

Category : **Hematology: Other**

**A205 - A scoping review of interventions to reduce diagnostic blood loss, anemia and transfusion in hospitalized patients**

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**Introduction:**

Blood sampling is a recognized and modifiable contributor to iatrogenic anemia in pediatric critical care units (PICU).

**Methods:**

We aimed to bundle and evaluate current evidence of interventions to lower the incidence of iatrogenic anemia and transfusion by lowering diagnostic blood loss in hospitalized patients.

We performed a systematic search in PubMed, Ovid MEDLINE, All EBM Reviews (Cochrane) and Embase until May 2021. Trial eligibility, data extraction and Risk of Bias (ROB Cochrane Collaboration tool) assessment were independently done by 2 or 3 reviewers.

**Results:**

39 trials were retained after screening 16,132 papers. ROB was high in all studies, but one. Many studies evaluated multiple interventions, of which most done in adults. All 7 adult studies evaluating small blood tubes observed a significant reduction in blood loss, only 1 observed a positive effect on hemoglobin (Hb) / transfusion. 8 adult studies evaluated closed blood sampling: all showed a significant reduction in blood discarded with varying effects on Hb. 1 neonatal study showed that returning blood discarded was effective in lowering transfusion volume. Point-of-care testing was found effective in reducing transfusion in 1 adult study; 5 neonatal studies reported divergent effects. Another study showed adults being significantly sampled more with arterial line vs. without. The remaining 16 trials that implemented bundled interventions showed mixed results: only 3/10 adult studies observed a significant lower transfusion rate, the 6 pediatric trials observed a lower transfusion rate when bundles included education/protocols.

**Conclusion:**

Current evidence on interventions to reduce diagnostic blood volume and associated complications is highly heterogeneous. Using smaller tubes and closed-loop sampling may be effective in adults, while bundled interventions with protocols/teaching seem promising in the pediatric population.