A Gathering Storm: Evaluating Perioperative Opioids

Michael Bottros, MD

Disclosure

- Nothing to disclose

Objectives

- Describe the history of opioid prescribing practices in the United States
- Describe the link between opioids and heroin
- Explain the components of an effective ERAS protocol

PAINWEEK

Outline

- Introduction
- How did we get here?
- Persistent postoperative opioid use
- Increased unused opioids & illicit drug use
- The transition to heroin
- Rethinking the postoperative paradigm

PAINWEEK

PaiNweek

Am. J. Ph.] 7 [December, 1901

BAYER Pharmaceutical Products

HEROIN—HYDROCHLORIDE

is pre-eminently adapted for the manufacture of cough elixirs, cough balsams, cough drops, cough lozenges, and cough medicines of any kind. Price in 1 oz. packages, $4.85 per ounce; less in larger quantities. The efficient dose being very small (1-48 to 1-24 gr.), it is

The Cheapest Specific for the Relief of Coughs

(In bronchitis, phthisis, whooping cough, etc., etc.)

WRITE FOR LITERATURE TO

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April 18, 1920 **The Washington Post.**

WASHINGTON: SUNDAY, APRIL 18, 1920.

WHY HIGH-LIFE DRUG ADDICTS ARE IN A PANIC

Their Friend Dr. Bishop, Who Says Opium Takers Should Not Be Treated as Criminals, Must Stand Trial Under Harrison Law---Physicians Declare Humane Treatment of Victims Impossible Under This Act

PAINWEEK

Federation of
STATE MEDICAL BOARDS

MODEL POLICY ON THE USE OF OPIOID ANALGESICS IN THE TREATMENT OF CHRONIC PAIN

INTRODUCTION

The Federation of State Medical Boards (FSMB) is committed to assisting state Medical Boards in protecting the public and improving the quality and integrity of health care in the United States. In 1997, the FSMB undertook an initiative to develop model guidelines and to encourage state medical boards and other health care regulatory agencies to adopt policies encouraging safe and effective treatment of patients with pain, including, if indicated, the use of opioid analgesics. [1]. The FSMB updated its guidelines in 2003 [2] so that its Model Policy would reflect the best available evidence on management of pain and give adequate attention to both the undertreatment and overtreatment of pain and the inappropriate use of opioid analgesics.

Through these initiatives, the FSMB has sought to provide a resource for use by state medical boards in educating their licensees about cautious and responsible prescribing of controlled substances while alleviating fears of regulatory scrutiny. The FSMB recognizes that inappropriate prescribing can contribute to adverse outcomes such as reduced function, opioid addiction, overdose, and death [3-5]. By promulgating its Model Policies, the FSMB has sought to provide a framework for the legitimate medical use of opioid analgesics for the treatment of pain while emphasizing the need to safeguard against their misuse and diversion.

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Focus Article

Pain Education in North American Medical Schools

Lina Mezei, Beth B. Murinson, and the Johns Hopkins Pain Curriculum Development Team
Department of Neurology, Johns Hopkins School of Medicine, Baltimore, Maryland.

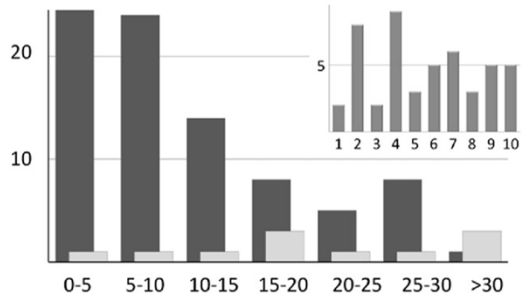

Figure 1. Frequency histogram, pain teaching hours by school. Main figure shows schools teaching 0 to 5 hours, 5 to 10 hours and so on. U.S. medical schools are shown as dark gray bars, Canadian schools as light gray. Inset shows expanded x-axis for 0 to 10 hours, U.S. schools only.

PAINWEEK

J Pain. 2011 Dec;12(12):1199-208

Top 20 Drugs for Service Year 2011

Rank Based on Total Paid

Rank	Drug Name	Brand Name/Generic	Paid Share
1	OXYCONTIN	Brand Name	7.4%
2	LIDODERM	Brand Name	4.9%
3	LYRICA	Brand Name	4.6%
4	GABAPENTIN	Generic	4.0%
5	HYDROCODONE-ACETAMINOPHEN	Generic	3.8%
6	CYMBALTA	Brand Name	3.4%
7	CELEBREX	Brand Name	3.2%
8	MELOXICAM	Generic	2.9%
9	TRAMADOL HCL	Generic	2.5%
10	OPANA ER	Brand Name	2.5%
11	CYCLOBENZAPRINE HCL	Generic	2.0%
12	FENTANYL	Generic	1.9%
13	OXYCODONE HCL-ACETAMINOPHEN	Generic	1.6%
14	FLECTOR	Brand Name	1.4%
15	OXYCODONE HCL	Generic	1.4%
16	METAXALONE	Generic	1.3%
17	CARISOPRODOL	Generic	1.3%
18	ZOLPIDEM TARTRATE	Generic	1.2%
19	KADIAN	Brand Name	1.2%
20	PERCOCET	Brand Name	1.1%
			53.6%

Source: NCCI Medical Data Call, for Service Year 2011.

The 35 jurisdictions for which NCCI provides ratemaking services are AK, AL, AR, AZ, CO, CT, DC, FL, GA, HI, IA, ID, IL, KS, KY, LA, MD, ME, MO, MS, MT, NE, NH, NM, NV, OK, OR, RI, SC, SD, TN, UT, VA, VT, and WV. The seven independent bureau states for which NCCI collects the Medical Data Call are IN, MA, MN, NC, NJ, NY, and WI.

