

Slide 1

Safe Post-Operative Prescribing of Opioids



BOSTON UNIVERSITY Boston University School of Medicine
Continuing Medical Education

 **SCOPE of Pain**
Safe and Competent Opioid Prescribing Education

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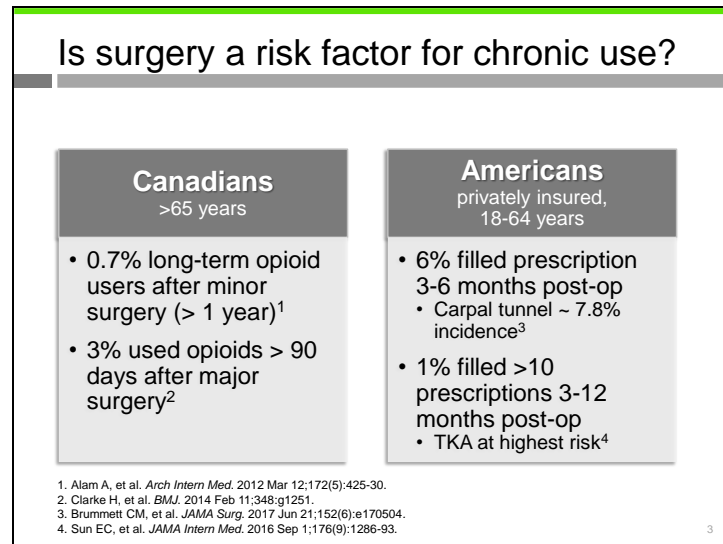
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Hello, my name is Eric Chen from Boston University and today we'll be talking about safe postoperative prescribing of opioids.



Opioid analgesia has long been used for pain control after surgery but the first question is – is surgery a risk factor for chronic use?

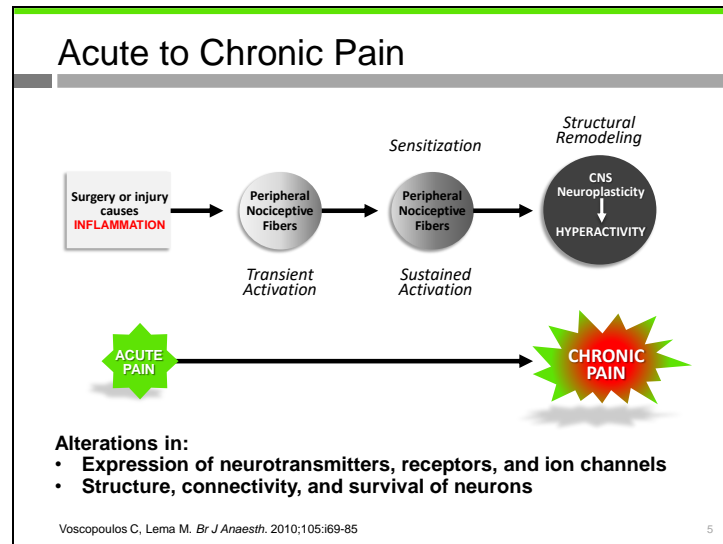
Here we show data from large insurance database studies looking at both elderly Canadians as well as privately insured American adults. And they showed that anywhere from one to six percent of patients used opioids for over three months after their surgery. These studies looked at a variety of surgical procedures and found evidence of chronic use after even minor surgery such as carpal tunnel releases and major, more invasive surgeries such as total knee arthroplasties.

Slide 4

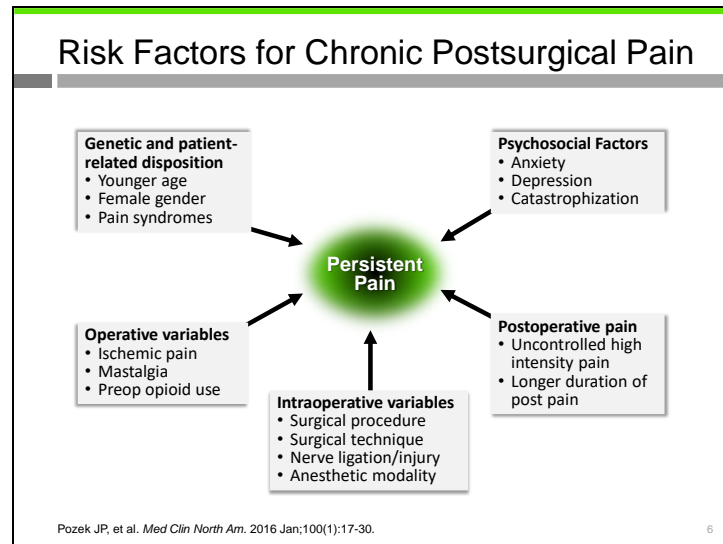
	% of Patients	
	Estimated Incidence of Chronic Pain	Estimated Chronic Severe (Disabling) Pain (>5 out of 10)
Amputation	30–50	5–10
Breast surgery (lumpectomy and mastectomy)	20–30	5–10
Thoracotomy	30–40	10
Inguinal hernia repair	10	2–4
Coronary artery bypass	30–50	5–10
Caesarean section	10	4

Sinatra R. *Pain Med.* 2010 Dec;11(12):1859-71. 4

Related to chronic opioid use and somewhat going hand in hand with it, is also the incidence of chronic postsurgical pain. This study by Sinatra found high rates of chronic pain after surgeries such as amputations and thoracotomies but also present after more elective or less invasive cases such as inguinal hernia repairs and Caesarian sections. And so all surgery due to its inherently invasive nature is a source of acute pain.



But how exactly does the experience of acute pain become chronic? Here this figure sort of conceptually shows this transition starting from surgery causing inflammation, which causes initially a transient activation of nociceptive fibers, which then become sensitized and then activated in a more sustained manner. This ultimately results in a structural remodeling of the central nervous system, which results in hyperactivity and chronic pain. And evidence suggests that these changes are mediated by alterations in expressions of neurotransmitters, receptors, ion channels, as well as structure, connectivity and survival of neurons.



