Optimizing Acute Pain Management in the Emergency Department and Short-stay Inpatient and Ambulatory Settings

AGENDA

11:30 a.m.
Welcome and Introductions
Asad Patanwala, Pharm.D., M.P.H., BCPS., FCCP, FASHP

11:40 a.m.
Effective Strategies for Assessing and Managing Acute Pain: An Overview
Asad Patanwala, Pharm.D., M.P.H., BCPS., FCCP, FASHP and Lee Kral, Pharm.D., BCPS, CPE

12:10 p.m.
Clinical Case Studies on the Effective Management of Acute Pain in the Emergency Department and Short-stay Inpatient and Ambulatory Settings
Asad Patanwala, Pharm.D., M.P.H., BCPS., FCCP, FASHP and Lee Kral, Pharm.D., BCPS, CPE

12:50 p.m.
Panel Discussion: Questions and Answers
Disclosures

In accordance with ACCME and ACPE Standards for Commercial Support, ASHP policy requires that all faculty, planners, reviewers, staff, and others in a position to control the content of this presentation disclose their relevant financial relationships. In this activity, only the individuals below have disclosed a relevant financial relationship. No other persons associated with this presentation have disclosed any relevant financial relationships.

- Asad Patanwala, Pharm.D., M.P.H., BCPS., FCCP, FASHP
  - AcelRx Pharmaceuticals, Inc.: Advisory Board member
Learning Objectives

After participating in this application-based educational activity, participants should be able to
• Review the pathophysiology of pain, including its multifactorial determinants.
• Review available pain assessment tools and explain how and when they should be used.
• Evaluate current and emerging pre-emptive pain management strategies, including administrative techniques and associated devices.
• Taking into account individual patient characteristics, select guideline-supported multimodal therapies that can be implemented in the emergency department and short-stay and ambulatory settings.

Pathophysiology: Acute to Chronic Pain

Within 20 minutes of injury, neurons express new genes responsible for sensitization and remodeling

Activation of C fibers and release of cytokines

Factors Affecting Pain

**Biological**
- Injury
- Inactivity
- Long-term opioid use
- Poor body mechanics
- Poor pacing of activities

**Psychological**
- Pain behavior
- Pain coping
- Self-efficacy
- Helplessness
- Cognitive distortion
- Personality characteristics

**Social**
- Social support
- Marital adjustment/spousal responses
- Children: parental responses
- Cultural practices

Assessment and Strategies: Short Stay/Ambulatory
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Ambulatory and Short-Stay Surgery
Ambulatory surgery has been shown to:
- Reduce risk of infection
- Increase mobilization
- Reduce risk of thromboembolic complications

To achieve these goals the following must be met:
- Rapid recovery
- Able to do or have assistance available for self-care
- Low incidence of surgical/anesthesia complications, including PONV and pain

PONV=postoperative nausea and vomiting

Common Short-Stay/Ambulatory Care Surgeries
- Cataract removal/eye
- ENT
- Dental
- Tendon/muscle/ meniscus repair
- Small joint surgery
- Skin (biopsy/resection)
- Carpal tunnel release
- Lumpectomy
- Hernia repair

ENT=ear, nose and throat
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Pain is Expected after Surgery
So What?

- Higher acute post-op pain = higher risk of chronic pain
- Increased cardiovascular complications
- Increased pulmonary complications
- Delayed discharge
- Prolonged convalescence
- Higher rate of unexpected admission after ambulatory surgery


AW

- 64 yr old woman scheduled for right rotator cuff repair, distal clavicle resection, biceps tenotomy, and subacromial decompression
- PMH: HTN, fibromyalgia, chronic pain, OSA, asthma, depression, obesity, and Hep B (+)
- FH: Her son, who lives with her, struggles with SUD
- SH: smokes 1.5 pack/day, h/o SUD (crack cocaine, THC)

HTN=hypertension, OSA=obstructive sleep apnea, Hep B=hepatitis B, SUD=substance use disorder, THC=tetrahydrocannabinol
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What are AW’s risk factors for increased pain after surgery?