Data used with permission.

PAINWEEK

Narcotics in Workers Compensation Are Highly Concentrated by Active Ingredient

Top Narcotics' Active Ingredient for Service Year 2011
Rank Based on Total Paid

Rank	Active Ingredient	Paid Share
1	OXYCODONE HCL	30.6%
2	OXYCODONE HCL/ACETAMINOPHEN	15.0%
3	HYDROCODONE BIT/ACETAMINOPHEN	14.4%
4	OXYMORPHONE HCL	10.7%
5	MORPHINE SULFATE	9.6%
6	FENTANYL	8.9%
7	FENTANYL CITRATE	6.0%
8	HYDROMORPHONE HCL	2.2%
	ALL OTHER	2.6%

Source: NCCI Medical Data Call, for Service Year 2011.

The 35 jurisdictions for which NCCI provides ratemaking services are AK, AL, AR, AZ, CO, CT, DC, FL, GA, HI, IA, ID, IL, KS, KY, LA, MD, ME, MO, MS, MT, NE, NH, NM, NV, OK, OR, RI, SC, SD, TN, UT, VA, VT, and WV. The seven independent bureau states for which NCCI collects the Medical Data Call are IN, MA, MN, NC, NJ, NY, and WI.

Data used with permission.

PAINWEEK

Brand Name OxyContin Is One-Fourth of All Narcotics

Top Narcotics for Service Year 2011
Rank Based on Total Paid

Rank	Drug Name Brand (B) or Generic (G)	Active Ingredient(s)	Paid Share
1	OXYCONTIN (B)	OXYCODONE HCL	25.5%
2	HYDROCODONE-ACETAMINOPHEN (G)	HYDROCODONE BIT/ACETAMINOPHEN	13.0%
3	OPANA ER (B)	OXYMORPHONE HCL	8.7%
4	OXYCODONE HCL-ACETAMINOPHEN (G)	OXYCODONE HCL/ACETAMINOPHEN	8.6%
5	FENTANYL (G)	FENTANYL	6.6%
6	OXYCODONE HCL (G)	OXYCODONE HCL	4.8%
7	KADIAN (B)	MORPHINE SULFATE	4.2%
8	PERCOCET (B)	OXYCODONE HCL/ACETAMINOPHEN	3.9%
9	MORPHINE SULFATE ER (G)	MORPHINE SULFATE	2.4%
10	FENTORA (B)	FENTANYL CITRATE	2.4%
			80.1%

Source: NCCI Medical Data Call, for Service Year 2011.

The 35 jurisdictions for which NCCI provides ratemaking services are AK, AL, AR, AZ, CO, CT, DC, FL, GA, HI, IA, ID, IL, KS, KY, LA, MD, ME, MO, MS, MT, NE, NH, NM, NV, OK, OR, RI, SC, SD, TN, UT, VA, VT, and WV. The seven independent bureau states for which NCCI collects the Medical Data Call are IN, MA, MN, NC, NJ, NY, and WI.

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American Pain Society. Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain.

106TH CONGRESS
2D SESSION

S. 3163

To designate the calendar decade beginning on January 1, 2001, as the "Decade of Pain Control and Research".

IN THE SENATE OF THE UNITED STATES

OCTOBER 5 (legislative day, SEPTEMBER 22), 2000

Mr. HATCH introduced the following bill; which was read twice and referred to the Committee on the Judiciary

A BILL

To designate the calendar decade beginning on January 1, 2001, as the "Decade of Pain Control and Research".

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. DECADE OF PAIN CONTROL AND RESEARCH.

The calendar decade beginning January 1, 2001, is designated as the "Decade of Pain Control and Research".

J Anesth Analg. 2005; 100:162–168.

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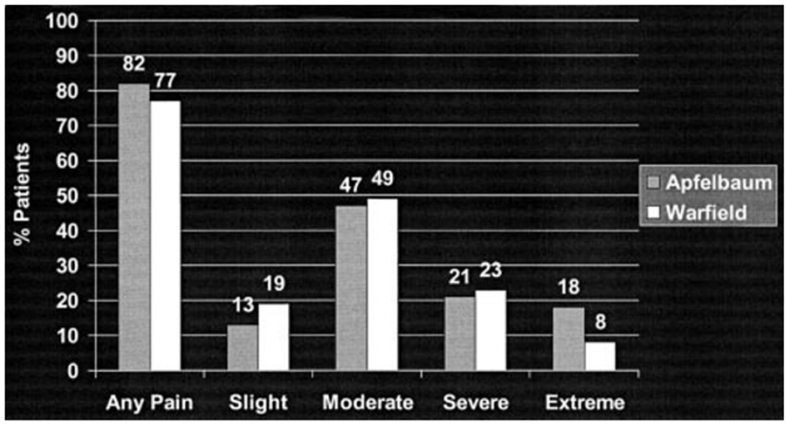

Figure 1. Overall pain after surgery.

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Anesth Analg. 2003;97:534–540.

Inadequately Managed Postsurgical Pain

- Increased complications
- Increased resource utilization
- Increased healthcare costs related to longer hospital stays
- Higher rates of readmission
- Potential for progression from acute to chronic pain

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Anesthesiology. 2004;100: 1573–1581. Anesthesiology. 2000; 93:1123–1133.

