SITUATIONAL ANALYSIS: MARBURG VIRUS DISEASE IN EQUATORIAL GUINEA AND TANZANIA

SSHAP

Social Science in Humanitarian Action Platform

This brief provides an overview of the Marburg Virus Disease outbreaks in Equatorial Guinea and Tanzania, as well as contextual factors to inform considerations for responses in both countries. It was written by Hana Rohan (independent consultant) with support from Juliet Bedford (Anthrologica). It was published on 10 May 2023 and is the responsibility of SSHAP.

KEY CONSIDERATIONS

- Symptoms and transmission mechanisms between Marburg Virus Disease (MVD) and Ebola Virus Disease (EVD) are similar enough to allow for the adaptation of some Ebola tools and risk communication strategies to Marburg. There is no need to 're-invent the wheel'.

- Early care-seeking behaviour for febrile disease should be a key focus of risk communication activities, and information education and communication materials. Reducing perceived barriers to care may help reduce delays in care-seeking.

- Establishing community feedback systems that inform the activities of all response pillars can facilitate response actors' access to up-to-date community information and concerns. It can also help to tailor the response appropriately and ensure that people feel listened to.

- Risk communications and community engagement (RCCE) materials and strategies should make use of trusted actors and interlocuters; any branding should reflect appropriate and locally trusted institutions.

- RCCE actors should consider working with pharmacists and small dispensaries (as well as with health workers and traditional healers where appropriate) to encourage early care-seeking and assess symptoms/facilitate referrals.

- In Equatorial Guinea, additional work is needed to change perceptions of risk at the community level. There is also a need to conduct focused community-engagement activities with health workers, infection prevention and control training, and to provide additional supplies.

- Strategic community engagement – and not just blanket awareness-raising activities – is critical to the success of outbreak response, particularly where no pharmaceutical interventions are available.

- Countries bordering Kagera Region in Tanzania are relatively well prepared, given recent experiences of disease outbreaks. Countries bordering Equatorial Guinea may benefit from more tailored support with readiness planning.

- Mapping cross-border mobility patterns could help to target resources and identify vulnerable populations.

- In both countries, the COVID-19 pandemic is perceived to have disrupted access to routine health services, affecting care-seeking behaviour. Where possible, data should be collected on routine health service utilisation, as part of the outbreak response. This would help ensure that its impact is understood and can be mitigated.

INTRODUCTION

At the time of publication (10 May 2023), both Equatorial Guinea and Tanzania have been responding to their first-reported Marburg Virus Disease (MVD) outbreaks (since early February and late March 2023 respectively). The countries are geographically distant, and there are currently no data to suggest that the two outbreaks are epidemiologically linked.[1] Initial infection with Marburg virus is thought to occur from prolonged exposure to mines or caves inhabited with Egyptian rousettus bat colonies.[2] Marburg virus has been identified in bat populations in countries that have never reported an MVD outbreak (including in West Africa for the first time in 2020).[3] Countries where this bat population resides are considered to be at risk of MVD outbreaks and it is therefore important to take a One Health approach to disease control.[4]

MVD is a filovirus and, like Ebola Virus Disease (EVD), is a viral haemorrhagic fever (VHF) that can have fatality rates as high as 90%.[5]

MVD is not airborne and is not considered to be contagious before symptoms appear. Direct contact with the bodily fluids of an infected person or contaminated items, such as bed sheets, is therefore necessary for transmission to occur. With proper infection prevention and control (IPC) in place, risk of infection is considered minimal. At disease onset, symptoms are non-specific (fever, headache, malaise) and can resemble many other common diseases, such as malaria or typhoid. However, like EVD, MVD frequently progresses to more severe symptoms including vomiting, diarrhoea, and symptoms of haemorrhagic fever.[6] An important point of difference between the two diseases is that while there are now licensed therapeutics and vaccines available for EVD, none exist for MVD.

Historically, MVD cases that were not linked to travel or imported animals have been identified in the following countries: the Democratic Republic of the Congo (DRC) in 1998; Angola in 2004; Uganda in 2007, 2012, 2014 and 2017; Guinea Conakry in 2021, and Ghana in 2022. Confirmed case numbers in those outbreaks have ranged from 1–252.[7]

As no licensed therapeutics for MVD currently exist, supportive care is therefore advised. While experimental products have been validated for use in non-human primates, these have never been used in humans. Potential treatments and vaccines are currently under assessment. One vaccine candidate (cAd3-Marburg) is due to be trialled in Ghana, Kenya, Uganda, and the United States.[5] Remdesevir, a broad-spectrum antiviral (BSA) treatment which had limited effectiveness when trialled for EVD,[8] is being used on a compassionate care basis for MVD in Equatorial Guinea.[9]

