Perioperative Pain Management in Outpatient Spine Surgery

Philip Schneider, M.D.
The Centers for Advanced Orthopaedics
Medical Director, Holy Cross Hospital Spine Center
The Surgery Center of Chevy Chase
Complex Spine Surgeries are Migrating

- Outpatient spine fusions projected to grow from 7% to **22% of volume in next 10 years**
- Payors accepting complex spine in response to **superior outcomes and lower costs**

**Migration to Outpatient (fusions)**

*Site of service % by case volume – includes only cervical fusion and thoracic/lumbar fusion procedures*

**Robust Outpatient Market Growth**

*2015-2025 annual case volume estimates*

Source: Sg2.
Challenges for Outpatient Spine Surgery

- Implant costs
- Pain control and medical issues
- Avoid trip to the E.R. or hospital admission after surgery
Inadequate Pain Control

• 2\textsuperscript{nd} leading cause for readmission
• Most common cause is wound complications
HCAHPS Scores

• Adequacy of pain control
• Length of stay
• Readmission rates
Traditional Post-op Pain Control

• Relied heavily on opiates
• Opiates are effective, BUT:
  – Respiratory depression
  – Altered cognition
  – Urinary retention
  – Constipation
  – Tolerance
  – Inadequate pain relief

Wheeler et al. J Pain 2001
“Tiger Woods’s DUI and the growing American painkiller problem”
Pawan Grover, THE HILL  6/6/17
Paul Azinger Says 'Some Players' Think Tiger Woods Has Pain Medication Problem

TIM DANIELS

Bleacher Report, JUNE 9, 2017
Opioids- Major Public Health Initiative

• CDC- Opioid use and abuse a major public health crisis
• Even Republicans and Democrats both agree
• In 2015:
  
  opioid overdose deaths= 52,404 (2/3 all drug deaths)
• In 1999:
  
  opioid overdose deaths= 17,000

Centers for Disease Control and Prevention. Prescribing Data 2016
Rudd et al. CDC.gov 2016
Koppen and Afanasjeva. Pract Pain Management 2017
Risk of Chronic Opioid Use

- Sharpest increase in chronic use at Day 5 & 31
- Risk starts every day after Day 3
- 2nd prescription doubles the risk of use at 1 year
- E.R. Opioids and Tramadol correlate with use at 5 years
- Increased risk > 700 MME

Shah, Hayes, and Martin. CDC morbidity and Mortality Report 2017
CDC Creates Rules for Opioids
A Brief History of the FDA's Role in the Ongoing Effort to Ensure Safe Opioid Use

Because of the recent focus on the opioid abuse epidemic, Practical Pain Management asked the authors to review what efforts the FDA has taken to help combat abuse of these medications.

Laura Koppen, PharmD
PhD Candidate, Drug Information Resident
University of Illinois at Chicago
College of Pharmacy
Chicago, Illinois

Janna Alanaseva, PharmD, BCPS
Clinical Assistant Professor
Pharmacy Practice, Drug Information Group
University of Illinois at Chicago
College of Pharmacy
Chicago, Illinois

The Centers for Disease Control and Prevention (CDC) estimates that 1 out of 5 patients with noncancer pain receives a prescription for opioids. The Food and Drug Administration (FDA) divides prescription opioids into 2 categories according to their duration of action: immediate-release (IR) and extended-release/long-acting (ER/LA). Immediate-release products can usually be taken every 4 to 6 hours, while ER/LA products are generally taken once or twice a day.

The federal law governing the prescribing and distribution of Schedule II, indicating that they have an extremely high potential for abuse. Schedule II products are the most strictly regulated controlled substances, and have the most extensive rules regarding their prescribing and distribution. Some combination pain medications, such as codeine-acetaminophen, are considered to have a lower abuse potential and are classified as Schedule III.

Prescription opioid abuse and overdose have become serious public health problems in the United States. According to a recent CDC report, 63.1% of the drug overdose deaths that occurred in the United States...
On Thursday, for the first time in its history, the Food and Drug Administration asked a drug company to take an opioid medication off the market.

The drug, Opana ER — a form of the painkiller oxymorphone hydrochloride — has been heavily abused and linked to outbreaks of H.I.V., hepatitis C and a serious blood disorder among people who crush the pills into powder and inject it.

