STRENGTHENING HEALTH INFORMATION SURVEILLANCE: IMPLEMENTING COMMUNITY-BASED SURVEILLANCE IN SUDAN

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This case study explores the 2018–22 implementation of a national community-based surveillance (CBS) programme in Sudan. The programme was designed to meet critical needs of the existing health surveillance system. It aimed to empower communities to detect and contain public health threats, improve relations between communities and their local health system, and involve villages in rural areas. Federal, state, and locality (district) staff attended CBS workshops before recruiting and training community volunteers. Over 8,000 volunteers across 11 states were recruited. The volunteers alerted staff to priority syndromes for communicable diseases as well as local events with public health implications (e.g., natural disasters, conflict-induced displacement, food insecurity). Lessons learnt can be used to increase understanding of large-scale CBS programmes and to identify opportunities to strengthen new and existing programmes. For more social science guidance on CBS, see our companion: *Key Considerations: Community-Based Surveillance in Public Health*.

THE CHALLENGE: STRENGTHENING HEALTH INFORMATION SURVEILLANCE IN SUDAN

Community-based surveillance (CBS) involves engaging community members to systematically collect and report health information from within their communities. The information is used for public health surveillance purposes to prompt a rapid response.

The World Health Organization (WHO) has supported Sudan's Ministry of Health to implement a national CBS programme to address the acute health information shortage in rural areas. It also contributes to the recent push across the African region to help countries meet their international reporting requirements to control epidemics and meet other global health priorities.

Sudan's CBS programme is designed to meet several critical needs of Sudan's existing health surveillance system. These include the gap in information reporting from two-thirds of public health facilities and a perceived deficit in trust in local health systems.[1,2] Both issues are most acute for rural populations due to the long history of government focus on the capital and centre of the country, and armed conflicts in peripheral areas.

SUDAN'S CBS PROGRAMME

In 2016, Sudan's Ministry of Health's Surveillance and Information Directorate (SID) started a new country-wide programme of event-based surveillance (EBS) to rapidly capture and interpret information about events that are a potential risk to public health. This involved creating new national and state structures to act on priority information. The information could come from non-health and non-government partners or from existing outreach initiatives, such as a call centre with a free hotline for the public to report emergency health concerns. The EBS programme was intended to complement the passive detection of epidemic information from the one-third of public health facilities participating in a sentinel surveillance programme.[1]

In 2018, a CBS programme was introduced in 11 of the country's 26 states as part of the broader EBS programme. CBS was the largest component of the EBS programme and had specific funding from the WHO and other donors (Sudan Humanitarian Fund, Central Emergency Response Fund, and disaster assistance departments of the USA, Qatar, Japan, and Italy).

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The CBS programme started with a concept note written in September 2018 that highlighted the need for CBS to help Sudan fulfil its international commitments to the Integrated Disease Surveillance and Response (IDSR) in Africa, and to the global elimination of key diseases such as Guinea worm. The concept note also outlined the importance of CBS as a means of addressing Sudan's history of predictable and multiple disease outbreaks and surveillance system gaps.[3,4]

The CBS programme implementation started with a pilot project in December 2018 in the states of White Nile (Alsalam and Aljabalin localities) and Red Sea (Tokar and Sinkat localities). These sites were selected for the high prevalence of diseases and the perceived high quality of their health information systems. Another factor in their selection was the potential challenge of operationalising the concept of 'community participation' in these populations, given several large populations of internally displaced persons and refugees in White Nile, and politically marginalised populations in Red Sea. The aims of the pilot were to assess the performance of community volunteers in identifying events and how the events were reported upwards.

By 2021, the CBS programme had gained sufficient policy traction and resources to become one of the key channels monitored for health information alongside other sources (e.g., point of entry screening by border control officers; early warning, alert and response (EWAR) monitoring from settlements for refugees and internally displaced persons; case-based surveillance and contact-tracing during specific outbreaks) and specific disease control programmes (e.g., antimicrobial resistance).

Vision and aims

The CBS programme's vision was to strengthen a community- and locality-level surveillance system run by local volunteers. The programme aimed to empower communities to detect and contain public health threats, improve relations between communities and their local health system, and involve villages in rural, inaccessible, and remote areas. Community participation in surveillance was noted to be crucial as it was often missing in existing programmes.

Staff and volunteer training

The CBS programme staff, drawn from surveillance departments in the federal and state Ministries of Health, attended two-day training workshops in November 2018. The 48 staff learned about the programme, its rationale, and channels of reporting. The workshops also covered recruitment criteria for community volunteers, and expectations and materials for future training in the state localities.

CBS focal persons ('supervisors') were identified from existing staff in public health departments at the locality level. They attended one-day workshops that covered the programme rationale, community engagement strategies, and reporting expectations. These staff then identified and trained the community volunteers.

Three approaches were used to identify volunteers. The main approach was to use existing networks of community volunteers who had been involved in previous health programmes. Community leaders (*shiyukh*) were also asked to identify individuals considered to be respectable and acceptable in society, and who would be able to interact intensively with the community; these volunteers did not need to be able to read or write. Finally, communities were asked to nominate trained health workers who were un- or under-employed. These included midwives, paramedical professionals, health inspectors, and lab technicians.

Priority diseases to identify in the community

The CBS programme was an extension of the national surveillance system for communicable and non-communicable diseases. Volunteers were asked to help identify 26 diseases and syndromes, including vaccine-preventable diseases, malaria, neglected tropical diseases, malnutrition, and reproductive health issues. Six syndromes were prioritised: acute diarrheal syndrome; acute haemorrhagic fever syndrome; acute jaundice syndrome; acute neurological syndrome; acute

respiratory syndrome, and Guinea worm disease. Suspected COVID-19 cases were also prioritised during the pandemic.