Cochrane Library

Cochrane Database of Systematic Reviews

Long-term opioid management for chronic noncancer pain (Review)

Noble M, Treadwell JR, Tregear SJ, Coates VH, Wiffen PJ, Akafomo C, Schoelles KM, Chou R

- 62 randomized controlled trials in meta-analysis
- Opioids are more effective than placebo for nociceptive and neuropathic pain on a short-term basis
- There is weak evidence for long-term use

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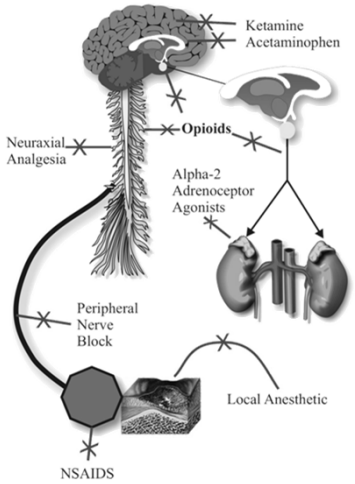
Cochrane Database Syst Rev. 2010;(1):CD006605.

What works to decrease opioid use?



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Persistent opioid use

ORIGINAL INVESTIGATION

Long-term Analgesic Use After Low-Risk Surgery

A Retrospective Cohort Study

Asim Alam, MD; Tara Gomes, MHSc; Hong Zheng, MSc; Muhammad M. Mamdani, PharmD, MA, MPH; David N. Juurlink, MD, PhD; Chaim M. Bell, MD, PhD

- Retrospective cohort study, 1997-2008
- 391,139 opioid naïve patients, aged 66 years or older
- Short stay, "low-pain" procedures (cataract surgery, lap chole, TURP, or varicose vein stripping)
- 7.1% prescribed opioids within 7 days of surgery, ~10% of those at 1 year

Table 2. Risk of Long-term Analgesic Use After Low-Risk, Short-Stay Surgery

	Opioid Cohort			NSAID Cohort		
Primary Outcome	No. of Events in Non–Early Users	No. of Events in Early Users	Adjusted Odds Ratio (95% CI)	No. of Events in Non–Early Users	No. of Events in Early Users	Adjusted Odds Ratio (95% CI)
All operations	27 288	2857	1.44 (1.39-1.50)	29 795	285	3.74 (3.27-4.28)
Cataract surgery	26 584	2102	1.62 (1.54-1.67)	28 093	247	4.61 (3.98-5.35)
Laparoscopic cholecystectomy	222	549	1.33 (1.13-1.56)	1089	15	1.14 (0.67-1.96)
Transurethral resection of the prostate	425	123	1.33 (1.07-1.64)	440	17	4.10 (2.36-7.14)
Varicose vein stripping	57	83	1.41 (0.99-2.02)	173	6	0.82 (0.35-1.95)

Abbreviation: NSAID, nonsteroidal anti-inflammatory drug.

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Arch Intern Med. 2012;172(5):425-430.

ORIGINAL INVESTIGATION

Long-term Analgesic Use After Low-Risk Surgery

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Table 3. Distribution of Opioid Prescribing Among Patients Newly Dispensed an Opioid Within 7 Days After Surgery and at 1-Year Follow-up

	Frequency Prescribed, %[a]	
Opioid Name	First 7 Days After Surgery	1-Year Follow-up
Codeine	93.4	87.5
Fentanyl patch	0.01	1.6
Hydromorphone	0.3	1.9
Meperidine	0.7	1.0
Morphine	0.1	2.6
Oxycodone	5.4	15.9
Long-acting oxycodone	0.04	1.9

[a] Calculated among people receiving at least 1 opioid prescription. If someone received multiple opioid types, they were counted multiple times.

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Arch Intern Med. 2012;172(5):425-430.

Rates and risk factors for prolonged opioid use after major surgery: population based cohort study

OPEN ACCESS

Hance Clarke *assistant professor*[1 2 3], Neilesh Soneji *lecturer*[2 4], Dennis T Ko *associate professor*[5 6 7], Lingsong Yun *analyst*[4], Duminda N Wijeysundera *assistant professor*[1 2 5 7 8]

- Population based retrospective cohort study, 2003-2010
- 39,140 opioid naïve patients, aged 66 years or older
- Main outcome measure: prolonged opioid use after discharge (>90 d)
- 49.2% were discharged with opioids; 3.1% continued for >90 days
- Adjusted risk factors:
  - Younger age
  - Lower household income
  - Specific comorbidities (DM, CHF, pulmonary disease)
  - Specific preop drugs (benzo, SSRI, ACEI)
  - Both open AND minimally invasive thoracic procedures

PAINWEEK

BMJ 2014;348:g1251

Table 1| **Patterns of post-discharge opioid use across different surgical procedures. Values are proportions (%) with exact 95% binomial confidence intervals**

Procedures	No of participants (n=39 140)	Duration of opioid use: Early post-discharge* % (95% CI)	Duration of opioid use: Prolonged post-discharge† % (95% CI)
Urological surgery‡:			
Radical prostatectomy (open and minimally invasive)	5193	65.2 (63.9 to 66.5)	2.8 (2.4 to 3.2)
Coronary artery bypass graft via sternotomy	9488	53.5 (52.4 to 54.5)	3.3 (2.9 to 3.6)
Intrathoracic surgery:			
Minimally invasive lung resection	720	65.7 (62.1 to 69.2)	6.3 (4.6 to 8.3)
Open lung resection	2423	72.4 (70.6 to 74.2)	8.5 (7.4 to 9.6)
Intra-abdominal surgery:			
Minimally invasive colorectal surgery	3202	44.1 (42.3 to 45.9)	3.2 (2.6 to 3.9)
Open colorectal surgery	8642	38.0 (37.0 to 39.1)	2.8 (2.4 to 3.1)
Gynaecological surgery:			
Minimally invasive hysterectomy	5287	35.7 (34.4 to 37.0)	1.5 (1.2 to 1.8)
Open hysterectomy	4185	47.3 (45.7 to 48.8)	2.5 (2.1 to 3.0)

*≥1 prescriptions for opioids within 1-90 days after surgery.

