Clinical Scenario #1
Patient Controlled Analgesia

Part 2: Workflow Diagrams
Working Draft Version 5.1

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Clinical Workflow

This PCA Safety Interlock workflow has served as a prototype to refine our clinical scenario requirements analysis methodology. This work began in 2005 and was ultimately published in Annex B of the ASTM F2769-09 (ICE) standard. Originally these workflows were documented in Microsoft Visio, then in Altova UModel, but neither tool was a good fit. The depictions included in this series of documents were created in Enterprise Architect.

Key for Workflows:

- Diagram Boxes in Green signal a Manual Clinical Process (i.e. a nurse hangs an IV bag)
- Diagram Boxes in Red signal that a Comparison between two data points is required (compare dose on pump with dose in order)
- A $\infty$ at the bottom of a workflow block signals that there is an additional page of workflow.
Diagram: Infusion Therapy

Begin Infusion Management

getOrderPatientID

«Business Process»
getObservationData(Patient Assessment)

«Group»
Infusion Pump Pre-Setup

getPhyData(patientID, status)  getSTDdata(patientID, EMR, Lab)

«Group»
setSettings(Infusion Pump)

«Business Process»
getObservationData(SRD Drug Check)

Does the Patient Require Monitoring with this Infusion?

Yes: «Business Process»
setSettings(Monitor)

«Business Process»
Monitor Patient

No: Patient Infusion Process (in parallel)

manual Process: Administer Infusion

«Business Process»
getObservationData(Dose Check)

Continue Infusion

Yes: «Business Process»
Pharmaceutical Infusion Solution

No: End Infusion

End Infusion Therapy Process
Diagram: IV Assessment

Begin Assessment

- Line Types
  - Arterial, Central Venous, Pulmonary Artery, PIC
  - Body Site
    - Arterial: Radial/Femoral, Right/Left, Central Venous; Internal Jugular/Subclavian, Right/Left, Pulmonary Artery; (Not) Paced, Internal Jugular/Subclavian, Right/Left, PIC, Right/Left

- Gauge

- Dressing Change
  - Frequency, Time of Next Change

- Line Tubing Change
  - Frequency, Time of Next Change

- Site Assessment
  - Number of Attempts

Continue with Assessment

Yes

No

Assessment Complete

setObservationData(IVLines)
Diagram: 5R Drug Administration

If all of these are not verified you cannot continue. This is also completed by 2 nurses independently.
Diagram: Set up Infusion

BPMN Setup Infusion

Name: Setup Infusion
Package: Infusion Therapy As Is
Version: 1.0
Author: Michael

1. Manual infusion or with infusion pump?
   - Infusion Pump

2. Select infusion pump type?
   - Syringe
   - Volumetric

3. PCA?
   - No
     - Manual process: Load Tubing/Cassette into Pump
   - Yes
     - getSData(patient Hazards)
     - GetSDatapainScore, sedation Score
     - manual process: Educate Patient and Family on PCA
     - setSettings(Infusion Pump)

End Setup
Diagram: Set up Patient Monitoring

BPMN Setup Patient Monitoring
Name: Setup Patient Monitoring
Package: Infusion Therapy As Is
Version: 1.0
Author: Michael

Start Monitoring Setup
getOrders/patientID
manual Process: Setup Monitoring Equipment
Select one or both devices:
Capnograph
Pulse Oximeter
manual Process: Attach Sensors to Patient
setSettings/device
setAlarm Settings/device
End Monitoring Setup