



ROLE OF DIVISION OF TASKS: A CASE OF THE 2022 EBOLA SUDAN OUTBREAK IN MUBENDE DISTRICT, UGANDA

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Abstract: In 2022, Uganda grappled with the Ebola Sudan Outbreak amid resource constraints at its onset. To optimize available resources and achieve efficient outbreak control, a strategic response was implemented, emphasizing the division of tasks among health partners. This study describes the relevance of task division among health partners during the initial phase of outbreak response, focusing on surveillance activities.

Partner program surveillance data for the first month of response in Mubende district were obtained. During initial response taskforce meetings, partners were assigned high-risk Sub-counties to independently facilitate and coordinate response activities. For surveillance, the Infectious Diseases Institute and Jhpiego, the Monitoring and Evaluation Technical Support program, and Mildmay were assigned 5, 3, and 7 high-risk Sub-counties respectively to conduct surveillance activities including training, contact tracing, and follow-up.

Within one month, 559 healthcare workers (HCWs) and 891 Village Health Teams (VHTs) were trained to support community education, mobilization, and contact tracing. An additional 1,088 VHTs were trained for community-based active case search. These efforts yielded significant achievements, including visits to 74,454 households, identification of 42 new cases and 1,196 new contacts, verification of 134 alerts, and effective follow-up with 1,433 contacts.

The allocation of tasks played a pivotal role in achieving rapid and efficient outbreak control. This provides valuable insights for countries in developing more effective and efficient outbreak control strategies. Further research is necessary to quantify the cost savings resulting from such division of response tasks.

Key words: Division of tasks, Surveillance, Ebola Sudan, Outbreak

INTRODUCTION

Uganda faces a range of emerging and recurring infectious disease outbreaks, including Ebola, Marburg, Yellow Fever, Tuberculosis, Anthrax, and rabies (Ndow, et al., 2019). The inevitability of outbreaks in many countries is acknowledged, as Jain (2020) succinctly states, "The question is not if we still have an outbreak, but when." Learning from its experiences, Uganda has diligently worked over the years to strengthen its readiness and response strategies encompassing a comprehensive multi-hazard framework. These endeavors would ensure the availability of ready and adequate resources for responding to outbreaks, steering away from "firefighting" approaches during public health crises (Aceng et al.;2020). Nonetheless, the consistent challenge of securing sufficient funds has impeded prompt outbreak responses, extending beyond Uganda to various other nations (Quaglio, et al.; 2016).

Effectively managing health emergencies mandates substantial financial investments from governments, non-governmental entities, and multi-sectoral organizations (Jain.; 2020). These funds are essential for erecting a robust and well-coordinated response structure during outbreaks. While the knee-jerk reaction might be "more money" to address any issue (Radin & Eleftheriades., 2021), outbreak financing has over the years been unclear for many countries, especially in the low and middle-income category. In response to the gaps laid bare by the global COVID-19 pandemic in September 2022, various propositions emerged for refining outbreak financing strategies, culminating in the World Bank's establishment of a pandemic fund. Despite the presence of this fund, there remains an evident need for dedicated response financing, and countries need to identify additional means to make response financing available before outbreaks occur (Boyce et al.; 2023).

During the 2014-2016 Ebola outbreak in West Africa, Nathan & Cars (2014) underscored the significance of the thorough case and contact tracing, community and patient engagement, and preventive measures in effective outbreak management. However, Summers et al (2014) highlighted inadequacies in training for contact tracing, case investigation, and follow-up as barriers to response effectiveness. Similarly, the 2018 Ebola outbreak in the Democratic Republic of Congo showcased the value of robust coordination and surveillance systems in averting the importation of the disease into Uganda (Aceng et al.;2020). Nevertheless, insufficiencies in funding for surveillance activities have persisted, as demonstrated in past Ugandan outbreaks (Nabukenya et al.; 2014).

In the most recent 2022 Ebola Sudan viral disease outbreak in Uganda, the Ministry of Health took innovative steps to promptly manage the crisis despite limited available response funds and delays in accessing limited ones from the government. Collaborating with local and international health partners, the ministry assigned specific high-risk sub-counties to various partners to undertake similar response tasks. This strategic allocation of tasks not only conserved resources and eliminated redundancy but also expedited outbreak control. This study seeks to delve into how this novel approach to task distribution contributed to enhancing surveillance responses, ultimately curtailing transmission and containing the outbreak in a timely manner.

RESEARCH METHODOLOGY

Intervention and intervention site: The study was conducted by review of surveillance outbreak response data from 15/19 sub-counties of Mubende district from the 27th. September, 2022 to 28th. October, 2022.

