



STOPPING EBOLA IN ITS TRACKS:

Maximizing a Health System Approach for an Improved Epidemic Response
Recommendations from IMA's Experiences Containing Ebola Outbreaks in the DRC

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IMA World Health's work on the frontlines of strengthening fragile healthcare systems often brings us in contact with new infectious disease outbreaks. Nowhere is this more pronounced, and deadly, than in the Democratic Republic of Congo (DRC), where we have worked in close concert with the Ministry of Health (MOH), our faith-based health facility partners and networks, civil society organizations (CSOs), and international health agencies to confront and control nascent Ebola outbreaks since 1995.



Ebola has impacted the DRC more than any other country (IMA World Health/ Bill Clemmer)

Despite poor infrastructure and a lack of healthcare workers, DRC's health system has quickly contained eight Ebola outbreaks within weeks or months of detection. Critical to the response has been the government's strong engagement and collaboration with DRC's faith-based sector, which has demonstrated the ability to rapidly marshal financial and human resources, provide a strong surveillance network, and reach local communities with evidenced-based messages as a trusted source of information. IMA's efforts to strengthen DRC's health system - through strengthening the health workforce, increasing access to essential medicines, and improving health service delivery - has also helped the government respond to Ebola and better prepare the country for future epidemics¹. We work directly with both the faith-based and the public sector throughout all levels of the health system to do this, helping create a more flexible and nimble health system better able to leverage the many resources across different partners.

This paper explores IMA's experiences – dating back to the 1995 Ebola outbreak – helping the government rapidly contain Ebola. We offer several key lessons learned and recommendations that can help the DRC better prepare to respond to future epidemics. Overall, a response that adequately prepares the health system and is inclusive of the faith-based sector can be effective in rapidly containing deadly outbreaks such as Ebola. As we have seen, an effective rapid response to Ebola maximizes all health systems resources in a coordinated way, including those

¹As reflected through the WHO's six pillars of health systems strengthening

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offered from the faith-based sector. Also, successful containment and prevention interventions should always recognize the role of local leadership, including the role of faith-based institutions in raising awareness about Ebola to prevent it from spreading, especially in communities where houses of worship and religious leaders are trusted within local communities.

Our recommendations may also apply in large-scale epidemics like the current multi-country outbreak in West Africa or in future Sub-Saharan African countries that possess weak health systems and possess large faith-based health service delivery networks.

EBOLA'S PRODUCTIVE HISTORY IN THE CONGO

Ebola has impacted the DRC more than any other country, with 8 of 25 global recorded outbreaks there². This rare and deadly disease - previously known as Ebola Hemorrhagic Fever - infects humans and non-human primates and causes a range of symptoms that include fever, headache, muscle pain, diarrhea and vomiting. EVD infections are caused by one of the five Ebola virus strains in the family Filoviridae, genus Ebolavirus. Researchers believe that the virus is animal-borne and that bats are the most likely reservoir based upon current evidence and similarities seen across viral strains. The natural reservoir host remains unknown, however.

The first recognized Ebola outbreak occurred in 1976 at a mission hospital in Yambuku, DRC near the Ebola River. The outbreak featured high mortality at 88 percent of patients (280 deaths among 318 cases). The Zaire ebolavirus strain caused all seven of DR Congo's subsequent outbreaks: 1976, 1977, 1995, 2007, 2008-2009, 2012, and 2014. The outbreaks continue today. On August 24, 2014, DRC's MOH informed the World Health Organization (WHO) of the seventh EVD outbreak in the Equateur Province. Despite media frenzy, the 2014 outbreak was determined to be unrelated to the growing West African one, although they were both caused by the Zaire ebolavirus. The outbreak was quickly contained, with 66 reported human cases and 74 percent mortality (49 deaths). On November 21, 2014, the WHO declared the DR Congo EVD outbreak over, with no new cases within the 42 day mark.

