Improving Acute Pain Management for Inpatients Using a Patient-Customized Opioid Tolerance Program

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Pain Control Continues to Be a Problem

- Unrelieved pain costs millions of dollars annually as a result of longer hospital stays, readmissions and visits to emergency rooms.

- 2012 inpatient HCAHPS survey demonstrated 59.2% on “pain well controlled” question.
  - Nearly 1,000 patients told us their pain was not well controlled.

- In 2013, pain domain goal is 69.2% to reach the 80th percentile.
Level of Opioid Tolerance

- **Opioid naïve**: A patient who has *minimal* or *sparse* exposure to opioids

- **Tolerance**: Normal neurobiological event characterized by need to increase the amount of pain medicine taken to achieve adequate pain control

- **Physical dependence**: Normal state of adaptation that is manifested by withdrawal symptoms if abruptly stopped, rapid dose reduction, or administration of an antagonist
Level of Opioid Tolerance

• *Pseudoaddiction*: Behaviors that appear like addiction but stop once the pain is resolved.
  – Example: “Clock-watcher”
  * The term “pseudoaddiction” is grossly overused, so be careful!

• *Addiction*: Primary, chronic, neurobiological disease characterized by impaired control over drug use, compulsive use, continued use despite harm, and craving.
New Opioid Legislation

• For CNCP (chronic non cancer pain)
• Dose = >60 mg morphine equiv/day; #60 pills per month
• Random UDS
• Regular visits
• Random pill counts
• Treatment agreement
• http://www.in.gov/bitterpill/
Goals for Integrated Pain Management Program

• Improved pain management through the development of tiered opioid pain plan

• Include opioid usage assessment and selection of appropriate pain plan

• Utilize an interprofessional approach
  – Representation from pharmacy, nursing, chemical dependency and physicians

• Collaborate for one source of pain management plans
Goals for Integrated Pain Management Program

• Integrate right expertise
  – Escalation strategy
    • Patient outcomes dictate the level of response
    • Guides the nurse on who to contact for support
  – Decision tree for prescribers
    • Recommendations based on evidence-based practice for those cases that involve tolerance or addiction

Tiered opioid pain management order set that stratifies opioids and adjunctive medications based on patient’s tolerance level
Getting Started

• Establish the patient’s baseline opioid use
  – How do I find out what they’re really taking?
    • Ask the patient
    • Run an INSPECT report
    • Collaborate with the family
    • Review other medical records/admissions
  – Continue patient’s chronic meds via home medication reconciliation
    • This is your patient’s baseline
    • Similar to a diabetic, you must start with the patient’s baseline and add to it, if needed, for acute pain control on top of their chronic pain
Opioid Management Order Set

• Step 1: Assign the patient an opioid tolerance level based on their daily use of opioids for the past six weeks
Monitoring Parameters, Call Orders and Adjunctive Medications

- **Step 2:** Fill in physician name/service line for all calls related to pain
- **Step 3:** Select additional monitoring parameters
- **Step 4:** Regardless of tolerance level, adjunctive medications should be prescribed for multi-modal pain management (gold standard)

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Scheduled Pain Medications ("Around-the-Clock")

- acetaminophen 650 mg PO Q6 hours

*NOTE:* Due to documented abuse potential, please limit the use of tramadol as part of an established service line protocol (i.e. orthopedic total arthroplasty) or continued home medication (scheduled NOT PRN). Avoid in individuals recovering from opiate addiction to minimize the exacerbation of iatrogenic opioid relapse.

  - tramadol 50 mg orally Q6 hours

Choose only ONE agent below

- gabapentin 300 mg PO TID
- gabapentin 100 mg PO daily (use if CrCl less than 15 mL/min)
- pregabalin 75 mg PO BID
- pregabalin 50 mg PO daily (use if CrCl less than 15 mL/min)

Choose only ONE agent below

*Note:* Do not order celecoxib if patient has sulfa allergy, NSAID allergy, creatinine clearance less than 50 mL/min, if greater than 70 years old, or for spinal fusions.

