Evaluating the Effectiveness of Current Orthopaedic Pain Management Strategies
TOPICS:

Impact of Health Care Changes

Current Strategies in Surgical Pain Management

Implementing and Evaluating Pain Management Strategies
Impact of Health Care Changes on Pain Management?

Regulation

Reimbursement
Regulation

Oct. 6, 2014, Under new federal regulation, all hydrocodone prescriptions now are treated as Schedule II drugs ... If one of these drugs is needed for longer than 30 days, the doctor has to write a new prescription. Refills are no longer allowed.
Reimbursement

In a recent Spine journal publication, the 30 day rate of readmissions after lumbar spine surgery was reported as 4.4%. 22% of those readmissions were for pain.

Spine 2014, Apr 20:39(9)761-8
Reimbursement

Delerium....It’s the most common complication of hospitalization among people ages 65 and over:

20% of those admitted to hospitals, up to 60% of those who have certain surgeries, and almost 80% of those treated in ICUs develop delirium. When delirium isn’t recognized, it can hinder recovery. Prolonged delirium is associated with poor long-term outcomes (mental and physical) and a higher mortality rate.

http://www.health.harvard.edu/staying-healthy/when-patients-suddenly-become-confused
Current Strategies

- Peripheral Nerve Blocks
- Multimodal Analgesia
- Opioid Tolerant vs Naïve
- LA Injection
- “Designer” Pain Meds
Current Strategies

- Total Joint

Goals

- Reduce Pain
- Accelerate Activity
- Improve Safety
- Increase Patient Satisfaction
Current Strategies

- Total Joint

Pathways

- Multimodal meds
- NB or Short Acting Spinal
- Intraop Tissue Injection (LA, Clonidine, Toradol, Epi in Saline)
- Accelerated Rehab Pathway
Current Strategies

➢ Total Joint

Compounded Injection

![Average Pain Scores, Blocks Vs Dalury Graph]

- Pain Scale 0 to 10
- # Hours After PACU
- Avg Pain Scores for Nerve Blocks and Dalury

<table>
<thead>
<tr>
<th># Hours After PACU</th>
<th>Nerve Blocks</th>
<th>Dalury</th>
</tr>
</thead>
<tbody>
<tr>
<td>4h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48h</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Compounded Injection

Current Strategies

➢ Total Joint

Comparison of Pain Scores, TKA, Dalury/Spinal vs Dalury Plus Block

Pain Scale 0 to 10

# Hours After PACU

DAF (100 pts)
FRK (40 pts)
Compounded Injection

Current Strategies

- Total Joint

Graph: Pain with Therapy on POD 0 vs POD 1

Pain Scale 0 to 10

# Hours after PACU

POD 0

POD 1

59 pts ea
DAF only

1st PT

1st PT
## Current Strategies

### Total Joint

<table>
<thead>
<tr>
<th>June-Dec 2014 DAF Knees only</th>
<th>LOS 1</th>
<th>LOS 2</th>
<th>LOS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td># KNEES -RAPID REHAB</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td># PT - 1st VISIT POD 0</td>
<td>81 (54%)</td>
<td>33 (41%)</td>
<td>42 (52%)</td>
</tr>
<tr>
<td>PT - 1st visit POD1</td>
<td>69 (46%)</td>
<td>19 (28%)</td>
<td>31 (45%)</td>
</tr>
</tbody>
</table>
### Current Strategies

#### Compounded Injection

**Total Joint**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypotension</td>
<td>16 (3.5% DAF)</td>
<td>19 (4.0% DAF)</td>
</tr>
<tr>
<td>Renal (non specific blood exam)</td>
<td>25 (5.4% DAF)</td>
<td>20 (4.2% DAF)</td>
</tr>
<tr>
<td>Post Op Nausea</td>
<td>22 (4.8%)</td>
<td>34 (7.2%)</td>
</tr>
</tbody>
</table>
Current Strategies

- Total Joint

Early Outcomes

- Excellent pain control with short acting spinal and “compounded” tissue injection
- Increased patient satisfaction
- More opportunity for early discharge
Current Strategies

- Lumbar Spine Fusion

Goals

- Reduce Pain
- Improve Safety
- Increase Patient Satisfaction
Current Strategies

- Lumbar Spine Fusion

Pathways

- Multimodal
- Opioid Tolerant
- Opioid Dependent
- Surgical Field Tissue infiltration
### Current Strategies

- **Lumbar Spine Fusion**

### Pathways

<table>
<thead>
<tr>
<th></th>
<th>Pre Admit MED</th>
<th>IN OR</th>
<th>PACU</th>
<th>DOS</th>
<th>POD#1</th>
<th>#2</th>
<th>DC# MED POSSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVG Naive</td>
<td>0 70 7.8 72 6.3 36.7/178 6.3 141 4.6 100 90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVG Tolerant</td>
<td>41 70.5 7.9 59 6.9 94/205 6.3 236 6.2 133 106</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Current Strategies