Given the lack of pharmaceutical treatment and prevention options, surveillance, IPC, and isolation of cases (i.e., public health and social measures or (PHSM)) are critical to controlling an outbreak of MVD. Community engagement is central to the effectiveness of all public health emergency responses, and particularly when there is a heavy reliance on PHSM.[10]

The virus can lie dormant for several months in people who have recovered from the disease,[11] and may emerge later to trigger another outbreak.[12] As such, community surveillance – and therefore engagement – continues to be important after an outbreak has been officially declared as over.[13]

Neither Tanzania nor Equatorial Guinea has prior experience mounting a response to a VHF outbreak where human-to-human transmission can drive an epidemic. Both countries are endemic for Dengue Fever, but this is driven by mosquito bites. While in Tanzania there have been relatively frequent reports of Rift Valley Fever outbreaks (another VHF) since the 1930s, with 264 confirmed cases in humans during the 2007 outbreak, most cases have been among livestock populations.[14] Control strategies for VHFs with human-to-human transmission can have significant social and economic effects. For this reason, additional attention to community perceptions, concerns and engagement is required.

MARBURG VIRUS DISEASE IN EQUATORIAL GUINEA

Equatorial Guinea confirmed its first case of MVD on 13 February 2023 in the eastern province of Kie Ntem. As of 4 May 2023, there had been 17 confirmed and 23 probable cases. 12 of the laboratory-confirmed cases have died (case fatality ratio of 75%). The last confirmed case was reported on 20 April 2023.[15] Five laboratory-confirmed cases were among health workers, of whom two have died. Among the confirmed cases, four have recovered. Cases have been identified in five districts across four of the country's eight provinces.[9] The most affected district has been Bata in Litoral province on the west coast, although the President of Equatorial Guinea noted on 29 April 2023 that there were currently no active cases.[16] Cases in Bata and Nsork (in the south east) have implications for preparedness activities in the neighbouring countries of Cameroon and Gabon.

Mercantile border towns normally see hundreds of traders crossing national borders each day, particularly in the north-eastern region of Equatorial Guinea where the three countries meet. The discovery of oil and the growth of the timber industry are said to have transformed Equatorial Guinea and Gabon into destination countries for economic migration.[17] This change has led to increasingly restrictive attitudes towards Cameroonian migrants by the Government of Equatorial Guinea.[18] As a result, most cross-border trade is relatively informal[19] and therefore may be harder to monitor and manage. Surveillance at land borders has been assessed as sub-optimal, and there are reports of frequent population movements in the border districts.[9]

The south-west Cameroonian province of Kyé-Ossi was once considered part of Equatorial Guinea and then Gabon, before being returned to Cameroon in 1972.[20] In response to the MVD outbreak, national borders were officially closed, and movement restrictions have been introduced within the country. Traders have recently held protests against the imposition of MVD-related travel restrictions, which are regarded as detrimental to trade and contrary to regional agreements on the movement of people and goods.[21] There may also be cross-border movement associated with care-seeking. However, in the absence of data, it is not possible to quantify this or determine which countries in the region are net 'sending countries' for this type of migration. Understanding population mobility patterns is important for preparedness and response strategies, including the identification of health facilities for targeted IPC and surveillance activities. It is therefore important to map cross-border mobility to facilitate this, as well as to identify potentially vulnerable populations.[22]

The response in Equatorial Guinea

The Government has activated a Public Health Emergency Operations Centre (PHEOC) to coordinate the MVD response and has developed an operational response plan. The World Health Organization (WHO) is supporting the Ministry of Health (MOH) by strengthening different response pillars, including surveillance, laboratory case management, and IPC measures, as well as risk communication and community engagement (RCCE).[9] There is an active RCCE Working Group which has developed a national plan on RCCE. Community engagement officers have been seconded to all other response pillars to ensure that field teams are always accompanied by community engagement staff and to help inform their activities. The US Centers for Disease Control and Prevention (CDC) and the International Organization for Migration (IOM) are also providing support for diagnostics and border management, respectively.

Several partners (including WHO, UNICEF, and IFRC) are coordinating RCCE activities, which are currently focused on awareness-raising and capacity strengthening, recruitment of RCCE specialists, and implementation of the RCCE national plan. IFRC is supporting the management of a Community Feedback Dashboard, and WHO/UNICEF have commissioned anthropological evaluations. In both affected countries, WHO has developed a *Risk Communication and Community Engagement Message Bank for Marburg Virus Disease (MVD)*, and is conducting online social listening activities to identify the most concerning MVD narratives. WHO is also supporting with the development of information education and communication (IEC) materials for preparedness activities in Gabon and Cameroon.

