

J. De Smedt¹, K. Feys¹, L. Hoste², J. Allaert², M. Debrauwere³

¹Ghent University, ²Specialised Pediatric Department of the Ghent University Hospital, ³VAST Ghent University Hospital Belgium

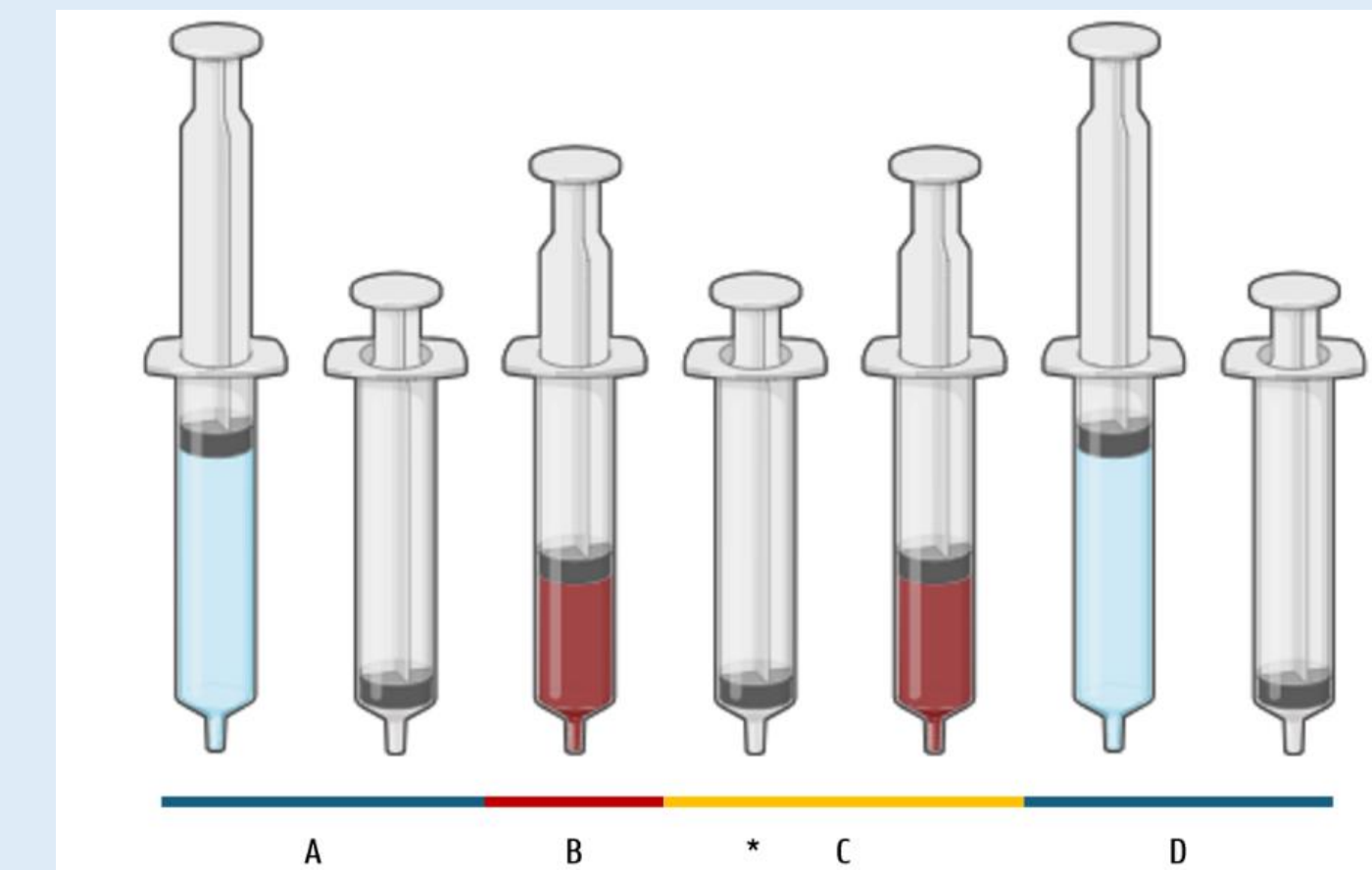
BACKGROUND AND PURPOSE

Anemia is a frequent complication among hospitalized children. One of the most significant causes is iatrogenic blood loss. Both a high frequency of sampling and the **method used to draw blood** are key in this matter.