“We are facing an opioid epidemic — a public health crisis, and we must take all necessary steps to reduce the scope of opioid misuse and abuse,” Dr. Scott Gottlieb, the F.D.A. Commissioner
Preemptive Multimodal Analgesia (MMA)

- Administered before onset of pain
- Relies on synergistic action of non-opioids
- Purpose is to prevent *Central Sensitization*

the activation of central neurons and their amplified peripheral neurons in response to noxious stimuli

Woolf and Chang. Anesth Analg 1993
Kurd et al. J Am Acad Orthop Surg 2017
World Health Organization

• Opiates- last step in pain management
• Opiates are addictive
• Among most abused substances in U.S.

Garland et al. Neurosci Biohav Rev 2013
MMA in Pediatric Scoliosis Surgery
332 patients

• Gabapentin and Ketorolac (Toradol) along with IVPCA
• Earlier mobilization
• Decrease LOS
• Faster functional recovery
• Decrease pain on POD 0 and 1. Similar after that

Muhly et al. Pediatrics 2015
Synergistic Effects of MMA

- Opioids
- \( \alpha_2 \)-agonists
- Acetaminophen
- NMDA antagonists

Local anesthetics
- Opioids
- \( \alpha_2 \)-agonists
- NMDA antagonists

Local anesthetics
- NSAIDs
- COXIBs
Proven Advantages of Better Post-op Pain Control

- Improved mobility
- Faster rehabilitation
- Reduced complications
- Improved patient satisfaction

Pugely et al. Spine 2014
How Improve Post-op Pain without More Opiates??

- Preemptive multimodal analgesia (MMA)
- The other MMA- Conor McGregor
Amanda Nunes first round defeat of Rhonda Rousey
NSAID’s

• NSAID’s are COX (cyclooxygenase enzyme) blockers
• Need COX to make prostaglandins
• If COX production blocked....... No prostaglandins made from arachidonic acid
• Since prostaglandin mediate inflammation and pain, therefore:
  \[ \downarrow \text{prostaglandin} = \downarrow \text{inflammation and } \downarrow \text{pain} \]

Kurd et al. J Am Acad Orthop Surg 2017
COX-1 vs COX-2

COX-1 blockers affect everything - get unintended side effects:
  • G.I. adverse events
  • Platelets effects
  • Effects on bone fusion (long term use)

COX-2 blockers selectively affect inflammatory tissue:
  Less G.I., platelet, and fusion side effects

Celebrex in TKA

Celebrex 400 mg pre-op and post-op x 5 days with PCA vs PCA only

VAS = 1.7 vs 3.2
Knee flexion = 78 degrees vs 64 degrees
Opioid use = ↓40%
Nausea = 28% vs 43%
No difference in EBL

Huang et al. BMC Musculoskeletal Disorders 2008
Celebrex- Cochrane Review

• Review of 10 studies

Celebrex 200 mg =
Aspirin 650 mg =
Acetaminophen 1,000 mg =

Adverse events of Celebrex same as placebo

Derry and Moore. Cochrane Database Rev 2013
Meta-Analysis of COX-2 Blockers in Spine Surgery

• 17 studies
• Given pre-op and post-op
• Level I evidence of ↓40% morphine use
• Level II evidence of improved pain scores
• No additional side effects

Jirarattanaphochai et al. Spine 2008
Acetaminophen
(in Europe- Paracetamol)

• N-acetyl-para-aminophenol

1. COX Blocker like NSAID’s, but different site on the COX enzyme- peroxidase site. Result is reduction in fever and pain.
2. Stimulates serotonin which inhibits pain.
3. Has active metabolites that are similar to endocannabinoid system with receptors in brain and PNS.

Medical Marijuana
Acetaminophen (like weed?)
N-acetyl-para-aminophenol

- Acetaminophen can become de-acetylated and react with arachidonic, the chemical they block from producing prostaglandins.
- The chemical reaction produces a metabolite similar to cannabinoids.
- Involved with pain, mood, memory, maybe runner’s high.
Acetaminophen (IV and oral)

- Most studies in extremity surgery in orthopaedics
- Decreased post-op pain
- Decreased opioid use
- Cost issue in some facilities

Sinatra et al. Pain Pract 2012
Toms et al. Cochrane Database Syst Rev 2008
Ketamine vs Morphine

