth of mass tourism has accelerated the transfer of insects, bacteria and viruses across the planet. All these changes bring new epidemiological risks, as we are seeing today with the terrible consequences of the COVID-19 Coronavirus crisis. Thus, these 'national' epidemics cross borders and go from being 'epidemics' to 'pandemics', and then a 'Public Health Emergency of International Concern'.

It is highly probable that in the coming decades epidemics will spread faster due to the global population's increasing geographic mobility, as recent pandemics have shown.

In many countries in the Global South with complex epidemiological profiles, classic health risks, such as malaria, meningitis, measles, and water-borne diseases, exist alongside certain endemic diseases with specific epidemiological profiles (sleeping sickness in certain parts of West Africa, kala azar in South Sudan, etc.). Unfortunately, in some of these countries, 'Ebola' and 'cholera' epidemics are common.

Very dangerous pathogens, such as those of the haemorrhagic fever viruses like the Ebola virus or the Marburg virus, are referred to as P4 level pathogens. Until recently, these were associated with a high level of local mortality, but were not prone to cause major epidemics. This was what is known as the 'clearing syndrome'⁷. In these isolated villages in the middle of the equatorial forest, the infected area would remain of limited size. The epidemic would end quickly due to the speed with which the virus killed. The population would fall below a certain level, thus preventing the virus from being transmitted and reproduced. This, however, did not mean that the virus did not survive, and new hosts were discovered amongst the fauna who were able to transmit the virus directly to humans⁸. The virus could therefore be reactivated.

The Ebola epidemic in the Gulf of Guinea has shown that in a world where mobility is a crucial aspect of the economy at all levels (moving to cities to find work, trade in agricultural products, tourism, etc.), which has been made easier by improved means of transport, and where fear leads to people fleeing an area, an epidemic will no longer end as it did in the past. The virus, which previously remained confined in forests, quickly spreads to cities and crosses borders. The 2014 Ebola epidemic began in poor countries where health systems were in decline and governance systems were still in construction after years of crisis and conflict. It also began at a time when the World Health Organisation (WHO) was in a depressing financial state, with cuts of several hundred million Euros and a major reduction in its early deployment capacity: the WHO's budget was 3.98 billion US\$, while the Atlanta Center for Disease Control (CDC) had a budget of around 6 billion. This could have led to a terrible price being paid. The imagination and innovation of NGOs such as MSF and ALIMA, of country teams such as the Ebola Coordination team in Guinea Conakry, of certain donors (DFID, OFDA, etc.) and of numerous public and private laboratories were essential.

The H1N1 SARS epidemic⁹ in 2004-05¹⁰ had already shown this vulnerability of borders. In December 2003, South Korea notified the World Organisation for Animal Health about a new subtype of avian influenza, A(H5N1), which spread rapidly throughout Asia, then towards Central Europe. 15 countries were officially affected by the epizootic: Cambodia, China, Croatia, Indonesia, Japan, Kazakhstan, Laos, Malaysia, Mongolia, Rumania, Russia, South Korea, Thailand, Turkey and Vietnam). Having initially been concentrated in poultry farms, the disease spread via numerous wild species closely related to domestic birds. Certain strains of H1N1 are endemic to birds (avian influenza) or to pigs (swine influenza), while others affect humans. The major risk from this family of viruses is its capacity to mutate rapidly and recombine from a strain that is normally carried by animals to a strain that can affect humans, with a high level of transmissibility and

⁷ https://www.urd.org/fr/revue_presse/ebola-comment-le-virus-est-sorti-de-la-clairiere/

⁸ Finding these wild carriers is an essential aspect of prevention.

⁹ https://www.urd.org/fr/revue_presse/ebola-comment-le-virus-est-sorti-de-la-clairiere/

¹⁰ Épidémie de grippe aviaire A(H5N1) 2003-2005 Philippe Barboza, InVS1. ÉPIZOOTIE http://www.grog.org/documents/jour_2005/epidemie_grippe_aviaire_h5n1_VF.pdf 8ème Journée Nationale des GROG – Paris, 17 novembre 2005

virulence for humans. The first human cases of this epidemic were recorded in January 2004 in Vietnam. Within a number of weeks, 126 cases (including 64 deaths) had been reported to the WHO by 4 countries. However, very quickly, many other countries reported deaths. In the end, this epidemic, known as COVID-1, developed primarily in countries that were able to cope with it, with significant financial resources and relatively competent and well-equipped health services, as well as politically strong governments.

1.2. A HEALTH CRISIS MANAGEMENT SYSTEM THAT IS REGULARLY UNDER PRESSURE

Before the Ebola crisis in the Gulf of Guinea, few organisations had the competence, means and protocols to operate in these extreme situations. Among these were the Atlanta Center for Disease Control, a few laboratories with P4 units, military and civil protection forces specialised in CBRN risks¹¹, MSF, following its initial Ebola operations in DRC, and the Ugandan Government, which established mobile Ebola teams. The 2014-2015 crisis led to the mobilisation of numerous actors, with ad-hoc training courses, notably in Geneva and Brussels, to train staff in using protective equipment and respecting operational protocols in 'hotspots'.

The Ebola crisis also raised questions about the WHO, with a great deal of tension between the institution and its donors, which led to significant reorganization of the institution so that it would be able to cope more effectively with this kind of challenge.

Regarding the debates about the WHO's role during the crisis, the WHO Director-General, Margaret Chan, wrote: "Deficiencies in capacity, expertise and approach revealed by WHO's response to Ebola suggest that organization-wide change is needed. WHO must ensure it can prepare for and respond to outbreaks and emergencies in a way that genuinely supports national efforts and fully integrates with international partners. WHO must do more than provide support in emergencies. It must become a fully operational emergency organization. This distinction may sound subtle – but the new course that WHO is charting marks one of the most profound shifts in its history. WHO must enable countries to strengthen their outbreak and emergency preparedness, while ensuring that its own experts and those of its partners can rapidly roll out the required response within the first 24–72 hours. Subsequently, WHO must support countries in the recovery phase after an outbreak or emergency and help them "build back better" when health systems have been damaged."¹²

After the decision of the 68th World Health Assembly on the Ebola virus and the Executive Council's extraordinary session on the Ebola epidemic (May and October 2015), the WHO reinforced its operational systems and capacities to tackle major epidemics. The changes concerned six essential areas:

- a unified WHO platform for outbreaks and emergencies with health and humanitarian consequences;
- a global health emergency workforce, to be effectively deployed in support of countries;
- core capacities at country-level under the International Health Regulations;
- functioning, transparency, effectiveness and efficiency of the International Health Regulations;
- a framework for research and development preparedness and capacity during outbreaks or emergencies; and
- adequate international financing for pandemics and other health emergencies, including a 100 million United States dollars contingency fund and a pandemic emergency financing facility.

¹¹ 'CBRN' is the abbreviation commonly used to describe the malicious use of Chemical, Biological, Radiological and Nuclear materials or weapons with the intention to cause significant harm or disruption.

¹² <https://www.who.int/bulletin/volumes/93/12/15-165720/en/>

This reform has been put to the test during the Ebola epidemic in the Democratic Republic of the Congo in 2019-2020 and the Coronavirus pandemic since March 2020.

Every epidemic is different, whether it is linked to known pathogens or the result of new biological agents. For the former, experience helps to reduce uncertainty: for example, we know the curve of how cholera will evolve if there is an effective response in contexts where it is endemic, such as in Chad. On the other hand, there is greater uncertainty when the epidemic takes place in a new context, as was the case in Haiti (2010-2013). The fact that the health sector had difficulty responding to the cholera epidemic in Yemen in 2016, a country where there had already been outbreaks, including in 2015, is more surprising: there was almost no preparation for a new epidemic, despite the fact that the 2015 epidemic had been relatively severe and the deterioration of water and sanitation systems continued to get worse because of the conflict¹³. Ebola was known in dense forest areas. Its arrival along the major roads and in the capital cities of the Gulf of Guinea was a surprise, in contrast to its reappearance in Eastern Congo where it has regularly caused devastation in restricted areas.

Health crises do not only have repercussions for health: they affect society as a whole, human relations, the economy, food security, governance, politics, and even international relations. In addition to the secret economic war between the major pharmaceutical laboratories over patents for tests, medicines and vaccinations, there is also the 'soft diplomacy' of countries eager to show how generous they are and how much they are contributing to the world's health in a new international 'Great Game' over the management of international health crises.



