Implementing Prefilled Sterile Syri
Department of a Tertiary Care Hosp
to Enhance Medi

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Introduction

Pediatrics are a vulnerable group for dosing and medication errors. Most of the drugs used are available in dosages and units ready for dispensing in adults. This necessitates a lot of calculations and has the potential for errors.

Objectives

The aim of this study was to evaluate the efficacy of selected ready-to-administer prefilled sterile syringes (PFSs) in reducing time of medication administration to critically ill pediatric patients in the emergency department (ED) of a tertiary care hospital in Karachi, Pakistan.

Methods

This was a quasi-experimental study done on the quality project from January 2018 to March 2018 in the ED of a tertiary care hospital in Karachi, Pakistan. This project was implemented by adopting Plan-Do-Study-Act (PDSA) methodology. In this study, mean reduction in intravenous medication administration time was studied. The three most frequently used pediatric emergency medications were selected in particular strengths for the pilot as ready-to-administer PFSs: magnesium sulfate 5 meq /2 mL, 3% hypertonic saline 150 mL piggyback , and paracetamol 200 mg/20 mL. Pre- and postintervention data were collected and analyzed inferentially in SPSS.

Figure: 2 Prefilled syringes implementing for Pediatric Emergency Department

Magnesium Sulpha
(5 mEq / 5 ml)
(5 ml / Syringe)
Refrigerate
3% HYPERTONIC SALI
Caution: High Alert Dr

Figure : 1
a: Magnesium Sulphate syringe 5meq/2ml
b: 3% hypertonic saline 150 ml piggyback
c: Paracetamol syringe 200mg/20ml

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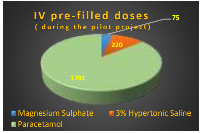
Results

We observed a mean reduction in dose administration time from 156 to 34.5 seconds (95% CI, 112.9–129.4) for magnesium sulfate 5 meq /2 mL and from 304 to 45 seconds (95% CI, 236.4–281.4) for paracetamol 200 mg/20 ml. Inferentially, the mean reduction in time was significant (*P*<0.05) after implementing both PFSs.



Summary

Implementing ready-to-administer PFSs in pediatric emergency patients not only significantly reduces the medication administration time but is also a good strategy to enhance patient safety in pediatric population. It has the potential to improve throughput in the ED.

Discussion

Our study highlighted that ready-to-administer prefilled sterile syringes has significantly reduce the time of medication administration in pediatric patients. This intervention will potentially have impact on ED patient throughput by improving process flow in busy emergency department. The PFSs also have potential to reduce medication errors, variation in medication order entry and enhance clear presentation. Indirectly, it also reduces unnecessary calls for clarifications and queries about medication orders.(1)

The dose administration reduction time for 150 mL of 3% hypertonic saline was not calculated in this project, as the volume was intentionally reduced from 500 mL to 150 mL. This adjustment was made primarily for safety reasons and is considered an effective strategy to reduce the risk of medication errors associated with this high-concentration electrolyte.

Key words

Prefilled sterile syringes, Pediatric patients, Emergency Department (ED), **T**ertiary care hospital, Pakistan

References

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