- celecoxib 100 mg PO BID
- celecoxib 200 mg PO BID

*Note:* Do not order ketorolac if patient has allergy to ketorolac or other NSAIDs, history of peptic ulcer disease or gastrointestinal bleed, creatinine clearance less than 20 mL/minute, concomitant use of other NSAIDs, or high risk of bleeding.

- ketorolac 15 mg IV Push Q6 hours for 8 Doses (if age greater than 65 and/or less than 50 kg OR CrCl less than 30 mL/min)
- ketorolac 30 mg IV Push Q6 hours for 8 Doses
- ketorolac infusion 90 mg in sodium chloride 0.9% 1000 mL at 40 mL/hr for 24 Hours
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Opioids by Tolerance Level

- **Step 5**: Opioid tolerance level 2

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Scheduled Pain Medications
Choose only ONE agent from the list of medications below if needed
☐ morphine Tab SA 15mg PO BID
   NOTE: If patient is allergic to morphine, then use:
☐ OXYcodone SR 10mg PO BID
   NOTE: Physician to order long acting opioid from home:
☐ resume long acting opioid (physician must enter)

Mild Pain Management (Pain Score 1-3)
Choose only ONE agent from the list of ORAL medications below if needed
☐ acetaminophen-codeine 300mg-30 mg 2 Tablets Orally Q4 hours PRN Mild Pain; comments: or score 1-3
☐ hydroCODONE 7.5mg/acetaminophen 325mg 1 tablet PO Q4 hours PRN Mild Pain; comments: or score 1-3
☐ hydroCODONE-acetaminophen 7.5mg-325mg/15 mL,15 mL per Feeding Tube Q4 hours PRN Mild Pain; comments: or score 1-3
☐ OXYcodone 5mg/acetaminophen 325mg 1 tablet PO Q4 hours PRN Mild Pain; comments: or score 1-3
☐ OXYcodone IR tablet 5 mg, 1 Tablet PO Q4 hours PRN Mild Pain; comments: or score 1-3
☐ OXYcodone oral solution, 5 mg/5 mL, 5 mL PO Q4 hours PRN Mild Pain; comments: or score 1-3
** Total acetaminophen 4 Gram maximum from all sources in 24 hours**
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Opioids by Tolerance Level

• Opioid tolerance level 2 Cont.

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Moderate Pain Management (Pain Score 4-6)
Choose only ONE agent from list of IV push medications below if needed:

- HYDROMORPHINE 0.6 mg IV Push Q2 Hours PRN Moderate Pain; comments: or score 4-6; give first for moderate pain until patient tolerates oral pain medications
- Morphine 4 mg IV Push Q2 hours PRN Moderate Pain; comments: or score 4-6; give first for moderate pain until patient tolerates oral pain medications

Choose only ONE agent from the list of ORAL medications below if needed:

- HYDROCODONE-acetaminophen 7.5 mg-325 mg, 2 Tablets, Orally Q4 hours PRN Moderate Pain; comments: or score 4-6
- HYDROCODONE-acetaminophen 7.5mg-325mg/15 mL,30 mL per Feeding Tube Q4 hours PRN Moderate Pain; comments: or score 4-6
- OXYcodeine 5 mg/acetaminophen 325 mg 2 Tablets PO Q4 hours PRN Moderate Pain; comments: or score 4-6
- OXYcodeine IR tablet 5 mg, 2 Tablets PO Q4 hours PRN Moderate Pain; comments: or score 4-6
- OXYcodeine oral solution, 5 mg/5 mL, 10 mL per Feeding Tube Q4 hours PRN Moderate Pain; comments: or score 4-6
  **Total acetaminophen 4 Gram maximum from all sources in 24 hours**

Severe Pain Management (Pain Score 7-10)
Choose only ONE agent from the list of IV push medications below if needed (give first for severe pain until patient tolerates oral pain medications):

- HYDROMORPHINE 1 mg IV Push Q2 hours PRN Severe Pain; comments: or score 7-10; give first for severe pain until patient tolerates oral pain medications
- Morphine 6 mg IV Push Q2 hours PRN Severe Pain; comments: or score 7-10; give first for severe pain until patient tolerates oral pain medications