Preparation of an Ebola intervention team in a village in Guinée Forestière (© Groupe URD)

¹³ <https://www.urd.org/fr/publication/evaluation-de-la-reponse-de-msf-ocba-au-cholera-au-yemen-2018/>

2. HEALTH PROBLEMS AND HUMANITARIAN ISSUES

2.1. SAVING AND TREATING

Epidemics and pandemics can have various profiles, between those that can be treated easily and those for which there is still no known treatment, those that are highly contagious and those that are not, those for which morbidity and mortality are related to a high viral load (generally linked to prolonged exposure) and those that are deadly as soon as there is contact with the pathogen. In these different contexts, patients are treated in different ways: for Ebola, in the absence of a specific treatment for the virus, the objective is primarily to do everything possible to support people's capacity to resist it. Thus, in numerous Ebola treatment centres, before a vaccination was developed, the only option for the healthcare staff was to feed and rehydrate the patients, and fight other diseases that Ebola can reinforce (the problem of co-morbidity). The same is true for cholera, which, according to the WHO, affects almost 3 million people and causes the deaths of more than 95 000 people per year. The overall case fatality ratio was 1.8% in 2016, but was over 6% among vulnerable groups living in high-risk areas.

For a certain number of these major epidemics, no treatment has yet been found: patient care consists of oral or intravenous rehydration to compensate for digestive loss of water and electrolytes which can lead to death from dehydration. A course of antibiotics is sometimes administered to limit the risk from related infectious illnesses, but the multiplication of poly-resistance to the infectious agent makes antibiotics less and less effective.

The epidemiological profile of a population before a crisis also plays an important role in terms of managing these health crises that do not have any obvious medical solution: level of malnutrition, of HIV-Aids infection, of mortality and morbidity due to malaria, of water-borne diseases, and of everything that can lead to a risk of comorbidity.

It is also important to take into account the fact that in situations where there is an epidemic without a solution for treatment, healthcare providers witness a lot of deaths and feel helpless, which is very difficult to cope with psychologically. This is made all the more difficult by the lockdown measures that that personnel often have to observe when they go home. There can be significant psychological scars for health workers who simply feel that they are unable to treat or save their patients.



MSF Cholera Treatment Centre in Yemen (© Groupe URD)

In the end, in these extremely frustrating contexts for healthcare staff, one of the rare principles that stands is that of protecting healthcare staff (see paragraph 3.2.) due to the crucial role they play in everyone's survival.

2.2. HEALTH CRISES IN ENVIRONMENTS WITH HIGH POPULATION DENSITY

One of the major difficulties for public health is when there is an epidemic in a densely populated environment: slums, refugee camps and IDP sites. The growing number of cholera epidemics in many poor urban contexts, and the difficulty of managing Ebola in Monrovia and Freetown (Conakry was spared for the most part), show that these situations are public health time bombs.

The increased urbanization of recent decades has seen the emergence of new dangers. Health conditions in slums, and in cities affected by war or disasters, are a major threat due to the combined challenges of population size and density which are the two key variables of the 'contamination equation'. Here again, depending on whether contamination takes place via water-borne vectors or through the air, this changes how the virus spreads. As a result, some behaviours that are necessary to reduce contamination are the same, such as washing hands, while others are specific, such as physical distancing and wearing masks.



Slum in Conakry – an area with a high risk of contamination (© Groupe URD)

These cities are faced with numerous public health risks. The potential impact of epidemics is extremely high due to overcrowding, difficult and often costly access to clean water, the poor (or very poor) state of sanitation systems, and the mediocre nature of the majority of shelters. Tuberculosis, the poor man's disease, is often spread in contexts where there is overcrowding, such as slums, displaced persons' shelters built in overcrowded areas, including in Europe, and refugee camps in winter. Diarrhoea is a frequent problem and there is a high risk of a cholera epidemic, which, of course, is directly linked to the deplorable health conditions in which many poor people live in makeshift urban settlements, IDP sites, the places where urban refugees settle, as well as in many refugee camps. High population density is also a key factor in

spreading pathogens linked to the respiratory system, which are transmitted through droplets when a person coughs or sneezes, or through contact with something that has been contaminated with the virus.

Numerous illnesses contribute to weakening a population's health and making them less resistant to large scale epidemics. Malaria is also a recurring problem, with many seasonal and geographic variations, notably in urban areas that are near rivers and lakes, or on the coast. Measles and meningitis, which are highly contagious diseases, are among the biggest sources of child mortality in cities. In addition to the epidemiological risks related to population density (risks of rapid, large-scale contamination and the spreading of acute respiratory diseases), and inappropriate hygiene and sanitation conditions (water-borne diseases, cholera, etc.), urban contexts cause other kinds of public health problems. Vector-borne diseases are a very complex health problem that require a specific approach in urban environments where disasters have taken place (PAHO, 1982). Removing vectors of the disease or maintaining their level below a particular threshold requires a vigorous public campaign and the commitment of the municipal authorities.

In many classic humanitarian operations, IDPs and refugees are provided with shelter in camps where aid agencies focus their public health programmes. However, when health assistance is provided to displaced persons, it is often necessary to extend it to the surrounding population. Indeed, the multiplication of health centres in camps where the neighbouring urban population does not have access to health services, is both unjust and a source of health and security problems. The situation is much more complex in contexts where a large number of people live within communities, often living with host families, in makeshift houses, of all shapes and sizes, in areas where there is high population density and widespread poverty. Human in contexts such as Mogadishu, N'Djamena, Mani number of lessons :



Mogadishu IDP camp – a high-risk environment
(© Groupe URD)

- The importance of widespread public communication on the proper behaviours to adopt to control the spreading of the disease and of using all possible forms of communication (billboards, newspapers, radio stations, and social networks);
- The importance of reinforcing the capacity of local health institutions;
- The importance of improving systems for water provision, waste water and household waste.

This question needs to be tackled in a more strategic manner by drawing up an 'urban environment health map' that makes it possible to develop a spatial strategy to meet the health needs of the population and the displaced persons in the urban camps nearby.

2.3. MANAGING AN EPIDEMIC IN A CONFLICT CONTEXT

Working in a conflict zones has always been difficult. Managing a health crisis in a conflict zone is all the more difficult and requires a specific approach, as was seen in Yemen, Chad and DRC.

In these contexts where there is constant political instability and internal or cross-border conflict, several major constraints need to be taken into account:

- **Constraints related to the instability of health facilities in conflict zones and neighbouring regions.** Regions where there is conflict are often regions that are abandoned, in which health institutions are very weak, if they exist at all. Detecting a major infectious event and understanding the potential impact are of secondary importance in relation to the development of the conflict. What is more, in numerous conflicts these institutions are targeted by certain parties to the conflict which makes them incapable of providing basic health services and, of course, of responding to an epidemic. In such conditions, monitoring diseases and notifying national and international bodies about their presence becomes much more difficult.
- **Constraints related to the mobility of populations, with new flows of refugees and displaced persons.** Indeed, conflicts and the mass movement of refugees and IDPs lead to epidemics, such as in Goma in DRC in July 1994 in Rwandan refugee camps where it is estimated that cholera killed 23 800 people in a few weeks (with a case fatality ratio of 30%).
- **Constraints related to limited movement and limited access to areas where the epidemic is present:** where the aim is to adopt approaches that allow access, with both advocacy directed at the authorities and the establishment of mechanisms to encourage acceptance on the part of the population. In contexts like Yemen, it can be very difficult to get an authorisation to go to areas close to the front line where there is cholera.
- **Constraints related to the potential politicisation of the crisis and the subsequent weakening of humanitarian actors:** in these very sensitive contexts, fear of the epidemic, political interests, and the search for scapegoats can easily lead to the situation being turned against humanitarians. They must anticipate these risks very early on and plan the necessary mitigation measures, notably in terms of communication.

Militarised approaches, with (often very expensive) military escorts, have been seen by the WHO as the only way of taking action to contain Ebola (via vaccination campaigns) in places like Ituri in Eastern DRC, where there are many militias and armed groups. Such practices, which have been widely criticized by NGOs and other humanitarian actors, have already had a significant impact on security and have led to attempts to impose paying escorts on the rest of the humanitarian sector in Eastern RDC.

Conflicts bring specific issues related to the increase in the number of people in prisons, where the conditions are often deplorable even before the conflict. These can quickly become time bombs where the epidemic spreads very quickly, contaminating prison staff (who then contaminate their family and neighbours) and all those who come to visit the prisoners. The failure to implement strict lockdown measures can quickly become a source of tension and can lead to major security incidents.



