

What We Can Do With Our Anesthesia

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1

Disclosures

- I have funding unrelated to this topic from Merck

2

Why Does it Matter What We Do?

3

State of Current crisis

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- The United States (US) makes up approximately 4% of the world's population but consumes about 80% of the world's supply of opioids with the number of opioid prescriptions quadrupling between 1999 and 2014¹

5

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6

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1. Stone AB, Wick EC, Wu CL, Grant MC. The US opioid crisis: a role for enhanced recovery after surgery. *Anesth Analg*. 2017;125(5):1803-5.

2. Rudd RA, Aleshire N, Zibbell JE, Gladden RM. Increases in drug and opioid overdose deaths—United States, 2000-2014. *MMWR Morb Mortal Wkly Rep*. 2016;64:1378-82.

7

Zeroing on the Source of Illicit Opioids

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11

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- >80% of heroin users reported the nonmedical use of opioid pain relievers prior to heroin initiation
- with 42% to 71% of all the opioid tablets obtained by surgical patients being unused.

Bickett MC, Long JJ, Pronovost PJ, Alexander GC, Wu CL. Prescription opioid analgesics commonly unused after surgery: a systematic review. *JAMA Surg*. 2017;152(11):1066-71.

Jones CM. Heroin use and heroin use risk behaviors among nonmedical users of prescription opioid pain relievers - United States, 2002-2004 and 2008-2010. *Drug Alcohol Depend*. 2013;132(1-2):95-100.

12

Zeroing on the Source of Illicit Opioids

- analysis of a nationwide dataset of US adults aged 18 to 64 years without opioid use in the year prior to surgery (n = 36,177 patients) found rates of new persistent opioid use ranging from 5.9% to 6.5%

Brummett CM, et al. *JAMA Surg.* 2017;152(6):e170504

13

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- new persistent opioid use after surgery is common and should be treated as a surgical or post-anesthesia **complication**

14

Economics of Opioid Use

15

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- A direct comparison of opioid vs. opioid sparing techniques examined 24 published studies (3,000 operative cases)

16

Economics of Opioid Use

- A direct comparison of opioid vs. opioid sparing techniques examined 24 published studies (3,000 operative cases)
- Cost savings due to a decrease in not only length of stay but also the number of hospital personnel needed to monitor a patient on a typical opioid treatment plan.

Philip BK et al. The economic impact of opioids on postoperative pain management. *J Clin Anesth.* 2002;14:354-64.

17

Economics of Opioid Use



18

Economics of Opioid Use

- A claims study with >37,000 patients from 26 hospitals

19

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20

Economics of Opioid Use

- A claims study with >37,000 patients from 26 hospitals
- 13.6% of patients had adverse drug event (ADE) related to opioid administration
- Accounted for a 47% higher hospital cost vs. those patients without an opioid related adverse event.

Kessler ER, Shah M. *Pharmacotherapy*. 2013;33(4):383-91.

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Opioid Use in Amb Surg

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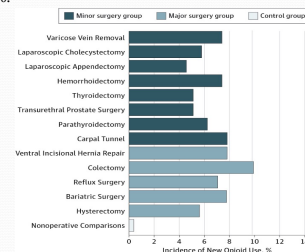
Opioid Use in Amb Surg

- Data suggests that persistent opioid usage risk is the same in minor/outpatient procedures as it is in major procedures with about 6% of patients continuing to fill opioid prescriptions greater than 90 days after the surgery.

23

New Persistent Opioid Use After Minor and Major Surgical Procedures in US Adults

- The incidence of new persistent opioid use was similar between the 2 groups (minor surgery, 5.9% vs major surgery, 6.5%; odds ratio, 1.12; SE, 0.06; 95% CI, 1.01-1.24). By comparison, the incidence in the non-operative control group was only 0.4%.



- JAMA Surg. 2017 Jun 21;152(6)

24

Why?

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Why?

- Possible reasons?

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 - 1. Too much intraoperative opioid use?

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 - 2. Lack of multimodal analgesia?

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Why?

- Possible reasons?
 - 1. Too much intraoperative opioid use?
 - 2. Lack of multimodal analgesia?
 - 3. Inadequate use of regional nerve blocks?

