Pain Management in Special Care Populations

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**OBJECTIVE**

**THE PROBLEM**

- 116 million Americans suffer chronic/persistent pain (Institute of Medicine's Committee on Advancing Pain Research publication "Relieving Pain in America" 2011)
  - Direct medical costs AND loss of productivity - $560 – 635 billion per year
  - Conflicting problems of untreated pain AND opioid abuse ADDS to this overall cost
- Chronic pain common in all ages and settings
- In chronic/persistent non-cancer patients 50% respond to treatments with reduction in pain of 30% (ref 75)
**Postoperative Pain**

- 25 million inpatient surgeries annually
- 35 million outpatient surgeries annually
- Severe pain after surgery affects significant number of patients
- Acute on chronic pain – large problem (tjb)
- Poorly controlled post surgical pain leads to greater costs
  - Higher rates of re-admissions
  - Delayed discharge (increased length of stay)
  - Negative physical and psychological consequences

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**DEFINITION OF PAIN**

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.

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**ALTERNATIVE DEFINITION OF PAIN**

Pain is whatever the patient says/feels it is, existing whenever he or she says/indicates it does.
TYPES OF PAIN

- **ACUTE**
  - Follows injury
  - Generally disappears when injury heals
  - Well-defined temporal onset

- **CHRONIC**
  - Persists beyond expected healing time
  - Cause may be hard to define

- **CANCER**
  - Definable cause
  - Can be acute, recurrent, or chronic

CHARACTERISTICS OF ACUTE AND CHRONIC/PERSISTENT PAIN

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>ACUTE PAIN</th>
<th>CHRONIC/PERSISTENT PAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relief of Pain</td>
<td>Highly Desirable</td>
<td>Highly Desirable</td>
</tr>
<tr>
<td>Dependence &amp; Tolerance</td>
<td>Unusual</td>
<td>Common</td>
</tr>
<tr>
<td>Physiological Component</td>
<td>Usually Not Present</td>
<td>Often a Problem</td>
</tr>
<tr>
<td>Organic Cause</td>
<td>Common</td>
<td>Often Not Present</td>
</tr>
<tr>
<td>Family &amp; Environment</td>
<td>Small</td>
<td>Significant</td>
</tr>
<tr>
<td>Sleep Problems</td>
<td>Unusual</td>
<td>Common</td>
</tr>
<tr>
<td>Treatment Goal</td>
<td>Cure</td>
<td>Rehabilitation &amp; Acceptance</td>
</tr>
</tbody>
</table>

IF WE CANNOT ASSESS PAIN, WE WILL NEVER BE ABLE TO RELIEVE PAIN.

Betty R. Ferrell, Ph.D.
**ASSESSMENT OF PAIN**

- Careful history
  - Believe the patient and family
  - When you dislike patients, pain is taken less seriously
- Assess the nature of the pain
  - Acute pain
    - Distinct onset, short duration, physical signs
  - Chronic/Persistent pain
    - Long duration, long-standing functional impairment
    - Consider neuropathic pain

**ASSESSMENT OF PAIN**

- Consider onset, what makes pain better or worse, location, description, severity, and does pain move?
- Consider multiple pain types and/or sites.
- Assess psychosocial status
  - Emotional, Social, Cultural
- Assess functional status.

**MEDICATION HISTORY**

- All medications used in the past six months
  - Dose
  - Duration of use
  - Frequency of use
  - Reason for use
  - Perception of efficacy
- Social drug use (Do not forget alcohol)
- What worked, how well they worked, what did not
- Side effects
- Allergies
- Nonprescription drug use
- Nutritional supplements
- Alternative therapies
PAIN TREATMENT PLAN DEVELOPMENT

• Develop treatment plans using assessment tools and, whenever possible, include patient and family input.
• Remember in chronic pain it is unrealistic in most cases to expect COMPLETE relief of pain.
• Do systematic and ongoing reassessments with functional end points in mind.
• Change the plan as needed.
• Document the plan and all changes.
• The process should never end.

POSTOPERATIVE TREATMENT PLAN

Trevor Warner

Initial Assessment

- Patient Interview
- Medication history
- MAPS
- Evaluate risk factors for respiratory depression
- Reassure patient
- Discussion with Provider / Nursing
- Continue sustained release opioids

Daily Assessment

- Assess recent opioid needs
- Develop 24 hour pain control plan
- Home sustained release opioids
- Breakthrough IV / PO options or PCA
- Utilize multimodal therapies
- Set realistic functional goals
- Develop monitoring plan
- EtCO2 vs SpO2
- Bowel Regimen
- Review plan with patient / nursing / physicians

Discharge

- Develop short-term plan for patient upon discharge
- Use similar oral regimen that achieved pain control as inpatient
- Discuss plan with patient / physician
- Counsel patient on new regimen and follow-up plans with PCP