While mass awareness-raising exercises are important, it is also critical to implement focused operational community engagement and social and behaviour change (SBC) strategies for outbreak response. Blanket awareness-raising activities can miss specific local concerns. Community

engagement is often more effective when routine healthcare services are maintained, and when local grievances are understood and responded to. Community consultation and feedback activities can help ensure that community members feel consulted, particularly when the insights gathered inform all response pillars. They also help to build trust by challenging the perception that public health and political authorities are only motivated to control the outbreak, with little regard for pre-existing health and social concerns. Establishing multi-pillar community feedback systems[23] can help to ensure that people feel listened to, as well as to facilitate response actors' access to up-to-date community information and concerns, and to tailor the response appropriately.

National response capacities

Given the novelty of MVD in Equatorial Guinea, WHO has assessed that local capacity to manage the outbreak needs to be strengthened.[9] There is limited diagnostic capacity and evidence to suggest that active community surveillance strategies need to be actioned. In 2022, the Government of Equatorial Guinea assessed its own preparedness for epidemics and disaster management as inadequate.[24] This aligns with external global health security evaluations, such as the 2019 Joint External Evaluation exercise.[25]

The presence of cases across multiple districts without clear epidemiological links suggests undetected transmission of the virus and the possibility of unidentified contacts. Few alerts have been reported and investigated, and risk perception is assessed as low.[9] These factors indicate that alongside strengthening the surveillance system, expanded awareness raising and community engagement activities are needed. Infections in health workers raise questions about IPC measures, and highlight the importance of RCCE activities with this group, alongside training and provision of IPC materials.

Political economy in Equatorial Guinea

The current President, Teodoro Obiang Nguema Mbasogo, has been in power since staging a military coup in 1979, and won his sixth seven-year term in 2022 with over 99% of the vote.[26] The ethnic majority, the Fang, dominate political life, and minority ethnic groups have little influence. Elections are considered to be neither free nor fair,[27] and an absence of checks or balances grants the President's political party absolute political power.[28]

Equatorial Guinea is an upper middle-income country[28] and was once one of Africa's fastest growing economies, due to the oil sector.[29] However, oil wealth and political power are concentrated in the hands of an elite minority, and a large proportion of the population continues to live in poverty. In 2020, the country ranked 145 (out of 189) on the Human Development Index. This is low compared to countries with the same income per capita.[29] Allegations of human rights abuses are frequently reported, including torture, arbitrary detention, and unfair trials.[30] Public sector employment is conditional upon political loyalty to the ruling party.[27]

Health system in Equatorial Guinea

The health system has seen decades of underinvestment, with the IMF estimating that in 2011 (the most recent year for which data are available), the government spent less than 2% of its budget on health.[31] Health spending has tended to be focused on health capital investment projects, such as large hospitals in urban centres, rather than on primary healthcare access and quality.[31] Equatorial Guinea has health workforce shortages, with 2017 data showing four doctors per 10,000 inhabitants.[32] The country has seen recent economic declines, resulting from drops in oil prices and the effects of the COVID-19 pandemic. These are likely to have negatively affected investments in the health system. The pandemic increased strain on the health system by reducing access to basic services and routine immunisation.[29]

To address some of these issues, Equatorial Guinea's MOH has developed the *Distritos Sanitarios* health programme, which aims to partner closely with local communities to increase access to care, but is yet to be fully implemented.[33] There is some evidence that the political system may have led to the perception that adherence to health promotion messages is a 'legal/government issue' and thus

reduced communities' engagement with health and hygiene messaging and promotion.[34] There is limited information available on care-seeking in Equatorial Guinea, but published studies suggest that the majority of the population may typically delay treatment-seeking behaviour for febrile disease, with rural populations and those with lower socioeconomic status more likely to delay.[35,36] One study on the use of traditional medicine in Equatorial Guinea found that while people might seek traditional medicine for 'ordinary' febrile diseases like malaria, the standing of traditional healers has declined, and many Guineans expressed limited confidence in their ability to heal disease.[32]

Conclusion

This is a context where there may be limited engagement with the routine healthcare system and health promotion activities, and where there is some evidence that the majority of people delay febrile disease care-seeking. It is therefore vital, especially in affected and at-risk districts, to ensure awareness of the MVD outbreak, and to encourage rapid care-seeking for early symptoms of MVD.[37] Where knowledge is already high, health promotion/social mobilisation teams should focus on tailored community engagement that aims to collect and coordinate a multi-pillar response to community feedback, facilitate access to care, and mitigate the social and economic effects of population-wide disease control measures.