29

Regional NB and Opioid Use

30

Regional NB and Opioid Use

- Data consistently confirmed that a local anesthesia based regional technique will lower perioperative opioid consumption

31

Femoral NB and Opioid Use

Anesthesiology 2010;113:1144-62

32

Interscalene NB and Opioid Use

A

Study or Subgroup	Mean Difference IV, Random, 95% CI
19.1.1 ISB vs Control	
Kinnard 1994 ⁴¹	-16.90 [-19.91, -13.89]
Nisar 2008 ²³	-11.10 [-13.99, -8.21]
DeMarco 2011 ¹⁷	-17.56 [-20.89, -14.43]
Lehmann 2014 ⁷⁷	-3.09 [-5.10, -1.06]
Subtotal (95% CI)	-12.10 [-21.75, -2.45]

Heterogeneity: $\tau^2 = 54.13$; $Chi^2 = 88.07$, $df = 3$ ($P < 0.00001$); $I^2 = 97\%$
 Test for overall effect: $Z = 3.23$ ($P = 0.001$)

Anesth Analg 2015;120:1114-29

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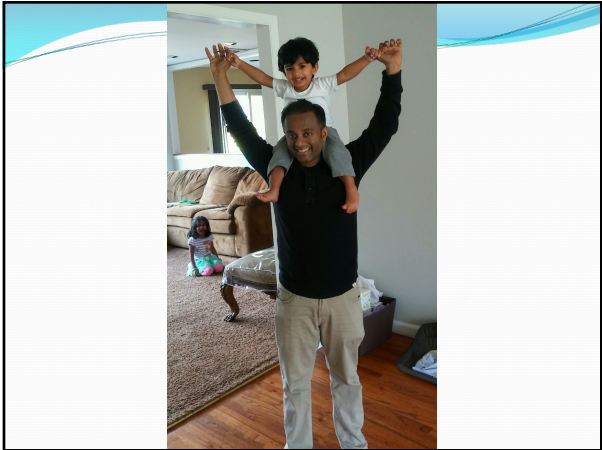
TAP Block and Opioid Use

Opioid Consumption

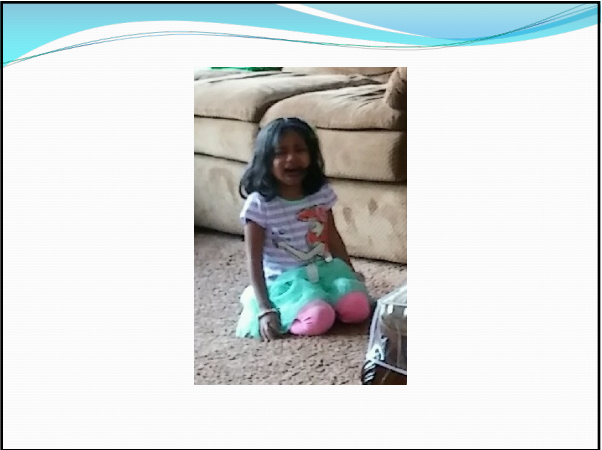
Study name	Sample size	Difference in means and 99% CI
TAP Block/Control	27 30	
Albrecht ref 26	31 32	
Waller ref 30	28 28	
Kane ref 32	22 12	
DeOliveira(hysterectomy) 1 ref 34	21 12	
DeOliveira(hysterectomy) 2 ref 34	24 12	
DeOliveira(outpatient) 1 ref 35	23 12	
DeOliveira(outpatient) 2 ref 35	21 21	
El-Dawlatly ref 37	24 22	
Hosgood ref 33	221 181	

Anesth Analg 2014;118:454-63

34



35



36

Does ↓ intraoperative opioids
↓ cause ↓ addiction

37

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- 2 studies suggest a lack of association between usage of NB and risk of persistent opioid use
- Anesth Analg 2017;125:999-1007
- Anesth Analg 2017;125:1014-20

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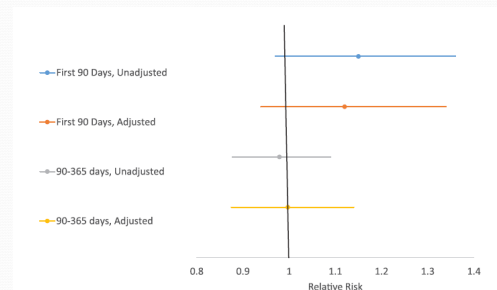
Study 1

