Community event-based surveillance as trust infrastructure for Bundibugyo Ebola response

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Highlights

1. Sierra Leone offers practical lessons for Bundibugyo Ebola response
2. Community event-based surveillance can strengthen Ebola case finding
3. Community triggers can help reveal hidden Ebola transmission chains
4. Paid local monitors can link alerts to isolation, transport, and care
5. Community surveillance can build trust and preparedness during outbreaks

Title: *Community event-based surveillance as trust infrastructure for Bundibugyo Ebola response*

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The 2026 Ebola outbreak in the Democratic Republic of the Congo (DRC) and Uganda is testing outbreak surveillance under severe pressure.[1-3] As of August 21. 2026, there has been sustained transmission in DRC (5290 confirmed cases and 2516 deaths), 20 confirmed cases and two deaths in Uganda, and a travel-associated case detected in France.[4] Already the largest known outbreak of Bundibugyo virus disease (BVD), the CDC has described the outbreak as spreading substantially faster than previous Ebola outbreaks in DRC and as the third largest Ebola outbreak on record.[4] Transmission modeling suggests urgent public health action is needed to prevent the outbreak from reaching the size of the 2013-16 Zaire Ebola outbreak in West Africa.[5, 6] Thus, it may warrant a public health response of similar magnitude, with consideration of effective strategies applied there.

Reported cross-border transmission, challenges in contact tracing, insecurity, health-facility security incidents, and community mistrust of Ebola response activities in DRC and Uganda are analogous to early stages in West Africa.[3, 4] The UN reports more than 260 healthcare workers have been attacked in the DRC over the last six months, with response vehicles and facilities also targeted.[7] Community mistrust, misinformation, and resistance to Ebola response activities have been identified as core immediate and longer-term priorities for resolving the current outbreak.[3, 4] These constitute not only logistical challenges but also relational constraints shaping whether people report symptoms, accept isolation, disclose contacts, allow safe and dignified burial, and trust responders. During the 2018-19 Ebola outbreak in DRC, low institutional trust was associated with decreased likelihood of adopting preventive behaviors.[8] Lessons from West Africa suggest that including community members in surveillance activities improves trust while reducing resistance to contact tracers and active case finders.[9] To mitigate the current Bundibugyo outbreak, it will be necessary to establish trust infrastructure with local communities. By trust infrastructure, I mean the material and relational conditions that make reporting possible: locally selected and paid roles, reliable communication, safe travel, respectful investigation, visible household support, protection of monitors and households, and reciprocal feedback after alerts.

While the stated objectives of community event-based surveillance (CEBS) are to improve surveillance sensitivity, timeliness and representativeness of Ebola response, its positive impact can extend to all pillars of Ebola response by serving as trust infrastructure for communities currently or at risk of experiencing transmission. CEBS can be understood as a community-facing form of that surveillance function and a practical strategy to establish trust infrastructure during ongoing outbreaks. Ebola control depends on linked response functions: clinical care, safe and dignified burial, infection prevention and control, social mobilization, contact tracing, laboratory diagnosis, and surveillance. Surveillance is the hinge between them;

without timely community-level detection, care, safe burial, and household support arrive late. Event-based surveillance is already part of the Integrated Disease Surveillance Response strategy in the WHO African Region, complementing indicator-based surveillance through alert detection, triage, and verification.[10] In West Africa, CEBS implementation assumed a complementary, decentralized role alongside other ongoing, existing Ebola response activities such as contact tracing, risk communication, safe burial practices, and social mobilization. CEBS is a system of case finding that relies on community clues or “trigger” events rather than clinical case definitions (Figure 1). Trusted community members are selected, trained, equipped, and compensated to recognize events in their community that might indicate hidden transmission, converting local knowledge into early-warning signals to be verified by trained supervisors linked to formal structures. Rather than logging individual symptoms or completing case investigation forms, community health monitors report the occurrence of trigger events to a supervisory structure and provide village-level response (oral rehydration, local safe isolation, local transportation) while awaiting case investigation teams, if warranted. CEBS is designed to enhance case-finding beyond health facilities and known contacts and improve timeliness and equity of response by linking to local isolation, IPC, oral rehydration, and transport. CEBS asks communities to self-report critical information, but pairs surveillance with visible local resources and response, building reciprocal trust.

(Figure 1 Here)

Sierra Leone’s experience during the 2013-16 epidemic remains the clearest example of extensive CEBS built rapidly during a crisis. First piloted in Bo District in October, 2014, CEBS demonstrated high levels of social acceptability among team members, community members, and leaders.[11] Full implementation of CEBS occurred across nine of Sierra Leone’s 14 districts.[12] It generated 12,126 alerts over seven months; identified 287 total cases, detected 30% of confirmed cases identified in participating districts and, in Kambia District, identified 66%

of confirmed cases with no known epidemiological links.[13] While CEBS generated many false alerts, the decentralized screening management process prevented such alerts from impacting formal response activities or diverting key limited resources. The system also detected three measles outbreaks and varicella clusters, showing CEBS's potential as a broader early-warning platform with applications beyond Ebola.[13] However, CEBS was scaled during the later phase of the epidemic and should not be credited with Sierra Leone's decline in cases, which reflected many overlapping international and community-driven response efforts. Its best-supported contribution is not independent transmission reduction, but community-level alert generation, detection of some unlinked cases, and establishing trust infrastructure which may be essential for getting-to-zero surveillance.

