Creating an IV infusion safety net with smart pump/EMR interoperability

"Here at Children's Minnesota, our mantra is every patient, every IV infusion, every time."[1]

Children's Minnesota is a 428-bed pediatric institution. They were the first children's hospital to go live with smart pump/EMR interoperability.

Goals

- Reduce chances of pump programming errors
- Improve infusion documentation habits
- Leverage EMR investment with full scale interoperability for all drugs and infusions

Challenges

- 65% of Children's Minnesota medications are IV infusions.[2] High-risk IV medications have the greatest chance of causing harm.[3]
- 49% of reported adverse drug events were related to IV infusion administration.[2]
- End-of-shift batch processing affected both the accuracy and availability of infusion data for clinical decision-making.
- CPOE, BCMA and smart pumps did not protect against many IV infusion errors.

Solution

Children's Minnesota partnered with BD and Cerner in March 2012 to implement bidirectional BD Alaris™ EMR Interoperability for pump and syringe infusions house-wide.

More protection against IV infusion errors

100% of prepopulated infusions protected by DERS *[4]

71% decrease in DERS alerts†[5]

99% decrease in overrides for high-risk drug alerts[4]

37% decrease in voluntary safety learning reports related to medication administration events[5]

Insights to drive improvements in cost control and quality

"We now have near real-time data on infusions that will allow us to implement timely compounding of expensive drugs."

N. Jeffery Fleming, PharmD
Clinical and Informatics Pharmacist

"The value to nurses is they can focus on patients since infusion data is captured electronically. Accurate, timely data supports clinical workflow."

Bobbie Carroll, RN, MHA
Senior Director for Patient Safety and Clinical Informatics

"We have tremendous data that we use to make workflow improvements and reinforce compliance."

Sarah Giga, MS
Director, Clinical Integration

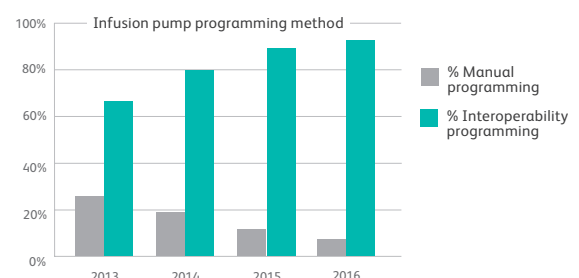### Sustainable impact on standardization

80% compliance sending EMR order parameters to prepopulate infusion pump[4]

57% initial increase in Guardrails™ utilization with use of BD Alaris EMR Interoperability[1]

Consistent increase in programming in Guardrails using interoperability for over **5 years**[1]

Infusion pump programming method

- % Manual programming
- % Interoperability programming

(Bar chart, years 2013–2016, y-axis 0%–100%)

References
1 Giga S, Biltoft J, Schmidl J. Driving Patient Safety with Smart Pump EMR Interoperability. PowerPoint presented at: HIMSS17; February 21, 2017; Orlando, FL. **2** Carroll B. Integrated solution helps improve pediatric patient safety, streamline IV medication management. Patient Safety & Quality Healthcare, March/April 2013. https://www.psqh.com/analysis/integrated-solution-helps-improve-pediatric-patient-safety-streamline-iv-medication-management/ Accessed September 14, 2017. **3** San Diego Patient Safety Council. Safe Administration of High-Risk IV Medications. https://www.hqinstitute.org/sites/main/files/file-attachments/sdpsc_safe_administration_of_high-risk_iv_medication.pdf. Published 2009. Accessed September 14, 2017. **4** Giga S, Children's Hospitals and Clinics of Minnesota, email communication 2017. **5** Fleming NJ. Trusted Information Leading to Clinical Action – True Interoperability For Medical Devices. PowerPoint presented at IOT, Big Data Healthcare Summit Western Canada; January 31, 2017; Vancouver, BC.

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