The Joint Commission Sentinel Event Alert (Ref 100)

- Issue 49 concerning the safe use of opioids in hospitals was published on August 8, 2012
- Opioid analgesics rank among drugs most frequently associated with adverse drug events (as high as 16% in one trial)
- This may be due to:
  - Lack of knowledge about potency differences
  - Improper prescribing and administration of multiple opioids and modalities of administration
  - Inadequate monitoring

Evidence from The Joint Commission Sentinel Event Database (Ref 100)

Selected Risk Factors for Oversedation and Respiratory Depression (Ref 100)

- Sleep apnea or sleep disorder diagnosis
- Morbid obesity
- Snoring
- Older age
- No recent opioid use
- Post-surgery status
- Opioid habituation
- Longer length of time receiving general anesthesia
- Use of other sedating drugs
- Pre-existing pulmonary or cardiac disease, dysfunction, or major organ failure
- Thoracic or other surgical incisions that may impair breathing
- Smoker

Opioid-Related Adverse Events (ORADEs) (Ref 93-96 + 101)

**ORADEs**
- Include:
  - Nausea / Vomiting
  - Constipation / Post-op ileus
  - Allergic reactions
  - Sedation
  - Respiratory depression

**Under-treatment**
- Up to 60% of postsurgical patients
- Can lead to
  - DVT / PE
  - Pneumonia
  - Impaired wound healing
  - Chronic pain syndromes

Can lead to increased LOS and Costs
**ORADEs in Post-Surgical Pain**

- Examined 36,017 post-op patients received opioids
- 13.6% had documented ORADE*
  - 55% longer LOS
  - 47% higher costs of care
  - 36% increased risk re-admission
  - 3.4 times increased risk mortality
* = all results statistically significant

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio</th>
<th>P - value</th>
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</thead>
<tbody>
<tr>
<td>Age ≥ 65 yrs</td>
<td>2.11</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Male</td>
<td>1.67</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Obesity</td>
<td>1.11</td>
<td>0.0333</td>
</tr>
<tr>
<td>Prior Opioid Use</td>
<td>1.34</td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>

**ORADE in Post-Surgical Pain**

Most Common ORADEs Identified During Two Retrospective Study Periods at LDS Hospital (UT)

<table>
<thead>
<tr>
<th>Adverse Events</th>
<th>1/1/90 – 12/31-98</th>
<th>1/1/98 – 12/31/03</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=1623)</td>
<td>(n=741)</td>
<td></td>
</tr>
<tr>
<td>Nausea or Vomiting</td>
<td>68.3%</td>
<td>49.9%</td>
</tr>
<tr>
<td>Cutaneous Effects</td>
<td>32.1%</td>
<td>34.1%</td>
</tr>
<tr>
<td>Respiratory Depression</td>
<td>7.1%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Confusion/Agit ation</td>
<td>6.2%</td>
<td>16.9%</td>
</tr>
<tr>
<td>Urinary Retention</td>
<td>1.3%</td>
<td>5.5%</td>
</tr>
</tbody>
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**Opioid Risk Assessment Project**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>Obesity (BMI &gt; 30)</td>
<td>5</td>
</tr>
<tr>
<td>Respiratory Disease</td>
<td>7</td>
</tr>
<tr>
<td>Renal Dysfunction (SCr &gt; 1.5)</td>
<td>6</td>
</tr>
<tr>
<td>History of Chronic Pain</td>
<td>4</td>
</tr>
<tr>
<td>Concomitant BZD/muscle relaxants</td>
<td>3</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>2</td>
</tr>
<tr>
<td>Three or more opioids prescribed</td>
<td>7</td>
</tr>
<tr>
<td>Opioid naïve</td>
<td>4</td>
</tr>
</tbody>
</table>

Total number of patients analyzed = 14. BMI: body mass index. SCr: serum creatinine. BZD: benzodiazepine.
Opioid Risk Assessment Project (Ref100)

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<th>Risk Factor</th>
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<td>Obesity (BMI &gt; 30)</td>
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<td>Respiratory Disease</td>
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<td>Renal Dysfunction (SCr &gt; 1.5)</td>
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<tr>
<td>Concomitant BZD/muscle relaxants</td>
<td>4</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>2</td>
</tr>
<tr>
<td>Three or more opioids prescribed</td>
<td>5</td>
</tr>
</tbody>
</table>

Total number of chronic pain patients analyzed = 8. BMI: body mass index. SCr: serum creatinine. BZD: benzodiazepine.