MARBURG VIRUS DISEASE IN TANZANIA

Tanzania confirmed its first cases of MVD on 21 March 2023 in the north-western Kagera region, following laboratory investigation of seven cases (of whom five died) from an unknown disease.[1] At the time of writing (8 May 2023), the last confirmed case had been reported on 11 April 2023, taking the total number of cases to nine (eight confirmed, one probable), of whom six died (case fatality ratio of 66.7%).[9] Two of the confirmed cases were health workers, one of whom died. Among the total confirmed cases, three have recovered. All cases have been reported from Bukoba Rural District, Kagera Region, and all confirmed cases appear to be linked.[39]

Kagera borders Rwanda, Burundi, and Uganda. As shown in the SSHAP brief *Cross-Border Dynamics Between Uganda and Tanzania in the Context of the Outbreak of Ebola, 2022* in the context of Ebola (published December 2022), there are several formal border crossing points between Tanzania and Uganda, as well as a highly porous border for informal migration.[40] During the COVID-19 pandemic, the Tanzanian MOH conducted qualitative research and population mobility mapping on the Tanzania-Uganda border using the Population Connectivity Across Borders (PopCAB) toolkit developed by US CDC, and used those data to inform COVID-19 response measures.[41] US CDC is working with the Tanzanian Government to apply the PopCAB toolkit to their response to the MVD outbreak.

Flow monitoring data collected by IOM at 11 flow monitoring points along the Tanzania-Burundi border suggests substantial informal mobility between Tanzania and Burundi, with data from one month in 2021 showing over 41,000 informal border crossings. The methodology used excluded short-term visits made to attend markets. As such, the true number is likely to be higher.[42]

Thousands of refugees moved from Rwanda to Kagera following the Rwandan genocide in 1994, and many remain settled in the region.[40] While there is limited up-to-date information on mobility across the Tanzania–Rwanda border, the WHO and Africa CDC have warned that the high volume of movement across the region presents a risk of cross-border spread.[43]

Following the EVD outbreak in the DRC in July 2022, and the Sudan Ebola Virus outbreak in Uganda (September 2022 to January 2023), neighbouring countries in the subregion – including Tanzania – have been developing preparedness strategies and capacities to respond to filoviruses.[1]

The response in Tanzania

The response is being led and coordinated by the Tanzanian Prime Minister's Office, with the MOH acting as the main technical arm of the response, working with WHO, IFRC, MSF, UNICEF and other partners.[44,45] A national MVD response plan with a budget of USD 12.2 million has been developed

and shared by the Tanzanian MOH. Rapid Response Teams have been deployed by Tanzania's MOH, GOARN, and Africa CDC to support the response. Contact-tracing activities have been initiated (with 206 out of 212 contacts having concluded their monitoring period), and risk communication activities are ongoing and focused on awareness-raising and prevention messages.[1] The national laboratory in Dar Es Salaam is managing diagnostics, and there are plans to deploy mobile testing laboratories to reduce turnaround times. A treatment unit has been activated in Kagera, although cases are also being treated and isolated at regional referral hospitals and local health centres.[45]

The recent EVD preparedness efforts in Kagera mean that the region is well placed to step up an MVD response. The Tanzanian Red Cross and UNICEF have implemented substantial RCCE activities in the region, including community awareness training, safe and dignified burials (SDB) training, and procurement of relevant supplies.[45] UNICEF has deployed anthropologists to support the MVD response. The MVD-specific RCCE response has included multi-channel awareness-raising/risk communication activities, community surveillance, installing handwashing stations, and implementing an infodemic response platform.[46] There are plans to expand the community feedback system that was developed for the COVID-19 response to include MVD, as well as to conduct community engagement activities and participatory assessments. As detailed above, WHO has developed a *Risk Communication and Community Engagement Message Bank for Marburg Virus Disease (MVD)* and is conducting online social listening activities to identify the most concerning MVD narratives.