IMA'S PROACTIVE LEADERSHIP IN THE 1995 AND 2007 DRC OUTBREAKS

IMA World Health staff was heavily involved in addressing two of DRC's largest Ebola outbreaks, those of 1995 and 2007. IMA's rich history of collaborating with the MOH, local leaders, and FBOs in building and maintaining Congo's health care system and our mission made us well-placed to help lead the response. In both outbreaks, IMA worked closely with the MOH, outside organizations (including the CDC, WHO and other NGOs), and the local populations to



Responding quickly with barrier materials to protect health workers (IMA World Health/Bill Clemmer)

² <http://www.sciencedirect.com/science/article/pii/S1755436514000528>



Tracking contacts of Ebola patients at Bulape hospital (IMA World Health/Bill Clemmer)

Dr. Sthreshley's contacts requested urgent barrier materials to help protect the health workers. They reached out to him knowing his team (many of whom now work for IMA and SANRU) had experience moving emergency drugs and supplies throughout the country. Knowing that Catholic Relief Services (CRS) had some funds for emergencies, Dr. Sthreshley approached them for funds to quickly buy protective materials and arranged a Mission Aviation Fellowship (MAF) flight to Kikwit with the supplies. That was the first response from any organization to the emerging outbreak.

Fearing the potential for a large-scale epidemic, Dr. Sthreshley contacted CDC Atlanta that evening with the existing information to see if they could identify the disease. CDC sent 40 pages of fax with the most likely possibilities. By Monday morning May 1st, when the government held its first general meeting on the outbreak, people were starting to panic. After two hours of chaotic discussion, the head of the European Union approached the table where CRS and Dr. Sthreshley were sitting and asked if we could jointly offer our logistical services to the government so there could be a more orderly response.

IMA received some money from the US Ambassador's fund to take on the role, and within 10 days all Ebola efforts were being coordinated out of our offices. WHO chaired the Ebola meetings with CDC and the government, and the WHO led delivering health services in Kikwit. Due to their access to rapid resources and expanded reach, the FBO consortium of CRS, MAF and what would later be IMA staff, handled the logistics of getting the supplies quickly into the country and flown to Kikwit, no small feat. The FBO consortium also provided supplementary vehicles and communication— including a radio-based email system— to CDC to help better coordinate the response. In Kikwit, much of the community communication was channeled through the Catholic and Protestant churches, which shared messages about the danger of bodily fluids and current burial practices. Within 11 weeks the Ebola outbreak was declared over, with 317 total cases.

Based on IMA's leadership in the 1995 epidemic, the CDC contacted IMA again in 2007 to help investigate a possible Ebola outbreak in Leubo. We chartered an initial MAF flight to speak with community members about the infections they were seeing, conducted verbal autopsies, and brought back blood samples for testing. Based on the information IMA gathered, CDC decided to set up an Ebola testing laboratory at a mission hospital about 20 km from the outbreak's epicenter. Knowing IMA could move quickly and flexibly, CDC asked IMA to urgently set up a guesthouse for 12 incoming on-site researchers. IMA sprang into action, knowing it was critical to get epidemiologists on site as soon as possible.

quickly mount a response to stop Ebola's spread. These experiences helped shape IMA's recommendations provided later in this paper.

In 1995, DRC was at one of its lowest points in terms of capacity to deal with an Ebola epidemic. The two pillages of 1991 and 1993 had destroyed what was left of the economy, and caused most major donors such as USAID to withdraw. Communication services were very poor, with only limited phone and email communication in the capital and a few other major cities.

On Saturday, April 29, 1995, now current IMA Country Director Dr. Larry Sthreshley received a radio call from the Baptist hospital of Vanga, saying there had been numerous deaths of what seemed to be a very contagious disease at the neighboring town of Kikwit.

We worked closely with the local community, who offered an almost abandoned missionary home that had a leaking roof, and lacked water, electricity, beds, and cooking facilities. IMA recruited a team of four expatriate missionaries for the job. With their knowledge of language, culture, and DRC logistics, the house was ready within five days, including new wiring, plumbing and basic furniture. IMA helped raise and tap Presbyterian Church USA money via the Medical Benevolence Foundation to purchase two vehicles and to rent some motorbikes for the CDC team. When the CDC team touched down, they were ready to begin work immediately upon arrival at this far-flung outpost. IMA's quick logistical and mobilization support helped ensure the investigators did not lose precious time. During the ensuing month, a team from Doctors Without Borders, along with local health workers, were able to handle all known cases. With few new diagnoses, CDC closed down their activities.

