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Protecting sickle cell care during Ebola outbreaks

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The ongoing outbreak of Ebola virus disease caused by Bundibugyo virus in the Democratic Republic of the Congo (DRC) provides an important reminder that epidemic preparedness cannot be separated from the care of patients with pre-existing diseases. Ebola response systems are designed to rapidly identify, isolate, test, and treat patients with suspected infection. However, patients with sickle cell disease (SCD) may present with several clinical features that overlap with Ebola-compatible syndromes, while simultaneously requiring time-critical hematological care. An Ebola response can therefore create an indirect vulnerability for patients with SCD, not necessarily by increasing their susceptibility to infection, but by disrupting access to appropriate care.

SCD is a major inherited hematological disorder in sub-Saharan Africa, particularly in the DRC, where delayed diagnosis, limited access to disease-modifying therapies, inadequate transfusion services, and constrained access to specialized care already contribute to preventable morbidity and mortality.[1,2] An Ebola outbreak may further reorganize patient pathways around infection prevention and control, potentially separating patients from the services required to manage acute SCD complications.

Our concern emerged from observations during the ongoing Bundibugyo outbreak. Although these observations have not been formally reported, one particularly concerning situation involved a 23-year-old woman with SCD who died in Bunia after a delay in admission to intensive care in the context of symptoms meeting the Ebola case definition. This case cannot establish that Ebola caused her deterioration, nor that SCD increases susceptibility to Bundibugyo virus infection. Rather, it illustrates a potential system-mediated vulnerability: when Ebola investigation becomes the dominant clinical pathway, other life-threatening conditions may be recognized or treated too late.

The literature on the management of sickle cell disease in the context of Ebola outbreaks remains, to our knowledge, scarce, although the DRC, one of the three countries bearing the highest burden of sickle cell disease, has experienced 17 Ebola outbreaks to date.[3] The COVID-19 pandemic demonstrated that disruption of routine SCD care can itself become

a determinant of morbidity.[4] We herein argue that three overlapping vulnerabilities deserve consideration.

First, **diagnostic and triage vulnerability**. Ebola surveillance appropriately prioritizes sensitivity for identifying potentially infectious patients. Yet fever, pain, anemia, thrombocytopenia, gastrointestinal symptoms, respiratory manifestations, renal dysfunction, and neurological abnormalities may also occur in SCD and its complications.[5] In a patient with SCD, these manifestations may reflect bacterial infection, hemolysis, vaso-occlusion, acute chest syndrome, stroke, or combinations thereof.[6] The clinical presentation of the current Bundibugyo outbreak may further complicate this distinction.[7] While Ebola must be rapidly excluded, the period of investigation should not become a period in which other time-critical diagnoses remain untreated.

Second, **therapeutic and referral vulnerability**. Acute chest syndrome, stroke, severe anemia, and other SCD complications may require rapid transfusion, neurological assessment, respiratory support, or intensive care.[5] In an Ebola response system, however, access to these services may be delayed when patients are first routed through Ebola-oriented facilities or when referral is postponed until Ebola has been excluded. This creates a potentially avoidable conflict between infection-control priorities and the need for immediate hematological care.

Third, **transfusion vulnerability**. Transfusion is not an ancillary component of SCD care; in selected acute complications, it is lifesaving. Yet blood collection, donation, transportation, and access to transfusion services may become more difficult during an Ebola outbreak.[8] Blood safety must remain paramount, and individuals potentially exposed to Ebola cannot simply be treated as routine replacement donors. Nevertheless, outbreak preparedness should anticipate how patients with SCD requiring urgent transfusion will continue to access safe blood.

These vulnerabilities suggest that Ebola preparedness should not rely on a sequential pathway in which Ebola is first excluded and other emergencies are addressed afterwards. Instead, patients with SCD who meet criteria for Ebola investigation should remain under appropriate infection-control measures while undergoing a parallel assessment for potentially life-threatening SCD complications. Predefined referral pathways to emergency, intensive-care, neurological, and hematological services should be established before an outbreak. Transfusion contingency plans should similarly identify how safe blood can remain available for patients requiring urgent transfusion.

The Bundibugyo outbreak therefore provides an opportunity to broaden the concept of epidemic preparedness. Preparedness should not only ask how rapidly a suspected Ebola case can be isolated and tested, but also whether patients with chronic hematological diseases can continue to receive time-critical care while Ebola is being excluded.

In an Ebola outbreak, protecting patients with SCD requires not only preventing transmission, but also preventing the response itself from becoming a barrier to lifesaving hematological care.

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