



The use of closed blood sampling system to reduce iatrogenic blood loss in PICU patients

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Introduction

In Pediatric Intensive Care Unit patients, blood loss from diagnostic testing may be as often as every hour. This practice can have a significant impact on a patient's hemoglobin and hematocrit and increase the need for blood transfusion. The goal of this study was to investigate if the use of a closed blood sampling system would decrease iatrogenic blood loss versus the current practice of an open blood sampling system with blood waste.

PICO Question

P: Pediatric Intensive Care Unit Patients

I: Use of Closed Blood Sampling System

C: Open System for Blood Samples with Blood Waste

O: Minimize Iatrogenic Blood Loss

Question: In Pediatric Intensive Care Unit patients, does the use of a closed blood sampling system minimize iatrogenic blood loss compared to an open system for blood sampling with blood waste?

Methods

A literature review was conducted using the search engines: PubMed, CINAHL, and EBSCO Host.

Results

A review of three randomized controlled studies and one literature review showed that:

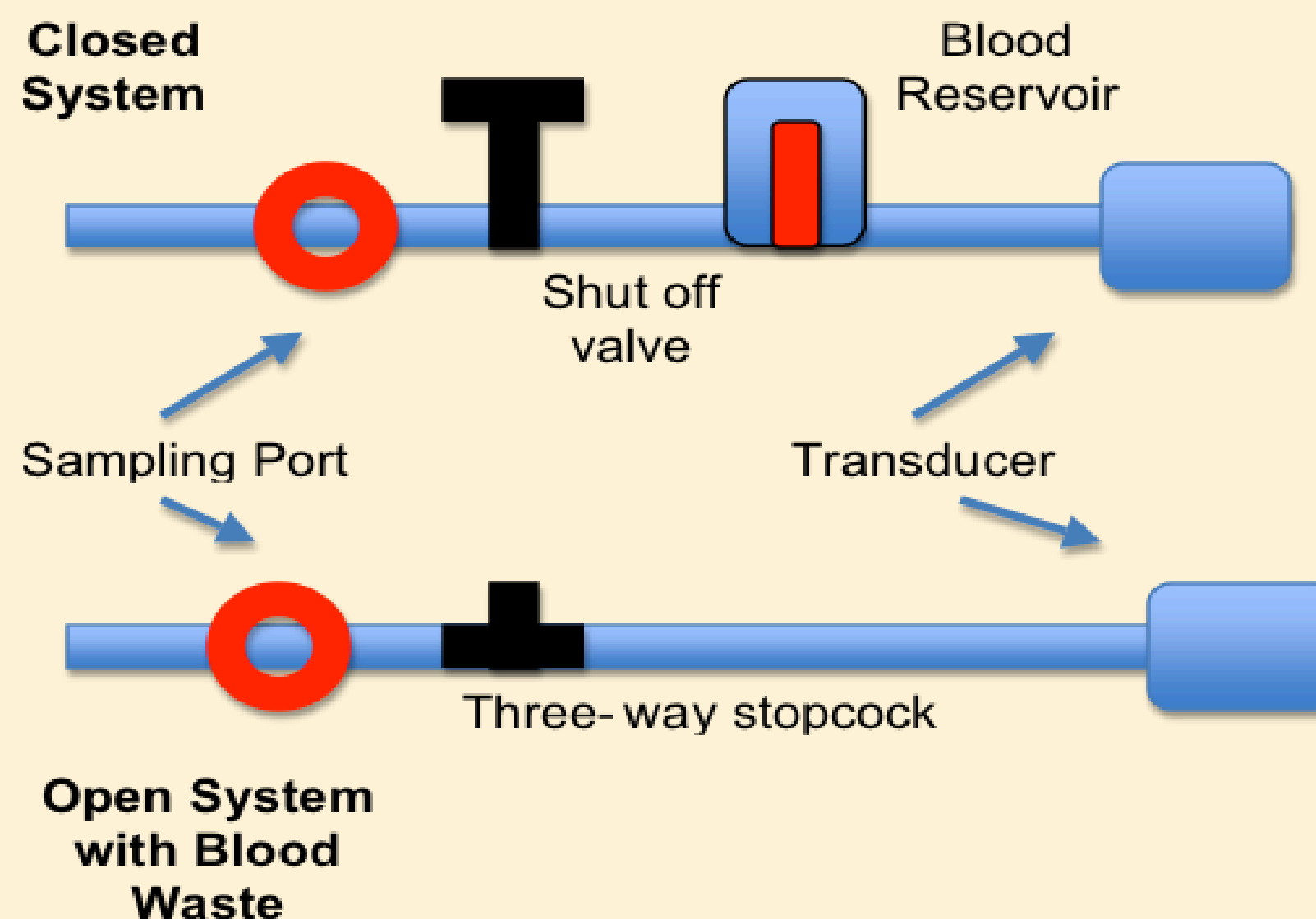
- Overall, patients had less blood loss when blood conservation systems were used as opposed to open systems with blood waste.
- With less blood loss, patients with closed blood sampling systems required less blood transfusions.
- Implementing closed blood sampling systems proved to be a minimal cost to the institution.
- The use of closed blood sampling systems has the potential to significantly reduce iatrogenic anemia and therefore reduce the necessity for blood transfusions and the possibility of negative transfusion effects.

Discussion

Although there are various methods for blood conservation, the use of a closed blood sampling system would be easy to implement in the Pediatric Intensive Care Unit, low cost, and based on literature evidence has proven to have significant effects on iatrogenic blood loss. National guidelines are promoting decreased use of blood transfusions and closed blood sampling systems would be a method for complying with these guidelines.

Conclusions

The literature review was adult based, and concluded that adult patients had less blood loss and required fewer blood transfusions when a closed blood sampling system was used. Literature was not available that tested the use of a closed blood sampling system in pediatric patients. However, due to the fact that pediatric patients have a smaller circulating blood volume than adults, the use of a closed blood sampling system has the potential to have even more significant benefits on iatrogenic blood loss in the Pediatric Intensive Care Unit. At present time the Pediatric Intensive Care Unit at this institution is preparing to trial various closed sampling systems in the unit to determine if they are a benefit to this patient population.



References

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