

## Comment

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## The blood drought in context

Universal access to safe, affordable surgery when needed depends on a sufficient and safe blood supply. This is not the case in most of the world today. The average donation rate in low-income countries (2.8 donations per 1000 population) is an order of magnitude below that of high-income countries (36.4 donations per 1000 population).<sup>1</sup> To put these figures into context, take Ethiopia, which has a blood donation rate of 0.6 units per 1000 population or roughly 56 000 units per year.<sup>2</sup> With just over 3 million births per year in Ethiopia, we know that between 66 000 and 230 000 mothers will require a blood transfusion for postpartum haemorrhage.<sup>3</sup> In the high-income setting, the median transfusion requirement per case of postpartum haemorrhage is three units.<sup>4</sup> In addition to far exceeding the existing blood supply, this leaves nothing for patients with other surgical conditions, trauma, and severe malarial or sickle-cell anaemia.<sup>5</sup>

To make the situation even worse, these low donation rates are almost certainly overestimates; they include blood that is unsafe for use, infected with organisms that cause transfusion-transmissible infections (TTIs) such as AIDS, hepatitis, malaria, and syphilis.<sup>6</sup> In fact, up to 52% of blood collected in Nigeria and 14% of blood collected in Mali could be contaminated with malarial parasites and hepatitis B virus, respectively.<sup>7,8</sup> 19% of blood collected in sub-Saharan Africa is not even tested for hepatitis C virus.<sup>2</sup>

In Ethiopia and beyond, patients and providers have few options when in need of a transfusion.

One possibility is unbanked direct blood transfusion (UDBT), which involves on-the-spot donation from a family member or volunteer in the community, a screen for TTIs with a rapid testing kit, and a blood type cross-match. UDBT is not ideal: rapid testing kits are not as sensitive as banked blood screening protocols, family and replacement donor blood has a higher prevalence of TTIs, and the potential for coerced donation is high.<sup>6,7</sup> Another option is commercial blood donation, whereby eligible individuals are paid for donation. Unfortunately, in the setting of poverty, payment creates perverse incentives for donation of unsafe quantities at unsafe intervals. Reports exist of commercial donors presenting to hospitals in hypovolaemic shock.<sup>8</sup>

However, when faced with the untenable option: forego a life-saving operation owing to lack of blood, or operate knowing the patient will die without a transfusion, UDBT or commercial donations become necessary choices. The dependence on UDBT and commercial blood donors will exist as long as reasonable alternatives do not. Rather than disregarding or banning these practices, practical interim measures should be implemented to optimise their safety.<sup>8</sup> Offering formal training for providers, developing best practices and formal auditing mechanisms, and ensuring reliable provision of testing kits can be crucial to keeping patients, donors, and providers safe.

Interim measures, however, are not nearly enough. A massive expansion of the blood donor pool is needed, but scaling up blood donation in the low-resource

world is no easy task. WHO has long advocated a set of interventions to fortify a nation's blood supply,<sup>9</sup> but countries will have difficulty solving these problems on their own. Nations with the lowest donation rates also have high rates of malnutrition, chronic anaemia, and TTIs, severely restricting the donor pool.<sup>2</sup>

Blood availability must be addressed as a global priority. Until the international community develops feasible equity-based transnational strategies, billions will continue to lack access to life-saving transfusions. First, we must build a donor pool fit for donation by combating malnutrition as aggressively as TTIs. Next, we must establish well distributed blood bank infrastructure capable of meeting demand. Although these efforts might lack a profit motive, global public-private partnerships have had success in developing drugs for neglected diseases, and should be considered as a structural response to this crisis.<sup>10</sup> As these changes lay the foundation for a better donor pool, so too must we change the fear and trepidation that surrounds blood donation in many regions of the world. We must engage local community leaders in concert with clerics in churches, temples, and mosques, both to dispel myths about blood donation and to encourage it as a civic responsibility.

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We declare no competing interests.

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## Strengthening emergency care: experience in central Haiti



Although substantial advances have been made in global health delivery, particularly within prevention and treatment of infectious diseases, including HIV/AIDS and malaria, under-5 mortality, and vaccine-preventable illness, gaps continue to exist in universal health coverage, especially with regard to management of non-communicable and surgical disease, including trauma.<sup>1</sup> In much of the world, injuries (intentional and, especially, unintentional) are now a leading cause of death in children and young adults.<sup>2</sup> The Declaration of Alma-Ata,<sup>3</sup> which affirmed "health for all by 2000", might have been endorsed in 1978 by almost all nations' ranking health officials, but this goal has yet to be met in most low-income and middle-income countries.

To meet this goal, however tardily, global health implementers have increasingly focused on building comprehensive health systems, providing a broad base of care with the flexibility and adaptability to meet these needs,<sup>4,5</sup> sustained by robust and integrated referral systems. As our experience in central Haiti at the University Hospital at Mirebalais shows, and as others have argued,<sup>6</sup> integrated systems of emergency care are a fundamental component of the health system. Emergency care systems are uniquely positioned to respond to the array of life-threatening emergencies, including acute trauma, surgical disease, acute infectious illnesses, exacerbations of chronic disease, and more routine medical needs that nonetheless require timely attention.