Can we predict which patients are at higher risk of developing chronic postsurgical pain? Indeed some risk factors have been identified. Much of the experience of postoperative pain can be attributed to psychosocial factors such as anxiety, depression as well as catastrophization or essentially a patient's ability to cope with their individual surgical experience. However, beyond patient related factors such as younger age or pain syndromes, there are some operative variables that can play a role in increasing the risk for chronic postsurgical pain, such as the surgical procedure or technique or presence of any sort of ischemia or nerve injury during or after surgery.

Progression to Chronic Pain

Example: STarT Back Screening Tool

Thinking about the **last 2 weeks** tick your response to the following questions:

	Disagree 0	Agree 1
1 My back pain has spread down my leg(s) at some time in the last 2 weeks	<input type="checkbox"/>	<input type="checkbox"/>
2 I have had pain in the shoulder or neck at some time in the last 2 weeks	<input type="checkbox"/>	<input type="checkbox"/>
3 I have only walked short distances because of my back pain	<input type="checkbox"/>	<input type="checkbox"/>
4 In the last 2 weeks, I have dressed more slowly than usual because of back pain	<input type="checkbox"/>	<input type="checkbox"/>
5 It's not really safe for a person with a condition like mine to be physically active	<input type="checkbox"/>	<input type="checkbox"/>
6 Worrying thoughts have been going through my mind a lot of the time	<input type="checkbox"/>	<input type="checkbox"/>
7 I feel that my back pain is terrible and it's never going to get any better	<input type="checkbox"/>	<input type="checkbox"/>
8 In general I have not enjoyed all the things I used to enjoy	<input type="checkbox"/>	<input type="checkbox"/>

9 Overall, how **bothersome** has your back pain been in the **last 2 weeks**?

Not at all	Slightly	Moderately	Very much	Extremely
0	0	0	1	1

Total score (all 9): _____ Sub Score (Q5-9): _____

Helps identify modifiable risk factors (biomedical, psychological and social) for chronic back pain disability

The total score stratifies patients into low, medium or high risk

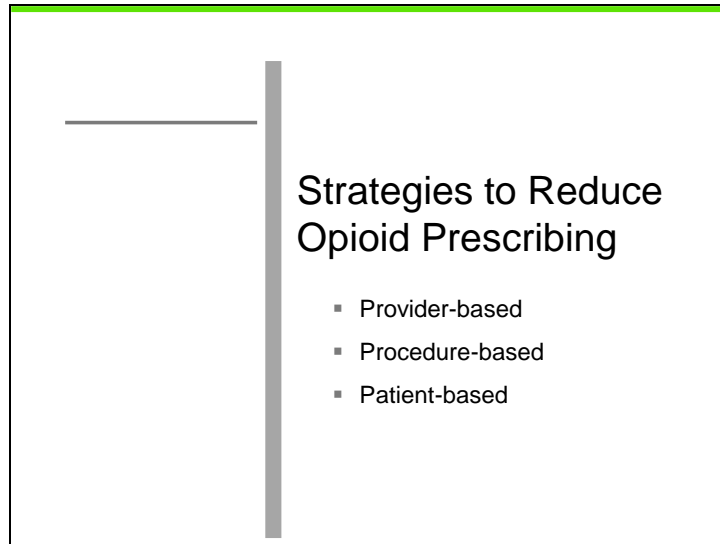
Hill JC, et al. *Arthritis Rheum.* 2008 May 15;59(5):632-41. 7

Here we give the example of the StarT back streaming tool, which is a nine question survey that can help stratify patients into being low, medium or high risk of chronic back pain disability. As you can see, this survey includes questions regarding physical symptoms such as radiating pain down the legs, shoulder and neck pain, as well as more psychosocial questions such as worrying thoughts or not enjoying things that the patient used to enjoy.

Over-prescription After Surgery

Reference	Surgery	Over-prescription
Kim et al. JSBS. 2016	Upper extremity procedures	84% did not complete meds
Rodgers et al. J. Hand Surg. 2012	Upper extremity procedures	77% reported taking half or less
Chapman et al. Hand. 2017	Carpal tunnel release	4.3 pills consumed on average
Bartels et al. Plos One. 2016	Cesarean section	83% reported taking half or less
Bartels et al. Plos One. 2016	Thoracic surgery	71% reported taking half or less
Hill et al. Annals Surgery. 2016	General surgery procedures	71.3% of pills not consumed
Bates et al. J. Urology. 2011	Urologic procedures	42% of meds not consumed
Harris et al. JAMA Derm. 2013	Dermatologic procedures	86% had leftover pills

Now in the effort to sort of prevent patients from having too much pain, which may lead to chronic pain, have surgeons sort of taken the pendulum and swung it too far? And are they overprescribing opioids after surgery? Several studies out of the past several years have shown there is evidence for over prescription after surgery. Here are just some examples of some of these studies from the upper extremity literature, general surgery literature, as well as urologic and dermatologic literature.



The slide features a title and a bulleted list. The title is 'Strategies to Reduce Opioid Prescribing'. The list contains three items: 'Provider-based', 'Procedure-based', and 'Patient-based'. The slide is enclosed in a black border with a green border on top. A vertical grey bar is positioned to the left of the text, and a horizontal grey line is positioned above the title.

Strategies to Reduce Opioid Prescribing

- Provider-based
- Procedure-based
- Patient-based

And so the bulk of this presentation is going to center around strategies to reduce opioid prescribing. These strategies can be generally divided into three sections, which we'll talk about individually, namely provider based strategies as well as procedure and patient based strategies.


Strategies to Reduce Opioid Prescribing

- ➔ **Provider-based**
 - Opioids are not the only option
 - Guidelines
 - Multimodal analgesia
- **Procedure-based**
 - Evidence-based prescribing by surgery
- **Patient-based**
 - Tailor prescribing to individual patient's utilization


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We'll start by talking about provider based strategies. These strategies primarily center around guidelines for appropriate opioid prescription as well as the use of non-opioid analgesia in a multi-modal fashion.

