

Preliminary findings of a novel community-based mixed-methods approach to assess oral cholera vaccination coverage in a rural area of Democratic Republic of Congo (DRC)

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Background

In collaboration with the Ministry of Health and Médecins Sans Frontières, Epicentre is conducting research on oral cholera vaccine (OCV) mass campaigns in endemic settings such as Bukama in Haut Lomami province, Democratic Republic of Congo. Thirteen (164 villages) out of the total 19 health areas of the Bukama health zone were vaccinated against cholera in December 2021 and March 2022. Bukama health zone is mostly rural and includes two urban agglomerations plus many smaller villages accessible only by motorcycle or boat. The traditional WHO Extended Programme for Immunisation (EPI) vaccination coverage survey (VCS) methodology requires sending teams from a central location to randomly selected points, requiring extensive transportation logistics. While this methodology provides coverage results on the total study zone it does not identify villages with high and low coverage. Epicentre sought to develop and pilot a novel vaccination coverage survey methodology that would be less resource intensive and provide coverage data for every village.

Methods

A sequential explanatory mixed methods approach was implemented, using teachers as data collectors for the quantitative phase. The novel methodology was co-developed by an Epicentre epidemiologist through informal discussions with local health authorities, community health workers, and community leaders. Teachers were identified as appropriate data collectors for this activity because of their presence in almost every village, their existing relationships with the community, their independence from the health system, and their capacities to complete written documents.

One teacher from each of the 164 target villages, or from a nearby village in the case of a village without a teacher, was identified in collaboration with the local teaching authorities. The teachers were brought together and received a two-day training by Epicentre nurse supervisors in four groups. Teachers were provided with verbal consent forms, a memory-aid, and a paper data collection tool to collect vaccination status for the first and second

round of the OCV campaign aggregated by household and age group (above and below 15 years of age) as well as reasons for non-vaccination. In villages or neighbourhoods with a population of 500 people or fewer, sampling was exhaustive. In villages with a population of over 500 people, teachers randomly selected 2 landmarks within the village, and interviewed 16 households near each landmark, for a total of 32 households, for an estimated precision of 10%.

Nurse supervisors conducted periodic spot check supervisions throughout the data collection period, though supervision of every teacher was not possible. A toll-free hotline was also provided, allowing the teachers to reach the nurse supervisors at any time with questions. Teachers then delivered their completed data collection forms to the training site in their own time, one to two weeks after the training, and the forms were checked for completeness by the nurse supervisor. As the data collection period occurred during a school break, the activity did not impact regular teaching programs. Data were entered into a RedCapTM web-based database using a computer and analysed using R software to calculate vaccination coverage levels by village, health area, and for the health zone.

Villages with low, moderate, and high vaccination coverage levels were purposively selected for inclusion in the subsequent qualitative phase of the study. An Epicentre epidemiologist and local research assistant visited the selected villages and conducted individual interviews with community leaders and health care workers to understand factors affecting vaccination level in the village and also to assess how the VCS data collection by teachers was perceived by the community.



Image 1: Qualitative interviews with a female community leader in Bukama, Haut Lomami, DRC. Photo courtesy of Epicentre.

To further triangulate and validate findings, questions on OCV status were included in another study activity, a serosurvey using more traditional GPS random sampling.

Preliminary Findings and Community Feedback

Quantitative data was collected from all 164 villages within the OCV campaign health areas. 25 in-depth interviews were completed in 11 villages/ neighbourhoods. Results from the qualitative phase triangulated the findings from the quantitative phase, with villages with higher coverage levels sharing information about techniques used to increase coverage, and villages with lower coverage levels speaking more about lack of access or reasons for resistance. Though triangulation with the quantitative sero-survey preliminary results seems encouraging, further analysis will be undertaken prior to making a conclusion on comparability.

The community's perception of the data collection by teachers was generally positive. No security incidents or

widespread refusals were documented. Community leaders and health care workers reported that they are accustomed to monitoring activities and studies coming through their neighbourhoods, for example monitoring of mosquito net distributions or vaccination campaigns, and thus welcomed the teachers conducting this activity. With the exception of one interviewee, community health workers and leaders involved in the campaign reported being glad to see the teachers pass by to verify that the vaccination work they had done was completed well:

« The teachers came last month. It was very good, if something [a campaign] has been done then there should be a follow-up to verify the work that was done ». (Community leader, village J).

The teachers were also well accepted by families and students.

Discussion

The strengths and limitations of this novel approach are summarized below:

Table 1: Strengths and limitations of a novel community-based mixed-methods approach to assessing oral cholera vaccination coverage in a rural area of DRC, 2023

Strengths	Limitations
Exhaustive – data is collected from all villages, allowing for better targeting of potential catch-up campaigns	Large number of data collectors meant the training was more logistically intensive
Less logistical demand – distant villages could be included without needing to organize special transport	To allow a high quality of data and easy understanding, the questionnaire was simplified, and only aggregated data was collected
Qualitative phase had dual benefit of identifying factors influencing coverage and validating results of the quantitative phase	

Overall, this first experience with this novel methodology was positive and allowed Epicentre to collect the desired information with minimal cost and logistical involvement. The data from the quantitative phase allowed us to identify villages with low, medium, and high vaccination coverage, and the complementary information gathered during the qualitative phase provided details on best practices to be shared, and barriers to specifically be addressed in future

vaccination campaigns. The findings from the qualitative phase could be useful in developing strategies to improve uptake in future campaigns of various vaccines, not just cholera, helping to control cholera as well as other vaccine-preventable diseases. To further validate this community-based data collection approach, it should be piloted and potentially adapted in additional contexts.