

Identifying zones for preemptive vaccination activity during measles epidemics in the Democratic Republic of the Congo

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Background

In 2019, the Democratic Republic of the Congo (DRC) faced its largest measles epidemic in decades. The epidemic saw over 380,000 cases and over 7,000 deaths—both of which are likely underestimated. Current trends suggest that DRC may be going into yet another measles epidemic of massive scale. In hopes of offsetting this as much as possible, multiple MSF sections are working in collaboration with Epicentre to identify health zones for preemptive vaccination and mobilisation.

Methods

A simple scoring system was developed to identify health zones at imminent risk of outbreak. Three key goals were considered. First, to identify zones with a high underlying risk of outbreak. Second, to determine which of these potential outbreaks would happen soonest. Third, to evaluate which outbreaks were likely to be the worst in terms of number of cases and deaths. Potential indicators for each goal were evaluated and included as relevant.

Results

The final system allocates points based on three indicators : population based vaccine coverage, time elapsed since the zone's last large outbreak, and physical proximity to suspected active outbreaks. The first two indicators are metrics of underlying outbreak risk and remain fixed over time. The third points to zones where this risk is more immediate and is an indicator that will change with the epidemic. Ultimately no reliable indicators were identified to determine epidemic scale and this goal was dropped from the final scoring system.

Conclusion

Rapid mobilization is critical if we are to minimize the scale and reach of the coming measles epidemic in DRC. If like in 2019 we focus predominantly only on health zones already in outbreak, we may find ourselves once again chasing peaks that have already passed. Scoring systems like the one proposed here provide a valuable complement by informing strategies focused on prepositioning and preemptive vaccination.

We provide a simple system to inform prepositioning and preemptive vaccination activities during the ongoing measles epidemic in DRC.

