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Patient Safety - IV Opioid Use in Hospitalized Patients



MID COAST
HEALTH



Objectives

- List reasons that necessitated development of risk assessment
- State a few risk factors or medical conditions from the IV Opioid Risk Assessment that require enhanced monitoring
- Explain how enhanced monitoring is performed.



Opioid Safety Team

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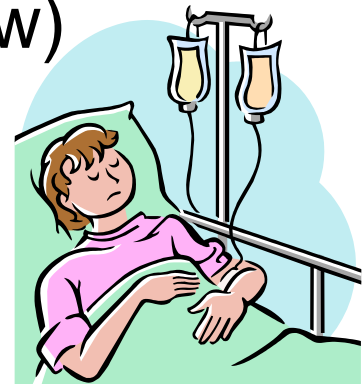
Multidisciplinary Team Goals

- To determine which in-patient populations are at high risk for adverse events associated with IV opioid administration
- To determine the manner and frequency of monitoring these high risk patients.
- To provide safe, effective care by implementing evidence based guidelines
- To educate MCH inpatient staff



Background

- New CMS standards published March 14, 2014
- Requires:
 - Risk assessment to identify patients at risk for over sedation(new)
 - Enhanced monitoring protocols for those patients who have been identified (new)





Baseline- 6 Adverse Events at MCH

Data review-

(Variance reports and Rapid Response Team events March 2013 through April 2014)

6 cases of respiratory arrest/depression attributed to opioid over sedation

- Average age 47, all female
- 5 cases involved Hydromorphone
- One case involved Opioid and PCA
- Four cases had OSA as history or hypoventilation syndrome
- Average BMI= 37
- No surgical patients
- One death



The PI PROCESS

- **Plan**- the multidisciplinary team met over many months and identified what MCH needed to change.
- **Do**- a risk assessment was created, enhanced monitoring was defined, documentation tools were amended and staff training was created.
- **Check**- baseline data was obtained and will be used to compare our performance with this change in practice
- **Act**- changes will be made to the plan as follow up information is obtained in the following months.



The Risk Assessment

IV Opioid Risk Assessment

added to all inpatient flow sheets

- It will be performed on patients with pain **AND** IV Opioid orders
- The risk assessment is done **before** the IV Opioid is administered
- Any one risk factor triggers enhanced monitoring nursing orders

Note-

- This is for patients ordered on **IV (intravenous)** opioid use, not PO routes

At risk if one or more of these are identified

- IV Opioid ordered and patient BMI greater than 35
- IV Hydromorphone ordered
- IV opioid ordered and any route of benzodiazepine (Valium, Ativan)
- IV opioid and history of untreated OSA or hx of snoring
- IV opioid by PCA
- IV opioid with general anesthesia greater than 3 hours
- IV opioid with STOP BANG score greater of 3 or higher



Enhanced Monitoring- Interventions

- Vital signs q4 hours
- Pain score, sedation score and RR **Q2 hours**
- **Continuous pulse oximetry** while at risk
- Patient/family education on why patients will be checked every two hours and what to watch for/scripting for nurses
- Notify provider if O2 sat drops below 88%, sedation score of 3 or lower, RR less than 10
- Enhanced monitoring may be discontinued 12 hours after the last dose of the IV Opioid



Sedation Scale- ICU

- **ICU- uses Sedation Agitation Scale (SAS)**

- Scores 1-7

- 1= Unarousable
- 2= Very sedated, does not follow commands or communicate
- 3= Sedated, follows simple commands, arousable but drifts off immediately
- 4= Calm and cooperative, arouses easily
- 5-7 are about agitation

- Interventions-

- Level 3 and 4- acceptable, continue to monitor q 2 hours
- Level 1 and 2- contact provider, initiate more frequent assessments, back off or stop opioids



Sedation Scale- non ICU inpatients

Pasero Opioid Induced Sedation Scale (POSS)-modified

- 1= Somnolent, no response
- 2= very drowsy, drifts off during conversations
- 3= slightly drowsy easily aroused
- 4= Awake and alert

Score 3 and 4

- acceptable, continue to monitor

Score 1 and 2

- unacceptable- contact provider, initiate more frequent assessments, back off or change opioids
- Consider administering Narcan, call RRT or Code Blue



Morphine

- Metabolized by liver and excreted in urine. The metabolite (morphine-6-glucoronide) has significant analgesic and respiratory depressant effect. **Not suggested for use in renal failure patients**
- Available in IV, PO, IT, Epidural, and more
- Many uses: IV sedation, post-op analgesia, post-trauma pain management, chronic pain
- Half life is approximately 2 hours



Hydromorphone (Dilaudid)

- Analgesic potency 5-7 times stronger than morphine, acts similarly to morphine
- Metabolized by liver and excreted in urine, but the principle metabolite (hydromorphone-3-glucoronide) is inactive so can be used cautiously in renal failure patients
- Half life 2-3 hours
- **Watch for cumulative effect with repeated doses!**



Fentanyl

- Analgesic potency 35-60 times stronger than morphine, *but different dosing!*
- Rapid onset and variable dose-dependent duration
 - IV half life 30-60 minutes (2-4h if continuous)
- Given in same settings as morphine and hydromorphone and many different routes,
 - IM, IV, buccal, intranasal, transdermal, sublingual, IT, epidural



Lorazepam/Benzos

- Sedative, hypnotic
- Metabolized in the liver
- Half-life is 10-20 hours!!
- Caution in renal failure patients, are you seeing a theme?!