Clinical Practice Guideline



RESEARCH
EDUCATION
TREATMENT
ADVOCACY



RESEARCH
EDUCATION
TREATMENT
ADVOCACY

The Journal of Pain, Vol 17, No 2 (February 2016): pp 131-157
Available online at www.jpain.org and www.sciencedirect.com

Guidelines on the Management of Postoperative Pain

Management of Postoperative Pain: A Clinical Practice Guideline From the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council

Roger Chou,¹ Debra B. Gordon,² Oscar A. de Leon-Castillo,³ Jack M. Rosenberg,⁴ Stephen Richter,⁵ Tom Brennan,⁶ Todd Carter,⁷ Carla A. Casola,⁸ Eric Hall-Christensen,⁹ Ernest Degenhardt,¹⁰ Scott Griffith,¹¹ Renee Mansourni,¹² Bill MacCarberg,¹³ Robert Montgomery,¹⁴ James Murphy,¹⁵ Melissa E. Perlas,¹⁶ Santosh Suresh,¹⁷ Kathleen Skala,¹⁸ Scott Stroup,¹⁹ Richard Thurlby,²⁰ Eugene Viscusi,²¹ Gary A. Walcott,²² Lisa Wagner,²³ Spencer J. Weisman,²⁴ and Christopher L. Wu²⁵

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²²Department of Anesthesiology, Children's Hospital of Wisconsin, Milwaukee, Wisconsin

Chou R, et al. *J Pain*. 2016 Feb;17(2):131-57. 11

Here is a clinical practice guideline on the management of postoperative pain, released in 2016, from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists.

The slide is a summary of strong recommendations from the American Pain Society. It features a list of recommendations in grey boxes on the left and the society's logo and title on the right. The 'Offer multimodal analgesia' box is highlighted with a green border. At the bottom right, there is a citation: 'Chou R, et al. J Pain. 2016 Feb;17(2):131-57. 12'.

American Pain Society RESEARCH EDUCATION TREATMENT ADVOCACY

Clinical Practice Guideline

Strong Recommendations

- Conduct a pre-op evaluation
- Provide patient-centered education
 - Tapering of analgesics after discharge
- Provide adequate monitoring
 - Analgesic regimen
 - Adverse reactions
- Use PO opioids (over IV or IM)
 - PCAs be used when parenteral route is needed
 - Avoid routine basal infusions
- Offer multimodal analgesia
 - Acetaminophen and/or NSAIDs
 - Pre-op dose of oral celecoxib
 - Gabapentin or pregabalin
 - Peripheral regional anesthesia
 - Use continuous when need exceeds effect of a single injection
- Organizational structure for safe/effective post-op analgesia
 - Acute Pain Service
 - Spinal/epidural and regional anesthesia

Chou R, et al. *J Pain*. 2016 Feb;17(2):131-57. 12

Shown here is a summary of their strong recommendations, namely conducting a preoperative evaluation, providing patient centered education including the tapering of analgesics after discharge. Monitoring patients in terms of their analgesic regimens as well as for adverse reactions or signs of dependence and abuse. As well as the encouragement of PO opioids over parental routes. They do recommend that PCAs be used but caution against the routine use of basal infusions.

Highlighted in green is their recommendation to offer multi-modal analgesia such as the use of acetaminophen or nonsteroidal anti-inflammatories or other non-opioid medication such as gabapentin or region nerve blocks. Furthermore, they also recommend establishing or advocating for organizational structures to be put in place for safe effective postop analgesia such as the use of an acute pain service or sort of spinal or regional anesthesia when appropriate.

Practice Guideline for Acute Pain Mngt

American Society of Anesthesiologists

Updated Report 2012

SPECIAL ARTICLES

Practice Guidelines for Acute Pain Management in the Perioperative Setting

An Updated Report by the American Society of Anesthesiologists Task Force on Acute Pain Management

PRACTICE Guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about health care. These recommendations may be adopted, modified, or rejected according to the clinical needs and circumstances and are not intended to replace local institutional policies. In addition, Practice Guidelines developed by the American Society of Anesthesiologists (ASA) are not intended as evidence of standard of care requirements, and their use does not constitute an endorsement of the products, services, or procedures mentioned. The guidelines are subject to revision as a result of the evolution of medical knowledge, technology, and practice. They provide basic recommendations that are supported by a synthesis and analysis of the literature.

OBJECTIVES The American Society of Anesthesiologists (ASA) Task Force on Acute Pain Management (Task Force) was organized to review the literature and make recommendations on the management of acute pain in the perioperative setting. The Task Force was organized to review the literature and make recommendations on the management of acute pain in the perioperative setting. The Task Force was organized to review the literature and make recommendations on the management of acute pain in the perioperative setting.

DISCUSSION Guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about health care. These recommendations may be adopted, modified, or rejected according to the clinical needs and circumstances and are not intended to replace local institutional policies. In addition, Practice Guidelines developed by the American Society of Anesthesiologists (ASA) are not intended as evidence of standard of care requirements, and their use does not constitute an endorsement of the products, services, or procedures mentioned. The guidelines are subject to revision as a result of the evolution of medical knowledge, technology, and practice. They provide basic recommendations that are supported by a synthesis and analysis of the literature.

CONCLUSIONS Guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about health care. These recommendations may be adopted, modified, or rejected according to the clinical needs and circumstances and are not intended to replace local institutional policies. In addition, Practice Guidelines developed by the American Society of Anesthesiologists (ASA) are not intended as evidence of standard of care requirements, and their use does not constitute an endorsement of the products, services, or procedures mentioned. The guidelines are subject to revision as a result of the evolution of medical knowledge, technology, and practice. They provide basic recommendations that are supported by a synthesis and analysis of the literature.

REFERENCES

Methodology

DISCLOSURE

American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012 Feb;116(2):248-73. 13

Here is another practice guideline from 2012, from the American Society of Anesthesiologists...

