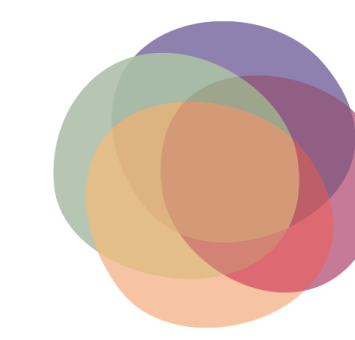


Implementation of a Structured Perioperative Anaemia Management Service in a Regional Australian Hospital: Challenges and Outcomes

Darling Downs Hospital and Health Service
 Toowoomba Hospital
 Dr Yigang Liu,¹ Ms Simone Brown,² Dr Linga Prasad³



Darling Downs
 Health

Implementation of a structured perioperative anaemia management service improved early anaemia detection and optimisation, with an associated reduction in transfusion requirements, postoperative infections, and length of hospital stay in elective surgical patients at a regional hospital in southern Queensland.

Background & Objective

Perioperative anaemia is common, occurring in up to 30% of adult elective surgical patients.¹ It is associated with increased blood transfusion rates, post-operative complications, prolonged hospital stay and increased healthcare costs. Optimisation of anaemia prior to surgery offers the potential to improve patient outcomes.^{2,3} Toowoomba Hospital is a regional referral centre, servicing a geographically expansive population across the Darling Downs region in Queensland, providing specialist services including cancer care surgeries. Our previous audits conducted in 2019 and 2023 identified persistently suboptimal perioperative anaemia management. In response, a clinician-led Perioperative Anaemia Optimisation Service (PAOS) was established in January 2025 to support the rural and regional communities in southern Queensland.

Methodology

Perioperative Anaemia Optimisation Service (PAOS) was developed initially without designated staffing or funding, relying on dedicated volunteer clinicians and nursing staff, multidisciplinary collaboration including allied health staff, and utilising new locally designed digital tools to identify, track, and manage anaemic patients perioperatively.

All Category 1 and 2 patients, and a proportion of Category 3 patients, were screened and included during the initial PAOS trial period between January and June 2025. Baseline blood tests were ordered and reviewed by the PAOS team, followed by appropriate optimisation intervention.



Figure 1. Geographic distribution of iron infusions organised through the perioperative anaemia service, including external sites outside of the DDH region.