†≥1 prescriptions for opioids within 1-90 days after surgery, along with ≥1 prescriptions for opioids within 91-180 days after surgery.

‡Subgroup specific results for open versus minimally invasive prostatectomy not reported owing to privacy regulations on reporting of small numbers of people within subgroups.

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BMJ 2014;348:g1251

- "Doctors and hospital administrators are asking, if an opioid addiction starts with a prescription after surgery or some other hospital-based care, should the hospital be penalized?
  As in: Is addiction a medical error along the lines of some hospital-acquired infections?"
- "Putting hospitals on the hook for the consequences of aggressive opioid prescribing makes sense to me."
- **Martha Bebinger | Washington Post December 11, 2017**

PAINWEEK

Postsurgical prescriptions for opioid naive patients and association with overdose and misuse: retrospective cohort study

Gabriel A Brat,[1,2] Denis Agniel,[1] Andrew Beam,[1] Brian Yorkgitis,[3] Mark Bicket,[4] Mark Homer,[1] Kathe P Fox,[5] Daniel B Knecht,[5] Cheryl N McMahill-Walraven,[5] Nathan Palmer,[1] Isaac Kohane[1]

- Retrospective cohort study.
- 1,015,116 opioid naïve patients undergoing surgery.
- 56% patients received postop opioids.
- 0.6% (5,906 pts) were identified having a code for abuse.
- Total duration of opioid use was the strongest predictor of misuse.
- Each refill and additional week of opioid use was associated with an adjusted increase in misuse rate of 44%.

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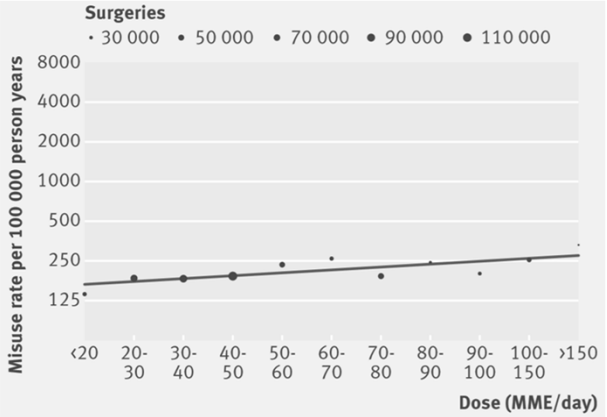
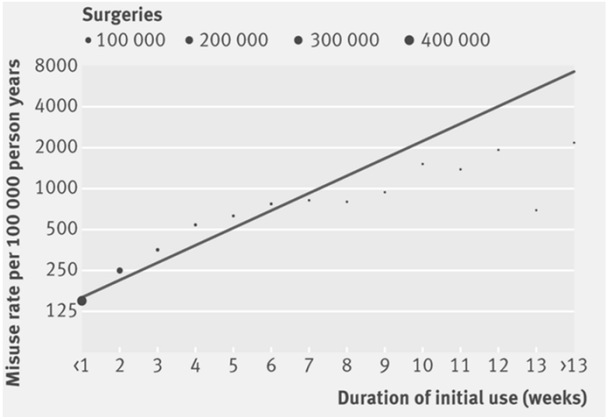
BMJ 2018; 360:j5790.





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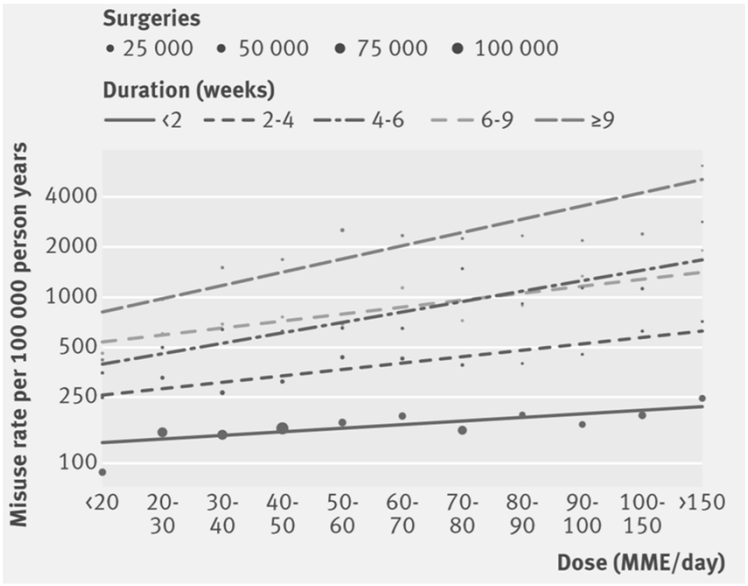
BMJ. 2018; 360:j5790.



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BMJ. 2018; 360:j5790.