a. Age
b. History of substance use disorder
c. Obstructive sleep apnea
d. History of fibromyalgia

http://www.aspmn.org/Documents/Position%20Statements/Prescribing_and_Administering_Opioid_Doses_Based_Solely_on_Pain_Intensity.pdf

Risk Factors for Increased Post-op Pain

- Adverse experience with previous surgery
- Preceding pain (moderate-severe > 1 month)
- Psychological vulnerability
- Younger age
- Female gender
- Workman’s compensation
- Inefficient diffuse noxious inhibitory control (DNIC)
- Genetic predisposition


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Add 1 more

- Patients on chronic opioid therapy
- Tolerance, physical dependence
- Compared with opioid-naïve patients
  - Severity of post-op pain is 3 times higher\(^1\)
  - Use 3 times more opioid post-op\(^1,2\)
  - Require epidurals for 3 extra days\(^2\)

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Assessment Tools

Unidimensional

- Numerical, Verbal, Visual Pain Scales
  - Validated but not very useful except in acute pain/intervention setting
  - Completely subjective, does not allow clinician assessment
  - Only assesses Severity
- Wong-Baker Faces Scale
  - Typically used for children
  - Not specific for pain
  - Only assesses Severity

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Treatment of pain should be linked to pain severity score.

a. True

b. False

http://www.aspmn.org/Documents/Position%20Statements/Prescribing_and_Administering_Opioid_Doses_Based_Solely_on_Pain_Intensity.pdf

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Assessment Tools

- Multidimensional
  - Clinically Aligned Pain Assessment
    - Validated
    - Allows patient input and clinician scoring
  - Functional assessments
  - FLACC (neonates)

FLACC=Face, legs, activity, cry, consolability

Clinically Aligned Pain Assessment (CAPA)

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort</td>
<td>Intolerable, Tolerable with discomfort, Comfortably manageable, Negligible pain</td>
</tr>
<tr>
<td>Change in Pain</td>
<td>Getting worse, About the same, Getting better</td>
</tr>
<tr>
<td>Pain Control</td>
<td>Inadequate pain control, Effective, just about right, Would like to reduce medication [why?]</td>
</tr>
<tr>
<td>Functioning - for the usual things you need to do</td>
<td>Can’t do anything because of pain, Pain keeps me from doing most of what I need to do, Can do most things, but pain gets in the way of some, Can do everything I need to</td>
</tr>
<tr>
<td>Sleep - is the pain waking you up? Yes? No?</td>
<td>Awake with pain most of the night, Awake with occasional pain, Normal sleep</td>
</tr>
</tbody>
</table>

https://healthcare.utah.edu/search/?q=CAPA&tab=general-results
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Functional Pain Scale

- 0 = No Pain
- 1 = Tolerable (and doesn’t prevent any activities)
- 2 = Tolerable (but does prevent some activities)
- 3 = Intolerable (but can use telephone, watch TV, or read)
- 4 = Intolerable (but can’t use telephone, watch TV, or read)
- 5 = Intolerable (and unable to verbally communicate because of pain)

Ideally, all patients should reach a 0 to 2 level, preferably 0 to 1. It should be made clear to the respondent that limitations in function only apply if limitations are due to the pain being evaluated.


Pain vs. Comfort – It Makes a Difference

PAIN SCORES (GROUP P)

- “You had a C-section and I am interested in your pain from the surgical trauma. So is it OK if I ask you some questions about your pain?”
  - VNRS where 0 = no pain, 10 = worst pain imaginable
    - At rest
    - On movement
  - VAS where one end is marked “least pain” and the other “most pain”
    - At rest
    - On movement

- “Does the wound bother you?”
- “Are you comfortable?”
- “Would you like additional pain relief?”

COMFORT SCORES (GROUP C)

- “You had a C-section, your wound is healing, and you are in the process of recovering. Is it okay if I ask you some questions about your level of comfort?”
  - VNRS where 0 = no comfort, 10 = worst comfort
    - At rest
    - On movement
  - VAS where one end is marked “least comfort” and the other “most comfort”
    - At rest
    - On movement

- “Are you comfortable?”
- “Does the healing wound bother you?”
- “Do you have any pain?”
- “Would you like additional analgesia?”