An IDP camp in Kivu, DRC (© Groupe URD)

2.4. MANAGING LOGISTICS: A KEY ASPECT OF THE RESPONSE

Beyond medicine, it can never be stressed enough how important logistics are in managing a health crisis such as a large-scale epidemic. The experience of managing the last major health crises, such as the cholera crises in Haiti and Yemen, and the Ebola crisis in the Gulf of Guinea and in DRC show how important it is to get experts and resources in place on time and in sufficient quantity to allow staff and equipment to be mobile, such as the Personal Protective Equipment (PPE) that is essential to protect the medical teams and nursing staff.

The war and embargo in Yemen meant that all imports had to be cleared by the UN Sanctions Committee, adding to the humanitarian sector's workload. This was on top of the complex negotiations that were necessary to allow medical teams, healthcare equipment and medicines to be lifted into the field near the front line. In Guinea, Sierra Leone, Liberia and DRC, the mobilisation of fleets of vehicles was crucial in order to transport sick people, decontaminate sites and, establish treatment centres as close as possible to contamination sites.

Admittedly, these operations were very expensive, and sometimes, as happened in DRC, the processes in place led to speculation and exorbitant costs to hire vehicles, which were nevertheless necessary: the speed and mobility of the means of detection, evacuation and decontamination proved to be essential to control the epidemics. The establishment of coordinated and shared logistical systems can also be very useful.

The current coronavirus crisis and the constraints that it brings are going to make work much more difficult in many regions of the world affected by conflicts and natural disasters. The systematic closure of borders and airports is preventing experts from travelling and delaying the arrival of goods: medicines, protective equipment, oxygen concentrators, mechanical ventilators, etc. Given the scarcity of this type of equipment in healthcare structures in Africa, alternative mechanisms will need to be found for the provision of supplies: the WHO has mentioned the idea of humanitarian corridors which would help to transport medicines, equipment and test kits.

Logistics are an essential component of managing major health crises, as they determine the capacity to treat patients, what kind of support is available for medical staff, mobility in the affected areas and options for evacuating patients.



Protective equipment for health workers during the Ebola epidemic, Sierra Leone (© Groupe URD)

2.5. THE NEED FOR SPECIALIST SKILLS

The quality of a response will often depend on the quality of specialist skills available. There are significant constraints on the deployment of teams of specialists with adequate knowledge and skills, in adequate numbers, to advise governments and front-line operators. There is only a limited number of qualified specialists available to deal with complex epidemics. There are major challenges involved in providing them with adequate working conditions: laboratories, supplies for carrying out tests, basic health infrastructure. This is particularly true in more inaccessible areas, or in conflict zones. The ability to work in 'degraded mode' requires prior experience of adapting to such conditions. It may be necessary to take a flexible approach to interpreting standard protocols; only specialists with a solid background of experience can safely take such an approach.

Situations such as those we have been seeing since March 2020, in which international expertise is gradually withdrawn from the field, will bring new challenges, such as remote training and monitoring, and the development of telemedicine. However, in many regions connectivity and networks are too weak to work with any applications that need more than a weak bandwidth. The number of local specialists has nevertheless grown as different epidemics and responses have taken place, and it will be necessary to provide them with support. What form this will take has yet to be determined.



Staff are briefed before entering the contaminated zone, Kenema, Sierra Leone (© Groupe URD)

3. SOME KEY LESSONS FOR UPFRONT MANAGEMENT OF HEALTH EMERGENCIES

3.1. KEY LESSON 1: WARNING SYSTEMS: MAKING THEM CREDIBLE AND FAST

Society has evolved (see section 1 above). In addition, initially harmless biological entities are likely to undergo mutations that change them into highly effective vectors of fatal disease. The risk for the world's population is that new threats to health will emerge without being immediately detected, for which warnings are then issued late. A health monitoring and alert system is essential; also essential is the capacity to record and enumerate clinical cases and transmit the resulting data to a central monitoring organisation. For more than thirty years it has been recommended that health monitoring and alert systems be established that are appropriate for high risk situations. (PAHO, 1982)

Such systems are essential for early identification of health emergencies and for fast response: both identification and response are of fundamental importance. However, a real problem arises from the politicisation of monitoring and alert systems, both within the countries concerned and within the specialist international bodies, specifically the WHO. What happens is that epidemics are covered up, their gravity is denied, and information is not simply manipulated but suppressed. Lies are told about measures that have been taken or are being planned. All this happens regularly when dealing with large-scale health emergencies. The cover-up goes on until the situation is so grave that silence and lies are no longer sustainable. By then it is often too late.

3.2. KEY LESSON 2: KEY HEALTH WORKERS: PROTECTING THEM IS A TOP PRIORITY

Since the 1918 Spanish flu epidemic, the following points about health workers have been well recognised: they are particularly vulnerable to contagion because of their high exposure to affected patients; and they are therefore - unfortunately - likely to disseminate and pass on pathogens. They are also, of course, central to caring for the sick. Their vulnerability was made clear yet again during the Haiti cholera epidemic; and above all during the Ebola emergency in the Gulf of Guinea area, when health workers were badly hit by the epidemic. Hundreds of doctors, nurses, ambulance drivers and other health sector personnel lost their lives.

Health workers play an essential role in the response, are at great risk of contamination and also run the risk of contaminating others.

The current COVID-19 crisis demonstrates this once again. Health workers – both doctors and carers and their support teams of logistics staff, drivers, cleaners – are at the heart of the response to the crisis. Allowing them to die – or seeing them lose confidence in the health systems they work in and the society they belong to – makes it highly improbable that the crisis can be properly managed.

Central to any strategy for managing epidemics or pandemics where there is a high mortality rate must be the safety of the health workers. This means deploying the means necessary to protect them. It also means allowing them to recover physically and mentally from their extremely testing experiences as crisis responders.

3.3. KEY LESSON 3: STRENGTHENING THE CAPACITY OF HEALTH SYSTEMS TO RESPOND IMMEDIATELY TO THE THREAT OF AN EPIDEMIC

Triage

Triage: this is a very difficult task when the number of victims of disease is very high, and a choice must be made – often in situations where capacity is limited and time is short – as to which of them will be treated, and how. This implies also choosing who will not be treated, giving power over life or death. Modern medical training for emergencies barely allows for triage. Every life must be saved, is the current theory. Medical teams on the front line stabilise the sick or injured, prepare them for transport and send them on to fully equipped medical centres.

However, at the height of an epidemic, triage is essential, as experienced in the cholera epidemics in Yemen and Haiti. Triage enables decisions to be made on who will be treated immediately, who will be put under observation, who will be put into a waiting zone and who will be sent back home.

The effectiveness of triage will depend on whether accurate testing is available, on clinical protocols and of course on the capacity of the health teams who must be able not only to make fast, reliable diagnoses but also to feel comfortable with their decision to say “no” in some cases, and to send patients and their families away from the treatment zone. This requires robust management: sound technical capacity, good leadership, and above all the ability to communicate effectively with families, with the patients themselves and with the health personnel who are operating under extreme tension.

Separating “contaminated zones” from “non-contaminated zones”

Another critical element in epidemic management is formulating and maintaining health protocols, and organising the physical spaces where the health emergency is being managed in such a way as to avoid contamination, or secondary infections. High risk or “hot” zones need to be distinguished from zones which must stay as “zero risk”. Then routes need to be defined by which health workers, equipment and material move about within the “hot” or “zero risk” zones or move between them.

Existing health structures are often limited, particularly once there are many patients to manage, along with the many health workers who care for them. Other sites may be used: schools, stadiums, storage depots, or other large spaces. Whatever the site, the demarcation of “clean” and “dirty” zones and routes must be extremely clear. (This need not necessarily be costly. Médecins sans Frontières (MSF) used flexible building site fencing in their Ebola treatment centres in Conakry from May 2014. Many others have used the same arrangement since.) The hub separating the zones needs proper equipment and above all enough staff, a full-time presence, to monitor comings and goings and ensure that the procedures for keeping them separate are observed at all times by everyone, including those moving medical supplies, or bringing food and water for the patients. Vehicles coming and going need careful monitoring, too: ambulances bringing in the sick, and hearses removing the dead.

Early establishment of protocols for handling dead bodies, and conducting funerals

The cholera epidemics in Haiti, Chad and Yemen; and the Ebola epidemics in the countries around the Gulf of Guinea and in the DRC: all illustrate how sensitive the question of handling the dead may be. Every culture has death-bed rituals, and rituals governing the disposal of the dead, which are important for the peace of mind of families and mourners.

In Islamic countries, the dead must be buried within twenty-four hours of dying: before sunset if they died in the morning, the next morning if they died in the evening. All male relatives and mourners must take part

in the funeral procession. Muslims do not organise a vigil for the dead. Their burial ceremonies are simple. Much care is taken over the washing of the corpse, which is first positioned with the head towards Mecca, then washed three times before being wrapped in an uneven number of swathes of white cloth, which normally has not been stitched or sewn. The arms may either be positioned by the sides of the dead person, with palms facing upwards; or crossed on the breast. This washing ceremony must be performed by four people of the same sex as the dead person, although the widower or widow may take part.