- Lumbar Spine Fusion

Pathways

**Opioid Standard Set**
used for any pt age 65+
Pts under age 65 with less than 2 pain pills per day

**Opioid Tolerant Set**
Any pt under age 65 taking more than 2 pain pills per day for more than 2 weeks
Current Strategies

- Lumbar Spine Fusion

Exparel Trial

Graphs showing pain scores for Posterior Fusion:

- AVG of all nursing documented pain scores
  - PRE DALURY
  - WITH DALURY
Current Strategies

- Lumbar Spine Fusion

Exparel Trial

AVG of all nursing documented pain scores
PRE DALURY

AVG of all nursing documented pain scores
WITH DALURY
Current Strategies

- Lumbar Spine Fusion

Outcomes

- Physician reported improved pain control with tissue infiltration
- Continued patient reliance on narcotic management with oral or IV
- Compounded injection minus Toradol
Current Strategies

- Outpatient Knee and Shoulder

Goals

- Effectiveness to allow for discharge home
- Ease of patient self management
- Patient Satisfaction
Current Strategies

- Outpatient Knee and Shoulder

Pathways

- Preop multimodal
- Peripheral nerve blocks single or continuous
- Joint injections
- Tissue infiltration
## Current Strategies

#### Outpatient Knee and Shoulder

<table>
<thead>
<tr>
<th>Block Type</th>
<th>Procedure Type</th>
<th>POD 1 NUMB</th>
<th>POD 1 PAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interscalene Block, Continuous {64416}</td>
<td>(R) SHOULDER ORIF AC JOINT, ARTHREX DOG</td>
<td>Y</td>
<td>0</td>
</tr>
<tr>
<td>Interscalene Block, Single {64415}</td>
<td>(R) SHOULDER SCOPE, ACROMIOPLASTY,</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>Interscalene Block, Continuous {64416}</td>
<td>(R) SHOULDER SCOPE, RCR</td>
<td>N</td>
<td>3</td>
</tr>
<tr>
<td>Interscalene Block, Continuous {64416}</td>
<td>(R) SHLDR SCOPE, RCR, POSS. BICEPS</td>
<td>N</td>
<td>4</td>
</tr>
<tr>
<td>Interscalene Block, Single {64415}</td>
<td>(R) SHLDR SCOPE, DECOMPRESSION, POSS.</td>
<td>N</td>
<td>8</td>
</tr>
<tr>
<td>Interscalene Block, Continuous {64416}</td>
<td>(R) SHOULDER SCOPE, SAD, MUMFORD, POSS.</td>
<td>N</td>
<td>4</td>
</tr>
<tr>
<td>Interscalene Block, Single {64415}</td>
<td>(R) SHOULDER ROTATOR CUFF REPAIR &amp;</td>
<td>N</td>
<td>4</td>
</tr>
<tr>
<td>Interscalene Block, Single {64415}</td>
<td>(R) SHOULDER ARTHROSCOPY, POSTERIOR</td>
<td>N</td>
<td>4</td>
</tr>
<tr>
<td>Interscalene Block, Continuous {64416}</td>
<td>(R) SHLDR SCOPE BANKART REPAIR, LABRAL</td>
<td>Y</td>
<td>5</td>
</tr>
<tr>
<td>Interscalene Block, Continuous {64416}</td>
<td>(R) SHOULDER SCOPE W/LABRAL REPAIR</td>
<td>Y</td>
<td>10</td>
</tr>
</tbody>
</table>
Current Strategies

- **Outpatient Knee and Shoulder**

Outcomes

- 2 week phone follow up study on blocks
  - 99% prefer block even if reported as somewhat ineffective

- “Mental anchoring” - patient perception of pain right after surgery correlates to current pain being experienced
Designer Drugs

- IV Tylenol
- Exparel
- Transdermal
- Compounds

Outcomes

- $$$$$$
- Our Experience-Limited Effectiveness
- Technique Dependent
- Safety Concerns
Implementation/Evaluation

- Access to Data
- Pharmacy Reports
- Clinical Outcomes
- Patient Satisfaction
- Post Discharge Outcomes
Access to Data

Pharmacy Reports

Clinical Outcomes

Patient Satisfaction

Post Discharge Outcomes

<table>
<thead>
<tr>
<th>77 M</th>
<th>02/18/15 2</th>
<th>HOM</th>
<th>81.54</th>
<th>1200</th>
<th>PAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/16/2015</td>
<td>1340</td>
<td>0</td>
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</tr>
<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/16/2015</td>
<td>1610</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/16/2015</td>
<td>2035</td>
<td>0</td>
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<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/16/2015</td>
<td>2350</td>
<td>5</td>
<td></td>
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<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/17/2015</td>
<td>400</td>
<td>6</td>
<td></td>
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<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/18/2015</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/18/2015</td>
<td>400</td>
<td>5</td>
<td></td>
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<tr>
<td>SHIFT</td>
<td>ASSESS</td>
<td>2/18/2015</td>
<td>800</td>
<td>2</td>
<td></td>
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</tbody>
</table>
Implementation/Evaluation