Choose only ONE agent from the list of ORAL medications below if needed

- HYDROCODONE-acetaminophen 10 mg-325 mg, 2 tablets PO Q4 hours PRN Severe Pain; comments: or score 7-10
- HYDROCODONE-acetaminophen 7.5mg-325mg/15 mL, 40 mL per Feeding Tube Q4 hours PRN Severe Pain; comments: or score 7-10
- OXYcodeine-acetaminophen 7.5 mg-325 mg, 2 Tablets, Orally every 4 hours PRN Severe pain; comments: or score 7-10
- OXYcodeine IR tablet 15 mg Orally Q4 hours PRN Severe Pain; comments: or score 7-10
- OXYcodeine oral solution, 5 mg/5 mL, 15 mL per Feeding Tube Q4 hours PRN Severe Pain; comments: or score 7-10
  **Total acetaminophen 4 Gram maximum from all sources in 24 hours**
Symptom Management

- Option to order medications for nausea/vomiting or itching
- Naloxone is automatically ordered
Pre-op Medications for Elective Surgical Patients

- Tiered opioid pre-op companion order set
- Table to determine the patient’s opioid tolerance level
- Select medications for nausea/vomiting/itching prophylaxis and pain, if desired
  - These are options for all patients, regardless of Tolerance Level
Pre-op Medications for Elective Surgical Patients

• The last step is to order a long-acting opioid, if desired, for level 2 or level 3 opioid tolerance patients

Additional options for Level 2 or Level 3 Patients (for patients less than 70 years old):

- morphine Tab SA 15mg PO x 1 dose

*Note: If allergic to morphine, use OXYcodone:
- oxycodone SR 10mg PO x 1 dose
Integration of Support Escalation Process

Escalation Communication Plan Opioid Tolerance Orders

**Physician**
- Implement opioid orders
  - Pain controlled: Yes
  - Free opioid side effects: No
  - Continue opioid orders
- Review chart and interview patient
  - Pt request ↑ opioids: Yes → Revise pain plan
  - Pt refusing pain plan: No → Continue opioid orders
- Identifying etiologies
  - Pt refusing pain plan: Yes → Notify physician
- Revise pain plan

**Chemical Dependency**
- Review chart and interview patient
  - Able to revise pain plan: Yes → Revise pain plan
  - Orders followed?: No → Review and follow orders
- Identify etiologies
  - Pt refusing pain plan: Yes → Revise pain plan

**Pharmacist**
- Review chart and interview patient
  - Orders followed?: No → Identify and document variance
  - Identify etiologies
  - Notify physician
  - Revise pain plan

**CNS**
- Review chart and interview patient
  - Orders followed?: Yes → Identify and document variance
  - Review and follow orders
  - Identify etiologies
  - Revise pain plan

**Nurse**
- Implement opioid orders
  - Pain controlled: Yes
  - Free opioid side effects: Yes → Continue opioid orders
  - Yes → Continue opioid orders
  - No → Revise pain plan
  - Notify physician
Guidelines for Prescribers

Opioid Treatment Recommendations
- Physician and Chemical Dependency Providers

Consult pain

H/O Addiction

Yes

Perform addiction assessment with INSPECT

Active addiction or remission with addiction

Yes

Treat addiction and evaluate type of pain

No

Evaluate type of pain

Acute Pain

Yes

Treat opioid therapy adjuvants.