In the context of a death from cholera or Ebola, these rituals carry a serious risk of contamination. They need to be modified in a way that respectfully acknowledges the religious significance of the occasion while preventing any chance of contamination occurring. Of prime importance in ensuring this will be a dialogue with the local Imams and Oulemas.

The issue came up in Haiti where those in charge of dealing with the cholera epidemic had completely neglected to take account of the funeral “washers”, who prepare the body of the dead person to meet the Great Hungan, god of the Haitian Voodoo religion. Washing, without any sanitary protection, the bodies of people who have died of cholera – not to mention letting the water used for washing them run down straight into the local rivers – leads inevitably to secondary infection, sometimes of people for whom no connection will be made to the ritual washing. It is essential to institute a proper dialogue and to take appropriate measures: warn people of the risks and train them to deal with them, supply gloves, bleach, containers for the used water.

In the case of Ebola, too, the situation caused extreme tension since local populations did not understand why they could not organise 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 led to the involvement of social anthropologists in the management of epidemics. MSF led the way on this; and the concept emerged of “safe and dignified burial” which was a new approach to handling the dead during the Ebola crisis.



The graves of Ebola victims, Sierra Leone (© Groupe URD)

Dealing with those accompanying patients

Dealing with people who accompany patients is one of the major difficulties in managing an epidemic. Whether the patient remains in treatment for a shorter or longer period, he usually arrives at the treatment facility with a large group of family members who are unwilling to leave until he leaves with them. What is to be done? First, measures must be taken to avoid secondary infection among the accompanying family members, while allowing the patient at least a bare minimum of support from their family. At the same time, measures must be introduced to keep the rest of the family at a distance, for their own protection, thereby also ensuring that access to the facility is not congested.

It is essential to disseminate clear information among people living around a treatment facility: this reduces fear in the local population, and makes it less likely that they will object to the presence of the facility in their midst or to the arrival of patients for consultations or treatment. It can additionally be helpful to explore local possibilities for providing shelter or accommodation for accompanying family members (while stressing the importance of observing hygiene protocols). It may in some cases be possible to offer financial compensation to any local host families. This type of initiative can be pursued by humanitarian relief workers who do not have a key medical function to fulfil in the area affected by the epidemic.

Discharging patients once they are better

Seeing patients leave a treatment facility cured of the 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 marked and satisfying experiences of the health workers involved. These workers had often been hard hit by the experience of losing many of their other patients. But discharging patients entails taking precautions, too. The degree of contamination of those discharged from medical treatment facilities is frankly often unknown. Nor may it be clear whether patients have acquired immunity from the disease, since serological tests to determine the presence of antibodies tend to be rare. Those who have been cured may not necessarily be accepted back into society. It is important to follow up these patients, their families and their communities from both a psychological and an economic standpoint: the patients may often be ostracised by their communities to a greater or lesser degree, for a greater or lesser length of time.

3.4. KEY LESSON 4: HYGIENE, PROTECTIVE MEASURES, QUARANTINE

Managing an epidemic may necessitate new regulations, sometimes drastic, ranging from a simple requirement for people to wash their hands when entering or leaving a village or building to the imposition – sometimes by force – of a regime of isolation, or the quarantining of whole areas.

Clearly, protective measures are essential: keeping a physical distance between people (a better way of expressing this measure than “social distancing”); frequent handwashing; avoiding shaking hands, hugging or kissing. The Ebola experience showed that some of these measures are accepted without difficulty and catch on quickly: bumping elbows as a means of avoiding more physical greetings, handwashing in basins provided at the entrance to buildings. A mnemonic such as WASH – water, sanitation, health - can be used as a reminder that water, soap, bleach (or other disinfectant) and basins or bowls in order to make handwashing and other protective measures work effectively.

If epidemics are related directly to the water supply, particularly heavy investment is needed in hygiene measures. In the case of cholera, this means going beyond the promotion of handwashing to the reinforcement of efforts to prevent people defecating out in the open; and the improvement of latrines or of mechanisms for emptying septic pits: all are key elements of disease prevention. It is critical too to determine which of the habits and new practices acquired during the period of the epidemic should be maintained, or even further strengthened, once it is over. In North and South Kivu (in the DRC), where they have just got over the Ebola crisis, handwashing habits have been maintained and are now being practised as part of the response to the coronavirus pandemic.

For epidemics that are spread by aerial transmission, such as tuberculosis and influenza, in addition to physical distancing to avoid direct transmission, individuals need to adopt specific gestures and wear masks.

In epidemics and pandemics, careful attention must be paid to any constraints on hygiene and disinfection practices in medical facilities involved in providing treatment. A good water supply is critical. First, the sick need drinking water, since epidemic diseases often entail serious problems of the digestive system. Health workers also need drinking water, since it is very easy to become dehydrated when wearing personal protective equipment. Plentiful water is also needed for regular cleaning of treatment facilities, and for high-powered spraying – as systematically as possible – of at-risk zones in the facilities with diluted bleach. Health workers need water to wash their hands often, as do teams of aid workers who arrive to assist and family members accompanying patients. Water is needed for laundry services. It is needed for the rituals of washing the dead. Throughout an epidemic, unremitting monitoring is needed of the situation as regards availability of water, adequacy of drainage systems and capacity to maintain standards of cleanliness.

In addition to these protective measures, it will sometimes be necessary to place extensive areas under quarantine arrangements, to confine people to their homes. Confining people, or requiring them to “shelter in place”, has been used for centuries as a means of containing epidemics. This policy was stringently applied first by China as a way of responding to its Covid-19 outbreak, and then increasingly by numerous other countries as a response to the pandemic. It is effective as a means of reducing the rate of new infections, and thus relieving pressure on health facilities. It is, however, a difficult policy to apply. Very soon questions will be asked about how long democratic societies will accept draconian “shelter in place” policies which deprive people of that most basic of liberties, 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. Unfortunately, it is not a realistic policy to try and maintain in countries where there are very limited buffer stocks of food, and limited financial reserves.

‘Shelter in place’ measures are not realistic in countries where the population and the state have very limited buffer stocks of food and limited financial reserves.

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 several days, let alone weeks, without going to work, or without daily trips to buy or sell items in the streets or the markets. People who survive on barely one or two dollars a day per capita 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. In the DRC, a surgical mask costs 2000 CDF or US\$ 1.18¹⁴: i.e. a substantial share (more than half) of a poor person’s daily income; and in the DRC a majority of the population is poor.

Ensuring compliance with stringent “shelter in place” policies is simply impossible - even if attempts are made to use force - in such a context, beyond the very short term. Political protests and food riots are very

¹⁴ 1000 CDF = US\$ 0,59 (4 April 2020).

likely to occur sooner rather than later, unless mechanisms are rapidly created to support people during the time they are obliged to stay home.

In the global south, especially in more inaccessible regions or in conflict zones, health systems are weak, or practically non-existent. Effective “shelter in place” policies over extended periods of time are impossible to apply. The only response available is to inculcate protective measures and new behaviours such as systematic handwashing or keeping a physical distance between people. Inculcating these new behaviours entails informing, explaining, giving instruction on what to do: this in itself is a demanding task.

3.5. KEY LESSON 5: VACCINATION

Before vaccines against cholera were available, the only way of managing cholera epidemics was to focus on effective prevention policies, i.e. by improving access to clean water and improving drainage systems and hygiene standards; and then improving both individual and community hygiene: handwashing, safe food handling, for example. One of the most promising responses to epidemics and pandemics is to find preventive vaccines and make them widely available. There are several types of vaccines against cholera. To begin with, vaccination as a response to epidemics was recommended specifically for health workers and others working with the sick. Now it is also recommended for the wider population in and around the area where the epidemic is rife. The WHO has said that oral anti-cholera vaccines are a public health tool to be used in high-risk situations during cholera epidemics, and can be used alongside the classic prevention measures¹⁵.

A global stockpile of anti-cholera vaccines was established in 2013. It is maintained and replenished by two separate bodies: first, the WHO's Global Task Force on Cholera Control which is responsible for campaigns of preventive vaccination; and second, the International Coordination Group (ICG), also part of the WHO, which is responsible for emergency vaccination campaigns.

It must be emphasised, however, that at present there is no known vaccine that provides long-term protection against cholera. Given the threat posed by cholera, and given the difficulty for many poorer countries of guaranteeing the necessary hygiene infrastructure to mitigate that threat, it is clearly of paramount importance to press ahead with research on anti-cholera vaccines.

