One Size Does NOT Fit All: Opioid Dose Range Orders

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Case Presentation: Susan Harris

- Otherwise healthy 18 yr-old female post emergency exploratory laparotomy and appendectomy for ruptured appendix
- Intraoperative management: IV fentanyl 100 mcg and general anesthesia
- Surgery duration = 1 hour, 20 minutes

1400: Admit to PACU

- T = 98.8 (ear); PR = 84; R = 20; O_2 saturation = 97%
- Frequently drowsy, falls asleep mid-sentence.
- Pain rating 6:
  - Given 3 mg IV morphine.

PACU

- 1420: Pain rating 3; frequently drowsy, falls asleep mid-sentence.
- 1445: Vital signs stable; O_2 saturation = 95%; pain rating 5; drowsy but easily aroused.
  - Given 3 mg IV morphine (45 min).

PACU Discharge

- 1505: Pain rating 3; vital signs and O_2 saturation stable WNL; drowsy but easily aroused.
- 1515: Discharged to clinical unit.

Pertinent Postop Orders

- Vital signs q 4 h
- Morphine q 2 h IV PRN:
  - 2 mg for pain rating 1-3
  - 4 mg for pain rating 4-6
  - 6 mg for pain rating > 6
- Metoclopramide (Reglan) 10 mg IV q 6 h PRN nausea
- Diphenhydramine (Benadryl) 25-50 mg IV q 6 h PRN itching

1530: Admit to Clinical Unit

- T = 98.3 (ear); PR = 80; R = 18; O_2 saturation = 95%
- Drowsy but easily aroused.
- Pain rating 8:
  - 1540: Given 6 mg IV morphine. (55 min)

Clinical Unit

- 1745: Pain rating 5; "Mother requesting pain medication and something for itching."
  - Given 4 mg IV morphine + 25 mg IV Benadryl. (2 h, 5 min)
- 1800: "Sleeping."
- 1820: Pain rating 8; frequently drowsy and falls asleep mid-sentence; reports nausea; refused meal; continues to itch.

Clinical Unit

- 1810: "Mother requests nausea medication and more pain and itch medication."
- 1815: MD called for 1-time early morphine order. (30 min)
  - 1825: Given 6 mg IV morphine, 10 mg IV Reglan, and 25 mg IV Benadryl.
- 1855: "Patient sleeping. Mother at bedside."

Clinical Unit

- 1915: Mother detects patient is not breathing and calls for nurse.
  - Nurse calls Code Blue and gives 0.2 mg IV naloxone with no response.
- 1940: Resuscitation successful; given total of 0.8 mg IV naloxone; patient transferred to ICU on ventilator.

Total IV Morphine Dose

- 6 mg (PACU) + 16 mg (clinical unit)
- Total = 22 mg over 4.5 hours (1400 to 1825) = ~ 4.8 mg/hour
- Twice the recommended opioid-naïve adult starting dose of ~ 2.5 mg/hour, or ~ 10 mg over 4-hour period

Iatrogenic Risk Introduced

- Opioid-only pain treatment (monotherapy)
- Repeated doses of Benadryl
- Reglan administration
- Inadequate monitoring
- Decision making influenced by mother?

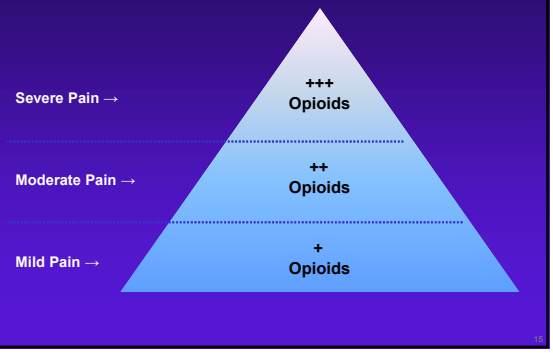
How Could This Have Been Prevented?

- Use a multimodal approach:
  - Nonopioid foundation (local anesthetic infiltration, acetaminophen, + NSAID)
- Reduce iatrogenic risk:
  - Avoid/minimize co-sedating agents;
  - Assess sedation, respiratory status at peak time and at least q 2 hrs x 1st 24 hrs;
  - Initiate mechanical monitoring based on elevated risk due to iatrogenesis;
  - Talk with family members: Safety First!

Opioid-Only Pain Treatment

- Poor pain control is just one downside.
- Is a major contributor to morbidity and mortality in patients with acute pain.
- High opioid doses do not increase patient satisfaction or improve functional outcomes.
- Resistance to change despite decades of guidelines, expert recommendations, and educational efforts.