Knowing the importance of early detection and containment, an integral part of IMA's support to the CDC included using our own funding to visit surrounding vulnerable mission hospitals, providing them with protective equipment and training for surveillance, communication, and early treatment and isolation. This initiative paid off when a man with EVD subsequently presented at the Bulape Mission Hospital for treatment. The IMA-trained staff swiftly recognized the symptoms, isolated the patient, and used barrier protection while caring for him. Healthcare workers tracked and isolated his contacts through community contact tracing. Though the patient died, no secondary cases occurred among the medical staff or in community, helping further contain the epidemic.

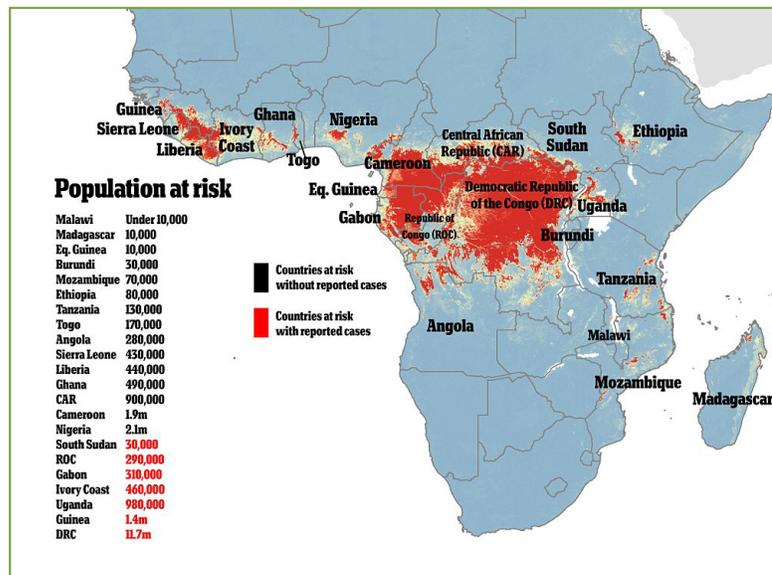
LOOKING FORWARD: IMA'S RECOMMENDATIONS AND LESSONS LEARNED FOR FUTURE OUTBREAK PREPARATION

Prior to the first Ebola outbreaks in DRC, Congo looked like a post-conflict country, with a weak health care system and depleted infrastructure: A situation ripe for a rampant epidemic. Despite these challenges, all seven EVD outbreaks were controlled relatively quickly in comparison to other Ebola outbreaks in Africa. IMA and our partners' DRC Ebola experiences provide several lessons that should guide the Congolese health system and other countries hoping to better prepare to respond to EVD epidemics.

Proactively strengthen health systems to better respond to future epidemics.

Short of an effective vaccine or treatment, Ebola remains a looming threat for which governments and churches should better prepare. The recent and largest epidemic in West Africa demonstrates the impact of an inadequately contained epidemic. Without proven medical prevention and treatment tools, we must build healthy and more resilient health systems that are better able to identify emerging disease threats like Ebola. Research demonstrates that building strong health systems, as IMA currently does in DRC and a number of other countries, helps the government prepare for and respond to infectious disease outbreaks. Key health systems strengthening recommendations drawn from our work in DRC with Ebola include:

- **Strengthen health service delivery in advance through targeted health workforce training:** Every hospital in countries considered at high risk for Ebola should be able to identify patients with



suggestive symptoms of EVD, and be able to isolate and treat them safely until a definitive diagnosis is made. The training may be integrated into related infection control or disease training to reduce costs and maximize integration. Countries should ensure training includes private commercial, faith-based and other non-government health service providers to ensure full coverage.

- **Build a proactive Ebola-attentive supply chain:** Ebola is highly infectious and time is critical during initial diagnosis to stop further spread. The MOH should ensure that reference hospitals have appropriate supplies and protocols to safely collect blood or skin snip samples and transport them to an appropriate lab for testing. At the facility level, hospitals and health centers should be equipped with and trained to use protective gear for the protection of health worker lives. They should know, and have the equipment available, to perform safe burials and to disinfect houses in the community where patients came from. Health systems strengthening efforts should help decentralized health management units forecast and monitor these supplies as part of routine service delivery so stock outs are avoided.
- **Strengthen the health information system:** Health workers at all levels should know how to track and address contacts of Ebola cases and report this information to the appropriate authorities for further action. Rapid alert or other mobile information systems should be established to ensure the information immediately reaches decision-makers and key stakeholders to prevent delays.
- **Assess health system breakdowns during and after epidemics:** Once Ebola and other infectious disease epidemics subside, the MOH should assess the strengths and weaknesses of the response and feed this information into new HSS projects (internally or externally funded) in collaboration with their civil society and international partners. Outbreaks provide a unique lens into the most fragile areas within a health system, and can provide an excellent opportunity to improve them in more stable times, before future epidemics. Concerted analysis and action will help contain future Ebola epidemics, while also helping address other pressing health issues in a country.