- Looked at 6695 patients undergoing shoulder arthroplasty
- Billing data to identify the use of nerve blockade
- Regression to estimate association between nerve blockade and 2 measures of opioid use
 - Having filled at least 1 RX for opioid between POD 0-90 and between POD 91-365
- Result: No association between nerve blockade and persistent opioid use at POD 0-90 or POD 91-365

Anesth Analg 2017;125:1014-20

39

Study 1



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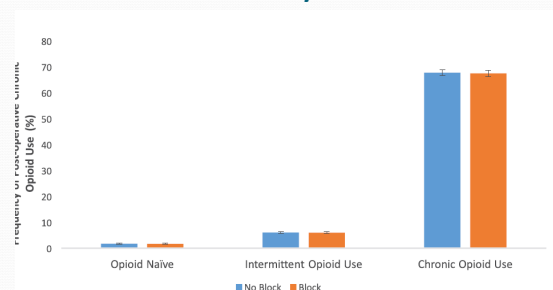
Study 2

- 120,080 patients undergoing TKA
- Billing data to identify the use of nerve blockade
- Analyzed effect of nerve blockade and risk of chronic opioid use (filled ≥10 RXs or ≥120 days' supply for an opioid in the 1st postsurgical yr)
- No association between nerve blockade and risk of postsurgical chronic opioid use

Anesth Analg 2017;125:999-1007

41

Study 2



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WHY does ↓ Intraoperative Opioid Usage NOT Cause ↓ Addiction

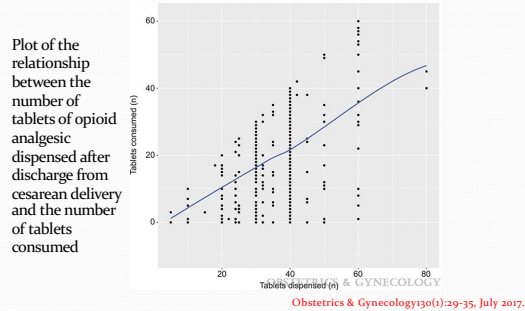
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WHY does ↓ Intraoperative Opioid Usage NOT Cause ↓ Addiction

- Opioid addiction related to prescribing practices, not perioperative opioid use

44

Patterns of Opioid Prescription and Use After C-Section Delivery



45

Patients at Risk: Large Opioid Prescriptions After Total Knee Arthroplasty

- 105 patients reviewed retrospectively with at least 1 year follow up
- Quantity of opioids prescribed after TKA varied widely, ranging from a total MED of 273- 3250 mg
- Refill rate did not differ between large prescriptions (1400 mg) and smaller prescriptions
- Excessive opioid prescriptions should be avoided as they did not decrease the number of refills and pose the risk of divergence and subsequent abuse

The Journal of Arthroplasty 32 (2017) 2395-2398

46

WHY does ↓ Intraoperative Opioid Usage NOT Cause ↓ Addiction

Preoperative

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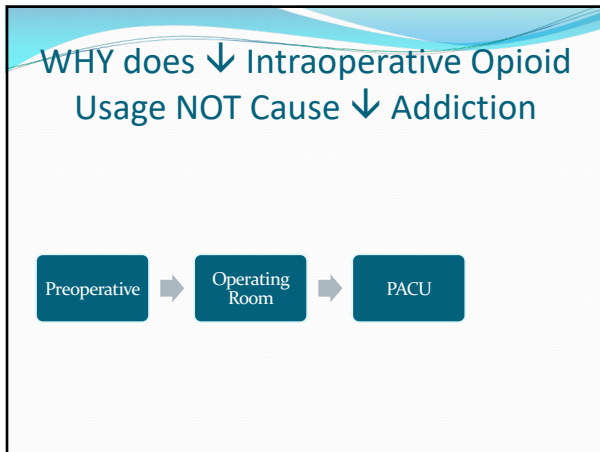
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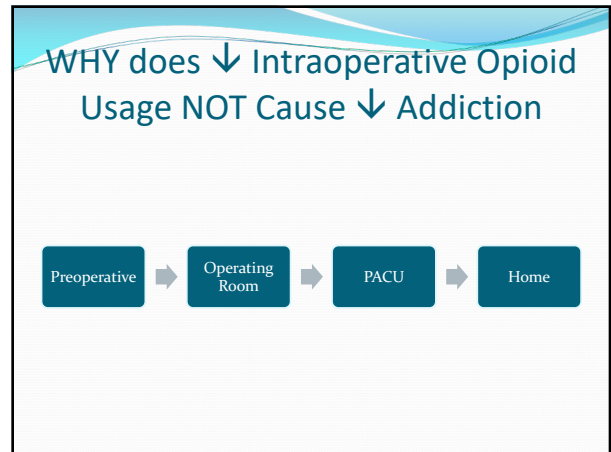