• Ketamine is a NMDA and glutamate receptor antagonist
  • Produces analgesia and amnesia
• 0.3 mg/kg Ketamine vs 0.1 mg/kg Morphine
• No diff in VAS pain scores 4.1 vs 3.9
• No diff in adverse reactions
• More rapid pain relief with Ketamine

NMDA Receptor Antagonist (Ketamine)

- N-methyl-D-aspartate (NMDA) blocker
- Initially anesthetic agent in higher doses - hallucinations
- Used in Emergency rooms
- Found useful in treatment of CRPS
- Showed usefulness in acute pain in lower doses

Schwartzmann et al. Pain 2009
NMDA Antagonist (Ketamine)

- NMDA receptors transmit pain after tissue injury
- Not used as primary anesthetic in higher doses because causes hallucinations.
- Lower doses have less “mind altering” side effects and can be adjunct to anesthesia
- Little suppression of respiration
- Does not affect MEP’s

Himmelseher and Durieux. Anesthesiology 2005
Ketamine in the Emergency Room

Causes a dissociative state:
• Trance
• Analgesia
• Amnesia
• Airway reflexes maintained
• Little effect on respiration

Side Effects:
○ Recovery agitation (versed)
○ Salivation (atropine)
Low Dose Ketamine in Emergency Room

- Viable analgesic adjunct to morphine for severe acute pain
- 0.3 mg/kg more effective than 0.15 mg/kg with similar side effect profile

Beaudoin et al. Acad Emerg Med 2014
NMDA Blockers in Scoliosis Surgery

For TIVA (total IV anesthesia)

• Ketamine 0.5 mg/Kg/hr
• Ketamine is only anesthetic that enhances MEP signals
• Fentanyl has no effect on SSEP/MEP’s
• Propofol slightly depresses SSEP and MEP’s
• Volatile anesthetics ↓ MEP’s
  ▲ SSEP latency, ↓ SSEP amplitude

Kabul Bomb Sows Carnage

Blast in Afghan capital's diplomatic quarter kills at least 60, wounds hundreds

as the Green Zone where major embassies and U.S. military headquarters are located. It was the first time a truck bomb had struck the area, and it killed more than 100 people. The vast majority were Afghan civilians who had been commuting to work at government agencies, companies and host a gathering of representatives of more than 20 countries to discuss political solutions to the long-running conflict with the Taliban.

Opioid Makers Sued for Stoking Addiction

By JANNIE WOLLEN

In one of the highest-profile cases to date against makers of prescription painkillers, Ohio filed suit against five drug companies, alleging they stoked the opioid addiction crisis by misrepresenting the addictive risks of their painkillers.

The complaint, filed in state court in Ross County on Wednesday, targets parent companies and various subsidiaries, including: Purdue Pharma L.P.; Johnson & Johnson; Teva Pharmaceutical Industries Ltd.; Allergan PLC; and Endo International PLC's Endo Health Solutions unit.

Johnson & Johnson denied the allegations. The other companies either declined to comment or said they were reviewing the allegations.

Ohio Attorney General Mike DeWine, a Republican who filed the lawsuit on behalf of the state, said at a news con-

Please see DRUG page 5.
Anti-Convulsants
(Neuromodulatory Agents)

• Gabapentin (Neurontin)
• Pregabalin (Lyrica)

• Anti-convulsants block calcium-gated channels of the pre-synaptic axons......

\[\text{nerve stimulation}\]
Advantages of Anti-Convulsants

Gabapentin 1200 mg pre-op dose only

• Improved post-op pain scores
• Decreased morphine use
• Decreased urinary retention (less opioids)
• Decreased vomiting (less opioids)
• No additional side effects

Turan et al. Anesthesiology 2004
Advantages of Anti-Convulsants

150 mg Lyrica pre-op and 12 hrs post-op

- Decrease in opiates via PCA pump
- No increase in side effects, including: dizziness, blurred vision, altered cognition

Kim et al. Spine 2011
RCT of Anti-Convulsants in Spine Surgery

Lyrica 75 mg or Gabapentin 300 mg pre-op and one week post-op

- ↓VAS pain scores
- ↓ODI scores for function
- ↓Opioid use

No increase in side effects

Kharana et al. Spine 2014
Meta-Analysis of Anti-Convulsants in Spine Surgery

7 studies included

• Decrease opioid use
• Decrease post-op pain
• No increase in side effects

Yu et al. Spine 2013
Local Anesthesia

- Lidocaine and Bupivacaine
- Sodium channel blocker
- Ions will not flow through the channel and postsynaptic sensory neuron will not depolarize
- No action potential transmitted
- No pain impulse transmitted to brain
Local Anesthesia