Effectively and proactively engage faith-based health facilities, houses of worship and networks.

The government of DRC has always embraced the involvement of churches in its health care structure, and Mission-related hospitals and health centers play a foundational role in Congo's health care system. Today, about 40 percent of DRC's health zones and referral hospitals remain co-managed by the government and FBOs. In Ebola outbreaks, church-supported health zones and institutions in the region were the first to take the lead in patient care and in the dissemination of appropriate health messaging, helping to better contain the epidemic. IMA's experiences in DRC demonstrate that substantively and immediately engaging FBOs to help respond to Ebola were critical to containing the epidemics quickly, as they can fill gaps within the health system in this context effectively. Recommendations include:

- **Build strong, multi-sectoral health systems that effectively engage faith-based actors:** Even though DRC's health care system is under-financed, its decentralized health zone structure that emphasizes strong links to the community position it to rapidly mobilize a comprehensive response to an Ebola outbreak. The working relationship between mission hospitals and DRC's MOH provide excellent synergy for stopping an EVD epidemic, as groups like IMA can often tap into additional external technology, equipment and manpower to assist the government. The government recognizes, through action and written plans, that faith-based health care institutions and houses of worship should become early, active partners in containing EVD due to their strong coverage, confidence from local population, and the key roles they play in passing information, in identifying patients, and in super-spreader type events. As it did in 1995 and 2007, the MOH should engage faith-inspired health institutions and groups in discussions and planning for the Ebola response to rapidly mobilize resources and maximize coordination and effectiveness. This should be part of a holistic response however, inclusive of all different civil society and government actors operating within the health system.

- **Strengthen contact tracing and surveillance by engaging faith-based partners:** International health organizations who get involved in outbreaks of EVD tend to concentrate their efforts on the disease epicenter where the case load is the highest. This is a helpful role because they bring in desperately needed resources and expertise not available on the ground. However, in DRC, control of Ebola was also achieved through early involvement, training, and equipping of local leaders – religious and political, and local health care workers - best in the position for early identification of suspect cases, contact tracing, and to promote appropriate burial practices and health messages so that the disease does not spread. Since faith-based hospitals and clinics often serve as Ebola screening sites and refer patients to Ebola Treatment Units (ETUs), they can provide an excellent platform to link to contact tracing and follow-up.
- **Leverage the trusted role of faith communities in disseminating accurate messaging:** Ebola thrives on fear and distrust. While funds, expertise, and personal protective equipment are important, fear and distrust are best combated by building confidence, trust, and hope among affected people. These values are fundamental to faith based health workers. Local leaders (religious and political) and persons of influence in communities should have early access to appropriate information, and help craft and disseminate health messaging important for Ebola containment. Faith gatherings are one such effective venue, offering a platform for disseminating messages during worship services, or through informal community networks. They can help reduce risks related to specific religious practices, like holding hands and burial practices, during outbreaks through discussion and development of alternative, culturally-appropriate expressions. Faith communities can also support their members through death, mourning and recovery during stressful times.
- **Tap into the unique characteristics and attitudes of the faith-based health community:** No challenge is too great when it comes to the dedicated health care providers at far-flung mission hospitals. As IMA demonstrated in 2007, we could build an entire functioning guest house in a few days to support Ebola epidemic control by leveraging rapid and flexible funding, volunteer manpower, and the goodwill of local communities. Faith-based institutions are sometimes able to work more quickly and in tougher areas as compared to international agencies or the government. Properly coordinated, they can gap fill on logistics and resources for Ebola epidemics as part of a flexible and strong health system.

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(IMA World Health/Bill Clemmer)



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