BIZCOMMUNITY

# Outbreaks of measles: compounding challenges in the DRC

By Matthew Ferrari

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An outbreak of measles that began in early 2019 in the southeast corner of the Democratic Republic of the Congo (DRC) has now spread to all 26 provinces. Over 180,000 cases and more than 3,000 deaths have been reported. The outbreak has disproportionately affected young children under five years of age. Similar outbreaks occurred previously in the DRC in 2011 and again in 2015.

Many families in the DRC can't routinely access preventive services. Shutterstock

This is the largest and most fatal of the large measles outbreaks across the world this year. These have occurred in the Ukraine, Philippines, Brazil, US, New Zealand, Madagascar and Nigeria. While the details of each individual outbreak vary, the root cause of measles outbreaks is always the same: too few children receive timely and effective vaccination.

The outbreak in the DRC highlights all of the various causes for episodic measles outbreaks. The delivery of measles vaccine in endemic areas must contend with a biological catch-22. From birth to about nine months of age, most infants have maternal antibodies that protect them from measles infection. But these antibodies also prevent the measles vaccine from conferring lifelong immunity.

Those children whose maternal immunity wears off early are at risk of infection at an age when measles infection can be most severe. Thus, health systems in endemic regions, like the DRC, employ a first dose at a relatively early age (nine months) to immunise these vulnerable children. Later they provide a second dose to catch those for whom the first dose didn't provide protection.

The weak spot of this strategy is the accessibility of routine preventive health services. In the DRC, as in many underfunded health systems, many families cannot routinely access timely preventive services. This can be because they live too far from clinics, or because clinics are in bad shape.

To combat limited vaccination access, the DRC conducts periodic "supplemental vaccination activities". These are large, coordinated efforts to bring second dose opportunities into every community, vaccinating all children under five years of age, regardless of prior vaccination. The expense and logistics of these massive efforts means that they can only be conducted every few years.

The unfortunate consequence is that, in the years in between them, many children are born and not vaccinated. This sets the stage for large outbreaks.

## On the ground

Many specific challenges in the DRC compound the already difficult task of vaccine delivery.

Years of internal conflict have displaced millions from their homes, limiting their access to preventive health services. The country has an estimated population of 87 million, of which more than half are children. About two thirds live in rural areas and 40% of mothers report distance to health facilities as a challenge when getting healthcare.

In addition, inherent mistrust of government-run programmes prevents some from seeking care. Those who do are met by health-care workers who want to help, but are hampered by stock outages or unstable refrigeration necessary to store vaccines in the prescribed temperature range. Many are understaffed or simply don't have sufficient vaccines available due to the fragility of cold-storage and supply chain in remote areas.

All of this combines to leave more than 40% of children born in the DRC unvaccinated in any given year. This risk isn't uniformly distributed. Some remote areas and areas of conflict have much lower coverage.

Once an outbreak begins, rapid response to provide vaccination to children at risk is critical. This first requires detection and confirmation of the outbreak, and must be followed immediately by a massive effort to coordinate agencies, and often NGO partners, to mount a response in affected or at risk areas.

Even when cases of measles are detected in clinics, limited diagnostic and communication infrastructure can cause significant lags in triggering the outbreak response. The DRC currently has only one reference laboratory that can run the blood tests necessary to confirm a measles outbreak. Transporting and processing samples can take weeks. Add to this the competing demands of a health system combating two Ebola outbreaks in the past two years, and these lags can become larger.

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Coordination efforts for outbreak response have been improving in the DRC. The Ministry of Health has partnered with the Measles and Rubella Initiative, the World Health Organisation and Gavi, the vaccine alliance, to deploy vaccination campaigns in April 2019 and again in October 2019. The aim is to vaccinate more than 20 million children under the age of five nationwide against measles.

Medecins Sans Frontieres has additionally conducted several targeted vaccination campaigns, in conjunction with the

Ministry of Health, in acutely affected areas.

## Tackling intractable problems

The solution to measles outbreaks is deceptively easy: vaccinate more children. This belies the challenges along the path to that solution. In the DRC, as in many low and middle income countries, periodic supplemental vaccination activities have borne too much of the weight of the control effort.

Supplemental vaccination activities as discrete events are convenient for external partners to fund and to evaluate afterwards, and thus have become a favoured tool of organisations that are beholden to donors seeking measurable results.

While the benefits of supplemental vaccination activities are clear (they have saved millions of lives), they don't address the fundamental need to improve routine vaccination. Improving routine vaccination coverage requires a broad, systems-wide approach that includes supply chain, training and financing of health system staff, and community engagement to get at the root causes of non-vaccination.

In the DRC this requires tackling seemingly intractable problems. One is health access for people internally displaced by conflict. Another is deep mistrust of government institutions and solutions from the global north in areas that have experienced decades of both colonial and internal oppression.

Technological and infrastructure solutions can help to make gains in vaccination coverage. Solutions ranging from the very simple – packaging vaccines in pre-loaded syringes to prevent wastage in remote clinics that see children infrequently – to the aspirational – micro-patch technology to allow thermostable, needle-free vaccination – hold real promise but are years from implementation at scale.

Mundane solutions hold the potential to make meaningful gains in improving immunisation rates overall and increasing equity. These solutions include improving surveillance and response by building new regional reference laboratories to reduce the burden on the single national lab and shorten the time to confirm outbreaks.

Additionally, trying out strategies to increase routine vaccine delivery throughout the year, rather than relying on campaigns every three or four years; and reinforcing national surveillance to allow targeted, reactive enhancement of vaccination activities in locations that are underperforming can help to achieve the goal of equitable control of measles.



ABOUT THE AUTHOR

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