American Society of Anesthesiologists
Practice Guideline for Acute Pain Management

The diagram shows a human silhouette with three colored circles indicating drug targets: a blue circle at the brain, an orange circle at the spinal cord, and a red circle at the peripheral nerves. Each circle is connected to a text box listing associated drugs.

- Scheduled**
 - Acetaminophen
 - NSAIDs
 - COX-2 inhibitors
- Gabapentin or pregabalin
- Local or regional block if possible
- Individualized care
- Multimodal analgesia associated with:**
 - Superior pain relief
 - Decreased opioid use
 - Decreased opioid-related adverse events

Brain targets: Opioids, α_2 -agonists, Acetaminophen, NMDA antagonists

Spinal cord targets: Local anesthetics, Opioids, α_2 -agonists, NMDA antagonists

Peripheral nerve targets: Local anesthetics, NSAIDs, COXIBs

American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012 Feb;116(2):248-73. 14

...highlighting many of the same concepts, schedules, multi-modal analgesia, which they found had been associated with superior pain relief, decreased opioid use and decreased opioid related adverse events.

Oral Analgesics for Acute Postoperative Pain

Oral analgesics for postop pain ~50,000 participants in ~460 high-quality studies

Analgesic(s)	Dose (mg)	NNT vs Placebo for at least 50% maximum pain relief over 4-6 hours
SINGLE AGENTS:		
Ibuprofen	600	2.7
Naproxen	500	2.7
Celecoxib	400	2.6
Acetaminophen (APAP)	1000	3.6
Oxycodone	15	4.6
Codeine	60	12.0
Gabapentin	250	11.0
COMBINATIONS:		
Ibuprofen + APAP	400+1000	1.5
Ibuprofen + oxycodone	400+5	2.3
APAP + oxycodone	325+5	5.4
APAP + codeine	300+30	6.9

Moore RA, et al. *Cochrane Database Syst Rev.* 2015 Sep 28;(9):CD008659. 15

Now what about some evidence for multi-modal analgesia? I'm sure that we've all had patients who have reported that medications such as ibuprofen or Tylenol do not work for them and that opioids are the only effective pain medications for them. However, there is evidence such as this Cochrane Review that suggests that non-opioid medications can work just as good if not better than opioid medications such as Oxycodone or codeine and that combinations of these medications work even better.

Oral Opioid and Nonopioid Equivalents for Acute Pain

- RCT comparing 4 oral analgesics for moderate to severe acute extremity pain in 416 patients in 2 urban EDs (baseline mean pain score was 8.7)

Analgesic Groups	Decreases in Pain Scores
ibuprofen 400 mg + APAP 1000 mg	4.3 (95% CI 3.6 to 4.9)
oxycodone 5 mg + APAP 325 mg	4.4 (95% CI 3.7 to 5.0)
hydrocodone 5 mg + APAP 300 mg	3.5 (95% CI 2.9 to 4.2)
codeine 30 mg + APAP 300 mg	3.9 (95% CI 3.2 to 4.5)

- Adverse events were not assessed.
- **CONCLUSIONS:** For patients presenting to the ED with acute extremity pain, there were no statistically significant or clinically important differences in pain reduction at 2 hours among single-dose treatment with nonopioid and opioid analgesics

Chang AK, et al. JAMA. 2017 Nov 7;318(17):1661-1667. 16

Here is another study looking at patients who present to the emergency room with acute extremity pain and they found that there was no statistically significant or clinically important difference in pain reduction over two hours between single doses of non-opioid and opioid analgesics. Though NSAIDs are effective as a non-opioid analgesic and does not have the risk for dependence or abuse that opioids do, they do have their own sort of side effects, namely effects possibly on bleeding as well as GI problems and also on fracture healing.

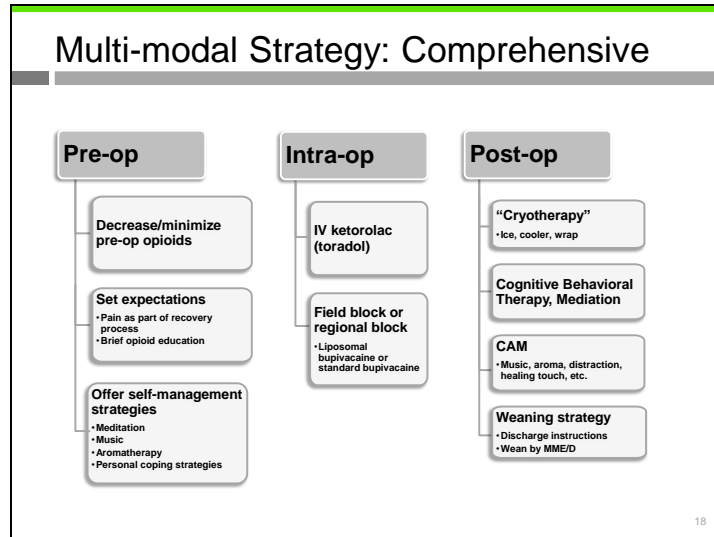
The Role of NSAIDs?

Studies in humans on the effect of NSAIDs on fracture healing

References	Design	NSAID	Outcome
No effect			
Wurning et al.	Prospective	Indomethacin	Hip replacement: no effect on periprosthetic bone loss
Davis and Ackroyd	RCT	Fluriprofen	Colles fracture
Adolphson et al.	RCT	Piroxicam	Colles fracture
Sculean et al.	RCT	Rofecoxib	Periodontal defects after periodontal surgery with enam matrix proteins
Meunier et al.	RCT	Celecoxib	Prosthesis migration, pain scores, range of motion, and subjective outcomes after total knee replacement
Vitale et al.	Retrospective	Ketorolac	Reoperation after scoliosis surgery
Pradhan et al.	Retrospective	Ketorolac (48 h)	Spinal fusion rate
Sucato et al.	Retrospective	Ketorolac	Pseudoarthrosis after spinal fusion
Horn et al.	Retrospective	Ketorolac	Nonunion after spinal fusion

Geusens P, et al. Curr Opin Rheumatol. 2013 Jul;25(4):524-31. 17

While the primary evidence for inhibition of fracture healing by NSAIDs primarily has been shown in animal data as well as with more potent NSAIDs such as indomethacin or ketorolac, many studies in humans have been variable and inconclusive in their findings. So in cases where bony healing is required after surgery, NSAIDs should be used in more of a case to case basis based on the risk of delayed bony healing.