Data on perceptions of MVD in Tanzania are currently limited to those collected from monitoring social media. It is important to note that the use of social media data may have methodological limitations, notably due to the demographic profile of internet users, and may not reflect the nature of offline dialogue on the disease. Social media data suggest there are information gaps in people's knowledge of the disease, but that there is appetite for accurate information.[47] This could be addressed through tailored health information campaigns. Misinformation in circulation includes concerns that the outbreak is a conspiracy to sell more vaccines, and that the disease was intentionally created to depopulate Africa.[46] It is not clear what level of traction such misinformation has received. UNICEF has reported concerns regarding stigma towards survivors and lack of acceptance of discharged patients staying in general hospital wards while they recover.[46]

National response capacities

Despite EVD preparedness efforts in Kagera, Tanzania's MOH has identified several challenges to national capacity in responding to the MVD outbreak. These include: inadequate financial resources; insufficient numbers of health workers willing to provide medical services to patients; inadequate tools for contact tracing; difficulty maintaining isolation of contacts; limited and inadequate personal protective equipment, IPC, and WASH materials, and misconceptions in the community.[45]

In the most recent Joint External Evaluation for Tanzania (held in 2016), the majority of indicators were amber (i.e., some capacity), with only one relevant indicator on 'Emergency Response Programmes' marked as red (i.e. insufficient/no capacity).[48] A 2019 assessment of readiness for Ebola conducted by Tanzania's MOH also identified multiple gaps.[40] However, recent experiences of the COVID-19 pandemic and other regional filovirus outbreaks and associated preparedness activities, may have improved national capacities related to International Health Regulations. For example, the MOH developed an EVD contingency plan in 2019 that aimed to address gaps identified in government-led EVD readiness.[49]

Political economy of Tanzania

Tanzania's majority party (*Chama Cha Mapinduzi*) has ruled the presidency and National Assembly for 60 years. President Magufuli, who denied the existence of COVID-19, died during the pandemic and was replaced by Vice-President Samia Suluhu Hassan – the country's first female President.[40] President Samia Hassan committed to making reforms on human rights. However, there is some evidence that this change has not yet been fully realised; there remain concerns by human rights

organisations that restrictions of the media and civic spaces continue alongside arbitrary arrests of journalists and government critics, and an investigation into concerns about the conduct of the 2020 elections has not taken place.[50] President Hassan has, however, reversed the previous president's stance on COVID-19.[51] Further details on the political context in Tanzania can be found in the SSHAP brief *Cross-Border Dynamics Between Uganda and Tanzania in the Context of the Outbreak of Ebola, 2022*.

Data from Afrobarometer suggest there are reasonably high levels of trust in political authorities in Tanzania with regards to health services and epidemic management (over 70%), and that trust has increased substantially in this area since 2017.[52] An effective risk communications strategy could harness this trust to combat misinformation and promote accurate health information by ensuring MOH ownership through branding of information education and communication materials.

Health system in Tanzania

Tanzania's health system is described in more detail in the SSHAP brief *Cross-Border Dynamics Between Uganda and Tanzania in the Context of the Outbreak of Ebola, 2022*, which summarises information on local burial practices and use of traditional healers. The health system is decentralised, with a primary policy goal of delivering quality primary healthcare services. There are a number of health system challenges in Tanzania, including insufficient financial resources to meet health system goals, regular stock outs of medical supplies, and health workforce shortages.[53] Many of these challenges are identifiable in the MOH assessment of the country's capacity to respond to the current MVD outbreak, described above.[49]

Literature available on the effect of the COVID-19 pandemic on health services is scarce. However, there is some evidence suggesting communities perceived that COVID-19 led to routine health service delivery being deprioritised. This perception may have led to underutilisation of primary care services, particularly by vulnerable groups.[54] This perception may also have exacerbated existing barriers to care-seeking, which were already influenced by concerns about cost and quality of care prior to the pandemic.[55] Much like Equatorial Guinea, there is some evidence that typical initial responses to febrile illness in Tanzania are to self-treat with remedies sourced from pharmacies and dispensaries.[56] Reasons for doing so include concerns about cost, the perception that a fever is not serious, and the convenience of pharmacies. Pharmacies and private dispensaries represent the largest source of private sector healthcare in Tanzania.[57] Working with them to promote awareness of MVD, symptom identification, and early care-seeking could help identify cases more rapidly.

Conclusion

Although the outbreak of MVD in Tanzania is ongoing, it appears to be relatively well controlled, not least because all confirmed cases have known transmission chains. However, as in Equatorial Guinea, it is important that community awareness of the disease remains high, and rapid care-seeking is encouraged, particularly in the Kagera region. The deployment of anthropologists within the response and establishment of an MVD-focused community feedback system will help ensure the response is tailored to specific local circumstances, concerns, and needs. Risk communication activities emphasising early care-seeking should be sensitive to the barriers people perceive that they face in accessing formal healthcare. Associated cross-pillar community engagement activities should seek to address those barriers, recognising that pharmacists may be an effective channel for health promotion.

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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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