Volunteers could also raise concerns about specific local priorities, such as food insecurity, flooding, or the broader needs of people recently displaced from fighting. In these situations, CBS supervisors reported them using flexible definitions for 'unusual events'.

THE RESPONSE SO FAR

Volunteer recruitment

Between November 2018 and the end of 2020, 8,310 volunteers were recruited across 7,183 villages in 11 of Sudan's 26 states. People who attended training workshops in White Nile and Red Sea reported that most CBS volunteers were health workers with existing community-based roles, unemployed health workers, or older men from the general community.

Information sharing

Most volunteers reported events verbally (face-to-face or via a phone call or text message) to their CBS supervisor in the locality. Volunteer monitoring booklets were occasionally used. These included a checklist of syndromes and space to include information on the timing and location of reported risk events.

The CBS supervisors then collated and evaluated the information about reported events through direct visits to the suspected area (when necessary) and submitted written reports to state-level staff. The reports were then shared with the preparedness and response departments at the state and federal levels to take action through their channels.

Impact of staffing constraints

Most event reporting happened promptly. There was, however, high turnover among CBS staff at all levels, often related to the multiple changes of government following the end of the military dictatorship in 2019 and a military coup in 2021.[5] This sometimes affected both work plans and relationship building, potentially impeding surveillance.

At the state level, all surveillance work typically fell to between one and three people. Staff members generally prioritised the CBS programme over other EBS-related duties – such as encouraging event reporting from non-health partners in animal health, agriculture, police, climate, and media – because of the complexity in relationship-building required. CBS was also sometimes prioritised over engaging staff at non-sentinel health facilities because of a perception that health facilities are often not geographically and financially accessible for people in many areas of Sudan.

Evaluation

Assessments of the CBS programme have focused on the system's ability to achieve early warning and response; this includes the performance of community volunteers and their supervisors.

Overall, communication channels in each state have reportedly been characterised as very good; for example, they have been credited with containing an outbreak of acute watery diarrhoea in White Nile. In states dealing with large humanitarian emergencies, such as South Kordofan, reporting has been less reliable.

At the community level, little information has been collected on how CBS volunteers complete their work to source information and make reporting decisions. A small evaluation of 26 volunteers found that most (18) had reported at least one event of public health importance. These events tended to be biological threats (infectious diseases), while a few were social (forced displacement). In general, volunteers became aware of events during social gatherings or via personal contacts and observations.

LESSONS LEARNT

The implementation of the CBS programme in Sudan can be used to increase understanding of large-scale CBS programmes and identify opportunities to strengthen new and existing programmes.

Use existing resources or assets

When implementing CBS programmes, opportunities to collaborate with existing programmes should be explored. In Sudan, for instance, there was feedback that people, knowledge, and equipment from the country's established Guinea worm eradication programme could have been shared and integrated for mutual benefit. However, when incorporating CBS into existing state and local structures, it is important to consider the impact of the additional workload on staff and the structures themselves. In Sudan, for example, the supervisory workload associated with CBS largely overtook the time people had to support other EBS functions.

Provide feedback to volunteers

The CBS programme relies on volunteers. Programmes should consider how to engage with volunteers over time to keep them motivated and prepared, and to ensure volunteers are not overworked. Volunteers should be provided with feedback on the information they have provided.

Enhance diversity in volunteer pool and community group relationships

Volunteers were mainly individuals with prior related experience or were un- or under-employed health workers. These volunteers tended to have high literacy and familiarity with biomedical reporting categories, and this helped with the training and supervision as well as in actual reporting.

The CBS concept, however, emphasises the importance of diversity. Having a diverse group of people participating as volunteers to identify health threats can help reach vulnerable populations, avoid stigma, and address equity in employment practices. Volunteer recruitment practices should therefore encourage diversity. Supervisors should also consider encouraging volunteers to cultivate good relationships and spend time with diverse population groups in their communities; this can enhance trust and information sharing.

Engage with communities when designing a CBS programme

The CBS programme aimed to build participation and trust in the local health system. Community engagement dynamics are complex and change over time, and there is a limited evidence base on community engagement in CBS. Future work and research could build on the following experiences in Sudan:

● Building in a flexible reporting category about 'unusual events' is potentially a good way to be responsive to community priorities, though the responses required may exceed the experience and mandate of staff in Ministry of Health roles. This underscores the importance of building and maintaining relationships with non-health actors for both ad hoc reporting of public health threats as well as for responding appropriately to them.

● Training programmes should consider incorporating a dialogue with communities to learn about specific local contexts, phrases, and words used in the community to describe priority diseases and other health-related concerns, and the circumstances of different social groups. This can help tailor the training and CBS reporting practices to the local environment.

● CBS programme designers should consider how communities view CBS reporting and address any sociopolitical threats that reporting could pose to certain populations.

● Programmes should plan how to work with volunteers to discuss the potential problem of health service mistrust and to develop creative strategies to overcome this.

Provide additional supervisory support during crises

The large-scale political insecurity in Sudan in 2023 is likely to further increase workload pressures on CBS staff at all levels of government and in communities. This insecurity may also make both information communication and response much harder. Public health needs may also be expected to grow. As described in our related briefing *Key Considerations: Community-Based Surveillance in Public Health*, where possible, increase opportunities for supervisory support to adapt approaches when needed, and consider targeting resources to communities most affected by armed conflict.

CONTACT

If you have a direct request concerning the brief, tools, additional technical expertise or remote analysis, or should you like to be considered for the network of advisers, please contact the Social Science in Humanitarian Action Platform by emailing Annie Lowden (a.lowden@ids.ac.uk) or Juliet Bedford (julietbedford@anthrologica.com).

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