Current Approach to Pain Management



Multiple Contributing Factors

- Failure to identify this as a problem.
- Variations and deficits in knowledge of healthcare team members.
- Multidisciplinary issue = requires frank discussion and problem-solving.
- Bedside nurses do not control formulary or orders but are liable for consequences.
- Focus is on patient satisfaction, rather than pain control for improved function.

Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)

- First (2006) publicly reported survey of patients' perceptions of healthcare
- 18 items regarding how often or whether they experienced an aspect of care, rather than satisfaction with care
- Questions regarding nurses, doctors, experiences, environment, discharge, overall rating

HCAHPS Pain Questions

- How often was your pain controlled?
- How often did the hospital staff do everything they could to help with your pain?
  - Never
  - Sometimes
  - Usually
  - Always

HCAHPS Survey

- Sent randomly to patients 48 hours to 6 weeks post discharge.
- Reimbursement depends on submission and results of survey data.
- Publicly-available comparisons of all healthcare facilities.
- Highly competitive and potentially dangerous.

Recipe for Disaster

Nurses feel responsible for HCAHPS scores
+
Current reliance on opioid-only plans
+
Current logic that more is better
("did staff do everything they could…")
+
Failure to monitor appropriately
=
Set-up for sentinel events

#1 Incentive for Change:

Sentinel Event or
Near-Miss Event

TJC Sentinel Event Alert

- Long overdue!
- 2004-2011 database
- Opioid adverse drug events are most common of all drug adverse events:
  - 47% wrong dose
  - 29% improper monitoring
  - 11% excessive doses, drug interactions, adverse reactions

TJC Sentinel Event Alert Action Plans

- Screen for risk, e.g., STOP Bang.
- Check for hidden patches and devices.
- Multimodal analgesia including nondrug.
- More frequent comprehensive respiratory assessment.
  - Consider risk: Mechanical monitoring.
- Monitor sedation; use a scale.
- Build red flags into the EMR.

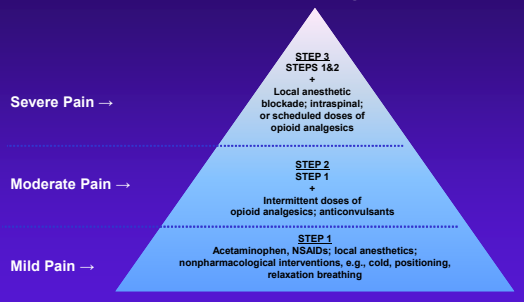
CMS Clinical Standards: Opioid Administration

- Insure policies/procedures for pain assessment and monitoring requirements.
- Train staff in early detection and intervention for sedation and respiratory depression.
- Teach patient and family.

Single Most Important Action: Use Multimodal Analgesia

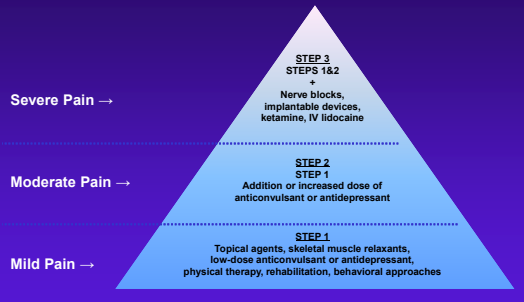
- Combinations of pharmacologic agents and nonpharmacologic methods that can attack more than one pain mechanism:
  - Synergistic or additive analgesic effects
- The result is lower doses of each drug → fewer adverse effects.

Multimodal Approach to Nociceptive Pain Management[1,2]



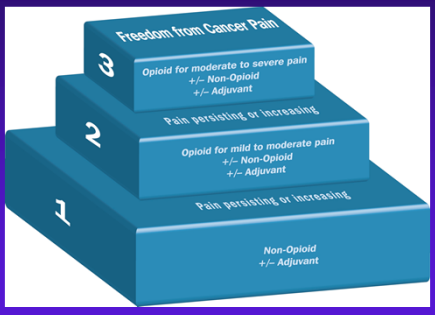
1. Aubrun et al, 2003; 2. World Health Organization. Pain relief ladder, 1986.

Multimodal Approach to Neuropathic Pain Management[1-3]



1. Dworkin et al, 2010; 2. Turk et al. (2011); 3. World Health Organization. Pain relief ladder, 1986.

First Model: WHO Analgesic Ladder for Cancer Pain, 1986



World Health Organization. Pain relief ladder. *http://www.who.int/cancer/palliative/painladder/en/*

Take Action to Save Lives

- Change the focus from patient satisfaction to patient outcomes.
- Discuss functional and QOL goals.
- Reinforce the link between pain control and achievement of goals.
- Be realistic: "Zero pain usually is not possible, but we care about your pain and will try to do everything we can to control it so that you are able to..."