Operating Room

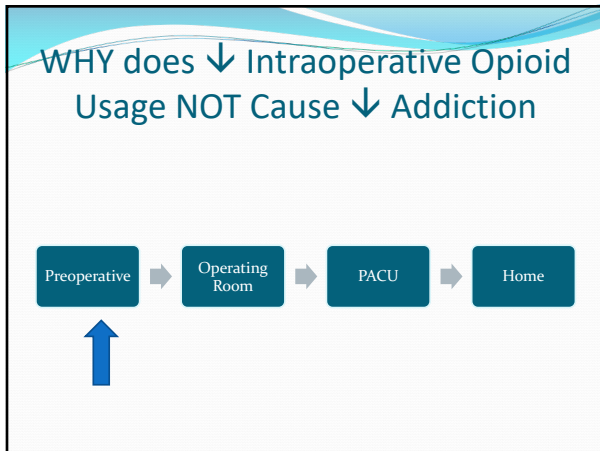
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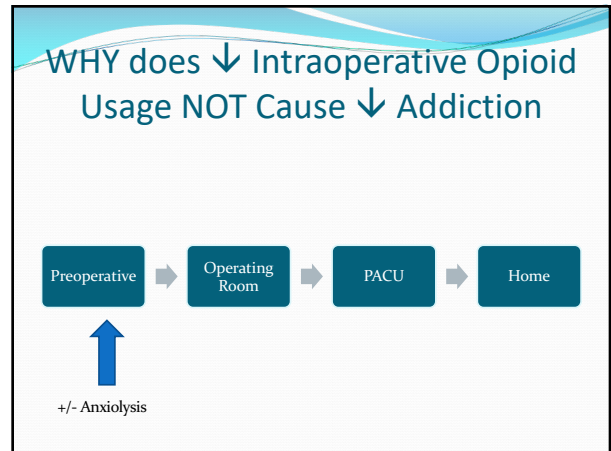
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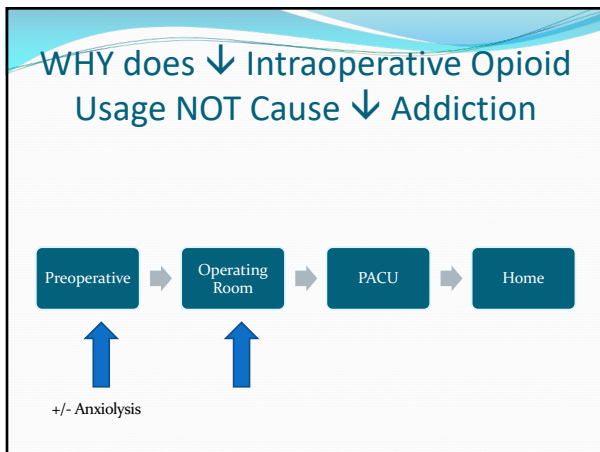
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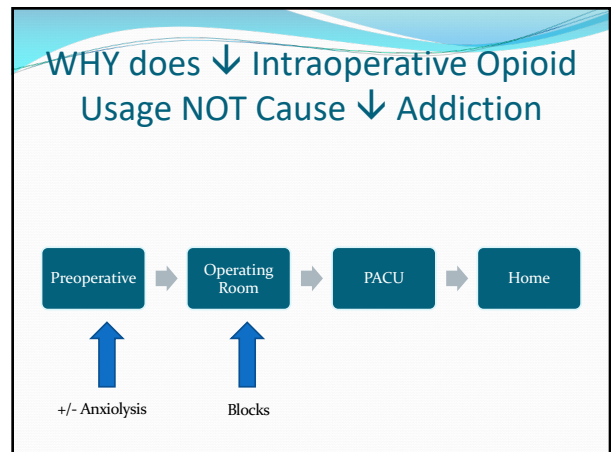
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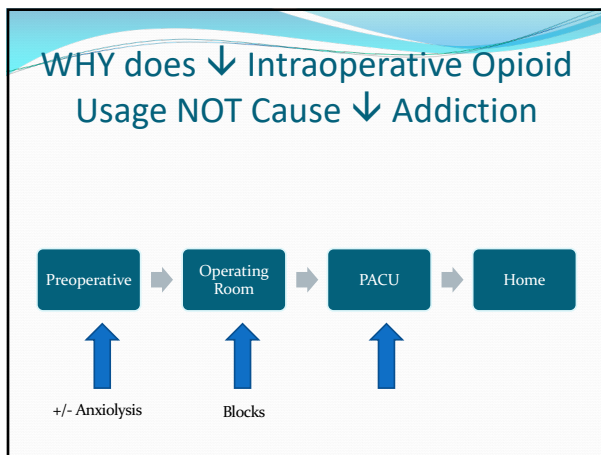