Access to Data

➢ Pharmacy Reports

Clinical Outcomes

Patient Satisfaction

Post Discharge Outcomes
Implementation/Evaluation

- Graph Pain Scores
- Calculate MED

<table>
<thead>
<tr>
<th>Procedure</th>
<th>MED</th>
<th>PACU time</th>
<th>Post op time</th>
<th>DC pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLAP</td>
<td>21.8</td>
<td>:50</td>
<td>1:40</td>
<td>2</td>
</tr>
<tr>
<td>SLAP</td>
<td>32.3</td>
<td>1:26</td>
<td>2:30</td>
<td>3</td>
</tr>
<tr>
<td>R CUFF</td>
<td>38</td>
<td>1:44</td>
<td>5:15</td>
<td>2</td>
</tr>
<tr>
<td>SLAP</td>
<td>29.8</td>
<td>1:24</td>
<td>:55</td>
<td>1</td>
</tr>
<tr>
<td>SLAP</td>
<td>17.2</td>
<td>1:02</td>
<td>:55</td>
<td>4</td>
</tr>
<tr>
<td>SLAP</td>
<td>25</td>
<td>1:00</td>
<td>1:14</td>
<td>5</td>
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</tbody>
</table>
### Implementation/Evaluation

#### Access to Data

#### Pharmacy Reports

- Clinical Outcomes

#### Patient Satisfaction

#### Post Discharge Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Knee Replacement (includes total and UNI knees)</th>
<th>Knee Replacement Published average (US)</th>
<th>Hip Replacement</th>
<th>Hip Replacement Published average (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Cases</td>
<td>964</td>
<td>Populations studied&gt;4,000</td>
<td>464</td>
<td>Populations studied&gt;4,000</td>
</tr>
<tr>
<td>Avg LOS</td>
<td>2.64 days</td>
<td>3.1 days</td>
<td>2.4 days</td>
<td>3.9 days</td>
</tr>
<tr>
<td>Infection rate</td>
<td>0.6%</td>
<td>0.4%³</td>
<td>0.65%</td>
<td>0.6%</td>
</tr>
<tr>
<td>In Hospital Mortality Rate</td>
<td>0%</td>
<td>0.09%⁴</td>
<td>0%</td>
<td>0.19%</td>
</tr>
<tr>
<td>30 day readmit rate for ortho related only</td>
<td>0.12%</td>
<td>not available</td>
<td>0.4%</td>
<td>not available</td>
</tr>
</tbody>
</table>
### Trend Analysis

### Outcomes Reports

<table>
<thead>
<tr>
<th></th>
<th>Bilat Proced</th>
<th>TKA</th>
<th>THA</th>
<th>UNI KNEES</th>
<th>REV KNEES</th>
<th>REV HIPS</th>
<th>TOTAL #'s</th>
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</thead>
<tbody>
<tr>
<td># Procedures</td>
<td>9</td>
<td>34</td>
<td>20</td>
<td>14</td>
<td>11</td>
<td>4</td>
<td>92</td>
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<tr>
<td>LOS 1 day</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>LOS 2 days</td>
<td>3</td>
<td>27</td>
<td>13</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>LOS 3 days</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>LOS &gt;3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>HOME</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td>HHS</td>
<td>3</td>
<td>25</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>SNF</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>REHAB</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TRANSFUSIONS</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>HYPOTENSION</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>COMP</td>
<td>0</td>
<td>Elev CR(2)</td>
<td>Elev CR</td>
<td>0</td>
<td>0</td>
<td>Ret to OR</td>
<td>3</td>
</tr>
<tr>
<td>READMIT</td>
<td>0</td>
<td>1-pneumonia</td>
<td>1-fem fx(fall)</td>
<td>0</td>
<td>1-hematoma</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>ER</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Implementation/Evaluation

Access to Data

Pharmacy Reports

Clinical Outcomes

➢ Patient Satisfaction

Post Discharge Outcomes

<table>
<thead>
<tr>
<th>Patients who reported that their nurses &quot;Always&quot; communicated well</th>
<th>HCAHPS</th>
<th>IOH (n=42)</th>
<th>Arizona Spine and Joint (n=23)</th>
<th>Institute for Orthopaedic Surgery (Ohio) (n=?)</th>
<th>Nebraska Orthopedic Hospital (n=24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>91%</td>
<td>83</td>
<td>92</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients who reported that their doctors &quot;Always&quot; communicated well</td>
<td>87%</td>
<td>81</td>
<td>89</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Patients who reported that they &quot;Always&quot; received help as soon as they wanted</td>
<td>84%</td>
<td>78</td>
<td>91</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Patients who reported that their pain was &quot;Always&quot; well controlled</td>
<td>80%</td>
<td>71</td>
<td>82</td>
<td>74</td>
<td></td>
</tr>
</tbody>
</table>