VNRS=verbal numeric rating scale
VAS=visual analog scale

Assessment and Strategies: Emergency Department

PEMI Multicenter Study

- Prospective cohort study (n=842)
- 41% of patients - pain intensity did not change or increased
- 74% discharged in moderate or severe pain
- 42% of patients who did not receive analgesics desired them
- 85% had 1 assessment, but reassessment was uncommon
- Median time from triage to analgesic was 90 min

A long time ago... in a land far away

Can repeat? How often?

Cumulative or single dose?

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### Pain Scales in the Emergency Department (ED)

- Numeric Rating Scale (NRS)
- Visual Analogue Scale (VAS)
- Verbal Descriptor Scale (VDS)

![Correlation between VAS and NRS](chart)


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### What can patients use?

<table>
<thead>
<tr>
<th>Patient non-response rate</th>
<th>NRS N (%)</th>
<th>VDS N (%)</th>
<th>VAS N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma (n=200)</td>
<td>8 (4)</td>
<td>6 (3)</td>
<td>39 (20)</td>
</tr>
<tr>
<td>Non-trauma (n=90)</td>
<td>3 (3)</td>
<td>10 (11)</td>
<td>4 (5)</td>
</tr>
</tbody>
</table>

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**Assessment = Analgesia**

- 150 trauma patients (prospective observational study)
  - Pain score documented (n=110)
    - Analgesic provided: 66/110 = 60%
  - Pain score not documented (n=40)
    - Analgesic provided: 13/40 = 33%


What is your pain score?

0 1 2 3 4 5 6 7 8 9 10

- NO PAIN
- WORST POSSIBLE PAIN
- PULLING YOUR ARMS OUT OF THEIR SOCKETS

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Measuring Pain Improvement

Patients with pain from trauma
41 patients and 248 pain contrasts on VAS [80 little more/less]

<table>
<thead>
<tr>
<th></th>
<th>Mean (mm)</th>
<th>95% CI (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A little less (n=41)</td>
<td>-16</td>
<td>-22 to -10</td>
</tr>
<tr>
<td>About the same (n=139)</td>
<td>4</td>
<td>-1 to 2</td>
</tr>
<tr>
<td>A little more (n=39)</td>
<td>10</td>
<td>6 to 14</td>
</tr>
<tr>
<td>Combined <strong>13 mm</strong> (95% CI 10 to 17)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Measuring Pain Improvement

Patients with isolated extremity trauma (n=73)
Clinically significant change = “little less” or “little more”

<table>
<thead>
<tr>
<th></th>
<th>Initial VAS &lt;34mm</th>
<th>Initial VAS 34-66mm</th>
<th>Initial VAS ≥67mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinically significant change on VAS</td>
<td><strong>13 ± 14</strong></td>
<td><strong>17 ± 10</strong></td>
<td><strong>28 ± 21</strong></td>
</tr>
</tbody>
</table>

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Patient-Driven Protocol

- RCT (n=224)
  - Group 1 = Patient-driven (hydromorphone 1 mg IV, then another 1 mg after 15 min if needed)
    - Question: “Do you want more pain medication?”
    - Group 2 = Physician-driven
  - Outcome = Pain decrease at 60 min
    - 5.6 (patient-driven) vs. 4.5 (physician-driven) (p=0.01)
  - No difference in adverse effects

RCT=randomly controlled trial

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Patient-Driven Protocol

- Prospective cohort (n=207)
- Hydromorphone 1 mg (IV) given every 30 min if patient desires
- Satisfactory analgesia in 99% of patients
- ADE – 9 desaturations,
- 2 ↓RR, 2 ↓HR