I do believe that a multi-modal pain strategy is one of the most effective ways to decrease opioid use after surgery. And there are sort of many opportunities in a patient's perioperative course where a comprehensive multi-modal strategy can be used. For example, before surgery, patients can work on decreasing their pre-op opioid utilization, which has shown to be a risk factor for chronic postoperative use. Physicians and providers can set expectations for the postoperative pain experience. Pain is normal after surgery. It is expected. But it will resolve. Patients can also work on some self-management strategies such as meditation and music, as well as sort of trying to develop their own personal coping strategies for the postoperative pain.

Intraoperatively the use of field blocks or regional blocks can be highly effective in providing sort of short term analgesia and decreasing the total opioids used during surgery.

Postoperatively in addition to different types of medications that work on different areas of the pain pathway, cryotherapy with ice or some type of cooler can be very effective as well as cognitive and psychological therapies, as well as a specific plan for the patient regarding how to use opioid medications and how to eventually wean themselves off of it as they recover from surgery.

Multi-modal Strategy: Medications

- Short acting opioids**
 - **NO Extended-Release/Long Acting Opioids**
- NSAIDS**
 - **Non-selective:** IV toradol, ibuprofen, etc.
 - **Selective if GI risk:** Meloxicam (generic)
- Gabapentin**
 - **Up to 1800 mg/day effective**
 - **Increased evening dose**
- Acetaminophen**
 - **Up to 4 gm/day**
- No sedative-hypnotics**
 - **Benzos, Ambien, etc.**

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Short-acting opioids should really be used. There are different kinds of nonsteroidals such as selective COX-2 inhibitors as well as nonselective ones that can be used. Gabapentin has also been shown to be effective in decreasing opioid use and obviously Tylenol as well. To the patients who feel that these non-opioid medications are not effective, I think that's important to emphasize to them that they can be and even if they don't notice an effect, to still try to take them and encourage them to use them as first-line therapy as it may help decrease their opioid use even if they don't realize it.

Strategies to Reduce Opioid Prescribing

- **Provider-based**
 - Opioids are not the only option
 - Guidelines
 - Multimodal analgesia
- ➔ ▪ **Procedure-based**
 - Evidence-based prescribing by surgery
- **Patient-based**
 - Tailor prescribing to individual patient's utilization

20

The next section is more procedure based, which is essentially evidence based prescribing based on the type of surgery being performed.

How much opioid analgesia
is needed after surgery?

And the big question here is how much opioid analgesia is needed after surgery?

Pain Medication After Surgery and Injury

Differences in Prescription of Narcotic Pain Medication After Operative Treatment of Hip and Ankle Fractures in the United States and the Netherlands¹

Anneluuk L. C. Lindenhovius, MSc, Gijs T. T. Helmerhorst, MSc, Alexandra C. Schnellen, MSc, Mark Vrahas, MD, David Ring, MD, and Peter Kloen, MD, PhD

Discharged on Opioids	Amsterdam	MGH
Hip Fractures	0%	77%
Ankle Fractures	6%	82%

Femur Fractures²

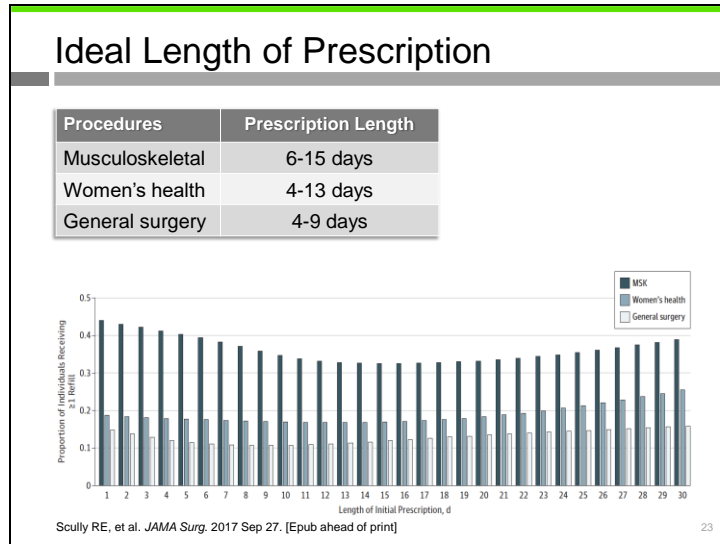
IM Nail Femur	Opioid Requirement (2 weeks post-op)	Adequate Pain Control	Accurate Pre-conception of Pain
Vietnam	0.9 MME/kg/day	92%	76%
USA	30.2 MME/kg/day	20%	3%

1. Lindenhovius AL, et al. *J Trauma*. 2009 Jul;67(1):160-4.
 2. Carragee EJ, et al. *Am J Orthop (Belle Mead NJ)*. 1999 Feb;28(2):97-102.

And the answer is it varies. So here are two studies showing the use of opioid medications after surgery in American patients and in those in the Netherlands or in Vietnam. So here on the top this was a study that looked at opioid use after hip and ankle fracture surgery, comparing the use in the Netherlands as well as here at Mass General in Boston. They showed that patients in the United States, nearly all of them got some sort of opioid medication at discharge, whereas in the Netherlands only a small minority of patients did.