Social science evidence from Sierra Leone is essential to interpreting these findings. Ebola transmission in rural Sierra Leone followed pathways of social intimacy: nursing sick relatives, preparing bodies for burial, and navigating obligations to family and authorities.[14] Detailed reconstruction of infection chains showed that local social dynamics, community action, and the interaction between community, district, national, and international response levels shaped how chains were sustained or ended.[15] Families also faced a real care dilemma: early Ebola symptoms resembled malaria and other common febrile illnesses, while referral to Ebola facilities could be feared as dangerous, isolating, or stigmatizing.[16] CEBS can help address this dilemma only if it links alerts to safer local isolation while awaiting transport, hydration support, rapid testing or referral, and respectful communication. Payment of community monitors is ethically necessary, but payment alone does not build trust and can intensify suspicion if compensation is opaque, inconsistent, or tied to per-alert incentives. Compensation should therefore be standardized, transparent, locally explained, and paired with confidentiality protections, role limits, and community feedback.

The parallels between Ebola in West Africa 2014-16 and the current BVD outbreak are instructive. In both settings, Ebola response has depended on rapid case-finding before vaccination could serve as a central control strategy: Sierra Leone's epidemic preceded the first Zaire Ebola vaccine, and the current Bundibugyo outbreak has no licensed vaccine or disease-specific therapeutic.[3] Both settings have a background disease profile that makes case-finding via symptom identification challenging for non-clinicians without laboratory support. Both outbreaks have unfolded in places where conflict, extraction, and weak state legitimacy shape trust, including diamond-mining communities in Kono District (Sierra Leone) and gold-mining areas of Ituri (DRC).[3] Both settings would involve CEBS deployment mid-emergency with added value for case-finding and trust-building essential for peak outbreak and getting-to-zero stages.

However, DRC is not Sierra Leone, and CEBS should not be transplanted as a chiefdom-based model. The transferable elements are the trigger-event logic, local selection of community monitors, rapid supervisory screening, links to transport and care, and feedback to communities. The elements requiring adaptation are governance, supervision, safety, compensation, data flows, and cross-border coordination. DRC has extensive Ebola response experience, health-zone structures, community relays, emergency operations systems, and prior community-based surveillance networks. During the 2018-20 DRC Ebola outbreak, large networks of local community members contributed to community-based surveillance; strengthening activities in Ituri emphasized locally selected community health workers, supportive supervision, rapid investigation, community feedback, free primary care, referral services, and ambulance capacity.[17] The starting point for Bundibugyo CEBS should therefore be a rapid mapping of existing health-zone teams, community relays, surveillance networks, and trusted local intermediaries, not the assumption that Sierra Leone's workforce model already exists. CEBS should also be situated within a wider evidence base on community surveillance

and engagement. Community-based surveillance may improve early detection by leveraging community members' capacity to identify and report unusual health events, but evidence remains heterogeneous and implementation dependent.[18] Community engagement during West Africa Ebola outbreak was associated with improved knowledge, case finding, isolation efforts, and treatment uptake, especially when local leaders and community members are meaningfully included.[19] Community health workers can support public health surveillance in low- and middle-income countries, but they face challenges with training, workload, supervision, safety, remuneration, and integration into formal systems.[20] These findings in context support a cautious claim: CEBS is a plausible and practical mechanism for strengthening surveillance and the conditions for trust, but evidence for direct improvements in trust, adherence, or cooperation should be evaluated rather than assumed.

For DRC and Uganda, the implementation principle should be explicit: CEBS is a decentralized extension of existing surveillance, not a parallel system. Community monitors should connect to health-zone surveillance teams, laboratories, referral transport, contact-tracing systems, safe-burial teams, clinical care, and emergency operations systems. In insecure or urban areas, surveillance nodes may include neighborhood blocks, transport hubs, markets, pharmacies, private clinics, mining sites, religious institutions, radio networks, and committees in displaced-person settlements. Risks should be managed from the outset: false alerts, delayed verification, community fatigue, confidentiality breaches, stigma, retaliation against monitors, politicisation of monitor selection, elite capture, and unsustainable compensation. A CEBS package should include three funded components: a paid and protected community workforce selected through transparent local processes; rapid verification and referral capacity, including phones or radios, airtime, supervision, transport, and links to testing and care; and a feedback-and-support system that returns information, infection prevention supplies, social support, and respectful follow-up to households and community leaders.