ADE=adverse drug event, RR=respiratory rate, HR=heart rate


So Many Choices

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Paradigm Shift

**SEVERITY**
- Mild (APAP/NSAID)
- Moderate
- Severe (Opioid)

**Diagnosis**
- NSAID
- APAP
- Opioid
- Other

Clinical Case Studies: Short Stay/Ambulatory

APAP=acetaminophen, NSAID=nonsteroidal anti-inflammatory drugs

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**AW**

- 64 yr old woman scheduled for right rotator cuff repair, distal clavicle resection, biceps tenotomy and subacromial decompression
- PMH: HTN, CAD (h/o MI), fibromyalgia, OSA, asthma, depression, obesity, and Hep B (+)
- FH: Her son, who lives with her, struggles with SUD
- SH: smokes 1.5 pack/day, h/o SUD (crack cocaine, THC)

CAD=coronary artery disease, MI=myocardial infarction

**Current Medications**

- Albuterol 90 mcg MDI 2 puffs PRN
- Alprazolam 0.25mg po qhs PRN insomnia (last filled 1 wk ago)
- Citalopram 30mg po daily
- Diclofenac topical gel 1% to knees
- Furosemide 40mg po PRN fluid retention
- Hydrocodone/APAP 10/325 mg, 1 tab po q 4 hr (last filled 1 week ago)
- Losartan 100mg po daily
- Ranitidine 150mg po bid
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**Multimodal Analgesia**

- Interventional Nerve blocks
- Neuraxial analgesia
- Analgesics
- Cognitive modalities
  - Deep breathing
  - Virtual Reality
  - Distraction
- Physical Modalities
  - RICE

RICE=rest, ice, compression, elevation


**Analgesics in the Pain Pathway**

- **Perception**
  - Opioids, SNRIs, Anticonvulsants

- **Transmission**
  - Opioids, LA, NSAID, Anticonvulsants

- **Modulation**
  - Opioids, SNRIs

- **Conduction**
  - LA, NSAIDs, Opioids Anticonvulsants

LA=local anesthetics, SNRIs=serotonin norepinephrine reuptake inhibitors

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**Acetaminophen**

- Inhibits central prostaglandin synthesis without affecting peripheral prostaglandin synthesis
- Additive analgesia with opioids\(^1\)
- IV product has comparable efficacy with oral, more expensive
- Single doses provided 4 hours of at least 50% relief in 37% of patients with post-operative pain\(^2\)
  - Reduced opioid consumption by 30% in first 4 hrs
  - No reduction in opioid-related adverse effects


**NSAIDs**

- Reduce the peripheral inflammatory response
- Used both pre- and post-operatively (oral and IV)
- Good efficacy in treating various types of surgical pain (orthopedic, abdominal, oral, gynecologic)
- Reduce opioid consumption (up to 40-50%), sometimes reduce opioid-related adverse effects, and increase patient satisfaction
- COX-2 inhibitors have no effects on platelets
- Concern about renal, gastrointestinal, and cardiovascular effects
- NOT used for bone fusion due to concern about non-union


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**Gabapentinoids**

- Modestly reduces opioid requirement & lowers pain scores postoperatively
- Some data to indicate reduction in chronic post-op pain
  - Gabapentin – 600-1200 mg pre-op, 600 mg X1 or multiple doses post-op
  - Pregabalin – 150-300mg pre-op, 150-400mg X1 or multiple doses post-op
- Consider using for major surgeries and opioid-tolerant patients
- May cause additive sedation with opioids


**SNRIs**

- Total knee arthroplasty (N=47)
- Prospective, placebo-controlled, 48 hr
- Duloxetine 60 mg daily (POD #0, POD #1)
- Less morphine consumed with SNRI
- No difference in pain score or adverse effects

*P=0.039  P=0.017  **
P=0.017

Pod=post-operative day

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Ketamine

• Adjunct to opioid therapy for
  – Patients with inadequate pain relief or adverse effects with opioids
  – Patients with opioid tolerance
• 0.5mg/kg IV bolus, then 10mcg/kg/min intraoperatively +/- continuous infusion postoperatively


Local Anesthetics

• Infiltration Anesthesia
  • Prior to incision and at wound closure
• Intravenous infusions intraoperatively
• Intravenous Regional Anesthesia
  • Injection of local anesthetic into an extremity with a tourniquet on
• Peripheral Nerve Blocks
  • Individual nerves or plexus can be blocked
  • Most applicable for extremity surgeries
• Central Neuraxial Blocks (spinals, epidurals)
Perioperative Pain Assessment for AW