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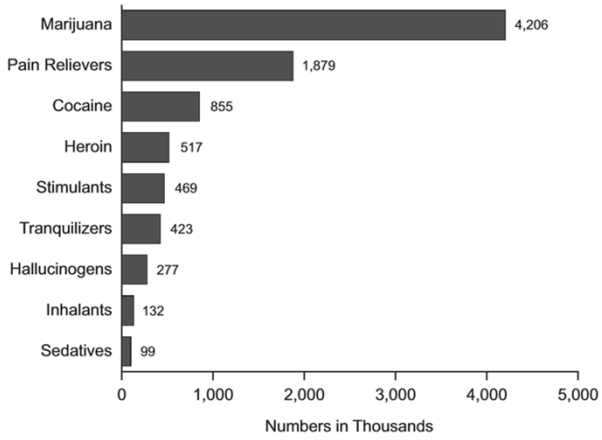
Increased unused opioids & illicit drug use

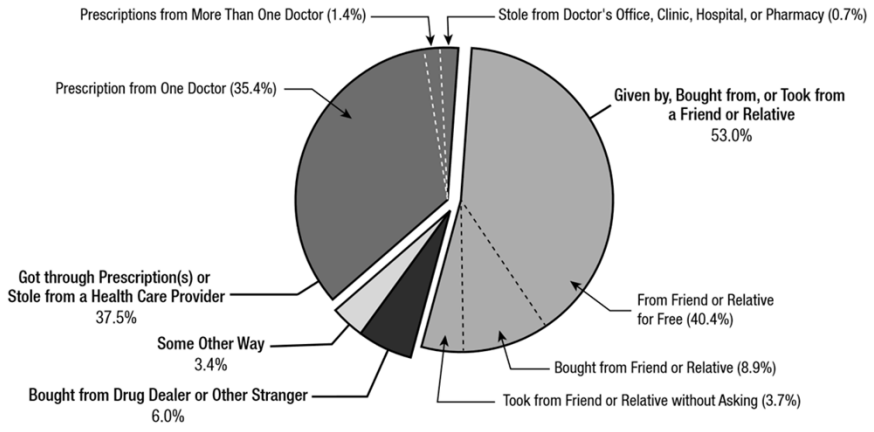
Figure 7.2 Specific Illicit Drug Dependence or Abuse in the Past Year among Persons Aged 12 or Older: 2013



Substance Abuse and Mental Health Services Administration. Results from the 2013 National Survey on Drug Use and Health. Volume 1: Summary of National Findings. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2014

PAINWEEK

Figure 34. Source Where Pain Relievers Were Obtained for Most Recent Misuse among People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year: Percentages: 2016

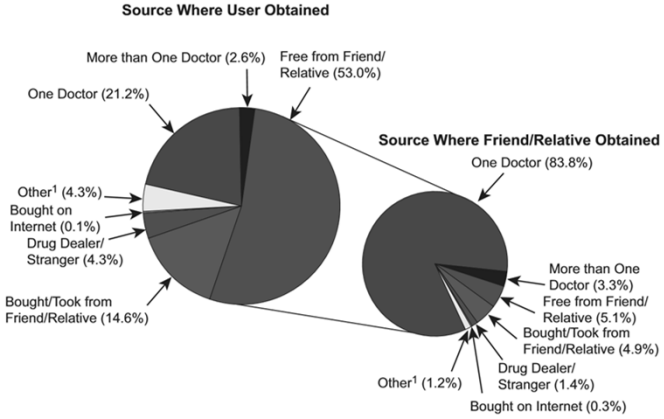


11.5 Million People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year

Note: Respondents with unknown data for Source for Most Recent Misuse or who reported Some Other Way but did not specify a valid way were excluded.
Note: The percentages do not add to 100 percent due to rounding.

Substance Abuse and Mental Health Services Administration. Results from the 2016 National Survey on Drug Use and Health. Volume 1: Summary of National Findings. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2017

Figure 2.16 Source Where Pain Relievers Were Obtained for Most Recent Nonmedical Use among Past Year Users Aged 12 or Older: 2012-2013



[1] The Other category includes the sources "Wrote Fake Prescription," "Stole from Doctor's Office/Clinic/Hospital/Pharmacy," and "Some Other Way."

Note: The percentages do not add to 100 percent due to rounding.

Substance Abuse and Mental Health Services Administration. Results from the 2013 National Survey on Drug Use and Health. Volume I: Summary of National Findings. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2014

PAINWEEK

Physicians' Knowledge & Attitudes about Opioid Abuse

TABLE 3. Primary Care Physicians' Knowledge and Beliefs Regarding Opioid Abuse and Diversion (N = 420)

	%
To your knowledge, what is the most common route for abusing prescription opioids?	
Swallowing the pills whole	66
Crushing and swallowing the pills	13
Crushing and snorting the pills	10
Crushing, dissolving, and injecting the pills	9
Crushing and smoking the pills	2
What do you think is the most common source of prescription opioids for people who use them for nonmedical purposes?	
More than one doctor	69
A relative or friend	13
A single doctor	8
A drug dealer or stranger	7
The internet	3
	Strongly or Somewhat Agree (%)
Abuse-deterrent formulations (ADFs)	
An ADF of a drug will have a lower addictive potential than a non-ADF of the same drug	46
ADFs of prescription opioids will result in large or moderate reductions of morbidity and mortality	27
I have a lot or some experience prescribing ADFs	12