¹⁵ https://www.who.int/immunization/policy/position_papers/PP_Cholera_2017_summary.pdf?ua=1

Preliminary work undertaken on vaccines during the 2014 Ebola epidemic in the Gulf of Guinea meant that vaccination became available as a treatment option for subsequent outbreaks. In the DRC, the rVSV-ZEBOV vaccine is used, which is the most advanced of the vaccines under development to protect against haemorrhagic fever. A relatively significant number of trials have shown it to be effective, and to be well tolerated by the subjects vaccinated. Vaccination using rVSV-ZEBOV limits the development of Ebola in people who have recently been infected, and thus reduces the number of patients needing to be admitted to treatment facilities.

“Ring” vaccination involves vaccinating the family and close contacts of anyone who has been diagnosed with the disease in order to prevent the number of cases growing exponentially. This should be given priority, but may not be effective in situations where there are security problems, where large groups of people are on the move. It may also be less effective in refugee camps or among large groups of internally displaced people; or where groups gather in markets or water collection points. In such cases, broad coverage of the population of the entire zone at risk should be the objective, although this necessitates enhanced supplies of the vaccine, with implications for both cost and delivery.

During both the Yemen cholera epidemic and the eastern DRC Ebola epidemic, many stakeholders pushed hard for vaccination efforts to be accelerated. However, this was difficult for a number of reasons:

(a) **the security situation in many parts of both countries, which gave rise to procedural difficulties.** This was a problem in the eastern states of the DRC when Ebola vaccination campaigns were implemented there. The parties to any conflict should be given clear information and explanations and invited to lend their full support to vaccination campaigns in the conflict zones. More reflection is needed on how to bring them on side.

(b) **the availability of vaccines:** vaccination campaigns should be carefully targeted on selected priority areas. If this is to happen, enhanced data is needed on the progress of the epidemic, e.g. the rate of new infections, the geographical distribution of cases. There should be improved coordination of health interventions with

Two types of oral vaccine that have been prequalified by the WHO:

- **Monovalent vaccine O1:** this is an inactivated vaccine, consisting of killed bacterial cells of *V. cholerae* O1 associated with a recombinant subunit vaccine B of the choleric toxin (WC/rBS, Dukoral). It was subjected to very extensive clinical trials in Bangladesh from 1985 to 1989; and also in Peru. It confers on all age groups 85-90% protection for six months, a protection that decreases rapidly in children under five years of age but is maintained at around 60% after two years in older children and adults. This is the only vaccine pre-selected by the WHO. It has been used in several mass vaccination campaigns. It cannot be put to general use in the population as part of public health programmes, but - according to the WHO - should however **“be taken into consideration as one of the means of preventing cholera in populations considered to be at risk of an epidemic in the following six month period”**. The vaccine was given a European ‘Marketing Authorisation’, but the French public health authorities have warned that it should not be routinely prescribed for travellers, for whom the first line of defence against cholera should continue to be correct observance of basic hygiene practices.
- **Bivalent vaccines O1 and O39:** these are prepared from killed bacterial cells, but do not contain the subunit B of the choleric toxin. They are formulated by different manufacturers. Shanchol was approved in India in 2009. Euvichol was approved in the Republic of Korea in 2015. Both have the same formula, and both are available on the international market. They induce a longer protection than the monovalent vaccine in children under five years of age: studies of Shanchol after a two-year monitoring and evaluation programme in India indicated a total effective protection of 67% to 69% among subjects who had been given two doses of the vaccine, in all age groups, including children from one to four years of age. The cumulative effective protection of Shanchol is 65% at five years of age.

other humanitarian and development interventions, notably in the water and sanitation sectors. In this area, the ICG should play a more dynamic part, consisting as it does of representatives of the four principal agencies concerned: WHO, IRC (International Red Cross), MSF and UNICEF (United Nations Children's Fund). A coordination mechanism is needed for the longer-term, not simply during an epidemic or crisis.

(c) **different approaches by different health sector stakeholders involved in responding to a health emergency:** health ministers; the WHO and its different component parts including headquarters, regional offices and field offices; the health sector NGOs.

(d) **delivery capacity:** this usually depends on the scale of operations in the field, including logistics capability.

(e) **the political or institutional returns on investment in vaccination programmes:** the state actors involved, the international organisations (WHO especially) and the NGOs all wish to safeguard their own mission and image in responding to an epidemic. They may not wish to commit financially to vaccination programmes, which call for large-scale investment in vaccines, personnel, incentive schemes, transport costs and sometimes the cost of security guards or escorts. The multiplicity of stakeholders and interests generates the risk of corruption. In both the Gulf of Guinea¹⁶ and in the DRC, where the situation on the ground was complex, where urgent action was needed and where vast sums of money were involved, it was difficult to ensure proper management and accountability.

Globally¹⁷, vaccination cannot be the sole response to either cholera or Ebola in times of crisis. What is needed to manage epidemics and pandemics is the full menu of responses: vaccination, treatment of patients, preventive and protective measures, extensive information programmes about risks, social mobilisation and community involvement.

3.6. KEY LESSON 6: CRISIS MONITORING ARRANGEMENTS: A HIGH PRIORITY

Monitoring the development of a health emergency or epidemic in real time, across all the affected areas, is key to managing it correctly. Systems for collecting and analysing epidemiological data must be set up as a matter of priority, with the assistance and advice of epidemiologists, cartographers and specialists in geographic information systems (GIS) in order to follow the number of cases, broken down by medical facility providing treatment, by region and finally at national level. This enables a better understanding of the way an epidemic develops, particularly any patterns of acceleration or deceleration of infection rates; and supplies a picture of where it is spreading to.

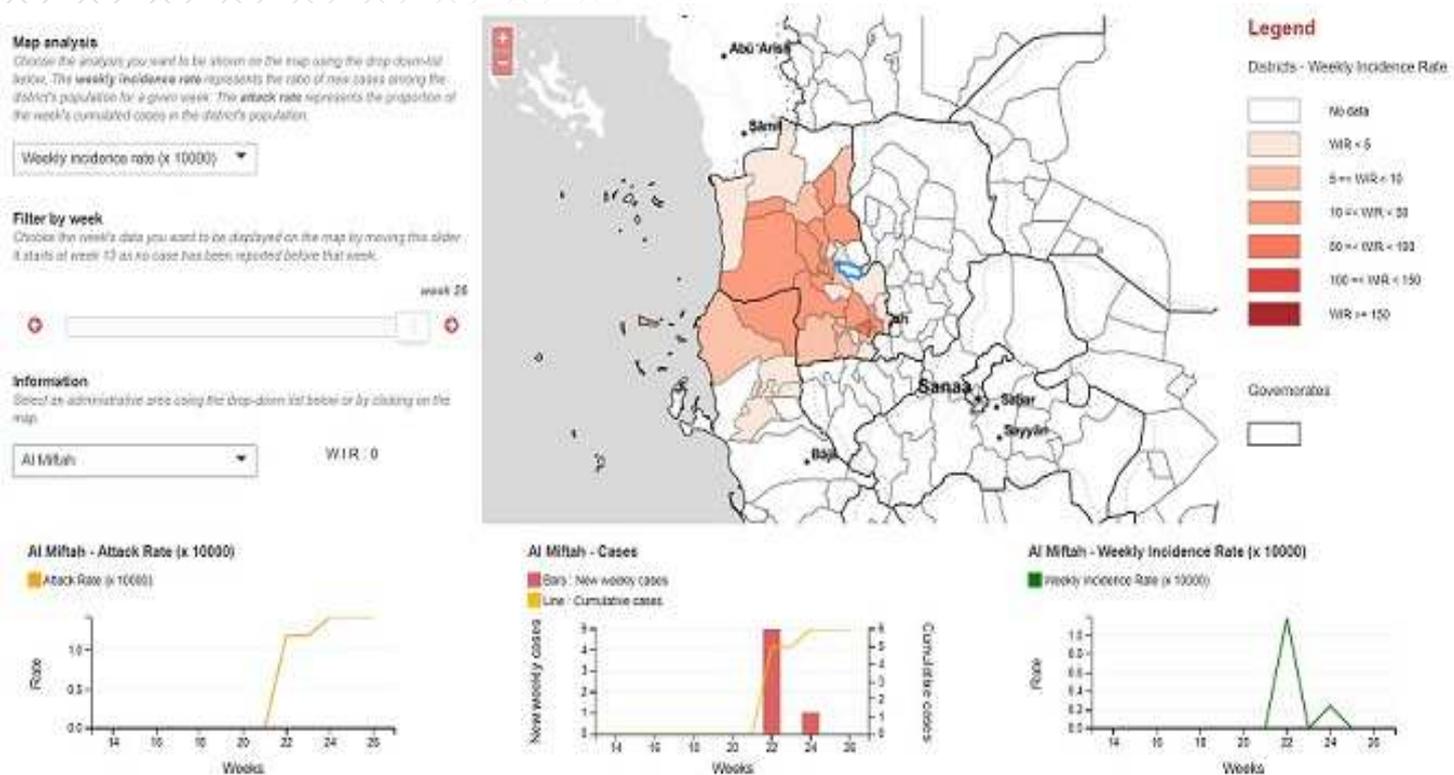
Knowing the rate of new infections, the seriousness of cases, the death rate as it changes over time, the effectiveness of treatment: all these are central elements in the operational management and strategic direction of the crisis.