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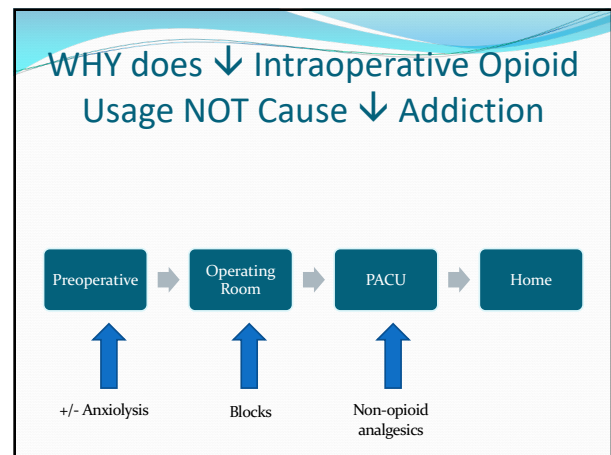
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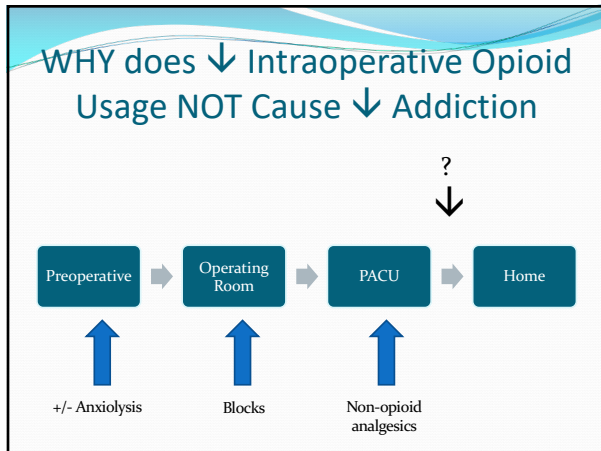
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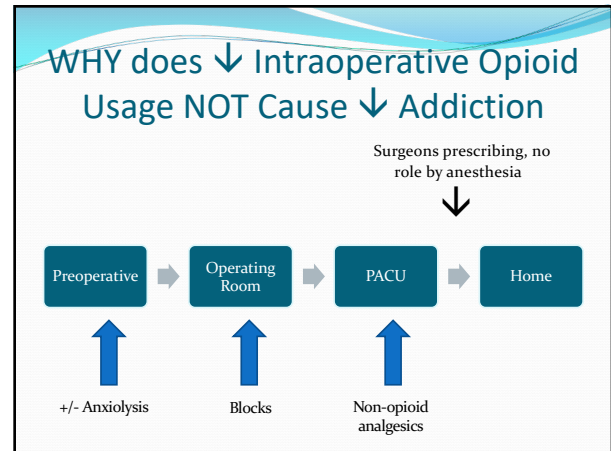
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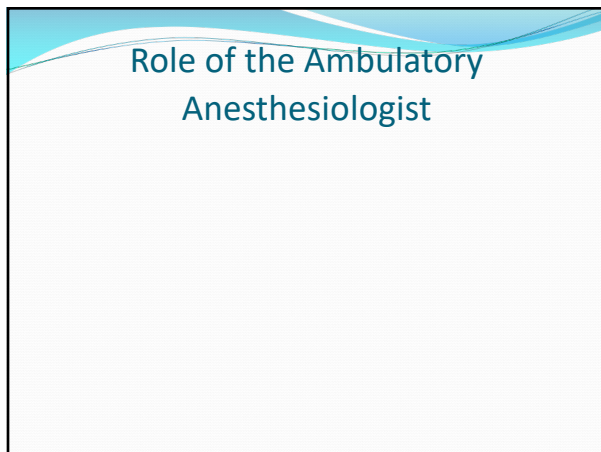
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57



58



59



60

What We Can Do With Our Anesthesia?