PAINWEEK

Clin J Pain 2016;32:279–284

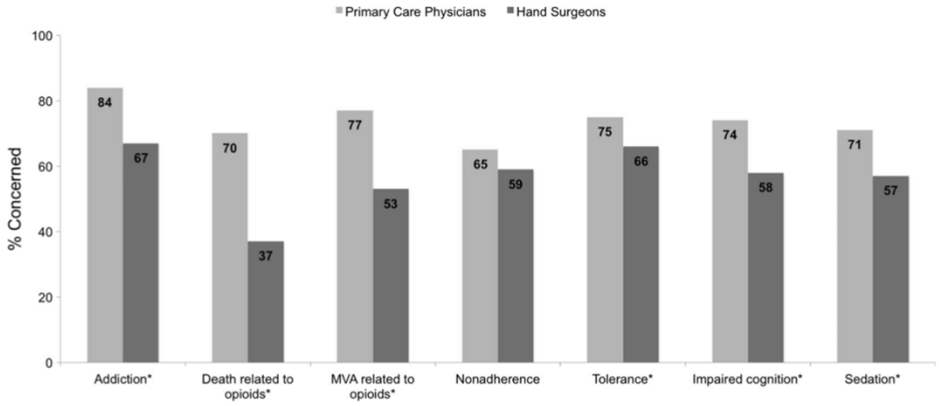


Fig. 1 Concern about potential adverse patient outcomes associated with opioid prescribing among hand surgeons and primary care physicians; *$P<0.05$

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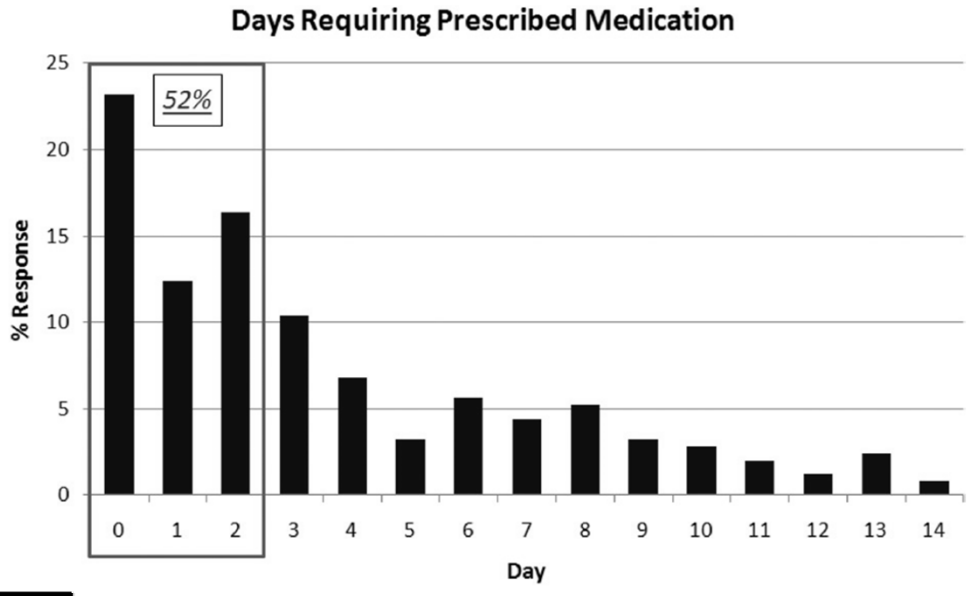
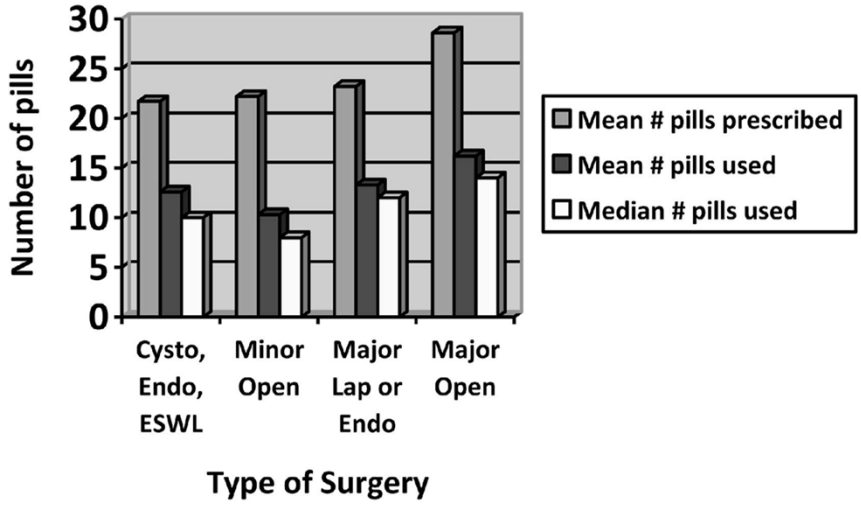
HAND (2015) 10:789–795



PAINWEEK

J Hand Surg Am. 2012;37:645–650



PAINWEEK J Urol. 2011 Feb;185(2):551-5.

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH
www.jahonline.org

Original article

Painfully Obvious: A Longitudinal Examination of Medical Use and Misuse of Opioid Medication Among Adolescent Sports Participants

Philip Veliz, Ph.D. [a,*], Quyen M. Epstein-Ngo, Ph.D. [a], Elizabeth Meier, Ph.D. [a], Paula Lynn Ross-Durow, Ph.D. [a], Sean Esteban McCabe, Ph.D. [a], and Carol J. Boyd, Ph.D. [b]

[a] Institute for Research on Women and Gender, University of Michigan, Ann Arbor, Michigan
[b] School of Nursing, University of Michigan, Ann Arbor, Michigan

Article history: Received March 4, 2013; Accepted September 6, 2013
Keywords: Adolescents; Prescription medications; Opioid use; Opioid misuse; Sports participation

- 1540 adolescents
- 2009-2010 and 2011-2012 school years
- Those in organized sports vs those who were not
  - 2x prescribed an opioid
  - 10x greater risk for misuse by taking too much
  - 4x greater risk for misuse to get high

PAINWEEK J Adolesc Health. 2014;54:333–340.