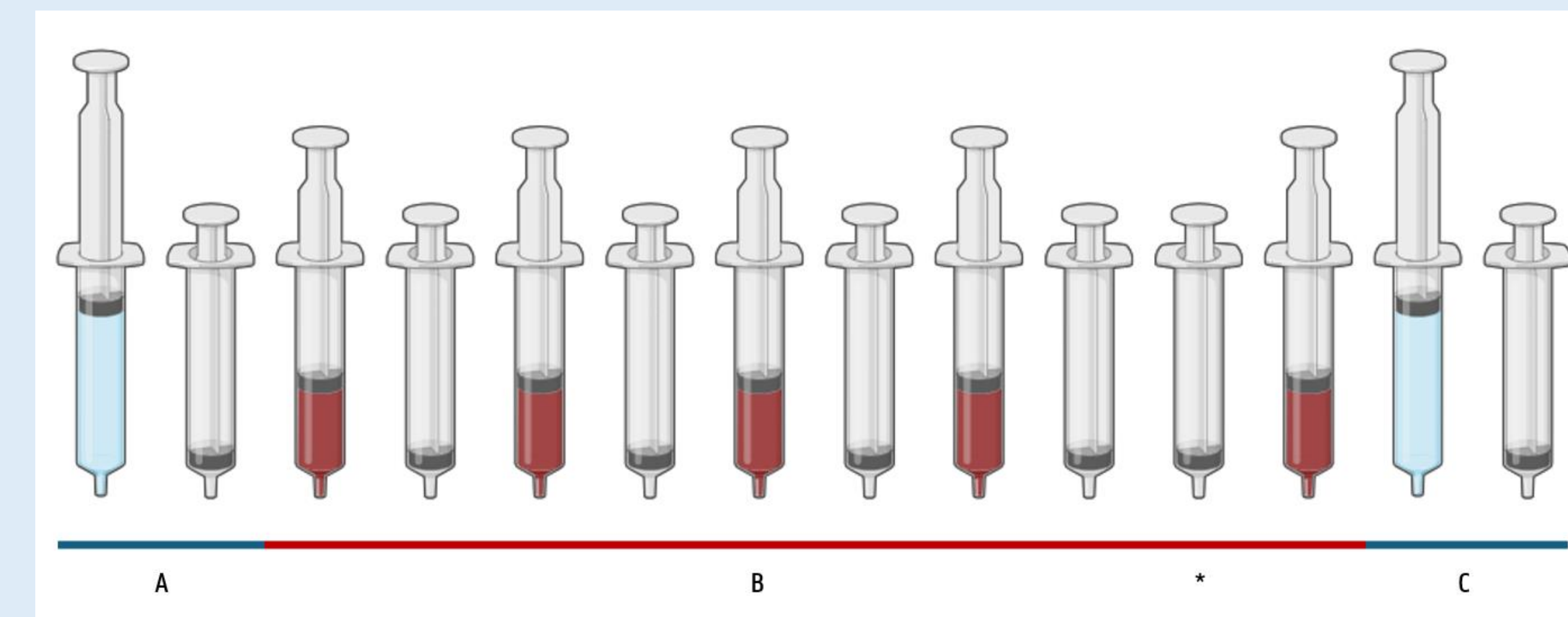
The purpose of this study is

- to compare two methods of blood sampling
- to establish if the push-pull method is a safe and effective alternative to the discard method for blood sampling in the pediatric patient population.

Discard method: Push-pause flushing with 10 mL (A). Obtaining the discard sample 3–5 mL (B). Connecting a new sterile syringe (*)/needle holder to obtain the diagnostic sample (C). Push-pause flushing with 10 mL (D).



Push-pull method: Push-pause flushing with 10mL (A). Push-pull 4x4-approach with 4 mL (B) and connection of new sterile syringe(*)/needle holder to withdraw the diagnostic sample. Push-pause flushing with 10 mL (C).



METHOD

This single-center RCT was conducted at the Specialized Pediatric Department of the Ghent University Hospital and aimed to include 120 children, based on a priori power calculation. This interim analysis included 46 children, aged 0-18 years with a CVAD, randomly assigned to Push-pull or Discard. The primary outcomes were hemoglobin decline and anemia incidence (Hb < 7 g/dL) during hospitalization as markers of iatrogenic anemia. Secondary objectives included hemolysis incidence, transfusion rates, catheter-related complications and nurses' perceived ease and satisfaction with the procedure.

RESULTS

A total of 46 patients were randomized: 22 were assigned to Push-pull and 24 to Discard. The median patients' length of stay was 6.5 days, with a median of 0.59 blood draws per day. No significant differences were observed in daily hemoglobin decline (-0.07 g/dL vs -0.10 g/dL per day, $p = 0.137$) and anemia incidence ($p = 0.282$). Transfusion rates and hemolysis incidence were low and equally distributed. Catheter-related complications occurred in 11.5% in Push-pull compared to 8.7% in Discard ($p = 0.743$). Nurses reported high satisfaction and minimal complexity of the push-pull procedure.

CONTACT

Mieke Debrauwere, RN, MSc
mieke.debrauwere@uzgent.be

CONCLUSIONS

The **push-pull method appears to be a safe and practical alternative** to the discard method for pediatric blood sampling from CVADs in this interim analysis. So far, the push-pull method tends to show no significant decline in anemia or transfusion needs. Completion of the trial to the planned sample size of 120 patients is needed to confirm its potential to minimize iatrogenic blood loss and transfusion needs.