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- Total amount prescribed

61

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- Number of prescription refills can be reduced by standardizing prescribing after orthopedic surgery

J Hand Surg Am. 2015;40:341-346

62

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63

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Anesth Analg. 2017 Nov;125(5):1704-1713

64

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65

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66

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67

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68

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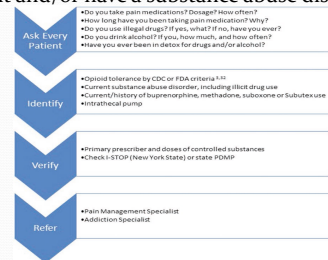
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- (4) The development of surgery-specific prescribing recommendations for opioid-naïve patients;
- (5) Mechanisms to modify prescribing habits to limit unnecessary prescribing of controlled substances

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69

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70

What We Can Do With Our Anesthesia?

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Signs of Potential Prescription Drug Misuse or Abuse
Obtaining prescriptions from multiple sources and locations
Use of illegal drugs or controlled substances not prescribed for the patient
Resistance to changing medications despite deterioration in function or significant side effects
Concurrent alcohol abuse / substance use disorder
Repeated episodes of: • requests for early refills of controlled substances • prescription loss or theft • increasing dose without prescriber instruction
Foraging prescriptions for opioids
Aggressive demands for opioids

71

What We Can Do With Our Anesthesia?

- (2) Education programs for patients, emphasizing the role of opioids in recovery after elective orthopedic surgery;

WHAT YOU CAN DO TO STAY SAFE:

- **USE:** Take your medications only as directed by your doctor. **DO NOT** share your medications with anyone.
- **DO NOT:** mix your medications with alcohol.
- **STORE:** Store your prescriptions securely in their original containers. Keep them out of sight and out of mind. If you have any questions, ask your pharmacist or your doctor.
- **DISPOSE:** Dispose of medications immediately after your pain has resolved. Unused medications are best disposed of as a safe best way to dispose of your pain medications.

MISUSE AND OVERDOSE RISKS:

- Prescription drugs may be just as dangerous as illegal drugs if they are misused.
- Mixing your medication may have serious consequences, including coma, seizures, breathing and suppressed breathing to the point of death. If you think you have taken more medication than was prescribed, or you have any of these symptoms, go immediately to an emergency room.
- Misusing your medications may also lead to addiction. Take your medications **ONLY** as prescribed.
- As you recover from surgery, your opioid needs will decrease. Please participate in your opioid requirements. Increase, please notify your surgeon.

FOR YOUR SAFETY, WE DO NOT ROUTINELY:

- Prescribe long-acting opioids, except in special circumstances.
- Prescribe more than a short course of short-acting opioids.
- Refill lost, stolen, or destroyed prescriptions.

ADDITIONAL RESOURCES:

- National Institute on Drug Abuse: <http://www.drugabuse.gov>
- Substance Abuse & Mental Health Services Administration: <http://www.samhsa.gov/medication-assistance>
- The American Society of Anesthesiologists: <http://www.asa.org>

72

What We Can Do With Our Anesthesia?

- (3) Education programs for prescribers of controlled substances, including clinical and regulatory aspects;

General Principles & Guidelines

- Prescribers must have both clinical licensure & the right to prescribe controlled substances
- Prescribers must adhere to an institution's policies, regulations, and accepted clinical practices
- A flag for office staff to verify or refuse prescriptions in the presence and age restriction parameters
- Refer to institution-specific guidelines for dispensing and reporting recommendations

PDMP Mandate

- Prescribers must review PDMP no more than 24 hours before prescribing controlled substances
- Checking PDMP may be required, not done if an individual is properly credentialed and has their own username and password
- The prescriber's name, responsible for reviewing PDMP information and documenting findings in the patient's medical record

Documentation Requirements

- Prescribers must include and document:
 - 1. Indication for use
 - 2. Examination findings
 - 3. Diagnosis
 - 4. Regimen, strength, and/or route for use
 - 5. VITAL findings

Signs of Potential Misuse

- 1. Obtaining medications from other providers or other medical sources
- 2. Use of multiple or controlled substances not prescribed for the patient
- 3. Prescriber changing medications despite deterioration in function or significant negative effects
- 4. Concurrent alcohol or substance abuse disorder
- 5. Increasing dosage without provider input

73

What We Can Do With Our Anesthesia?