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The transition to heroin

Pain Medicine

PAIN MEDICINE
Volume 10 • Number 3 • 2009

OPIOIDS, SUBSTANCE ABUSE & ADDICTIONS SECTION

Original Research Article

Prescription Opioid Abuse and Diversion in an Urban Community: The Results of an Ultrarapid Assessment

James A. Inciardi, PhD,* Hilary L. Surratt, PhD,* Theodore J. Cicero, PhD,† and Ronald A. Beard, MHS*

*Center for Drug and Alcohol Studies, University of Delaware, Coral Gables, Florida; †Department of Psychiatry, Washington University School of Medicine, St. Louis, Missouri, USA

- One male heroin user in his early 20s stated, "I started with Percocets and ended up shooting 10 bags of heroin a day."
- A 23-year-old male reported, "It led me into heroin. When I was in junior high my grandfather had cancer and he had Percocet and morphine pills, and after he died my Grandma still had a lot of his pill bottles around. I...started taking them, and...after that I was hooked."
- This theme was indicated by others as well: "They [prescription pills] are like just as strong as dope and weed. They are really gateway drugs. They get you there. They get you into that scene."
- It was also explained by several focus group participants that the movement from prescription drugs to heroin was due to the high cost of prescription opioids on the street: "When I first started doing drugs I started taking the pills, like Xanax, Oxys, Percocets, anything that was prescription. After that I progressed into heroin and cocaine because...sometimes the prescription drugs are real expensive. Most pills like an Oxy can be $40. So it was just getting too expensive for me."

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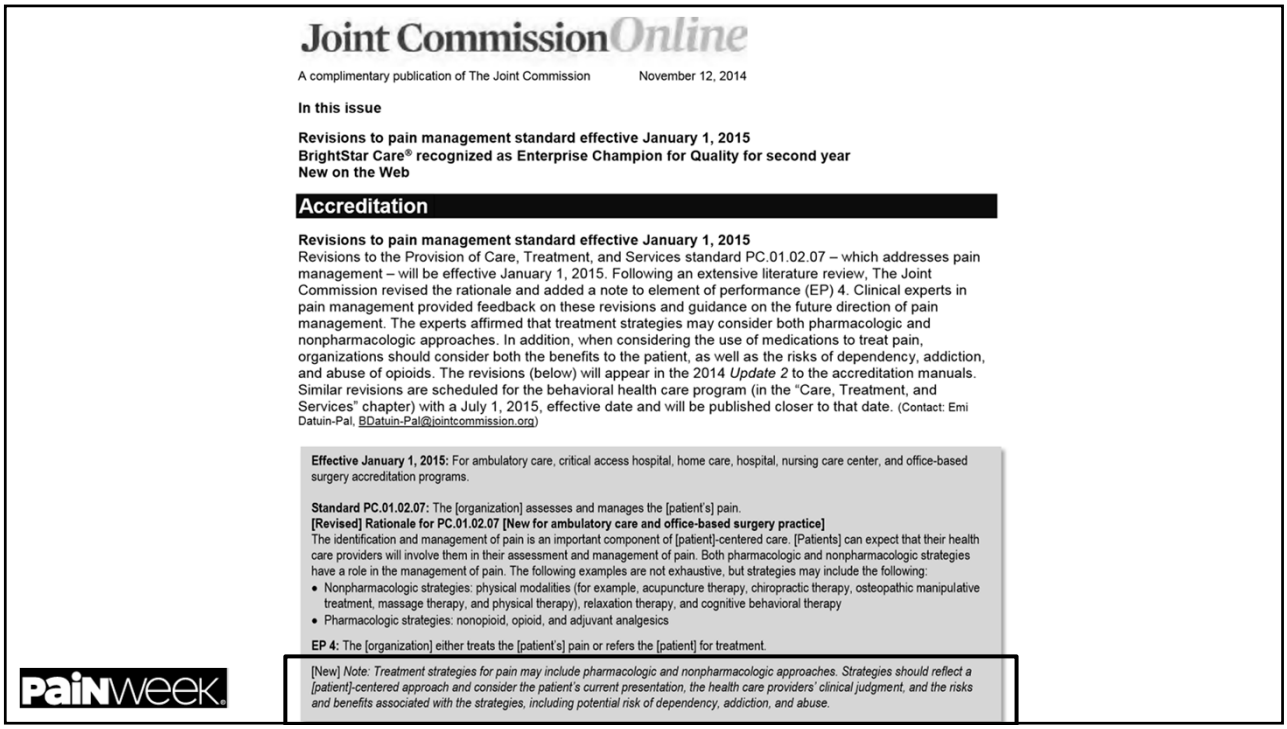
Pain Med. 2009 Apr;10(3):537-48



Joint Commission Online

A complimentary publication of The Joint Commission November 12, 2014

In this issue

Revisions to pain management standard effective January 1, 2015
BrightStar Care® recognized as Enterprise Champion for Quality for second year
New on the Web