On the bottom is a study comparing opioid utilization after femur fracture surgery, comparing the use between American patients and Vietnamese patients. And they showed that American patients used nearly 30 times more opioids than the Vietnamese ones in the two weeks postoperatively. Surprisingly 92 percent of Vietnamese patients reported adequate pain control whereas only 20 percent of the American patients did. And they sort of attributed this difference into the pre-conception of pain. Most American patients reported that their perioperative experience was way more painful than they had originally imagined, whereas 76 percent of the Vietnamese patients stated that the surgery hurt as much as they thought it was going to.

I think these studies are interesting and they really show that there is somewhat of a cultural or psychological factor in the experience of pain after surgery.



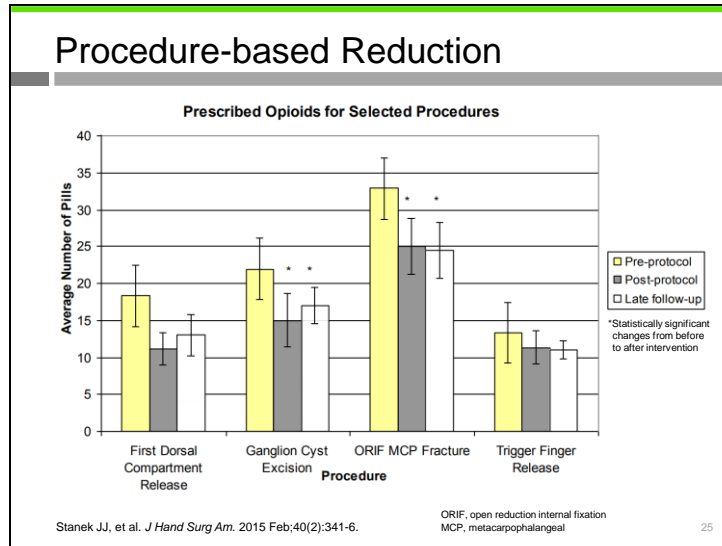
And so what is the ideal length of an opioid prescription? So this study by Scully, et al, looked at the need for receiving more than one opioid refill as a function of the initial length of prescription. And they sort of found that the length of prescription, if it were too short, would place patients at higher risk of needing multiple refills as well as if the prescription was too long, then they would also be at high risk of requiring a refill. Amongst different surgeries, they recommended that for patients undergoing musculoskeletal procedures that the prescription length be from between six to 15 days; for women's health surgeries four to 13 days; and for general surgery procedures four to nine days.

Procedure-based Reduction

<p>STANDARDIZED POSTOP PAIN REGIMEN FOR HAND/UE</p> <ol style="list-style-type: none">1. Intraoperative nerve block with mix of long and short acting anesthetic.2. Consider prece dex if repairing nerve (0.5 micrograms/kg IV over 20 min at start of procedure) FDA off-label.3. Ibuprofen 800 mg po q 8h x 3 days then prn (unless on anticoag/elev creatinine/renal dysfxn) or Aleve q 12 h.4. Tylenol Arthritis q 8 hr. Tylenol should not exceed 3000 mg/day.5. Ice to armpit 15 min/1-2x/hour while awake for 3 days then prn.6. Elevation of extremity x 3d.7. See reverse for opioid recs.8. Consider acute pain consult for extreme pain lasting more than 3 days.	<p>7. Opioid Guidelines</p> <p><u>No opioids</u>: small Moh's (<3 cm, no wide undermining), triggers, nonop Dupuytren's releases, flexor retinacular cyst, nevi, small lumps/bumps, CTR.</p> <p><u>5-10 tabs</u>: small joints (mucous cysts), DeQuervain's, operative Dupuytren's, Nonop hand fractures, small joint fusion.</p> <p><u>20 tabs</u>: fixation of hand fx, LRTI, scaphoid/distal radius fracture, tendon/tendon transfer/tendon stabilization.</p> <p><u>40 tabs</u>: large trauma, wrist fusion, open carpal surgery, DRUJ recon.</p> <p>8. Other: consider acute gabapentin for trauma-assoc neuralgic pain.</p> <p>9. Vit C: 500 gm/day x 8 wks for DRFs/crush injuries.</p>
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Stanek JJ, et al. *J Hand Surg Am.* 2015 Feb;40(2):341-6. Updated version since published. 24

Here is a tool that was developed for opiate prescribing after hand surgery. It was sort of named the Pink Card and it was given to all the providers and provides sort of guidelines for postoperative analgesia after hand and upper extremity surgery. You can see on one side they have sort of best practices in terms of sort of multi-modal analgesia. Sort of on the second side they have opioid guidelines where they list the recommended amount of opioids prescribed based on the type of procedure. With smaller surgeries such as carpal tunnel releases, trigger finger releases, requiring no opioids, up to 20 or 40 tabs for more invasive and painful surgeries.



They found that by using this Pink Card they were able to produce a specifically significant reduction in opioid prescribing in their departments.

Procedure-based Reduction

- **Hand Procedures**
- **Surgeon Education**
 - Opioid Guidelines
- **Patient Education**
 - Safe Opioid Use

RECOMMENDATIONS		
Procedure	≤ 65 years	> 65 years
Carpal Tunnel Release	15 pills	10 pills
Distal Radius Volar Plate	30 pills	20 pills

Take 1-2 tablets by mouth every 4-6 hours as needed for pain

RESULTS			
	Before	After	Change
Carpal Tunnel Release	22 pills	10 pills	-55%
Distal Radius Volar Plate	39 pills	25 pills	-36%

ASSH Meeting, Thursday, September 7, 2017
 PAPER 5 Best Papers Top 6e
 Treatment: Prognosis/Outcomes; Patient Education
 Prospective Evaluation of an Opioid Reduction Protocol in Hand Surgery
 Level 2 Evidence C.
 Liam Dwyer, MD et al. Lahey Health

Dwyer, et al. 2017 Lahey Health. 26

Here is another study presented last year at the Hand Society meeting, highlighting surgeon education and opioid guidelines for carpal tunnel and distal radius fracture surgeries, where they had different recommendations for the amount to prescribe based on whether the patient was older or younger than 65. And they found that this recommendation was able to decrease the amount prescribed after both surgeries.