Nurse Script



- *“Mr. Smith , I want you to know that you are receiving strong pain medication that may make you sleepy in addition to relieving your pain. In order to assure you are safe, we will be checking on you more frequently. I will be checking your level of sedation and your pain level every two hours. I am sorry that I may need to gently wake you up but your safety is the most important thing”.*
- *If family is present –”please call me right away if you are worried he is too sedated, starts snoring in an unusual way or his breathing seems too shallow”.*



In-patient Capnography

- MCH will add Capnography (Continuous end tidal CO₂ monitoring) to the enhanced monitoring nursing orders when the new monitoring system is purchased and installed on Med Surg in 2015



Case Study

- 59 yo male s/p TKR
 - 159 kg, hx OSA, HTN, DJD, Gout, Afib, Etoh use
- Admitted to MS, scored as “at risk” because of hx OSA, releases enhanced monitoring
- Pharmacist calls provider and checks on patient because of risk for sedation
- Initial orders oxycodone 5mg q4 prn
- 6h post op has increased pain, orders received for IV Morphine and prn Ativan



Case Study

- In the next 36 hours, received:
 - 12mg Morphine (6 doses) last dose 6h before event
 - 2mg Ativan (4 doses) last dose 12h before event
 - 20mg Oxycodone (4 doses) last dose 4h before event
- 3-11 nurse notices increased somnolence, sedation score 1, o2 sats dropping
 - Calls provider, gets narcan order (not used), transfers to ICU



Case Study

- Clears overnight in ICU
- Uneventful outcome – good news!
- Med Surg nurse prevented worse outcome using enhanced monitoring



Goal- Zero cases of over sedation or respiratory complications secondary to IV opioid use at MCH

- Monitoring of variance reports and adverse events will continue
- Measurement of risk assessment completion on admissions (Med Surg and ICU)
- Measurement of compliance with Q2 hour monitoring on patients identified at risk after education roll out.



February 2015 Data Collection

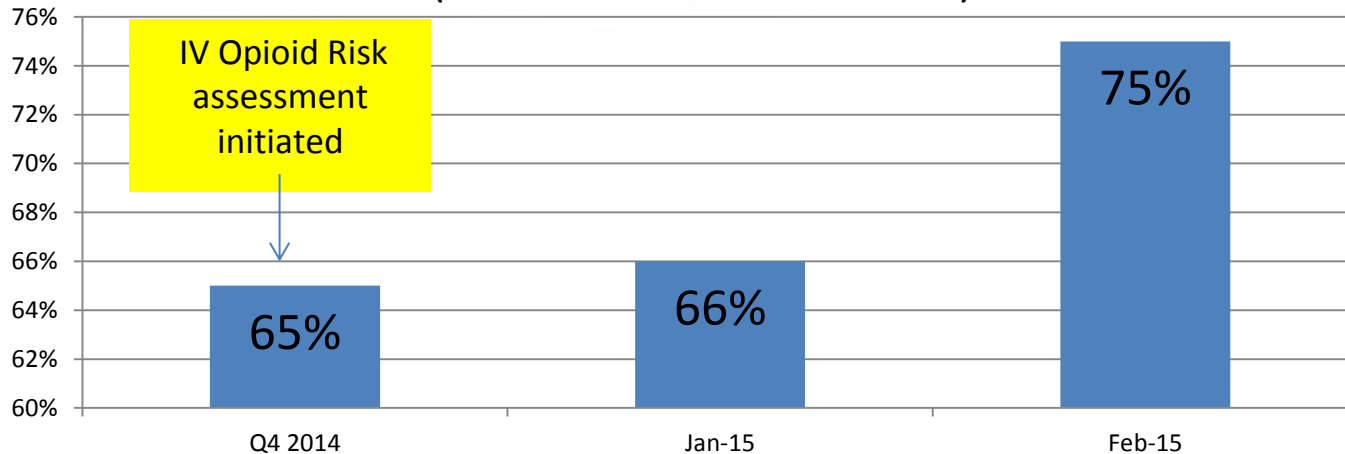
In November of 2014 an IV Opioid risk assessment was added to the flow sheets. The purpose was to identify patients at risk for over sedation when exposed to IV Opioids. A random chart audit is performed each month to measure our progress with adopting these new assessment and interventions into nurse practice.

After 5 months our progress is noted below:

- 100% of patients have pain assessed on admission.
- Patients with pain and who are receiving IV Opioids have the risk assessment completed and enhanced monitoring initiated 75% of the time.

Rate of Enacting Enhanced Monitoring on ICU and Med Surg

(Patients at Risk with IV OPIOID orders)





Outcome...so far

- 12 months prior to implementation: 6 RRT/Code Blues related to respiratory depression secondary to IV opioids
- 6 months post implementation: 0 RRT/Code Blue



Questions





References

- Lexicomp. (2015). *Ativan, Fentanyl, Morphine, Dilaudid*. Wolters-Kluwer Health. Retrieved from https://online.lexi.com/lco/action/doc/retrieve/docid/patch_f/7195#f_pharmacology-and-pharmacokinetics
- Pisini, J.V. (2015). *Perioperative pain management of the spine patient: Acute, chronic, and beyond* [PowerPoint slides].
- S&C: 14-15, March 2014, CMS Center for Clinical Standards and Quality/Survey & Certification (Standard 482.23c)