Standardized approach to implementation of infusion pump interoperability
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**Purpose**

Describe the process to implement smart pump–electronic health record (EHR) interoperability technology throughout a multi-facility community health system to improve intravenous (IV) medication safety and efficiency with auto-programming, reducing keystroke errors and edits from 17 step manual process to 7 steps.

**Approach**

- Identify stakeholders
  - Leadership
  - Informational Services (IS)
  - Biomedical
  - Nursing
  - Vendors – EHR & IV Pump
  - Facilities
  - Pharmacy
  - Outpatient & Ancillary Services
  - Finance
- Develop a project plan
  - Evaluate the organization’s current state – wireless network, technology usage and barcode compliance, nursing workflows, computerized provider order entry (CPOE), and pump library details
  - Define patient areas and situations that will not use interoperability and label as out of scope
  - Complete an extensive review of every medication and fluid infusion order with all corresponding dosing options
  - Test the interface for every infusion order
  - Develop a project timeline
  - Project plan details
  - December 2017
  - March 2018
  - July 2018
  - December 2018
- Project Steering Committee
- Leadership
- Informational Services (IS)
- Biomedical
- Nursing
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**Background**

EHR – IV Pump Interoperability Timeline

- May/June 2016
  - Deploy pumps throughout health system
- November-December 2017
  - Interoperability roll out to nursing units
- December 2017
  - Pump Steering Committee formed
  - Met weekly

**Outcomes**

- An EHR – IV Pump Steering Committee was formed and met weekly with subgroup meetings, tasks, and assignments occurring in between
- 7 key nursing units were identified to guide standard workflows
- Decrease CCAs
  - Critical Care
  - Medical Surgical
  - Obstetrics
  - Pediatrics
  - OBGYN
  - Perioperative
  - Oncology
- 3 rounds of testing were conducted on 1400+ medication orders ensuring the auto-programs the pump, closes without alerts, and documents rate, dose, and volumes correctly to the EHR
- 7 out of scope units and 6 out of scope patient care situations were defined, along with infusions which will not integrate

**Approach**

- Repeat order-interface testing for all medications in a distinct test environment with nursing end-users
- Document and correct errors identified by end-users in real time and/or track issues to include for end-user training
- Complete a thorough Failure Modes Effects Analysis with key stakeholders to address identified concerns and clarify follow-up
- Major decision points
  - Define out-of-scope areas, medications and situations
  - Standardize nursing IV workflows
  - Determine the number of clinical care areas (CCA) needed
  - Determine how bolus IV fluids will be ordered and infused

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**Conclusions**

- Assessment of current state technology and nursing IV workflows should start early
- A multidisciplinary approach is critical to ensure all aspects of the project are aligned
- A dedicated resource to serve as a liaison among the stakeholders with existing knowledge of pharmacy and nursing is invaluable
- Collaborating with IS, biomedical, and facilities will minimize delays
- Implementation will not be without challenges or delays, yet achievable within a reasonable timeframe
- Ongoing communication post go-live thru end user feedback, event review analysis, and proactive assessment of data allows the system and end user experience to continuously improve

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