- Injected locally
- Bulb elastic pump
- Occasional technical issues with use
- Good short term results

Elder et al. Spine 2010
Reynolds et al. Global Spine J 2013
Lisosomal Bupivacaine (Exparel)

- DepoFoam drug delivery system - extended release
- In hemorrhoidectomy surgery, 50% decrease in opioid use up to Day 4.
- Cost issue for some centers

Gorfine et al. Dis Colon Rectum 2011
Onel et al. Annual Meeting ASA 2010
Tranexememc Acid

- Treats blood loss from major trauma, postpartum bleeding, heavy menstrual periods, surgery
- Functions as an antifibrinolytic
- Binds to plasmin, so plasmin can’t degrade fibrin clots
- V.A. Medical Advisory Panel meta-analysis: decreased EBL in TKA with 45% less transfusions
OPIOID CRISIS IN U.S. FUELING CHAOS TO SOUTH

I

President’s window for early wins is shrinking

Trump seeks momentum on health care tax cuts before Congress recesses.

by Michael R. Bloomberg

Chancellor maintains need for Europe’s self-reliance

by Michael R. Bloomberg

London — President Trump expressed his “total” support for the European Union’s plan to tackle the crisis in the wake of a massive cyberattack that hit Britain and other countries. But he simultaneously held out for a deal that would allow the U.S. to strike back against Russia without relying on European allies.

The dispute started as Trump tweeted about the crisis on social media last week and then appeared to have a “triumph” on his hands. It kicked off after Merkel did little over the weekend to hide her disappointment with Trump’s refusal to commit Washington to the European Union.

We have a strong partnership with Germany, but we also need to ensure that NATO is a strong and effective force for the U.S.

This will change,” Trump wrote in his post-morning tweet.

The fight has had a series of obvious practical consequences so far. But Merkel’s meetings this week were:

- First a meeting with Indian leader on Tuesday and then a sit-down with the Chinese prime minister on Wednesday.

Trump’s broader point has merit, economists say. All...
Spine Injection with Opioids
(Neuraxial Blockade)

- Epidural 100 µg fentanyl bolus
- Intrathecal 15µg fentanyl bolus

- Decreased oral & IV opioids post-op
- Increased side effects - urinary retention, motor blockade, and still using opioids
- Concerning for out-patient surgery

Guilfoyle et al. Spine 2012
Chan et al. Spine 2006
Spine Injections with Steroids (Neuraxial Blockade)

Epidural steroids injected on nerve root in lumbar disectomy

↓ pain at 1-2 weeks

Rasmussen et al. Spine 2008
Jamjoon and Jamjoon. BMC Muskuloskeletal Disord 2014

Increased risk of post-op infection if esi done within 1-3 months of spinal fusion surgery

Singla et al. J Neurosurg 2017
Alpha-2 Agonists

Clonidine

Stimulates the $\alpha_2$ adrenergic receptor ➔
Blocks adenyl cyclase in brainstem ➔
Decrease brainstem CNS activation

Useful as anti-hypertensive, sedative, analgesic and Tx of opioid dependence and withdrawal
Clonidine in Open Heart Surgery

- ↓ pain scores
- ↓ PCA pain scores
- ↑ Patient satisfaction

Multimodal Analgesia (MMA)

- Multiple non-opioid meds to reduce post-op pain
- Meds with different mechanisms of analgesia for synergistic effect
- Minimize side effects, esp. opioids
- Given either pre-op, post-op, or both

Randy “The Natural” Couture
Multimodal Analgesia (MMA)

22 patients undergoing lumbar laminectomy

*Pre-op*  |  *Post-op*
---|---
Celebrex 200mg | Celebrex 100 mg
Lyrica 150 mg |

Results: decrease VAS pain scores
decrease morphine use

Garcia et al. J Spinal Disord Tech 2013
# Mutimodal Analgesia

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celebrex 200 mg</td>
<td>Celebrex 200 mg BID</td>
</tr>
<tr>
<td>Lyrica 75 mg</td>
<td>Lyrica 75 mg BID</td>
</tr>
<tr>
<td>Acetaminophen 500 mg</td>
<td>Acetaminophen 500 mg BID</td>
</tr>
<tr>
<td>Oxycontin 10 mg</td>
<td>Oxycontin 10 mg BID</td>
</tr>
</tbody>
</table>