There are well developed tools for collecting and processing information which make it possible to monitor almost literally in real time the curves indicating the epidemic's development; and to follow its geographical evolution, too. It is important that these monitoring tools, and people skilled in using them, are available simultaneously with the first response in the field to the pandemic. Otherwise, information vital for understanding, taking action and following up may be lost. A useful example are detailed maps of affected

¹⁶ <https://www.alnap.org/help-library/create-%C3%A9tude-de-cas-sur-lint%C3%A9grit%C3%A9-de-la-r%C3%A9ponse-%C3%A0-ebola-en-guin%C3%A9>

¹⁷ [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)31183-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)31183-3/fulltext)

zones which are accessible through the OpenStreetMap community. These maps were successfully tested by MSF during the West African Ebola epidemic.



3.7. KEY LESSON 7: INVOLVING SOCIAL SCIENTISTS

It is important to involve social anthropologists at the earliest stage of an epidemic. They can supply insights into the way epidemiological risks are perceived by the affected population, or into beliefs and rituals that surround sickness and death. Their insights help define the right approach to managing an epidemic. They can advise how best to communicate information to the affected population and how to manage disinformation and rumours. Social scientists are not called on often enough in health crises or epidemics but in fact they make a crucial contribution to managing them, as they do to dealing with broader health issues. In high-risk situations, it can be a major constraint not to understand the spiritual beliefs that underpin the life of a community; indeed, lack of understanding can lead in some cases to security breakdown. Social scientists were mobilised too late, unfortunately, during the Ebola epidemic in Guinea but were rapidly called into service during the epidemic in the DRC. They can be almost as indispensable as doctors in the management of large-scale epidemics and pandemics. They can analyse and explain fear and apprehension in an affected population and explain why communities behave as they do when faced with contagion, pain or death. They can advise on strategies that will facilitate the acceptance by the local population of the humanitarian aid workers who have arrived in response to the crisis. It is easy to forget how alarming it can be when health workers and their support teams arrive in their different coloured garb, talking from behind masks, wearing gloves to handle everything, preventing final farewells being said to people on their deathbeds, forbidding funerary rites from being celebrated.

3.8. KEY LESSON 8: TIMELY, CLEAR COMMUNICATION ON MEASURES TO BE TAKEN; AVOIDING MISINFORMATION AND RUMOUR

In our highly interconnected world, in the global south as well as in the more developed countries, information circulates rapidly. False rumours may often spread more rapidly than messages about the preventive and protective hygiene protocols that must be adopted.

Significant budgetary and human resources are needed to create and disseminate information and messages about hygiene and health, about the need to avoid risky behaviours, the need to limit large gatherings of people, the need above all to adopt the habits of basic hygiene. Posters must be displayed wherever possible, at the entrance to villages, in produce markets, in public spaces. Radio and television spots must be booked. Social media must be called into service. Information and messages must be communicated in all the languages spoken in an affected area.

It is also vital to combat “fake news” which may quickly lead to the health workers’ situation becoming unsafe; and even to the rejection of any proposed intervention. In Guinea, false rumours emanated not from sorcerers or forest-dwelling shamans, but from family members living in Conakry who were themselves assailed by false rumours about what was referred to as the “Ebola business”: according to these rumours, international aid agencies were there to get rich; they had even introduced Ebola into the country to make money out of it; alternatively, it was the work of the CIA...

In the DRC, the battle to contain Ebola was exploited for gain in conflicts between local political stakeholders, or between militia groups. At the time of writing, the same thing could happen at any moment in the battle to contain Covid-19. False rumours led to incidents such as stones being thrown in Guinea at the cars of health teams who were looking for Ebola sufferers in order to transport them to health facilities for treatment; or of vaccination teams travelling in the east of the DRC, in the Ituri area. Deaths can occur in such situations, as happened in the forested region of Guinea in 2014. Poor communication during an epidemic may badly undermine international teams who are there to provide assistance. This happened in the case of Haiti’s cholera epidemic when the UN continued to refuse – in the teeth of the evidence – to make the link between the presence in Haiti of the Nepalese contingent of MINUSTAH (a UN peace-keeping force) and the arrival in the country of the vibrio cholerae.

3.9. KEY LESSON 9: REMEMBER THAT OTHER HEALTH PROBLEMS HAVE NOT GONE AWAY

The development of an infectious disease epidemic does not mean that women stop giving birth, or other illnesses no longer need to be treated. Requisitioning all available labour to fight the health crisis, and giving that fight a priority call on the health system, will clearly detract from the resources that are available to treat other illnesses and health issues. The rate of mortality due to other health issues is likely to go up. It is rarely considered essential to maintain all the other operational parts of the health sector, even in ‘degraded mode’, during an epidemic. The prioritising of the response to an epidemic over all other calls on the health service means that other parts of the service suffer. This prioritisation of a single issue is underscored even further when rewards and financial incentives, sometimes generous, are allocated for the benefit of the teams responding to the epidemic. It is essential that guidelines for managing major health crises should preserve a minimum of capacity to deal with health issues arising separately from the epidemic so that the health sector as a whole can continue to deal with them.

3.10. KEY LESSON 10: RECOGNISE THE GLOBAL IMPACT OF THE EPIDEMIC; AND ACT AT THE APPROPRIATE LEVEL

There can be severe social and economic effects during and immediately following an epidemic. How well will the “resilient” societies of the global south cope? How will the economies of the global north, interconnected but, in the end, so fragile, manage situations of this kind?

It is all too clear that the poorest sectors of society across all affected countries will be three times worse off in a health emergency and will disproportionately suffer from any measures taken to address it, and from the inevitable economic repercussions.

Many families will have lost members. Some people may have lost their identity documents or be without news of their close family and friends. The period that follows an epidemic can often be complicated in terms of reuniting families, confirming inheritance arrangements, or settling questions of identification of the dead. There may be many citizens who are left behind, forgotten: but they are all a crucial part of the post-epidemic landscape. Professionals from different sectors are needed to deploy their resources to deal with all this, provided they have the agreement of the country or state concerned.

It is equally important to research the means of starting up productivity again as soon as feasible both in agriculture and in other sectors and to get supply chains working again. In urban areas, formal and informal sectors require study. It is important to understand the social, economic and psychological impact of a health emergency. What will have been the effect of an epidemic on society and its economic functioning? Many questions need answers if society is to re-emerge from the crisis in as good a shape as possible. Social scientists – economists and social anthropologists - as well as mental health counsellors, micro-economists and advisers on job creation (such as those on the staff of the ILO): all have a part to play in supporting people and societies in the complex post-crisis phase.

3.11. KEY LESSON 11: THE ROLE OF THE MILITARY

Health emergencies are fast-moving with effects that cross national boundaries. States may have recourse to their armies¹⁸ or to trained multi-disciplinary units. It may be that a national army's medical brigade is deployed, or trained units of the National Guard (or its equivalent). In Guinea, the French army was mobilised to help with the fight against Ebola.

Or there may be a need to mobilise military logistical or engineering capabilities: e.g. the American engineering corps in Liberia; or to provide reinforcements to coordinated efforts on the ground e.g. the British army in Sierra Leone.

Elsewhere, as in the east of the DRC, among the Kivu people, the country's own armed forces (the FARDC), or even militia groups, were deployed to provide security cover for the WHO's Ebola vaccination campaigns. Such a situation is ripe for misappropriation and mismanagement, which indeed occurred in this case on a significant scale, with an impact on the overall success of the campaign. OCHA (Organisation for the Coordination of Humanitarian Affairs) must be capable of providing adequate coordination and oversight, to minimise the kind of risk encountered in those DRC campaigns.



