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Rapid diagnostic testing: the key to ensuring sufficient supply and safe access to blood in emergencies

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Recently, the WHO published a strategic framework for management of blood in an emergency situation, when blood banking operations are disrupted.[1] In the wake of ongoing global events, it is timely, important guidance to promote resilience in blood systems worldwide. Maintaining a safe blood supply is an essential part of a health system and in the care of our sickest patients. How would you treat a woman suffering from obstetric haemorrhage if your blood bank was not operational because of disrupted supply chains from natural disaster, violence or war, or global shipping irregularities?[2]

However, the very real dangers posed by acute crises belie the reality that extreme blood scarcity in much of the world is not an impending, catastrophic event, but the current status quo. Millions die without access to sufficient blood for transfusion each year. Of 195 countries, 119 (61%) had blood demands that were not met by their blood supplies.[3] Worse still, countless people have no access to blood at all.[3–5] The standard transfusion systems do not extend to these 'blood deserts' due to the complex logistics required to bring transfusion to these settings.

Walking blood banks (WBBs) are an emergency measure that can be used in acute crisis settings as well as in areas of chronic insufficiency when banked blood is unavailable. Central to a WBB model in a low, resource remote setting is rapid diagnostic testing (RDT), which allows providers to screen for transfusion-transmitted infections (TTIs), such as HIV, hepatitis and syphilis, at the point of care, with limited equipment and at minimal cost. In areas of chronic insufficiency, RDT can augment the current framework as a safety measure to provide immediate access to blood. This process has gained substantial traction in high-income countries in military and civilian settings. The US military has invested over 19 years of research, with 10 000 units of transfused blood.[6] Cruise ships, too, have adapted protocols for blood screening and prioritisation at sea, where there are no traditional blood systems.[7] Both have recognised the practicality of RDT in real-world environments.

The value of RDT cannot be understated in solving a crisis disproportionately affecting the millions living in blood deserts. It is portable, fast and thermally stable. There is a substantial disconnect underlying the use of RDT. On one hand, major institutions have extensively studied and recognised the value of RDT for HIV diagnosis in low- and middle- income countries (LMICs) that do not have readily available automated laboratories. The WHO has published extensive guidelines regarding RDT for HIV diagnosis, suggesting its use at all levels of the healthcare system.[8] On the other hand, the value of RDT for TTI screening for potential blood donors, including in this new strategic framework, has been largely overlooked despite facing the exact same hurdles. Instead, policymakers should align policy to support more research for practical applications. The latest generation RDT has excellent sensitivity and

SUMMARY BOX

⇒ The WHO recently published a strategic framework for the management of blood in an emergency situation for impending acute crises.
⇒ Extreme blood scarcity, however, is the current reality for millions around the world.
⇒ Walking blood banks are an emergency measure that can be used in settings of acute crisis and chronic insufficiency when banked blood is unavailable.
⇒ Rapid diagnostic testing is the key to their successful implementation to prevent transfusion-transmitted infection but has been largely overlooked.
⇒ Guidelines integrating low-cost innovations like rapid diagnostic testing will save lives now and prepare countries to better handle situations when standard blood supply networks break down.

specificity. It provides a real-world solution and demands appropriate research investment from influential bodies such as the WHO.

The elephant in the room is that while governments and global organisations acknowledge the potential for imminent emergency situations, they are failing to recognise both the chronic deficiencies that already exist in rural, low-resource communities and the full spectrum of technologies available to mitigate these disparities. People are actively dying because there is no access to safe blood. With major blood shortages or disruptions to blood supplies, RDT should be the go-to measure to safely transfuse patients. Hundreds of thousands, if not millions of lives will be saved, today. Given the deep systemic barriers inherent in LMICs, the strategic, almost theoretical, framework suggested by the WHO could take years to implement. How many people will die from lack of access to blood in that time? We must avoid focusing solely on prevention of future disasters without addressing problems that can be treated immediately. Guidelines that integrate low-cost innovations, such as RDT, will save lives now, and prepare countries to better handle mass casualty situations when standard blood supply networks break down.

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