Procedure-based Reduction

- General Surgery Procedures
- Surgeon Education
 - Opioid Guidelines

Procedure	# Pills	# Pills		
	Recommendation	Before	After	Change
Partial mastectomy	5	20	5	-74%
Partial mastectomy sentinel lymph node biopsy	10	24	10	-59%
Laparoscopic cholecystectomy	15	35	19	-45%
Laparoscopic inguinal hernia repair	15	34	19	-43%
Open inguinal hernia repair	15	33	18	-45%

Hill MV, et al. *Ann Surg*. 2017 Mar 6. doi: 10.1097/SLA.0000000000002198. [Epub ahead of print]

This is the hand literature, the study by Hill, et al, used a similar surgeon education opioid guideline protocol where they first surveyed a large number of their patients and asked them to log their opioid use and then created recommendations based on the patient’s reported use. And they came up with these recommendations.

They then applied these sort of recommendations and best practices to all their other patients and they were able to show quite a significant reduction in opioid prescription after a variety of general surgery procedures.

In addition to lowering the amount of opioids prescribed, they also found that the amount of refills that patients required was not significantly affected, suggesting that they were not sort of under prescribing but merely reducing the rate of over prescription.

Strategies to Reduce Opioid Prescribing

- **Provider-based**
 - Opioids are not the only option
 - Guidelines
 - Multimodal analgesia
- **Procedure-based**
 - Evidence-based prescribing by surgery
- ▪ **Patient-based**
 - Tailor prescribing to individual patient's utilization

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Finally the last section or strategy to reduce opioid prescribing centers around the patient, which essentially tries to create a plan that tailors opioid prescribing to an individual patient's specific utilization.

Patient-based Reduction

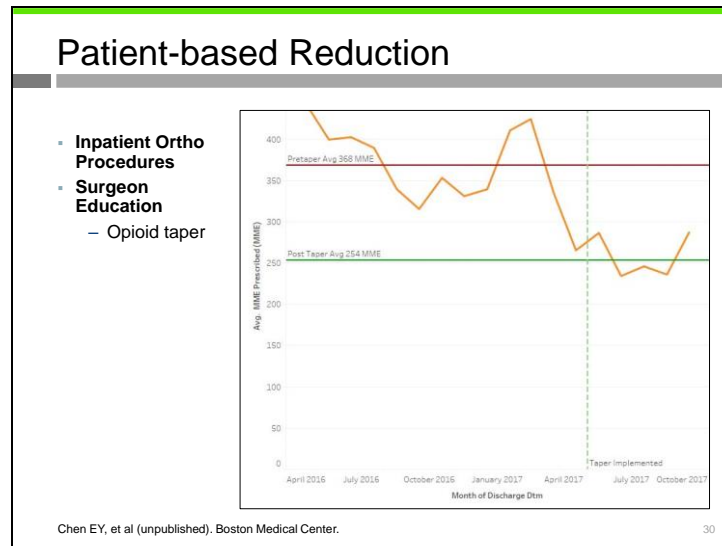
- Inpatient Ortho Procedures
- Surgeon Education
 - Opioid taper

Opioid Pain Control Plan:
This extended taper is recommended for treatment of your acute post-operative pain. Take your medications as needed. DO NOT exceed the daily maximum amount specified below. Track the amount you are taking daily and bring this log to your follow-up appointments for review. Dispose of excess medications responsibly (www.mass.gov).

Day	Daily Maximum	Amount Taken
1	- 11 tablets	_____
2	- 9 tablets	_____
3	- 8 tablets	_____
4	- 7 tablets	_____
5	- 6 tablets	_____
6	- 5 tablets	_____
7	- 4 tablets	_____
8	- 3 tablets	_____
9	- 3 tablets	_____
10	- 2 tablets	_____
11	- 2 tablets	_____
12	- 2 tablets	_____
13	- 2 tablets	_____
14	- 1 tablets	_____

Chen EY, et al (unpublished), Boston Medical Center.

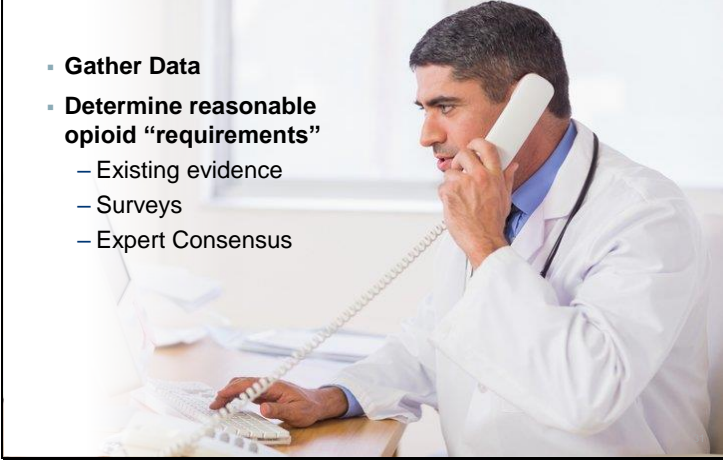
So this is an initiative that we have implemented here at Boston University, which centers around this opioid taper, which is based on a patient's 24 hour opioid utilization prior to discharge. And essentially provides a 14 day taper, which tells patients the daily maximum of tablets that they can take and includes a space where they can log their use for review with their physicians.



This taper was implemented around May 2017, and we found that it has been able to produce a significant reduction in opioid prescription at discharge after inpatient orthopedic surgeries.

How to Implement the Changes

- **Gather Data**
- **Determine reasonable opioid “requirements”**
 - Existing evidence
 - Surveys
 - Expert Consensus



So finally, how do we implement these changes? I think the first step would be to gather data on the opioid prescription patterns in your own practice. I mean, once you have an assessment of the opioid prescribing patterns at your own institutions you can then sort of compare them to existing evidence and consensus for sort of reasonable opioid requirements.