Red Cross Ebola Treatment Centre, Kenema, Sierra Leone
(© Groupe URD)

¹⁸ <https://www.urd.org/en/publication/report-mcda-deployment-in-natural-disasters-and-health-crises-the-ebola-crisis-2017/>

4. LESSONS FOR THE LONG TERM

Large-scale epidemics and pandemics that affect communities, regions, countries, or even the whole planet, have become part of the landscape. It is therefore important to be aware of this risk and to consider what it entails. A permanent, fundamental revision of health policies and the tools used to manage crises of this kind needs to start immediately. The humanitarian sector also needs to do some serious thinking about its role and its capacity in this domain.

4.1. ANTICIPATION AND PREPARATION

The risk of a new pandemic, or the return of known pandemics, such as those related to the Asian epizootic disease, is now a permanent feature of the international epidemiological landscape. As such, there is need for preparation.

The weakness of health systems in many countries in the global south, and particularly those where there are conflicts and disasters, makes it difficult to manage such epidemics and pandemics. However, health systems that had been considered relatively solid have had difficulty in managing the coronavirus pandemic

in the winter and early spring of 2020. This shows that the major factor is not only the weakness or solidity of the health system, but how well they are prepared to deal with an epidemic. The major difficulties in managing health crises, in both rich and poor countries, are due to the same deficiencies. There is the same need for trained and equipped medical and nursing staff, an effective contact-tracing system, protective clothing (masks and gloves), resources dedicated to the collection and transportation of samples, laboratories that can assess them, and intensive care units with the ability to isolate patients. Capacity building should aim to have an impact beyond a single disease. From the outset, the aim should be to establish sustainable systems, over and above the response to these increasingly common crises.

Anticipation requires that national and global plans to combat epidemics are finalized. Investment in research and production is also necessary to ensure that antiviral drugs are available, and that safe and effective treatments and vaccinations are developed¹⁹.

It is also crucial that international warning systems for health crises are reinforced. Following the intercontinental transfer of cholera to Haiti, the island went from being free of cholera to having endemic cholera. The whole of the Caribbean will potentially now be affected. Due to the Ebola epidemic currently affecting West Africa, and its related international outbreaks, the WHO has declared a public health emergency and has launched an international mobilization, the first of its kind. The fact that mosquitoes and protozoans carrying chikungunya and dengue fever have travelled between continents means that the risk of epidemics no longer only concerns the global south. Epidemics have become a planetary risk, as COVID-19 has shown.

One possible scenario for the future is that hitherto unknown infections and contamination methods will emerge.

4.2. ANALYSING THE EPIDEMIOLOGICAL RISKS RELATED TO THE TRANSFORMATION OF ECOSYSTEMS, PRODUCTION METHODS AND LIFESTYLES

¹⁹ Certain Chinese sources have claimed that traditional Chinese medicine has contributed favorably to controlling the coronavirus epidemic in China. Though no independent study has been carried out, it would be useful to continue research on these alternative, or complementary, forms of medicine (in relation to Western medicine). It should be noted that one of the alternatives to chloroquine in treating malaria is artesunate, which comes directly from plants and the Chinese pharmacopoeia. This subject should be approached without preconceived ideas or ideology, but the appropriate experimental protocols should be applied.

The major epidemiological risks caused by environmental degradation

The Ebola epidemic in 2014 showed that introducing cash crop cultivation into primary forest ecosystems increased the contact between humans and animal reservoirs of little known viruses. This opening up of ecosystems brings an influx of labour, thus spreading diseases faster.

In Borneo, deforestation has led to the resurgence of malaria. In the open spaces that are created, there are larger holes where water accumulates, and where the mosquitoes who transmit the parasite reproduce. The destruction of 4% of the forest has led to an increase of 50% in the number of malaria cases.

Biodiversity tends to create barriers to the rapid transmission of pathogens in natural environments. The existence of a wide variety of host species can limit transmission either due to a diluting effect, or by acting as a buffer. More and more studies have shown that accelerated biodiversity loss is increasing the probability of uncommon forms of transmission.

Rethinking our food production systems

The repeated appearance of new and old pathogens, all of which are linked to the complex dynamics of transmission between humans and animals, should be seen as a warning signal. It is obvious that the animal health sector and veterinary systems need to be included in the public health sector's efforts to improve the way that zoonoses and other infectious diseases are managed. It is also becoming increasingly evident that we need to rethink our food production systems, such as the intensive farming of cattle, hens, ducks, pigs, etc. New pathogens are bound to appear from time to time in the animal, human or inter-species domain²⁰.

The role of increased urbanisation and population density in spreading epidemics

Increased urbanisation creates stratified urban systems including both controlled and well-organised areas that are inhabited by people who are comfortably off, and informal areas where there are poor, overcrowded neighbourhoods, slums and suburbs on the periphery of the urban centres, and where deadly pathogens can spread extremely quickly.



Our mobile world

In a world where mobility has become a sign of socio-economic progress, epidemics related to the emergence of a pathogen can very quickly become a global risk.

Mobility is an essential part of life, both for people and societies: food security in most regions of the world depends on the ability to supply markets and the flow of clients. The reduction, or blocking of supplies of farm produce will lead to major food crises unless measures are taken to organize markets or to instigate rationing.

The increased mobility of goods and people, which is a central aspect of economic globalization, has been recognized as a major risk factor since the great exploratory voyages of the 15th and 16th centuries.

²⁰ Prions are newly identified infectious agents, and were responsible for the so-called 'mad-cow disease' epidemic. They can be spread from animals to humans, by ingestion, but probably not from human to human. Mad cow disease, with the massive health and economic crisis that it caused, is another example of these new risks of infection. It was probably caused by an abnormal method of feeding animals. The economic and social impact of the epidemic was limited as the areas that were affected were located in countries with the legal, regulatory and logistic means to cope and regain control of the situation.

Increased mobility means that both people and infected matter circulate faster. It increases contact between biological entities that were not previously in contact, and that do not have any immunity defence against unknown germs, and are therefore very vulnerable. In contexts where there are major epidemics or pandemics, movements obviously need to be reduced. At the beginning of a crisis, the aim should be to reduce movements as much as possible between areas where there are cases of the disease. As soon as it has spread to other continents, global movements need to be reduced drastically for as long as necessary.

4.3. REVIEWING INTERNATIONAL COLLABORATION AND COOPERATION

The flapping of the butterfly's wings in Wuhan in China led to such a drastic fall in the Paris stock exchange that the French Ministry of the Economy compared the crisis to the Great Depression of 1929. This shows how fragile our global system, made up of multiple inter-dependent relations, really is. We need to establish solid and effective partnerships to set up and coordinate the response, facilitate preparation, and reinforce the anticipation capacities of the different international stakeholders.

Is the WHO-led strategic framework, which the WHO approved in 2015 just after the Ebola crisis in West Africa, relevant? Five years after it was launched, it was tested in the response to the terrible cholera epidemics in Yemen in 2016-2017, during the Ebola response in DRC in 2019, then placed under great pressure with the COVID-19 pandemic in 2020. For the moment, the other actors involved in the response to these crises have not been convinced that the 2015 reform has brought the improvements that were expected.

During the 2014-2015 Ebola epidemic, an ad-hoc coordination body – the United Nations Mission for Ebola Emergency Response (UNMEER) – was created, based in Ghana. Located a long way from the field, UNMEER proved to be cumbersome and expensive, and was mainly involved in fund-raising. In the end, it turned out to be mainly a tool to make up for the terrible shortcomings of the WHO in terms of managing the crisis. During the Ebola crisis in DRC in 2019, another ad-hoc mechanism, the Ebola Emergency Response Coordinator (UNEERC), was created and soon found itself in conflict with the WHO, particularly regarding the issue of armed escorts. The fact that the virus killed more than 2100 people in DRC (with a case fatality ratio of 67%, similar to that of the 2014-2015 Ebola epidemic in the Gulf of Guinea), despite the fact that effective treatments and a vaccine were available, raises serious questions. One of the major problems was the rationing of the vaccination, which was imposed by the WHO, and widely contested by the other organisations involved in the response. Many organisations, such as MSF, tried to extend access to the vaccination, in collaboration with the Ministry of Health, and in keeping with the recommendations of the Strategic Advisory Group of Experts (SAGE). But these efforts came up against the very extreme control imposed on the supply of vaccinations and the eligibility criteria by WHO. NGO vaccination teams in North Kivu only received a small number of doses at a time, and these were specifically destined for people who were already on predefined lists. And yet, organisations like MSF and ALIMA are extremely experienced in responding to crises of this kind. This raises a certain number of questions about the economic interests that may have contributed to the WHO's decisions. The international community needs to look into this issue.