- Cannot take NSAIDs “due to liver disease”
- Did not tolerate gabapentin in the past
- Does not tolerate many opioids
- Does very well with hydrocodone but concern about acetaminophen dose
- Has received nerve blocks in the past with short-term relief
- Educated on likely difficulty with pain management due to limited analgesic/opioid options
- Educated on nonpharmacologic modalities
- Collaborated with primary care provider (PCP) on post-op management

Patient/Family Education

- Patient-tailored education has been shown to:
  - Reduce post-operative opioid consumption
  - Reduce pre-operative anxiety
  - Reduce requests for sedatives
  - Reduce hospital length of stay
- Education should include:
  - Changes in analgesics prior to surgery
  - Reporting and assessment of pain and when to report
  - Multimodal pharmacologic/nonpharmacologic options
  - Realistic goals for pain control
Which of the following would be the most reasonable analgesic choice to manage AW’s surgical pain?

a. Fentanyl patch  
b. Duloxetine  
c. Physical therapy  
d. Nerve block

http://www.aspmn.org/Documents/Position%20Statements/Prescribing_and_Administering_Opioid_Doses_Based_Solely_on_Pain_Intensity.pdf

What quantity of opioid medication should be dispensed to AW upon discharge?

a. #240 hydrocodone 10 mg/acetaminophen 325 mg (2 tabs q4hr PRN pain)  
b. #120 hydrocodone 10 mg/acetaminophen 325 mg (2 tabs q4hr PRN pain)  
c. #120 Oxycodone 5 mg/acetaminophen 325 mg (2 tabs q 4hr PRN pain)  
d. None
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Unused Opioids After Surgery


What happened with AW

- Continuous interscalene nerve catheter (ropivacaine) sent home with patient for 5 days
- Continued pre-op hydrocodone dose (managed by PCP because she had just filled her regular prescription last week)
- Added short-term pregabalin
- Recommended Ice/sling

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Clinical Case Studies: Emergency Department

A 50 y/o male is in the ED with flank pain and hematuria. He says the pain comes in waves and he is also nauseous. CT scan indicates that he has a kidney stone. He says that morphine gives him nausea and itching.
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### Ketorolac

<table>
<thead>
<tr>
<th>RCT – ED patients with renal colic</th>
<th>Morphine 5 mg IV (n=43)</th>
<th>Ketorolac 15 mg IV (N=43)</th>
<th>Morphine 5 mg IV + Ketorolac 15 mg IV (n=44)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doses could be repeated at 20 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline Pain</td>
<td>8.7</td>
<td>8.8</td>
<td>8.9</td>
</tr>
<tr>
<td>Dose repeated at 20 min</td>
<td>84%</td>
<td>88%</td>
<td>70%</td>
</tr>
<tr>
<td>Pain 40 min</td>
<td>3.7</td>
<td>4.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Change</td>
<td>4.0</td>
<td>4.7</td>
<td>6.9</td>
</tr>
<tr>
<td>Rescue morphine</td>
<td>42%</td>
<td>33%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Combination vs. morphine (difference in change 1.8, 95% CI 0.1-3.3)
Combination vs. ketorolac (difference in change 2.2, 95% CI 0.5-3.7)

Cl=confidence interval  

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### Lidocaine vs. Morphine

**RCT (n=240)**
Patients with renal colic in the ED [Iran]

<table>
<thead>
<tr>
<th>Pain Score</th>
<th>Lidocaine 1.5 mg/kg IV</th>
<th>Morphine 0.1 mg/kg IV</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>9.65 ± 0.88</td>
<td>9.74 ± 0.63</td>
<td>0.365</td>
</tr>
<tr>
<td>15 min</td>
<td>1.83 ± 1.59</td>
<td>2.55 ± 1.52</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30 min</td>
<td>1.13 ± 1.15</td>
<td>2.23 ± 1.57</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

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**Lidocaine vs. Ketorolac**

- RCT (n=41)
- Patients with radicular back pain in the ED
- Lidocaine 100 mg IV vs. Ketorolac 30 mg IV