“How well your pain was controlled”
Implementation/Evaluation

- Patient Satisfaction And Comments
  - Press Ganey-Facility
  - Press Ganey-Service Line
  - Press Ganey-Physician
  - Wellbe - Pt Comments
Access to Data
Pharmacy Reports
Clinical Outcomes
Patient Satisfaction

Post Discharge Outcomes

<table>
<thead>
<tr>
<th>PRO’s</th>
<th>Clinical Outcomes</th>
<th>Wellbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• EQ5D5L</td>
<td>• Oxford Hip/Knee</td>
<td>• Patient Reported</td>
</tr>
<tr>
<td>• PROMIS 10 GLOBAL</td>
<td>• UCLA Shoulder</td>
<td>Adverse Event</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oxford Hip/Knee</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post Discharge Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>numbness anterolateral thigh - see ofc note</td>
</tr>
<tr>
<td>MUA &amp; inj.</td>
</tr>
<tr>
<td>none @ 6 mos.</td>
</tr>
<tr>
<td>fall - ER visit - see phone note</td>
</tr>
<tr>
<td>fall - no injury</td>
</tr>
<tr>
<td>BP issues &gt; 6 weeks po</td>
</tr>
<tr>
<td>Knee manipulation</td>
</tr>
<tr>
<td>ER visit to rule out DVT</td>
</tr>
<tr>
<td>Hospital admit for cellulitis</td>
</tr>
<tr>
<td>ER visit for pain - negative doppler</td>
</tr>
<tr>
<td>ER - INR of 7.7</td>
</tr>
</tbody>
</table>
Implementation/Evaluation

➢ Post Discharge Outcomes

Quality of Life Improvements After Hip Replacement

1.0 = perfect health

<table>
<thead>
<tr>
<th></th>
<th>IOH preop avg (age 63.3)</th>
<th>IOH post op 12 mos</th>
<th>U.S. healthy* age 65</th>
<th>U.S. arthritis* age 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>0.648</td>
<td>0.882</td>
<td>0.86</td>
<td>0.8</td>
</tr>
</tbody>
</table>
FINDINGS

- Peripheral Nerve Block resolution (8-16 hours postop) is problematic in the inpatient and outpatient populations.

- Numbness does not always equate to good pain control.
FINDINGS

- Multimodal Pain Pathways are a moving target that need to be watched
- Opioids (std vs extended release)
- NSAIDS (renal impact)
- Antineuroleptics (delerium)
- Tylenol (hepatic toxicity)
- Opioid Tolerant vs Opioid Naive
FINDINGS

- The surgeons “belief” of the effectiveness of their strategies is not always accurate.
FINDINGS

➤ Every strategy impacts process, care and outcomes
Evolution of Pain Management in Orthopedic Surgery
Evolution of Pain Management in Orthopedic Surgery

Total Joints

Impact of Pain Management
Total Joints

- Pain
- Safety
- Pt Satisfaction

Year:
- 1985
- 1999
- 2005
- 2015
Evolution of Pain Management in Orthopedic Surgery

Lumbar Fusion

Impact of Pain Management
Lumbar Spine

- Pain
- Safety
- Pt Satisfaction

Graph showing trends from 1985 to 2015.
Evolution of Pain Management in Orthopedic Surgery

Outpatient Knee and Shoulder

Impact of Pain Management Outpatient

- Pain
- Safety
- Pt Satisfaction

Future of Pain Management in Orthopedic Surgery?
Streamlining Orthopedic Episodes of Care

Wellbe’s Smart Patient Navigation

Wellbe helps service line leaders to manage growing programs by leveraging digital patient navigation to increase the capacity of existing resources. The cloud-based platform combines vital tools for patient engagement and care coordination across the continuum to manage the performance of value-based reimbursement programs. This patient-centric approach using actionable feedback results in reduced risks, optimal costs, and a better patient experience.

Wellbe’s solution includes:

- **Guided Patient Journeys for Better Engagement and Experiences**
  Easy-to-follow Guided CarePaths™ are designed around your facility’s existing content and aligned to your current program’s clinical pathways to help your patients on their journey to better health.

- **Coordinated Care with Connected Teams**
  Each member of the care team can leverage CarePath Automation™ to help them complete their “to-dos” while ensuring collaboration on patient progress.

- **Real-time Insight from Patient Generated Data**
  On-demand reports give administrators the quick data they need to report to the C-Suite on program performance.

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