The World Bank Group, for its part, aims to reinforce public health systems through financial support. They proposed the following measures in 2015²¹:

Key lessons from the World Bank

1. Weaknesses in health systems are a major contributing factor to disease risk, especially from the lack of trained and equipped medical personnel, contact tracing capacity, sample collection and transport capacity, laboratory diagnostic capacity, and intensive care units with isolation capacity. The crisis response should support not only immediate emergency interventions but also medium-term risk reduction through public health system strengthening, recognizing that future opportunities to engage may be limited once the crisis has passed.
2. Capacity building efforts should be done in a way that are relevant to more than just a single disease, and should consider from the outset means to build sustainable systems that last beyond the current emergency. This would likely include support for animal health and veterinary systems, in addition to public health systems, and for managing other zoonoses and infectious diseases.
3. Develop a strong and effective partnership platform to coordinate the diverse support from different international actors, within the WHO-led strategic framework approved last month. Partners should focus on their specific areas of comparative advantage - for the World Bank Group, this would include building public health system capacity.
4. Complement national level investments with regional approaches for cross-boundary collaboration on regional public health goods, particularly in the areas of surveillance and monitoring. However, efforts to try to prevent disease transmission through border control may be ineffective, especially in countries with weak border control services and porous land borders.
5. Communication and awareness campaigns and outreach play an important role in responding to disease outbreaks, especially in areas where the population may have little information about the disease, its transmission mechanism and safe behaviors, and where people may be skeptical of medical interventions. Communication training for key public officials can be useful, as can efforts to engage with the news media to reduce misinformation and overly alarmist messages.
6. Hit the right balance between responding quickly and conducting the necessary technical analysis and project preparation to ensure effective design of interventions. Postponing important technical design work until after project approval can lead to costly delays to the startup of project activities and the procurement of critical goods and services.
7. Balance investments in physical infrastructure, such as laboratories and equipment, with institutional development and capacity building, to ensure that sufficient capacity exists to use and sustain the infrastructure technically and financially.
8. The procurement of specialized laboratory equipment and other supplies can be complicated and time-consuming - it is essential that implementing agencies of governments and regional economic communities have strong institutional capacity to fast-track procurement and manage project implementation.
9. Monitoring and evaluation system design should not be neglected in the rush to provide a rapid response. Intermediate outcome indicators that track the performance of particular functions (surveillance, sample collection and transport, diagnosis, treatment, etc.) against benchmarks are essential to assess implementation performance and readjust plans in response to real-time developments. Surveys should assess behavioral practice, not just knowledge.

To date, these largely 'aspirational' principles are not yet implemented in practice, but they show the right path to take.

Humanitarian actors, and particularly the limited number of organisations who have genuine operational capacity and solid experience in this domain, do not feel that they are sufficiently recognized by international institutions in general, and the decision-makers at WHO in particular. These organisations have an agile, well-trained and committed staff that it is imperative they have on hand at all times, and which includes healthcare personnel, logistical support staff, social anthropologists and social communication experts. However, they often lack the financial means – and above all, the political support - to match their ambition. This is the price of effective action and coordination. It is a huge challenge...

Governments have shown that they are only really interested in these major epidemics and pandemics when they threaten their security and that of their citizens, as well as their economy. The massive international mobilization against Ebola in the Gulf of Guinea in mid-2014 took place several months after the alert had been signalled and the number of people infected and dying had grown exponentially. It was only triggered when the first cases appeared in the United States, Europe and countries where there were foreign armed forces stationed who might have brought the virus 'home', as was the case during the Spanish flu epidemic in 1918.



²¹ <http://documents.worldbank.org/curated/en/241811559646029471/pdf/Lessons-Africa-A-Quantitative-Study.pdf>
Hand-washing system in North Kivu, DRC (© Groupe URD)

CONCLUSIONS

"The unexpected only submerges a political decision that is made without analysis or foresight. It just so happens that, on all major questions, human beings have the capacity to predict, and therefore to prevent. A political decision that is only a response to an emergency can never be up to the situation."

Massimo Cacciari, Italian philosopher (born in 1944)

The international community has learned a lot about managing health crises in recent times, including the SARS-type infections of the last twenty years, the Ebola outbreaks of the last ten years, and the many cholera crises that have taken place. How are we to cope with the consequences of this type of crisis, which can cause huge social and economic disruption? How can we improve national public health systems so that they are vigilant, prepared and capable of managing crises that often put them under great pressure? The realization that these epidemics can easily cross borders and continents led to the response to SARS in 2009 and to Ebola in 2014. The mobilization of numerous research laboratories and international cooperation considerably improved the response capacity; assessment tools were produced, treatments gradually emerged, and, above all, relatively effective vaccinations were developed. This led to a much more effective response to the Ebola epidemic in eastern DRC in 2019 than in the Gulf of Guinea in 2014-2015, even though the prevalence of conflicts and insecurity made operations very complex.

Contemporary infections have a number of specific characteristics: some systematically occur in certain types of context; others are new and therefore have unpredictable propagation and contamination dynamics (role of the viral load, of the method of exposure, etc.), and also different levels of probability that treatments and vaccinations will be found. Pathogenic agents have a wide variety of sources: they may come from a particular environment (the forest and its healthy carriers, eating habit), or from imbalanced livestock farming models (pig and poultry farms in Asia), or from other countries and are imported by travellers (model of aggression and the challenge of finding 'case zero'), or it can simply come from the mutation of an inoffensive agent into an extremely lethal agent. In a significant number of contemporary epidemics and pandemics, there is a lot of uncertainty. Though decisions should obviously be based on science and knowledge, we must not forget that these are always 'one war late' and that debates between scientists can be heated. We therefore often have to come back to Robert Chambers' two big concepts: that of 'optimal ignorance' (what do we really need to know to make a decision in an uncertain context?) and that of 'appropriate imprecision' (better to be 80% right on time than 100% right too late). In this respect, only decision-makers' courage can make a difference.

These epidemics can potentially have a widespread and disruptive impact on society and its values, and can rapidly have a significant impact on socio-economic dynamics. The insecurity related to the risk of contamination has become an increasingly globalized phenomenon. There is great potential for exclusion and conflict between healthy and sick individuals, and also between countries that are affected and those that are not.

Preventing the looting of food shops or medical storage units can mobilise a significant proportion of police forces. They can also be attacked during vaccination campaigns or when handling dead bodies, as was the case in Guinea and in DRC. The population may panic and end up attacking the medical personnel. All these

factors, and all the human, economic, social and even societal damage that these health crises can cause mean that action needs to be taken quickly before it is too late.

The response to these global risks are often on a national, or even local level, and can vary from one country to another. They sometimes entail collective reactions and political decisions at a regional or even global level. However, controversy within a country, and between countries, is an issue that has emerged in recent years and which significantly hampers the implementation of appropriate responses. The difficulties encountered in terms of decision making within international institutions are often due to the inability to adopt a broader perspective that is not limited to national and short-term considerations, and a lack of anticipation.

The response to an epidemic or pandemic should not be limited to immediate emergency operations. It should also aim to reduce medium- and long-term risks by reinforcing the public health system at all levels, including globally. The post-crisis context should not simply be seen as a return to business as usual. It should be marked by major political and financial investment in health systems and their capacity to anticipate, prepare and manage health crises, but also daily curative treatment and prevention.

Crises often reveal both the worst and best in human beings, such as new forms of solidarity that we might want to see continue afterwards. Crises allow significant progress to be made in terms of treating patients, in epidemiological monitoring, etc. They also underline the importance of anticipation and preparation.

Crises can also act as a wakeup call or encourage us to make individual or collective decisions that are needed to correct problems and excesses in numerous areas, whether political or industrial, or in terms of services or life choices. The analysis of costs, risks and benefits is often superficial, incomplete and partial, if there is any analysis at all, for many decisions that have an impact on human society as a whole. Again, it is intelligence and integrity that will help to anticipate and prevent the major crises ahead, whether they are health crises or of another kind.

Beyond health and medical aspects, but still in connection with the risk of infectious epidemics, the pandemic that is currently taking place in the spring of 2020 should change our view of:

- The environment, and particularly deforestation: forests, and particularly tropical forests are pillaged or erased for mining activities or intensive and industrial monocultures. The destruction of natural habitats could be the source of numerous infectious agents for human beings.
- Meat production: intensive livestock farms are potential breeding grounds and sources of antibioresistance (related to numerous antibiotic treatments used on the animals for preventive and curative reasons, and that find their way into food for humans). Intensive agriculture, which uses more and more pesticides (proven multiple toxicity for our organism) and GMOs (probable toxicity for numerous organs and functions), weakens our defence mechanisms.
- The transportation of raw or processed materials around the world that increases the risk of massive and rapid contaminations.



Ebola prevention poster in Goma, DRC (© Groupe URD)

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