A 35 y/o male is in the ED with severe back pain. He took 2 tablets of his wife’s oxycodone 5mg /acetaminophen 325 mg tablets without relief. Which of the following do you recommend?

a. Give him more oxycodone/acetaminophen
b. Given him hydromorphone instead
c. Give him IV ketorolac
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**Guideline: Acute Back Pain**

1st
- Non-pharmacological therapy

2nd
- NSAIDs
- Skeletal muscle relaxants

**Insufficient evidence or not effective**
- Antidepressants
- Benzodiazepines
- Opioids
- Acetaminophen
- Steroids


So what is most commonly used for back pain in the ED?

**OPIOIDS**


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**Radicular Back Pain**

<table>
<thead>
<tr>
<th>RCT (n=58) – Low back pain with radiculopathy</th>
<th>Dexamethasone 8mg IV</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS change at 24 hours</td>
<td>-2.63 (-3.63 to 1.63)</td>
<td>-0.77 (-2.04 to 0.51)</td>
</tr>
<tr>
<td>Straight leg raise angle improvement</td>
<td>20.2 degrees</td>
<td>5.5 degrees</td>
</tr>
<tr>
<td>ED length of stay</td>
<td>3.5 hours</td>
<td>18.8 hours</td>
</tr>
</tbody>
</table>


A 40 y/o male is in the ED after an all-terrain vehicle accident. He has an open fracture of his lower extremity. PMH includes heroin use. He is screaming in pain. After receiving 250 mcg IV (50 mcg + 100 mcg + 100 mcg) of fentanyl he is still screaming.
Ketamine Effectiveness

<table>
<thead>
<tr>
<th>Comparator (6 Trials)</th>
<th>Std. Mean Difference</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>-0.28</td>
<td>-0.67 to 0.10</td>
<td>0.15</td>
</tr>
<tr>
<td>Morphine</td>
<td>-0.35</td>
<td>-1.13 to 0.42</td>
<td>0.37</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>-0.09</td>
<td>-0.59 to 0.40</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Ketamine dose = 0.2 to 0.3 mg/kg IV


Ketamine Adverse Effects

<table>
<thead>
<tr>
<th>Adverse Effect</th>
<th>RR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal</td>
<td>1.10</td>
<td>0.65 to 1.84</td>
<td>0.73</td>
</tr>
<tr>
<td>Neurological</td>
<td>2.17</td>
<td>1.37 to 3.42</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Psychological</td>
<td>13.86</td>
<td>4.85 to 39.58</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Major cardiopulmonary</td>
<td>0.22</td>
<td>0.05 to 1.01</td>
<td>0.05</td>
</tr>
</tbody>
</table>

RR=relative risk

A 45 year old male who weighs 70 kg presents with severe abdominal pain (rated 10/10). Would you change his opioid dose if his weight was different?

a. Decrease the dose
b. Make no change to the dose
c. Increase the dose

### Weight-Based Dosing of Morphine

- Prospective cohort (n=50)
- Adult patients with severe abdominal pain
- Pain measured before, 15 min post dose, and 30 min post dose of morphine 4 mg IV

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Optimizing Acute Pain Management in the Emergency Department and Short-stay Inpatient and Ambulatory Settings

Obesity

- Retrospective cohort (n=300)
- Includes 100 patients with BMI ≥40 kg/m²
- All given morphine 4 mg IV

BMI = body mass index


An obese patient is brought to the ED after a motor cycle collision. He has a femur fracture and is in a lot of pain. IV access has not been obtained after 3 attempts. Which of the following do you recommend?

a. Give intramuscular morphine
b. Give intranasal fentanyl
c. Wait for IV access
Intranasal Opioids

- ↑Lipophilicity → ↑Absorp. on (fentanyl preferred)
- Ideal volume = <1 mL (↑volume → drug run-off into pharynx)


Intranasal Fentanyl PK/PD

- Bioavailability 89% (inter-patient variability in absorption 29%)
- Time to peak concentration 13 min (lag of ~5 min before enters systemic circulation)
- Mean duration of action 58 ± 24 min
- Mean time to rescue medication 71 ± 32 min