No

Chronic Pain

Yes

Treat opioid chronic pain and add short acting opioid for break through pain

No

Acute & Chronic Pain

Yes

Use current chronic pain treatment. Add short acting break through pain, non opioid adjuvant

No

Treat other symptoms

Yes

No
Testing of a Tiered Opioid Pain Management Order Set

• Order set trialed for seven months on elective total joint patients with great results
  – Decreased calls to physicians to adjust pain medications
  – Increased satisfaction among nurses by having enough pain medication options to use
  – Improved patient satisfaction with pain control reported during post-discharge phone calls

Spread learning and program across the system
# Opioid Tolerance Pilot Data Analysis

<table>
<thead>
<tr>
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<th>Intervention Group n = 45</th>
<th>Control Group n = 45</th>
<th>P value</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>59 (26, 86)</td>
<td>60 (31, 87)</td>
<td>0.580</td>
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<tr>
<td>Gender (male)</td>
<td>11 (24.4%)</td>
<td>17 (37.8%)</td>
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<tr>
<td>Weight (kg)</td>
<td>82 (43, 187)</td>
<td>90 (50, 160)</td>
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<tr>
<td>Length of stay</td>
<td>4 (3, 9)</td>
<td>4 (2, 9)</td>
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<td>Pain goal (0-10)</td>
<td>3 (1, 4)</td>
<td>3 (2, 5)</td>
<td>0.125</td>
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<td># of pain assessments</td>
<td>32 (8, 78)</td>
<td>31 (7, 75)</td>
<td>0.831</td>
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<tr>
<td># of times at goal</td>
<td>14 (0, 35)</td>
<td>9 (1, 37)</td>
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<tr>
<td>% assessments at goal</td>
<td>50 (0, 100)</td>
<td>28 (3, 100)</td>
<td>0.081</td>
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Opioid Level

Opioid Levels

Intervention Group

Control Group

- **Level 1**
  - Intervention Group: 53.3%
  - Control Group: 57.8%

- **Level 2**
  - Intervention Group: 37.8%
  - Control Group: 22.2%

- **Level 3**
  - Intervention Group: 8.9%
  - Control Group: 20.0%
Changes to Treatment

- Intervention Group: 33.30%
p = 0.020
- Control Group: 60.00%

Better
Adjunctive Medications

Celecoxib (Celebrex®)
- Intervention: 64.4%
- Control: 33.3%

Ketorolac (Toradol®)
- Intervention: 24.4%
- Control: 15.6%

Pregabalin (Lyrica®)
- Intervention: 71.1%
- Control: 2.2%

$p = 0.006$ Statistically Significant

$p <= 0.001$ Statistically Significant
No Significant Difference in Harm

- Respiratory Event: Intervention 22.2%, Control 22.2% (p = 1.0)
- Naloxone: Intervention 2.2%, Control 0.0% (p = 1.0)

Legend:
- Red: Intervention
- Yellow: Control
Statistically Significant Difference in HCAHPS

Did everything to help your pain

<table>
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<tr>
<th>Month</th>
<th>2011</th>
<th>2012</th>
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<tbody>
<tr>
<td>Jan</td>
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<tr>
<td>Jun</td>
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</table>

Pre-Intervention

- \( \bar{X} = 74.42 \)
- UCL = 81.07
- LCL = 67.77

Post-Intervention

- \( \bar{X} = 79.97 \)
- UCL = 86.03
- LCL = 73.90

Statistically significant increase

\( p = 0.001 \)

Better
HCAHPS: Pain Well Controlled During Your Stay

Pain well controlled during your stay

2011

UCL=69.66

$\bar{X}=56.2$

LCL=42.74

2012

UCL=70.83

$\bar{X}=60.08$

LCL=49.34

Better

2011 2012
Summary

• Managing complex pain challenges our interprofessional teams to a higher degree

• Approaching pain management with opioids requires not only a standardized plan that can be customizable to the patient’s tolerance, but also an escalation plan to include resources

• Pilot implementation demonstrated positive results, which have been generalized to larger populations with ongoing measurement


• Herr, Keela, PhD, RN, FAAN, Patrick J., MSN, RN, CS, FAAN, Tonya Key, RN, C Coyne, Renee, MS, RN, C, CNS Manworren, Margo, MS, RN, FAAN McCaffery, Sandra, MS, RNC Merkel, Jane, MSN, RN, C, CS, ANP Pelosi-Kelly, and Lori, PhD, RN Wild. "Pain Assessment in the Nonverbal Patient: Position Statement with Clinical Practice Recommendations." *Pain Management Nursing,* 1 June 2006: 44-52.