- Decrease ODI, Decrease VAS pain score
- Complications, side effects, EBL same

Kim, Ha, and Oh. Eur Spine J 2016
MME Conversion Factors

- Hydromorphone (Dilaudid) 4.0
- Oxycodone (Percocet) 1.5
- Morphine 1.0
- Hydrocodone (Vicodin) 1.0
- Codeine (Tylenol #3) 0.15
- Tramadol (Ultram) 0.1

Plan Description: Spine Surgery Preop (COE) (SS)
Plan Selection Display: Spine Surgery Preop (COE) (SS)
Plan Type: Medical
Version: 3
Effective Date: 3/27/2013 10:08
End Effective Date: Current
Available at: (GT) HCMGN
(SS) MGHSS


Spine Surgery Preop (COE) (SS)
Admit/Discharge/Transfer
Admit to inpatient Status

Patient Care
Communication
Order initiate Preop Card Associated with Scheduled Procedure

Medications
CefAZolin
   2 Gm. IV, Pre-Procedure, Routine, See Comments. Prophylaxis (DEF)*
   Comments: For patients less than 120 kg
   3 Gm. IV, Pre-Procedure, Routine, Prophylaxis
Ceftriaxone
   1 Gm. IVPB, IVPB, Pre-Procedure, Routine, See Comments. Prophylaxis
   Comments: Administer in Surgery Within 80 Minutes of incision
Vancomycin
   1 Gm. IVPB, IVPB, Pre-Procedure, See Comments, Prophylaxis (DEF)*
   Comments: Administer in Surgery Within 60 Minutes of incision
   15 mcg/kg/hr. IVPB, IVPB, Pre-Procedure, See Comments, Prophylaxis
   Comments: Administer within 1-2 hours of incision. Maximum dose of 2 grams with a minimum rate of 1 gram/hour
Transxamic acid
   1 Gm. IVPB, Once, Routine, See Comments
   Comments: Transxamic acid is contraindicated in cases with hx of Strokes, DVT, Color Blindness

Pain Management
Begin before Surgery (in ASD)(NOTE)*
Tylenol
   550 mg. PO, Tab, Once
   Comments: On Arrival to ASD
Celebrex
   200 mg. PO, Cap, Once
   Comments: On Arrival to ASD
Lyrica
   50 mg. PO, Cap, Once
   Comments: On Arrival to ASD

Given by Anesthesiologist in OR - Ketamine 20mg IV Push, Once and Dexamethasone 10mg, IV Push, Inject. Once

Laboratory
Type and Screen
   Routine, Once

Therapy
OT - Evaluation and Treatment
   Begin today after 12 noon on AM surgical patient
   Comments: Begin day of surgery

DT - Evaluation and Treatment
   Begin today after 12 noon on AM surgical patient for ADL's
   Comments: Begin day of surgery

