



Consequences of centralised blood bank policies in sub-Saharan Africa

Safe and reliable transfusion services remain largely unavailable to the world's poorest populations, particularly in sub-Saharan Africa.¹ WHO responded to this crisis with a strategy focused on centralising blood transfusion services, the exclusive use of volunteer donors, donor blood testing, and transfusion stewardship.² On the basis of our experience in Malawi, we think that this policy has unintentionally decreased the availability of blood products for patients with acute haemorrhage.

In response to this policy, the Malawi Blood Transfusion Service (MBTS) was established in 2003, replacing an in-hospital model with a government-sponsored centralised service. By 2008, over two-thirds of the country's blood donation was centralised and donation became increasingly dependent on unpaid volunteers rather than family member replacement.³ However, in 2014, data from MBTS showed that blood donation per-capita had decreased compared with 2011, meeting only one-third of blood products requested, largely because of a reliance on secondary and college students who donated 80% of MBTS blood.⁴ Prospective data from our study of 293 patients with upper gastrointestinal bleeding in Malawi corroborates that supply has decreased over time, showing that the number of units transfused per patient, adjusted for haemoglobin concentrations, decreased by nearly 50% between 2011 and 2013 (figure).

The fundamental weakness in the WHO blood banking policy is the categorisation of blood donors and emphasis on strict centralisation. WHO recognises three types of donor: volunteer donors, replacement donors (family or friends), and compensated donors.⁵ In 2004, over 80% of blood donations in sub-Saharan Africa were from replacement donors, but that number is now closer to 40%.³ The policy emphasis on volunteer donors focuses on improving safety from infectious diseases, particularly HIV. Collaboration between WHO and the US President's Emergency Plan for AIDS Relief has been instrumental in this strategy by setting transfusion policy priorities that focus on HIV transmission prevention or through direct funding for national transfusion services.⁶ These policies assume that volunteer donors have a lower risk profile than

compensated or replacement donors for key infectious diseases, although available evidence does not support this assumption. Several studies from sub-Saharan Africa have failed to show a safety benefit with respect to HIV transmission when comparing replacement donors and volunteer donors.⁵ Instead, evidence shows that it is repeat donation from volunteer donors that improves safety.^{7,8}

Centralised blood banking systems also have considerable financial implications.⁵ Bates and colleagues⁹ estimated that a centralised, volunteer-based system in sub-Saharan Africa is 4–8 times more expensive per unit of blood than a hospital-based system. Additional costs accumulate from expansive quality assurance programmes, blood distribution to medical centres, and donor recruitment. Furthermore, the blood donor recruitment strategy developed in most centralised blood-banking systems is dependent on local schools and universities as the primary donor source population, a strategy that is only viable when educational institutions are in session. This problem has been documented in other African countries such as Burkina Faso.¹⁰

With centralisation, timely and efficient distribution networks are key. However, mature blood distribution

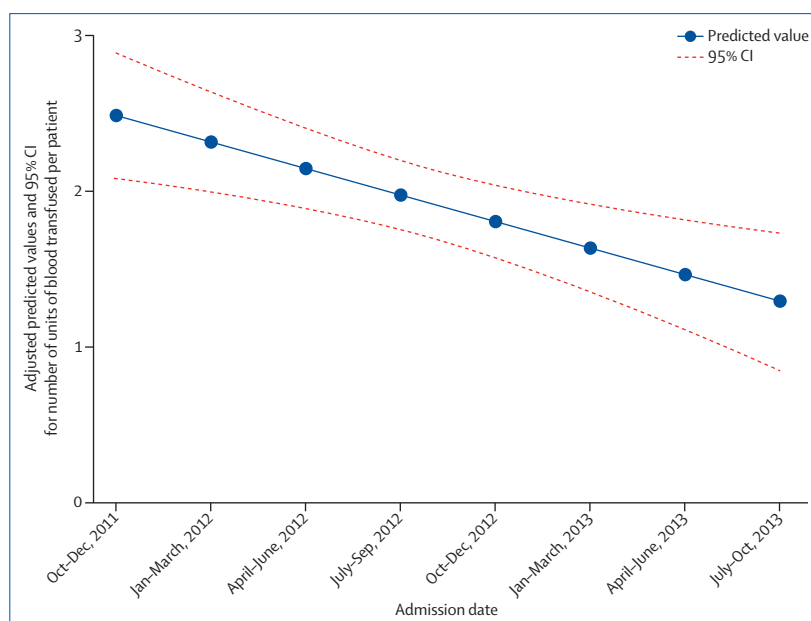


Figure: Transfused units of whole blood per patient between 2011 and 2013, in Kamuzu Central Hospital, Malawi

networks are yet to be established in most developing countries. For example, blood donated in Malawi's capital Lilongwe is sent to Blantyre (360 km away) for testing at MBTS before it is transported back to Lilongwe for use.⁴ This type of centralisation is impractical and unsustainable for the delivery of emergent and elective surgical services, particularly when family members are available and willing to donate blood locally.

Health-care systems need a hybrid approach that maintains the establishment of centralised blood banking infrastructure, while simultaneously supporting regional and local hospital transfusion facilities.⁶ This will result in blood product use at the site of donation and has several policy advantages. First, this approach acknowledges the importance of centralised regulation and quality assurance, but provides more flexibility for implementation in resource-poor environments. Second, it encourages the concurrent use of replacement and volunteer donors, which should increase supply. Finally, replacement donors are often interested in donating again, providing a potential sustainable source of donation.¹¹

Evidence suggests that this hybrid model works. In 2010, Bugge and colleagues¹² found a reliable and readily available blood supply at a Malawian district hospital that was using both centralised volunteer blood and local family replacement donations, effectively using a natural hybrid model. A hybrid model must also include strategies for culturally appropriate donor recruitment that target community leaders, and provider education programmes aimed at improving transfusion stewardship.

Countries in sub-Saharan Africa need long-term technical and financial support to develop sustainable blood banking systems that can meet the transfusion needs of patient populations. More detailed and accurate data on supply and demand is required to ensure that changes in policy will help bridge this gap. WHO strategy as it currently stands, although

commendable and well intentioned, has not served surgical patients in resource-poor settings well. The time has come for a more flexible policy that will lead to dependable access to life-saving allogeneic blood product transfusions in sub-Saharan Africa.

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