Introduction

- Pediatric procedural sedation is being increasingly performed at various hospital locations and involves the use of infusion medication. Intravenous medication errors are the most dangerous category of medication errors.
- We sought to improve the safe administration of infusion medications by performing a quality improvement initiative. This involved two-person verification of infusion pump programming from 0% to 90% prior to being administered to patients in a busy radiology suite. The overall aim was to reduce medication errors in the department.

Methods

- The radiology sedation service at our hospital delivers care using infusion medications to approximately 40-50 patients per week.
- To perform two-person verification, key drivers were developed which included frequent educational meetings with providers, written reminders, and display of visual reminders in the associated clinical areas to perform the processes and sharing knowledge by constant display of run charts (Figure 1).
- A multidisciplinary team conducted a series of tests of changes to address the key drivers using interventions. The primary aim was the process measure of performing two-person verification. The secondary aim was the outcome measure of reducing medication errors. The balancing measure was the measurement of delay in case starts.
- Data were collected and entered into database by an independent impartial data collector. Data were analyzed by using run chart.

Results

- The improvement team ran 24 Plan-Do-Study-Act (PDSA) Ramps.
- The percentage of two-person verification of infusion pump programming increased from 0% as a baseline to more than 90% by the end of the project over the last 14 months (Figure 2).
- Overall, there were four-infusion pump related medication errors reported from the department of anesthesia during the first three months of the project (unrelated to the study) and was reduced to 0 by the end of the project.
- There was no delay in case starts and was more than 90% prior to project start, during the project, and after the project completion.
- There was an overall reduction in the rate of medication errors in the department of anesthesia from 4 errors per month two years back to 1 error per month during the completion of the project.

Conclusions

- By applying quality-improvement methods, significant improvements were made in the safe use of infusion medication use.
- The culture of change was sustained and spread to all operating rooms.
- The impact can be significant by reducing medication errors in patients, and promote a culture of safety for the institution.

Correspondence: Rajeev.Subramanyam@cchmc.org