○ within catchment
 ○ external sites

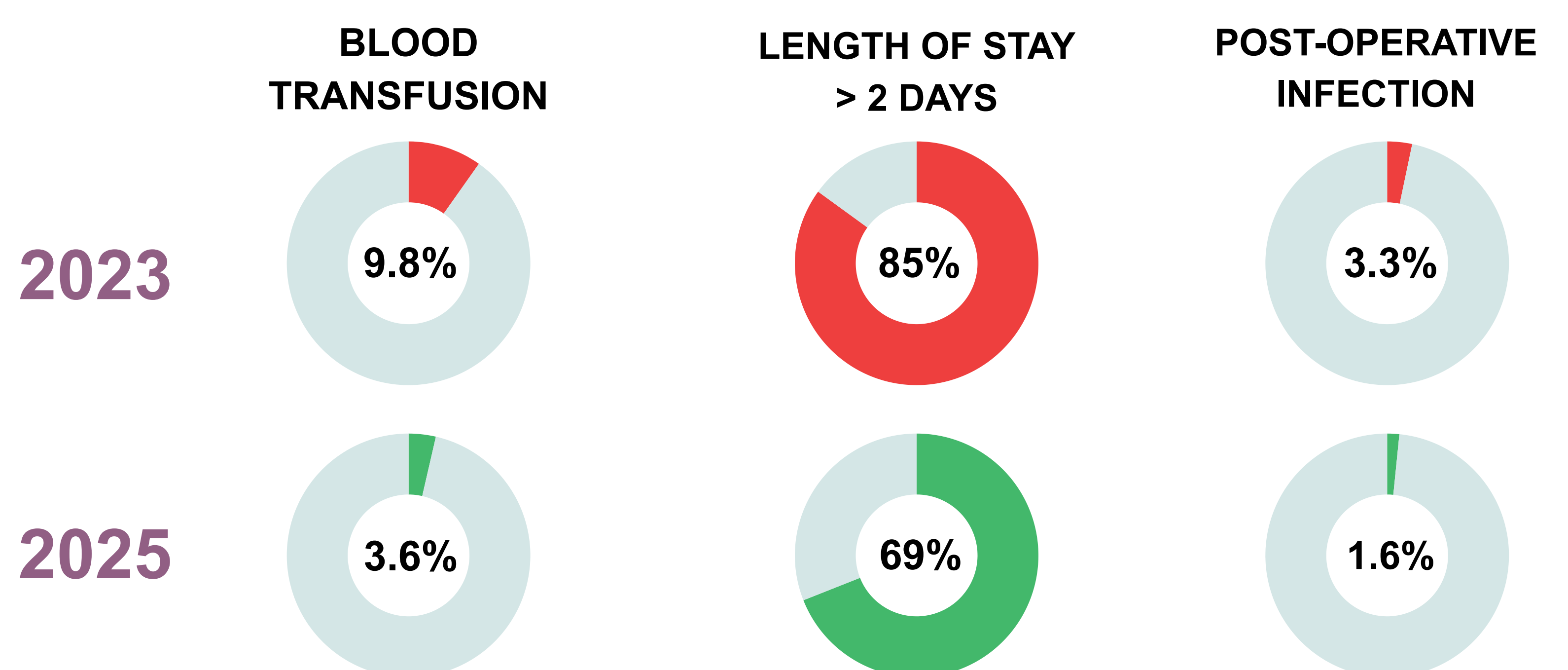


Figure 2. Comparison of perioperative anaemia audit outcomes between 2023 (pre-implementation) and 2025 (post-perioperative anaemia optimisation).

Results

- From January to June 2025, 276 elective surgical patients were screened, with 38 (13.8%) diagnosed with anaemia and 37 (13.4%) requiring active optimisation prior to surgery.
- Compared to a 2023 audit cohort (n=82), implementation of PAOS was associated with:
 - o Reduced blood transfusion rates: 3.6% (2025) vs. 9.8% (2023)
 - o Lower post-operative infection rates: 1.8% (2025) vs. 3.7% (2023)
 - o Shorter hospital stays among anaemic patients (length of stay > 2 days): 69% (2025) vs. 85% (2023)

Conclusion

These findings demonstrate that despite significant resource limitations, implementing a structured perioperative anaemia optimisation service in a regional hospital led to improved perioperative outcomes. We believe this model may be transferable to other resource-limited regional centres.

[1] Dr Yigang Liu - (PHO Anaesthetics, Toowoomba Hospital); [2] Ms Simone Brown - Anaemia Nurse (RN Day Surgery, Toowoomba Hospital); [3] Dr Linga Prasad - Project Clinical Lead (Consultant Anaesthetist, Toowoomba Hospital)

References
 1. Fowler AJ, Ahmad T, Phull MK, Allard S, Gillies MA, Pearse RM. Meta-analysis of the association between preoperative anaemia and mortality after surgery. *Br J Surg.* 2015;102(11):1314-24.
 2. Ng O, Keeler BD, Mishra A, Simpson JA, Neal K, Al-Hassani HO, et al. Iron therapy for preoperative anaemia. *Cochrane Database Syst Rev.* 2019;12:CD011588.
 3. Richards T, Baikady RR, Clevenger B, Butcher A, Abeysiri S, Chau M, et al. Preoperative intravenous iron to treat anaemia before major abdominal surgery (PREVENTT): a randomised, double-blind, controlled trial. *Lancet.* 2020.