- (4) The development of surgery-specific prescribing recommendations for opioid-naïve patients;

SERVICE: JOINT ARTHROPLASTY

POLICY STATEMENT/PURPOSE: Promote judicious prescribing practices; encourage prescribers to employ conservative opioid prescribing practices to enhance patient safety and minimize risks of misuse & diversion

CONTENT APPLIES TO: Post-operative inpatient & ambulatory patients with no history of opioid dependency (chronic opioid treatment with daily use > 6 months)

PRINCIPLES OF PRESCRIBING OPIOIDS AT DISCHARGE:

- Generally, we recommend that you prescribe only one (1) short-acting opioid. In situations where you prescribe two (2) short-acting opioids, the combined number of pills should not exceed the recommended maximum to prescribe (below)
- Do not prescribe long-acting opioids
- Consider discontinuing or decreasing benzodiazepines (e.g. Valium, Xanax) with concurrent use of opioids. Consult with attending surgeon/medical doctor or pain management specialist if patient will take benzodiazepines and opioids due to increased respiratory risks.
- Do not pre-prescribe opioids for a patient's discharge needs prior to the procedure.

RECOMMENDED PRESCRIBING BY PROCEDURE:

PROCEDURE	OPIOID	DOSE ROUTE FREQUENCY	DURATION	MAXIMUM	MULTIMODAL AGENTS	ALTERNATIVE (* do not prescribe acetaminophen with any other acetaminophen-containing medication)
Total Hip Arthroplasty	- oxycodone 5mg - hydromorphone 2mg	1-2 tablets - Oral - Every 3-4 hours as needed	2 weeks supply	90 tablets	- acetaminophen 1000mg 3-4x daily - meloxicam 15mg daily, 15 tabs	- hydrocodone/buprenorphine 5/0.25 mg - hydrocodone/acetaminophen 5/325 mg
Total Knee Arthroplasty	- oxycodone 5mg - hydromorphone 2mg	1-2 tablets - Oral - Every 3-4 hours as needed	2 weeks supply	120 tablets	- acetaminophen 1000mg 3-4x daily - meloxicam 15mg 2x daily, 15 tabs	- hydrocodone/buprenorphine 5/0.25 mg - hydrocodone/acetaminophen 5/325 mg

74

What We Can Do With Our Anesthesia?

Preoperative (Chronic Pain and/or Addiction Specialist)

- Urine toxicology screening for compliance/concordance with prescribed medications
- Risk factor assessment for opioid withdrawal and difficult-to-treat pain
- Develop and communicate a coordinated treatment plan with entire care team
- Careful opioid dose reduction prior to surgery
- Patient education and expectation setting: including who will prescribe controlled substances after surgery and discharge from hospital

Day of Surgery & Intraoperative (Anesthesiologist, Pain Services)

- Ensure sufficient pre- and intraoperative opioid to avoid acute withdrawal
- Provide balanced multimodal analgesia, emphasizing adjuvant, opioid analgesics
- Use regional analgesia and anesthesia techniques and local anesthetics wherever possible
- Arrange post-operative follow-up with acute and/or chronic pain teams.

Postoperative (Pain Services, Transitional Care Teams)

- Continue multimodal analgesic regimen, with scheduled opioid medications
- Consider recovery in a monitored setting (patients at risk of sedation, respiratory depression or anticipated high opioid requirements or intravenous analgesic infusions, including ketamine).
- Use oral opioids as soon as tolerated; Intravenous patient controlled analgesia (IVPCA) should be supervised by pain management specialists
- Reinforce the postoperative pain management plan, established at the preoperative consultation: who will prescribe opioids and how to taper back to baseline doses after discharge

75

Summary

- Regional decreases opioid usage perioperatively
- No reduction in opioid addiction and use
- Target now has to be the discharge meds
- Discharge meds need to be stratified by patient RF, and education of prescribers and patients must occur
- The ambulatory anesthesiologist must play central role in this process

76

Thank you!

77