At the beginning of the outbreak in September 2022, there was no sure quick way to obtain response funds from the government, amidst the ravaging outbreak. The National taskforce through the Mubende district task force held daily consultative response engagements to brainstorm on ways to effectively contain the outbreak in a safe, cost-effective, and timely manner. It was resolved that different health partners both local and international, commit resources for the outbreak management. These partners included but were not limited to; the Infectious Disease Institute (IDI), Makerere University, Mildmay Uganda, Baylor Uganda, the World Health Organization (WHO), Africa Centers for Disease Control and Prevention (Africa CDC), United Nations International Children's Emergency Fund (UNICEF), Medicines Sans Frontiers (MSF), Monitoring and Evaluation Technical Support program (METS), Jhpiego, and Ministry of Health (MoH) Uganda amongst others.

These partners were assigned different high-risk sub-counties in the Mubende district, to implement similar response activities including case investigation, contact tracing, infection prevention and control, risk communication, community engagement, and case follow-up amongst others. The risk categorization of the sub-counties was purposively selected based on reports of cases and contacts line listed, proximity to Madudu the epicenter, and trade and travel.

For surveillance, the partners were assigned high-risk sub-counties as follows; the IDI-05 (Kitenga SC, Kasambya SC, Kayebe SC, Kalonga-Kabyuma SC, and Kyenda Town Council, Mildmay Uganda-07 (Kiruuma SC, Madudu SC, Lubimbi SC, Bageza SC, Nabingoola SC, Nabingoola TC, and Kigandao SC), and METs program-03 (Kibalinga, Butologo and Kasambya TC), to implement healthcare worker and Village health teams' (VHTs) training, case investigations, contact tracing, contact follow up, and reporting and or notification.

Healthcare workers were selected from the health facilities in these high-risk sub-counties. One active VHT and respective area local council leaders were identified from each of the villages. These had a separate one-day training on contact tracing and follow-up using national tools on contact tracing and follow up.

Study population: The study considered local council leaders, and healthcare workers including village health teams that were trained and supported to conduct contact tracing and follow-up from the high-risk sub-counties supported by partners during the response in Mubende.

Study design: This was a cross-sectional study conducted in March 2023, following the declaration of the end of the Ebola Sudan Viral disease outbreak in Uganda on the 10th Jan 2023, and focused on surveillance response activities in Mubende district.

Data collection: Two tools were used to obtain the data. A digital form uploaded into "Go. Data" application (<https://play.google.com/store/apps/developer?id=World+Health+Organization>) was used to capture data on contacts and cases, follow-ups, and numbers investigated. The paper-based community active case search Talley sheet was used to capture additional data on the number of households visited, and suspects identified. Data from the "Go. Data" app was accessed daily by partners to verify information, while the summaries from the paper-based form were also made and shared daily with the supporting partner as well as the contact tracing desk situated at the situation room. The data for this study was obtained from individual partners that participated in the surveillance response in Mubende and was verified and confirmed by the Ministry of Health, Surveillance Department, Uganda.

A link to the paper was sent out to the different partner surveillance leads who shared their input from their program data. This same link was timely accessible to the Ministry of Health Surveillance Department for verification. The required information from partners included summaries of the number of contacts line listed per case per high-risk sub-county, number of contacts followed up, number of evacuations made, number of alerts sent and verified, number of case investigations made, number of VHTs and Health care workers trained, and number of households visited for active case search.

Data analysis: Descriptive analysis for counts, frequencies, and proportions

Quality control: VHTs and HCWs who collected the data were adequately trained to collect accurate data. Standard tools from the Ministry of Health were used to capture this data. Data was accessed daily, cleaned, and verified. The data was provided by the individual partners and was verified and confirmed by the Ministry of Health, Uganda.

Ethical consideration: The study entailed program data from partners that supported surveillance activities during the 2022 Ebola Sudan outbreak in Mubende. These partners verbally consented to share their data and also participate in the writing of this paper.

RESULTS

Healthcare worker and VHT training

The surveillance response activities started with capacity building of healthcare workers and VHTs through training on contact tracing and follow-up on the 27th. September, 2023. A total of **554** HCWs (all by Mildmay) and **891** VHTs (292 IDI/Jhpiego, 350 Mildmay, 249 METS). This was later followed by training on community active case search where a total of **05** Health assistants were trained as trainers of VHTs. By 3rd. October, 2023, the health assistants supported by SC-specific partners trained **1,088** (423 IDI/Jhpiego, 350 Mildmay, 315 METS) VHTs on active case search and reporting.

