Pediatric resident knowledge about the push-pull method for rapid intravenous fluid administration

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BACKGROUND

- Rapid administration of intravenous (IV) fluids remains an essential part of the treatment of shock in pediatric patients.
- Guidelines for the resuscitation of septic shock indicate a 20 ml/kg bolus should be given within 5 minutes[1]. This goal is attainable via pressure bag system or the use of a push-pull fluid system, but not by conventional IV fluid pumps.[2]
- Rapid infusers are less readily available on general care floors of a hospital, so it is important to understand the indications and technique for push-pull IV fluid administration.
- To our knowledge no prior studies have assessed the knowledge of pediatric residents regarding push-pull IV fluid administration.

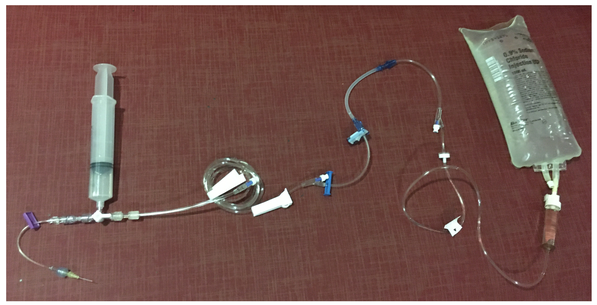
METHODS

- The literature was reviewed to determine the most appropriate push-pull IV fluid indications and techniques
- An anonymous 6-question needs assessment survey was developed that was sent to all pediatric residents at a Midwest tertiary care center.
- The survey included three yes/no questions, two questions on a 1-5 Likert scale, and one free-answer question.
- We planned to conduct interventions and assessments using Plan-Do-Study-Act (PDSA) quality improvement methodology following the needs assessment.
- An IRB exemption was obtained due to the quality improvement nature of the project.

Preliminary survey revealed pediatric residents agree knowledge of **push-pull IV fluid administration** is *important* but currently *lack the knowledge and confidence* regarding this important skill.

RESULTS

- Of 46 residents surveyed, there were 28 responses (7 PGY-1, 11 PGY-2, and 10 PGY-3).
- 43% responded that they did not know when push-pull administration is indicated.
- 93% of residents reported they did not know where to find the necessary supplies on the hospital general care floors
- 89% of residents denied having practiced this skill before (simulation or patient scenario)
- 82% of residents reported they did not feel comfortable with the set-up of the components of a push-pull fluid system.
- 96% responded that this skill was important for them to have.



CONCLUSIONS

- Residents agree that the knowledge regarding the set-up and administration of push-pull IV fluids is important, but that they are not confident about indications, do not know which supplies are required or where to find them, and lack practice in the technique.
- Next steps for this process include training on the push-pull IV administration for residents on 1) finding supplies they need on general care floors, 2) learning how to set up these supplies, 3) practicing these skills in a simulated setting.
- Following these interventions we plan to administer post-intervention surveys to assess for changes in knowledge and comfort regarding this skill set.

ADDITIONAL INFORMATION

[1]Davis, Alan L et al. "American College of Critical Care Medicine Clinical Practice Parameters for Hemodynamic Support of Pediatric and Neonatal Septic Shock." *Critical care medicine* vol. 45,6 (2017): 1061-1093. doi:10.1097/CCM.0000000000002425

[2]Stoner, Michael J et al. "Rapid fluid resuscitation in pediatrics: testing the American College of Critical Care Medicine guideline." *Annals of emergency medicine* vol. 50,5 (2007): 601-7. doi:10.1016/j.annemergmed.2007.06.482

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