

# Coronavirus Threatens Blood Supply

## Patient Blood Management Now!

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The outbreak of the SARS-CoV-2 pandemic has led to shortage of blood supply in health-care systems around the world. During the SARS epidemic in 2002–2003 severely affected cities experienced a dramatic decrease by 90% in blood donations, which fortunately could be compensated by importing blood units from less affected regions.<sup>1</sup> According to the national blood transfusion services, the numbers of blood donations have already dropped dramatically in the current pandemic.<sup>2</sup>

To sustain blood supply, multiple countermeasures must be pursued. Hospitals around the world have to postpone elective surgery to preserve resources and to decrease the demand for blood units. However, there are still (emergency) patients who require allogeneic blood transfusions, for example, in trauma, obstetrics, and so on. Transfusion services desperately ask for donations and highlight, that there is no evidence for blood-related transmission of SARS-CoV-2 so far. However, shortfalls are already in existence and the overall numbers of blood donations are likely to remain at a very low level.

Attempts to reduce the demand on allogeneic blood units are imperative in the present situation. Therefore, the authors encourage health care workers around the world to implement patient blood management (PBM) as soon as possible. PBM is an evidence-based multimodal approach to improve patient outcome. It is based on 3 main pillars: diagnosis and treatment of anemia, minimizing (iatrogenic) blood loss, rationale (restrictive) use of blood units. In detail, PBM comprises over 100 measures and recommendations<sup>3,4</sup> whose implementation requires a stepwise and locally adjusted process. Nevertheless, the most important components may be adopted without much effort and can be implemented even in a busy clinical environment:

- Preoperative intravenous iron substitution (anemia approx. 40% due to iron deficiency)

- Intraoperative tranexamic acid (eg, 1 g for 10 minutes before incision in high risk surgery or if bleeding is apparent)
- Maintaining physiological conditions: normothermia, pH > 7.2, calcium >1.1 mmol/L
- Cell salvage and re-transfusion of processed blood
- Single-unit policy (reassessment after each blood unit)
- Rational numbers of diagnostic blood samples
- If close hemoglobin measurements are needed, noninvasive hemoglobin measurement
- Correct coagulation anomalies as early as possible (via conventional laboratory tests or point of care testing)

Adherence to at least some of these measures will significantly reduce the demand for blood units. A meta-analysis revealed that the implementation of PBM leads to an overall decrease in transfusion demand by 39% (55% in orthopedic surgery; 50% heart surgery) and results in reduced morbidity, namely acute renal failure and thrombotic events, which reduce by about 25%, respectively. Additionally, reduced mortality rates by 11%, shorter hospitalization, and even cost savings can be achieved.<sup>5</sup> In these times, it is of utmost importance to acknowledge these findings. After all, PBM makes a virtue of necessity and must be considered imperative in view of the current crisis.

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