Take Action to Save Lives

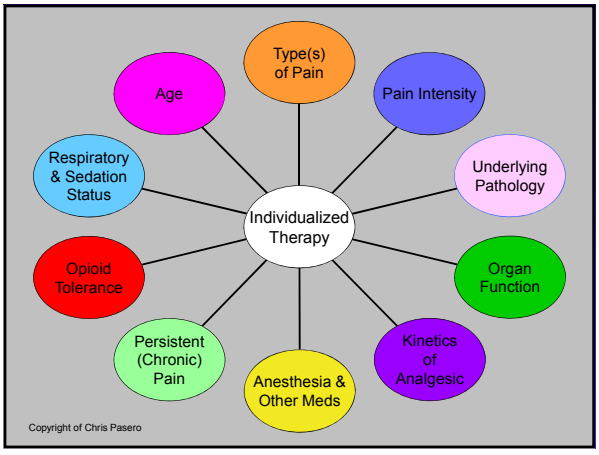
- Establish task force: Nurses, physicians, and pharmacists.
- Collect data and review literature.
- Develop multimodal order sets that provide a strong nonopioid foundation for pain treatment.
  - Do not link opioid dose to pain intensity.

Pain Intensity Rating Scales

- Useful purpose: Communication between patient and health care team:
  - Initial assessment: Here's where you are and where we're hoping to go.
  - Reassessment: Is what we're doing working?
- Relationship between pain intensity and opioid dose requirement is not linear.

Range Orders for Acute Pain
(ASPMN/APS: Gordon et al, 2004)

- Maximum dose should be at least 2 times but no more than 4 times the smallest dose in range, e.g., morphine 2-8 mg IV q 2 h PRN pain.
- Start with lowest dose in range.
- Do not give less or more than doses in range (e.g., < 2 mg and > 8 mg).
- Never dose to specific pain intensity.



Multimodal Order Sets

- Scheduled for mild pain (order 1):
  - PO and IV acetaminophen and NSAIDs
- Scheduled for moderate to severe pain (order both):
  - PO and IV acetaminophen and NSAIDs
- PRN for moderate pain (order 1):
  - PO and IV opioids in dose ranges
- PRN for severe pain (order 1):
  - PO and IV opioids in higher dose ranges

Individualize Treatment

- Adjust the treatment plan based on patient response:
  - Level of function (achievement of functional or QOL goals)
  - Pain relief
  - Adverse effects
- Find the right balance for the patient.

Implementation Process

- Nursing education:
  - Review policy and procedure and multimodal order sets.
  - Use case scenarios to teach proper implementation.
- Pilot on one or two clinical units.
- Mentor and monitor performance.
- Make changes as needed.

Susan Harris: Multimodal Analgesia

- Otherwise healthy 18 yr-old female post emergency exploratory laparotomy and appendectomy for ruptured appendix
- Preop: IV acetaminophen, local anesthetic surgical site infiltration
- Intraop: IV NSAID, evaluate possibility of reducing doses of sedating agents

Admit to PACU

- Give IV nonopioids if not on board.
- Evaluate need for opioid:
  - Start low and go slow.
  - Consider multiple factors: Let sedation level and respiratory status guide administration.
  - Ask patient if she wants more!
- Start nonpharm: Cool pack, music

Discharge from PACU

- Do not require a specific pain intensity to be deemed ready for discharge (e.g., ≤ 4/10).
- Pain control is on a continuum and the responsibility of every nurse.
- Some titration may be necessary on the clinical unit.
- Work together for safe patient care!

Admit to Clinical Unit

- Assess sedation level and respiratory status (depth, regularity, rate, and noisiness) frequently during 1st 24 hours.
- Use nonpharmacologic methods:
  - Position for comfort
  - Cool pack to abdomen
  - Music therapy

Clinical Unit

- Continue strong nonopioid foundation.
- Evaluate need for opioid:
  - Start low, go slow with opioid doses
  - Let sedation level and respiratory status guide administration.
  - Ask patient if she wants more!
- Evaluate risk on a continuous basis: Adjust monitoring accordingly.

Summary: Optimal Pain Control

- Use multimodal analgesia:
  - Strong nonopioid base (scheduled doses)
  - Opioid dose range orders (PRN)
    - Consider multiple factors to select dose.
- Reduce opioid dose to ↓ adverse effects.
- Reduce/avoid introducing iatrogenic risk.
- Consider risk and monitor appropriately.
- Stay focused on function.