*Report Legend:
DEF - This order sentence is the default for the selected order
<table>
<thead>
<tr>
<th>Preoperative—Surgeon/ PA to complete</th>
<th>Post-Operative—Surgeon/ PA to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spine Only</strong></td>
<td>□ Celecoxib/Celebrex 200mg PO BID?</td>
</tr>
<tr>
<td>□ Acetaminophen 650mg orally in ASD</td>
<td>□ Exclusion for Sufa Allergy</td>
</tr>
<tr>
<td>□ Exclusion:____________</td>
<td>□ Exclusion for NSAID reaction</td>
</tr>
<tr>
<td>□ Celecoxib/Celebrex 200mg orally in ASD</td>
<td>□ Exclusion for CAD</td>
</tr>
<tr>
<td>□ Exclusion for Sufa Allergy</td>
<td>□ Other Exclusion:___________________</td>
</tr>
<tr>
<td>□ Exclusion for NSAID reaction</td>
<td></td>
</tr>
<tr>
<td>□ Other Exclusion:____________</td>
<td></td>
</tr>
<tr>
<td>□ Pregabalin/Lyrica 150 mg orally in ASD</td>
<td>□ OxyContin or current long acting opioid started in the morning while PCA still running</td>
</tr>
<tr>
<td>□ Exclusion for Lyrica/Neurontin reaction</td>
<td>□ Oxycodeine ordered for breakthrough after PCA</td>
</tr>
<tr>
<td>□ Exclusion for self-administration of Lyrica/Neurontin</td>
<td>□ Other/Non-Opioid pain management:</td>
</tr>
<tr>
<td>□ Other Exclusion:____________</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intraoperative—Surgeon/ PA to complete</th>
<th>Pain Score—HUC to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anesthesia Used:</strong></td>
<td>Pre-operative Pain Score,__________</td>
</tr>
<tr>
<td>□ General Anesthesia</td>
<td>Pre-operative Pain Goal,__________</td>
</tr>
<tr>
<td>□ Other:_____________________________</td>
<td>*12 hours Post-Operative Score,__________</td>
</tr>
<tr>
<td><strong>Other Medications:</strong></td>
<td>12 hours Post-Operative Goal,__________</td>
</tr>
<tr>
<td>□ Intraoperative administration of Decadron</td>
<td>*Discharge Score,__________</td>
</tr>
<tr>
<td>□ Exclusion:_________________________</td>
<td>Discharge Goal,__________</td>
</tr>
<tr>
<td>□ Contraindication:___________________</td>
<td>*</td>
</tr>
<tr>
<td>□ Intraoperative administration of Ketamine</td>
<td>Date of Surgery:__________</td>
</tr>
<tr>
<td>□ Exclusion:_________________________</td>
<td>Patient Type: In-Patient Ambulatory Surgery</td>
</tr>
<tr>
<td>□ Contraindication:___________________</td>
<td></td>
</tr>
<tr>
<td>□ Tranexamic Acid (IV or topical wash)</td>
<td></td>
</tr>
</tbody>
</table>
MMA Jan 2016-present

Pre-op
- Celebrex 200 mg
- Lyrica 150 mg
- Acetaminophen 650 mg

Intra-op
- Ketamine 20 mg
- Decadron 10 mg
- Bupivacaine 30 cc
- Tranexamic Acid 1g
Pain Goals pre & post 2016

• Pre- 2016 27% patients met D/C goal
• After 2016 75% patients met D/C goal
Pain Goals: MMA vs Control
Jan 2016- present

**MMA**
75% met their goal
Pre-op
- Celebrex 200 mg
- Lyrica 150 mg
- Acetaminophen 650 mg
- Tranexamic Acid 1g
Intra-op
- Ketamine 20 mg
- Decadron 10 mg
- Bupivacaine 30 cc
Morphine and Percocet

**TRADITIONAL**
34% met their goal

Morphine and Percocet
If you want \( \downarrow \) pain and \( \downarrow \) opiates

Consider:

- Ketamine
- Acetaminophen
- Celebrex
- Lyrica or Gabapentin
- Decadron
- Tranexemetic Acid
- Bupivacaine local injection
- Maybe intrathecal injection
- Maybe Clonidine
Enormity of the Crisis

In 2014

2 million Americans abused or were dependent on Rx drug opioids

1,000 patients treated in E.R’s each day in U.S. for misusing opioids

Substance Abuse and Mental Health Services Administration (SAMHSA). Dept Health and Human Services
No racial bias in opioid deaths

TOLL AMONG MINORITIES RISING

Overdoses killing people in the prime of life

BY JOEL ACHENBACH AND DAN KEATING

The opioid epidemic that has ravaged life expectancy among economically stressed white Americans is taking a rising toll among blacks, Hispanics and Native Americans, driving up the overall rate of death among Americans in the prime of their lives.

Since the beginning of this decade, death rates have risen among people between the ages...
Economic and Regulatory Reasons for Post-op Pain Control

• Publicly reported outcomes
• Hospital reimbursement (changing)
• Spine Center of Excellence designation
• Hospital Consumer Assessment of Healthcare Provider and Systems (HCAPHS)
• The Joint Commission

MMA in Outpatient ASC

- Avoid hospital admission or E.R. visit
- Decrease pain
- Decrease bleeding
- Improve patient satisfaction
- Move more complex spine cases to ASC
- Reduced complications
- Improved mobility
- Reduce opioids and possible chronic use
THANK YOU