Evaluation should be built in from the start. Surveillance performance indicators should include time from alert to verification, proportion of alerts investigated within 24 hours, positive predictive value, unlinked cases detected, and referral completion. Operational indicators should include monitor coverage, supervision frequency, availability of transport and communications, and costs of start-up and routine operations. Trust and acceptability indicators should assess perceived fairness of monitor selection, household experience after alerts, feedback to communities, and willingness to report. Safety and ethics indicators should include breaches of confidentiality, stigma, threats or violence against monitors, and equity of monitor selection. Costs and sustainability should be explicit: the Sierra Leone evaluation estimated start-up costs of US$1.3 million and monthly operating costs of about US$129,000 for training, phones, motorbikes, fuel, and incentives.[13] In the current funding environment, IRC has reported reductions in US Government-supported frontline health, surveillance, outbreak preparedness, water, sanitation, and infection prevention programming in Ituri.[21] Whether or not those cuts explain delayed detection on their own, they illustrate the fragility of preparedness when community-facing infrastructure is not sustained.

The policy recommendation is straightforward. WHO, Africa CDC, national ministries of health, and donors should fund CEBS in affected health zones, adjacent high-risk zones, and cross-border corridors as a locally governed, paid, protected, and evaluated extension of existing Ebola surveillance. Sierra Leone does not provide a turnkey system for DRC; it provides an implementation lesson. Outbreak response should not ask communities to produce intelligence while offering only messages. Done well, CEBS is not only case finding. It is trust infrastructure.

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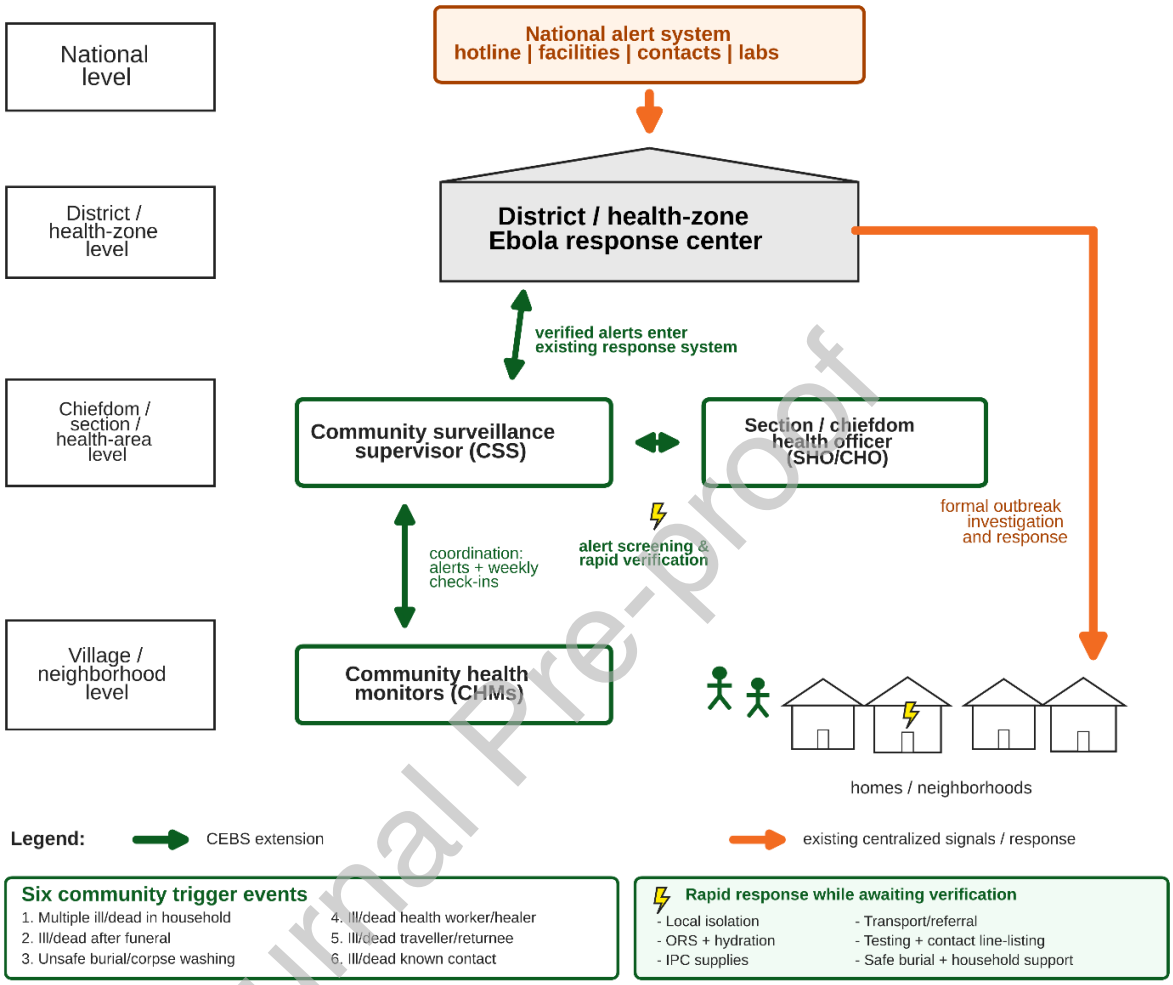
Figure 1. Community event-based surveillance as a decentralised extension of Ebola surveillance.



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Declaration of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.