I also do feel that it's important to survey patients regarding their postoperative opioid use to sort of get a better sense as to whether or not they're getting too much or too little opioids.

How to Implement the Changes

Decision Aids

- “Pink Card”
- Defined Guidelines

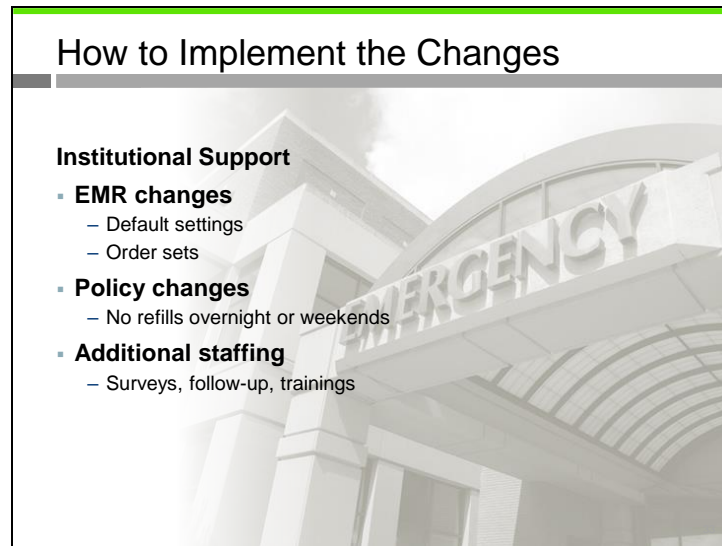
Drug	Route	Dose
Oxycodone	Oral	50
Hydromorphone	Oral	0
Tramadol	Oral	0
Hydrocodone	Oral	0
Morphine	IV / Parenteral	2
Hydromorphone	IV / Parenteral	0
Select Other	Oral	0
Select Other	Oral	0
Select Other	IV / Parenteral	0
Select Other	IV / Parenteral	0

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6	- 5 tablets	_____
7	- 4 tablets	_____
8	- 3 tablets	_____
9	- 3 tablets	_____
10	- 2 tablets	_____
11	- 2 tablets	_____
12	- 2 tablets	_____
13	- 2 tablets	_____
14	- 1 tablets	_____

Chen EY, et al (unpublished), Boston Medical Center. 32

Just to recap, there are several decision aids that have been reported to be effective, such as the Pink Card. Guidelines have been released to help guide clinical practice and those can be consulted as well.



How to Implement the Changes

Institutional Support

- **EMR changes**
 - Default settings
 - Order sets
- **Policy changes**
 - No refills overnight or weekends
- **Additional staffing**
 - Surveys, follow-up, trainings

In terms of institutional support with the advent and proliferation of electronic medical records, I think that it's important to have good default settings for opioid medications and that they're not ordered to be prescribed too frequently or having default values that make it easier for the prescriber to prescribe a reasonable amount rather than sort of having to make up a number on the fly.

I think policy changes can also be effective, telling patients that you don't refill prescriptions overnight or weekends can prevent sort of unwanted phone calls and also give patients the expectation to either try to taper their own medications if a weekend is coming up. Or to try to learn how to wean or go longer and longer without opioids.

Obviously everyone would love additional staffing and resources but if they are available I think they can be immensely useful in sort of following up and getting data from patients as well as training providers on responsible opioid prescribing as well.

How to Talk With Patients




- Define Expectations**
 - Discuss pre-operatively
 - Surgical pain temporary
 - Worst within first week
 - Share explicit multimodal pain management plan
- Discuss risk/benefits**
 - **Side effects of:**
 - Acetaminophen: overdose
 - NSAIDs: GI symptoms, renal impairment
 - Opioids: addiction, overdose, constipation
 - Poly-pharmacy: beware opioids and benzos

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All medications have side effects. So patients should be counseled on how to recognize these side effects and to report them. And I will just add that though we encourage multi-modal therapies, the combination of benzodiazepines and opioids together does increase the risk of an overdose.

How to Talk With Patients

- **Patient Instructions**
 - Multi-modal therapy
 - Logging use
 - Communicate with PCP



The infographic is divided into four horizontal sections. The top section is red and titled 'MIX', showing a pile of pills and dirt. The second section is yellow and titled 'PLACE', showing a white plastic bag being filled with a mixture. The third section is blue and titled 'THROW', showing a trash bin. The bottom section is green and titled 'SCRATCH OUT', showing a hand using a utility knife to scratch off a label from a pill bottle.

Follow these simple steps to dispose of medicines in the household trash

MIX
Mix medicines (do not crush tablets or capsules) with an unpalatable substance such as dirt, kitty litter, or used coffee grounds.

PLACE
Place the mixture in a container such as a sealed plastic bag.

THROW
Throw the container in your household trash.

SCRATCH OUT
Scratch out all personal information on the prescription label of your empty pill bottle or empty medicine packaging to make it unreadable, then dispose of the container.

<https://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicine/Safety/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/ucm186187.htm> 35

I also think printed handouts and educational materials can be extremely useful. That can detail multi-modal therapy, the ability to log their own opioid use as well as information for contacting their providers should they run into any problems or concerns.

Summary

- **Post-op pain can be effectively managed with fewer opioids than currently prescribed**
- **Various strategies exist for standardizing post-op opioid prescribing**
- **Education can help improve patient's post-operative experience**

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So in summary, postop pain can be effectively managed with fewer opioids than are currently being prescribed. I do think that the pendulum has swung a bit too far in the emphasis on eliminating postoperative pain and that many studies have shown over the past couple of years that patients can have effective analgesia with less opioid medications being prescribed.

There are various strategies that exist for standardizing postop opioid prescribing. I think that standardization is important because having a standardized protocol in place allows for better setting of expectations and a more reproducible outcome after surgery.

And finally, education can help improve a patient's postoperative experience. And the most effective time to discuss these things is before the patient undergoes surgery.

I thank you for your time and attention. I hope that some of this information can be used to help your own patients with their pain after surgery. Thank you.