EvergreenHealth
Staged Centralized Pulse Oximetry Implementation
September 27, 2016
Introduction
The Need Identified

Respiratory depression & hypoxia are known adverse effects caused by IV opioids used to treat pain

• Risk Factors Include:
  – Post Operative patients
  – Obesity
  – Obstructive sleep apnea (OSA)
  – Pulmonary, kidney, cardiac impairments

(Hagle, Lehr, Brubakken, & Shippee, 2004)
Risk Factors

Statistics surrounding risk factors:

• Post Operative patients 0.19%-5.2% significant respiratory depression with opioid use (Addison et al., 2014)
• Obesity occurrence nearing 36% of adults (Flegal, 2010)
• Obstructive Sleep Apnea (OSA) prevalence estimated 19.7% for males and 7.4% for females (Sharma et al. 2006)
The Risk Identified

Research shows an increase in near misses, failure to rescue and other adverse events related to over sedation of post operative patients receiving IV opioids.

(Smith, Farrington, Matthews, 2014)

EvergreenHealth’s experiences prior to the new CMS requirement in 2014 surrounding Opioids included:

– Post op day 2, on oral opioids, OSA, obesity, planned D/C that day

– Admit from free standing ED, SBO, 1 dose IV opioid, undiagnosed OSA
Meeting the CMS regulations

To meet the new CMS requirements, as well as the NPSG for safe clinical alarms, EvergreenHealth focused on the high risk patients with Obstructive Sleep Apnea (OSA)

Continuous centralized monitoring of Pulse Oximetry (CPOX) has been shown to reduce the incidents of failure to rescue events from adverse respiratory decline by standardization of the use of CPOX in this patient population.

(Hagle, Tutag, Brubakken, & Shippee, 2001)
Goal 6
Reduce the harm associated with clinical alarm systems.

NPSG.06.01.01
Improve the safety of clinical alarm systems.

--Rationale for NPSG.06.01.01--
Clinical alarm systems are intended to alert caregivers of potential patient problems, but if they are not properly managed, they can compromise patient safety. This is a multifaceted problem. In some situations, individual alarm signals are difficult to detect. At the same time, many patient care areas have numerous alarm signals and the resulting noise and displayed information tends to desensitize staff and cause them to miss or ignore alarm signals or even disable them. Other issues associated with effective clinical alarm system management include too many devices with alarms, default settings that are not at an actionable level, and alarm limits that are too narrow. These issues vary greatly among hospitals and even within different units in a single hospital.
Centralized Pulse Oximetry

• Vendors – 3 evaluated
• Demo’s with IT staff, Biomed, RN’s, Physicians, Purchasing and Administration present
• Reference Calls
• Site visit
• Masimo was the final decision
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Infrastructure

• Wireless upgrade
  – Phases
    • Adult med/surg
    • Obstetrical

• Monitor Room
  – Telemetry monitor, Video patient observation (War Room)
  – Heat distribution
  – Room relocation
Implementation

• Selecting the vendor that is right for you

• Workflows
  – Who to monitor
    • OSA
    • Post Op
    • IV opioids
  – Education
    • E-learning
    • Live education sessions
    • Vendor support at go live
    • Unit Champions
Implementation

• Workflows
  – Checked out from “War Room”
  – Patient notification on the system while in War Room

• Monitor Techs
  • Escalation process
  • Communication is critical to the process
Evaluation

• Delay of patient on the system
  – Staff time away from bedside
  – Equipment movement
  – Breakdown in communication

• New Process
  – Decentralized equipment (unit based)
  – Changed notification to monitor techs
  – Ortho, Spine, Neuro unit-assigned and mounted units in each room

9/25/2013
Evaluation

• Alarm Management
  – Originally
    • SPO2 set at 88%
    • Delay 15 sec
  – Changed to Manufacturers recommendations suggest a reduction in actionable alarms up to 91% (Masimo Corporation, 2012)
    • SPO2 set at 85
    • Delay of 15 secs
  – Physician buy-in
Change in Parameter

Results: Example from typical random patient

Spo2 setting at 88%  
• 67 alarm events (none actionable)

Spo2 settings at 85%  
• 35 alarm events (none actionable)

Potential reduction of current none actionable alarms by 50%

9/25/2013
Obstructive Sleep Apnea

• STOPBANG to STOPBAG
  – Snoring-do you snore loudly?
  – Tired- do you often feel fatigued during the daytime?
  – Observed-has anyone observed you gasp or stop breathing during your sleep?
  – Pressure-do you have high blood pressure?
  – Body Mass Index-is your BMI higher than 35?
  – Age- are you 50 or older?
  – Gender-are you male?
Pre-Op Assessment

Algorithm for Sleep Apnea Screening and Centralized Pulse Oximetry Monitoring for Post-Operative Patients

- Patient needs surgery

  - STOP BAG Positive
    - Referral to Pulmonary sleep clinic for assessment
    - Sleep clinic work-up completed
    - Patient supplied with appropriate equipment (CPAP). Cleared for surgery

  - STOP BAG Negative
    - Pre-Op Clinic Screening STOP BAG
    - Surgery Scheduled
Post Op Assessment

Algorithm for Sleep Apnea Screening and Centralized Pulse Oximetry Monitoring for Post-Operative Patients

Patient admitted to unit post op

Task to RN – Complete STOP BAG

NAS – Diagnosed with Sleep Apnea

No

Low Risk and Intermediate Risk

Place patient on Centralized Pulse Oximetry

High Risk

Notify MD patient screened for high risk. Place patient on centralized Pulse Oximetry.

Yes

Task to RN – Notify MD for Sleep Apnea routine power plan. Place on centralized Pulse Oximetry.
Outcomes

• Desaturation events
• Cardiac events
• Pulmonary events
• 6 known lives with early intervention
Next Steps

• Expansion of Centralized Pulse Oximetry
  — Now moving to all post op patients receiving IV opioids

• Pre-op screening
  — In office screening orthopedics

• Algorithms for OSA diagnosis in any setting

• Sedation assessment outside of the CCU
References


References


Questions

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