Striving for Zero IV Pump Errors – A Unique Approach

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Issue

Over a period of 18 months, there were 120 events involving the programming of IV pumps. Eight of the events resulted in serious injury to the patient. The contract for replacing the IV pumps would not be done for two years. Action was needed to be taken to avoid further serious events involving programming of IV pumps. There are more than 21 steps involved in programming the IV pumps to administer medications. A multi-disciplinary committee was assembled to review and to problem solve utilizing a FMEA tool. The committee included representatives from nursing, patient safety, risk management, education, nursing quality, information services and pharmacy.

Purpose and Logic

- Initial review of the process included an A3 (lean) tool to determine the background, current conditions, analysis, and proposed countermeasures that were needed. The process was outlined step by step, and reviewed for severity, occurrence and detectability. The most critical risk areas were identified, reviewed and action steps were determined.
- Identified concerns:
  - Retained data in IV pumps: Data from previous IV administrations was retained. If pump was not programmed correctly, the pump settings default to previous setting causing IV’s/medications to infuse at incorrect rates.
  - IV calculations: Dosages were programmed incorrectly causing incorrect rate to infuse
  - Weights were entered as pounds or kilograms, causing programming to be incorrect when the two were interchanged
  - Library: Staff did not always utilize the library correctly for programming of pumps.
  - Line reconciliation: When hanging more than one IV, lines were sometimes crossed and rates on pumps were set for incorrect medication.

Results

- Rollout of the action plan was initiated the beginning of December 2011, with education completed by the end of December 2011.
- In January 2012 we identified an increase in reported near-miss events.
  - The committee went to the units and interviewed staff to determine how well staff understood the education and were utilizing it to program the pumps.
  - Further education was provided to assure that staff were aware of the need to utilize the action steps for any IV’s or medications being administered.
- Outcome to date: Zero serious events since the implementation of the new processes.

Conclusions

Through collaboration and a team effort, a multi-disciplinary team of professionals embraced the issues identified with programming of the IV pumps. Using a FMEA format and lean methodology an action plan was determined for each concern. When review of the data after implementation identified some confusion with staff perception of expectations, the group evaluated the education provided and revised it to assure that all staff understood the expectations. As a result ZERO serious events for our patients.