Actions suggested by TJC (Ref100)

- Monitoring Guidelines/Policies
- Assessment Procedures
- Standardized Order Sets
- Second Level Review
- Bar Code Scanning
- Smart Pumps
- EtCO₂ monitoring
- Computer Decision Support Alerts
- Effective Processes
- Safe Technology
- Education Training
- Effective Tools
- Assessment Tools
- Pain Scales
- Risk Assessment Tools
- Monitoring Guidelines/Policies
- Newsletters
- Healthstream
- Encourage multi-modal adjuvant therapies

End-Tidal CO₂
- Most effective parameter, significant lag
- Use in high-risk patients
- Expensive to purchase equipment
- Uncomfortable

Continuous SpO₂
- Less effective than end-tidal CO₂
- Use in moderate-high risk patients
- More comfortable for patients

Respiratory Rate
- Least effective parameter, significant lag
- Use in low-risk patients
- Still helpful to assess trends

Pasero Opioid-Induced Sedation Scale (POSS)
- Validated, commonly used scale
- Assess every 1-2 hours in first 24 hours
- Every 4 hours in stable patients

Ref97-99+101
Study-Acute on Chronic Pain In
Postoperative Patients (Ref 101)

Data collected
- Sex
- Age
- Reason for admission (type of procedure)
- Location of admission
- Opioid use prior to admission
- Length of stay

Exclusion Criteria
- <18 years of age
- Palliative care or hospice
- Presence of malignancy
- Unable to self-identify as chronic pain

Inclusion Criteria
- Diagnosis of Chronic Pain
- Medication history includes use of at least one opioid
- Admitted to MMC for surgical procedure
- Opioid use (including tramadol) on medication history
- Patients self-identify themselves as having chronic pain

1,806 Charts Reviewed
565 Patients Identified with Chronic Pain
319 Patients Identified with Chronic Pain and History of Opioid Use
122 Patients Included in Retrospective Analysis

1,241 Patients Excluded:
- 236 <18 years old
- 1,005 patients no history of chronic pain
- 15 patients diagnosis of malignancy
- 3 patients on palliative care
- 179 patients not admitted for surgery

246 Patients Excluded: No history of opioid use
Results – Demographics (Ref 101)

<table>
<thead>
<tr>
<th></th>
<th>Retrospective (All Surgical Procedures) (n = 122)</th>
<th>Retrospective (Ortho/Spine Procedures) (n = 79)</th>
<th>Prospective (n = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Mean)</td>
<td>63.7</td>
<td>65.2</td>
<td>51.7</td>
</tr>
<tr>
<td>Male (%)</td>
<td>42.6 %</td>
<td>39.2 %</td>
<td>50.0 %</td>
</tr>
</tbody>
</table>
Results–Primary Outcome
(Ref 101)

<table>
<thead>
<tr>
<th>Group</th>
<th>Standard Deviation</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retrospective (All Surgical)</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Retrospective (Ortho/Spine)</td>
<td>2.73</td>
<td>2</td>
</tr>
<tr>
<td>Prospective</td>
<td>0.97</td>
<td>1.5</td>
</tr>
</tbody>
</table>

OPIOID ANALGESIC USE
High Risk Patients in Hospital

- 55 YO white female, 90 kg, admitted for back surgery, 4 year history methadone use, present dose 80 mg BID, non smoker, occasional alcohol use
- Put on hydromorphone PCA post surgery, once on floor pain 15/20, patient in obvious discomfort
- Patient reveals “fired” from pain clinic week before surgery (never told anyone)
- ?????

- High Risk, AND Obvious need for opioids
- Treat acute pain
  - Use FUNCTION as assessment tool
- Keep patient on equianalgesia
  - Verify opioid history
  - MAPS report
- Assess opioid abuse risk factors AND opioid adverse event risk factors
- Develop long term plan and Communicate
OPIOID ANALGESIC USE
High Risk Patients in Hospital

- Restarted methadone (1/2 dose as IV/IVB) and continued PCA, pain controlled within few hours
- Monitoring ??
- Re-established baseline methadone dose (put into system as PRN)
- Over several days convert to oral IR oxycodone and methadone with patient able to participate in all post-op activities
- Communicated with patient’s LMD and pain clinic:
  – Plan to continue methadone short term with “breakthrough” opioids, pain clinic to guide patient opioid therapy with LMD, with plan for eventual opioid wean
- Struck agreement with patient to accept plan

QUESTIONS

BIBLIOGRAPHY


50. www.StopPain.org
54. Pharmacists responsibilities in managing opioids a resource. APHA Special Report 2002 adv board Brushwood DB, Finely R, Ciglio JG, Heit HA.
60. Westanmo AD. Et al. Duloxetine: A balanced and selective noradrenergic and serotoninn.
68. Adpoted from “Methadone use in the hospice setting: safe, effective, cost efficient” by McCormick HY, Fisch MJ MD Anderson Cancer Center, Houston Texas


75. Walsh N. Little progress seen in treating chronic pain. MedPage. June 23, 2011. (Quote from Dennis C Turk MD and colleagues from the University of Washington.)


100. Slide by Janson Williamson

101. Slide by Trevor Warner