Community Active case search

Within the first 14 days, the **891** VHTs and LC1s trained supported community active case search in 773 villages reaching **74,454** (72088-IDI/Jhpiego, 350-Mildmay, 2016 METS program) households. The team managed to detect 42 new cases (an increase of **65.6%** of cases), **09** sudden community deaths, over **266,000** people with other diseases/illnesses other than EVD.

Contact tracing and follow-up

A total of **1,196** contacts were line listed (an increase by 79.3%), 42 cases detected during the active case search, and **1433** (12-IDI, 1184-Mildmay, 237-METS) contacts followed up.

Case or suspect notification and evacuations

During the follow-up time, a total of **134** (19-IDI, 17-METS, 98-Mildmay) alerts were sent to the alert desk, **134** (19-IDI, 17-METS, 98-Mildmay) alerts were verified, **100** alerts investigated, and **18** suspects evacuated to Mubende Regional referral hospital after meeting the case definition.

DISCUSSION

During the first month of the 2022 Ebola Sudan outbreak, health partners were strategically assigned to high-risk sub-counties. These partners played a pivotal role in training 559 Healthcare Workers (HCWs) and 891 Village Health Teams (VHTs) to support contact tracing and follow-up efforts. Within the subsequent seven days, the team took another significant step by facilitating the training of five health assistants. These health assistants then served as trainers for 1,088 VHTs, focusing on community-based active case searches across 773 villages. In a remarkable achievement, these efforts reached 74,454 households, leading to the detection of 42 cases (65.6% of the total cases), identification of nine sudden community deaths, and detected over 266,000 individuals suffering from illnesses other than Ebola Virus Disease (EVD). Simultaneously, the team also line listed 1,196 new contacts (an increase by 79.3%) and successfully followed up on 1,433 contacts.

This approach of dividing tasks among various stakeholders and focusing on specific sub-tasks was instrumental in expediting and enhancing the efficiency of the outbreak response. As described by Abifarin (2008), the division of tasks allows a complex operation to be completed more swiftly and effectively than if undertaken by a single group or individual. This approach was further supported by the works of McAuslane et al. (2014) and El Zein et al. (2019), which emphasized the importance of shared responsibilities, financial commitment, and resource allocation to ensure a successful outbreak response.

In the context of the 2022 Ebola Sudan response in Mubende, health partners were entrusted with different responsibilities, one of which was focusing on surveillance. Surveillance, a critical component of outbreak response, aims to provide data essential for informed decision-making, early detection, and effective response to outbreaks. The Uganda national Ebola Sudan response plan outlined key surveillance strategies, with a focus on strengthening early identification, reporting, and case investigation through enhanced facility and community-based surveillance (Plan & Dec, 2022). The health partners assigned to high-risk sub-counties successfully implemented this strategy by training healthcare workers and village health teams to support health facility and community-based case searches, case investigations, reporting, and contact follow-up.

An essential aspect of effective outbreak management is the clear identification of cases to initiate preventive measures. As stated by Investigation et al. (2020), this is crucial for guiding response efforts. During this response, it was observed that within 14 days, the number of Ebola Sudan cases and contacts had increased by 65.6% and 79.3% respectively, a trend consistent with the findings of Namukose et al. (2018). Namukose's study demonstrated that after initiating active case finding, the number of suspected EVD cases increased by more than 75%.

Right from the outset, this response prioritized community involvement through deliberate training and collaboration with local communities. This approach was informed by lessons from Anoko et al. (2020), who highlighted the importance of community engagement in response interventions, as communities play a fundamental role in outbreak control at all stages. Furthermore, experiences from past outbreaks reinforced the significance of clearly defining the roles and responsibilities of outbreak response team members (Reef, 2007). This approach was exemplified in the 2022 Ebola Sudan response, where the Ministry of Health allocated specific tasks to various health partners to ensure a coordinated and timely containment of the outbreak.

CONCLUSION

In conclusion, the division of tasks, strong community engagement, and a coordinated approach among health partners were instrumental in the success of the 2022 Ebola Sudan outbreak response in Mubende, Uganda. These findings offer valuable insights for shaping future outbreak response strategies, emphasizing collaboration, efficient resource allocation, and well-defined responsibilities to achieve rapid and effective containment of infectious disease outbreaks.

ACKNOWLEDGEMENT

We do acknowledge officers from the IDI, Jhpiego, METS, and Mildmay that offered to provide their program data of surveillance implementation in Mubende district during Ebola Sudan Outbreak.

Lastly, we acknowledge Dr. Martin Ndifuna, the Country Director of Jhpiego Uganda for supporting publication of this work.

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