PK/PD=pharmacokinetics/pharmacodynamics

Optimizing Acute Pain Management in the Emergency Department and Short-stay Inpatient and Ambulatory Settings

Sublingual Sufentanil

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Sublingual (SL) Sufentanil

- Sufentanil 30 mcg SL
- Multicenter, open-label study (n=76) in adults with acute pain due to trauma or injury


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Key Takeaways

• Treat the patient rather pain scores -“Do you want pain medication?”
• Use non-opioids when possible and consider the diagnosis.
• Patient size is not the only factor to consider when dosing opioids in adults.
• Make sure you know what medications the patient has at home before prescribing post-op opioids.

Which of these practice changes will you consider making?

• Review the pathophysiology of pain and pain management therapies.
• Review pain assessment techniques/tools to gauge the severity of pain so that appropriate analgesia can be administered.
• Discuss with colleagues appropriate assessment and management of acute pain.
• Review guidelines for managing patients with acute pain.
• Collaborate with other healthcare professionals to optimize management of patients with acute pain in my practice.
Thank you for Joining Us

ASHP CE Processing
✓ Deadline: January 31
✓ elearning.ashp.org
✓ Code: ______________
✓ Complete evaluation
✓ Additional instructions in handout

Coming Soon
On-Demand Archive
• Early March 2018

Download the handout at www.ashpadvantage.com/go/acutepain
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Questions? Contact EducServ@ashp.org!
About the Faculty

Asad Patanwala, Pharm.D., M.P.H., BCPS., FCCP, FASHP, is associate professor at the University of Arizona College of Pharmacy in Tucson, Arizona. He practices as an emergency medicine pharmacist at Banner-University Medical Center in Tucson and precepts students and residents on the trauma team and in the emergency department. He also coordinates the final pharmacotherapeutics course in the third year of the doctor of pharmacy program and teaches content in the curriculum related to acute care and emergency pharmacotherapy. He received his Doctor of Pharmacy from Drake University and completed a pharmacy practice residency and critical care specialty residency at the University of Arizona.

Dr. Patanwala has authored more than 100 peer-reviewed journal articles, book chapters and abstracts. He has been a recipient of the Junior Investigator Award from the ASHP Foundation, the New Clinical Practitioner Award from the American College of Clinical Pharmacy, the Pharmacy Practice Literature Award from the ASHP, and the Drake University Alumni Achievement Award.

He currently serves on the editorial advisory board for the American Journal of Health-System Pharmacy for emergency and critical care content. Dr. Patanwala has given numerous presentations at national and international meetings, such as the American College of Emergency Physicians, Society of Critical Care Medicine, American College of Clinical Pharmacy, American Society of Health-System Pharmacists and the American Association of Colleges of Pharmacy.

Lee Kral, Pharm.D., BCPS, CPE, is Clinical Pharmacy Specialist in Pain Management at The University of Iowa Hospitals & Clinics in Iowa City, Iowa. Dr. Kral received her Bachelor of Science and Doctor of Pharmacy from The University of Iowa College of Pharmacy and completed a pharmacy practice residency at The University of Iowa Hospitals & Clinics. After working in the primary care setting, she has been practicing in pain management exclusively for 16 years. Dr. Kral’s clinical practice is in the Pain Medication Management Clinic at The University of Iowa Hospitals & Clinics. This includes management of complex chronic pain patients as well as pre-operative pain assessments for surgical patients. Additionally she works with the Acute Pain Service, managing acute post-operative pain. She serves as a preceptor for PGY1 and PGY2 pharmacy residents as well as pain management fellows and anesthesia residents. Her academic position is with the University of Iowa Carver College of Medicine.

Dr. Kral is a faculty member for the ASHP Foundation Pain and Palliative Care Traineeship and a Certified Pain Educator. She has been a member of the ASHP Pain and Palliative Care Section Advisory Group for several years and also serves on the Board of Trustees for the Society of Palliative Care Pharmacists.

She is involved in local, regional and national pain management efforts and her practice and research interests include chronic non-cancer pain, central sensitization, opioid tapering and peri-operative pain management.

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