Accreditation

Revisions to pain management standard effective January 1, 2015
Revisions to the Provision of Care, Treatment, and Services standard PC.01.02.07 – which addresses pain management – will be effective January 1, 2015. Following an extensive literature review, The Joint Commission revised the rationale and added a note to element of performance (EP) 4. Clinical experts in pain management provided feedback on these revisions and guidance on the future direction of pain management. The experts affirmed that treatment strategies may consider both pharmacologic and nonpharmacologic approaches. In addition, when considering the use of medications to treat pain, organizations should consider both the benefits to the patient, as well as the risks of dependency, addiction, and abuse of opioids. The revisions (below) will appear in the 2014 *Update 2* to the accreditation manuals. Similar revisions are scheduled for the behavioral health care program (in the "Care, Treatment, and Services" chapter) with a July 1, 2015, effective date and will be published closer to that date. (Contact: Emi Datuin-Pal, BDatuin-Pal@jointcommission.org)

Effective January 1, 2015: For ambulatory care, critical access hospital, home care, hospital, nursing care center, and office-based surgery accreditation programs.

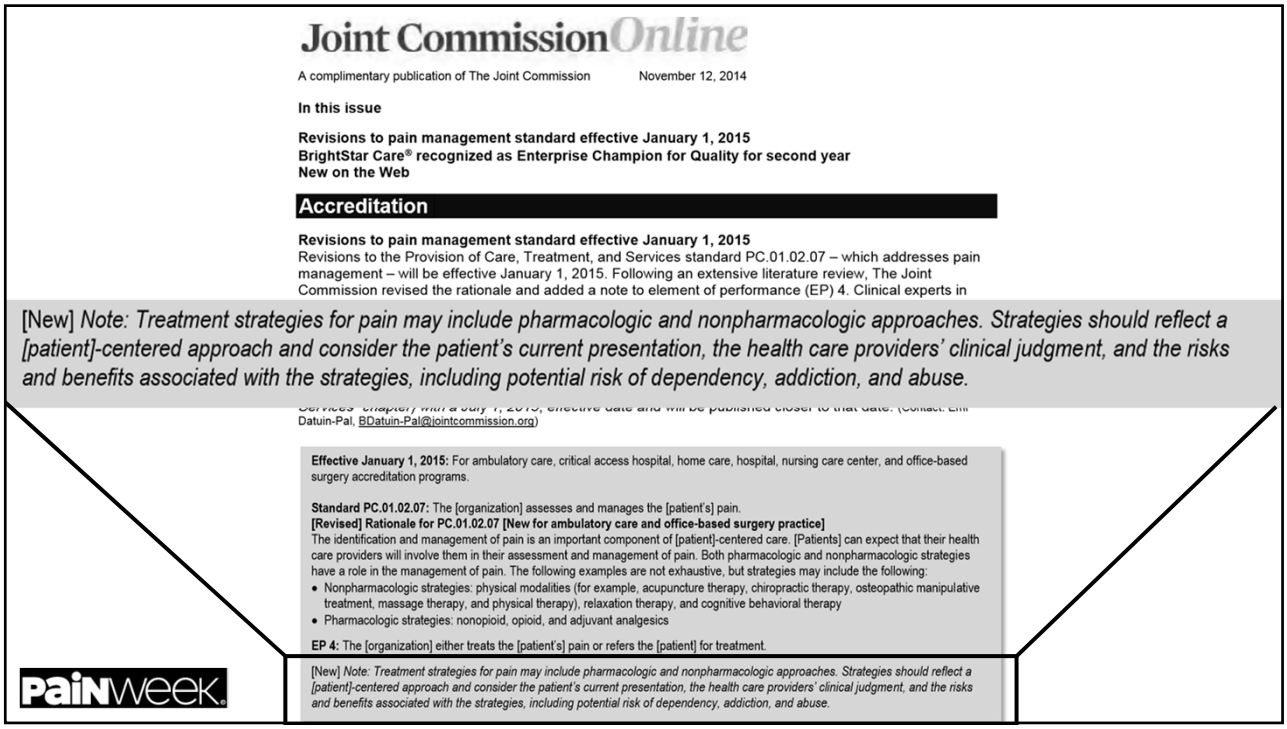
Standard PC.01.02.07: The [organization] assesses and manages the [patient's] pain.
[Revised] Rationale for PC.01.02.07 [New for ambulatory care and office-based surgery practice]
The identification and management of pain is an important component of [patient]-centered care. [Patients] can expect that their health care providers will involve them in their assessment and management of pain. Both pharmacologic and nonpharmacologic strategies have a role in the management of pain. The following examples are not exhaustive, but strategies may include the following:

- Nonpharmacologic strategies: physical modalities (for example, acupuncture therapy, chiropractic therapy, osteopathic manipulative treatment, massage therapy, and physical therapy), relaxation therapy, and cognitive behavioral therapy
- Pharmacologic strategies: nonopioid, opioid, and adjuvant analgesics

EP 4: The [organization] either treats the [patient's] pain or refers the [patient] for treatment.

[New] *Note: Treatment strategies for pain may include pharmacologic and nonpharmacologic approaches. Strategies should reflect a [patient]-centered approach and consider the patient's current presentation, the health care providers' clinical judgment, and the risks and benefits associated with the strategies, including potential risk of dependency, addiction, and abuse.*

PAINWEEK



Joint Commission Online

A complimentary publication of The Joint Commission November 12, 2014

In this issue

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BrightStar Care® recognized as Enterprise Champion for Quality for second year
New on the Web

Accreditation

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Services" chapter) with a July 1, 2015, effective date and will be published closer to that date. (Contact: Emi Datuin-Pal, BDatuin-Pal@jointcommission.org)

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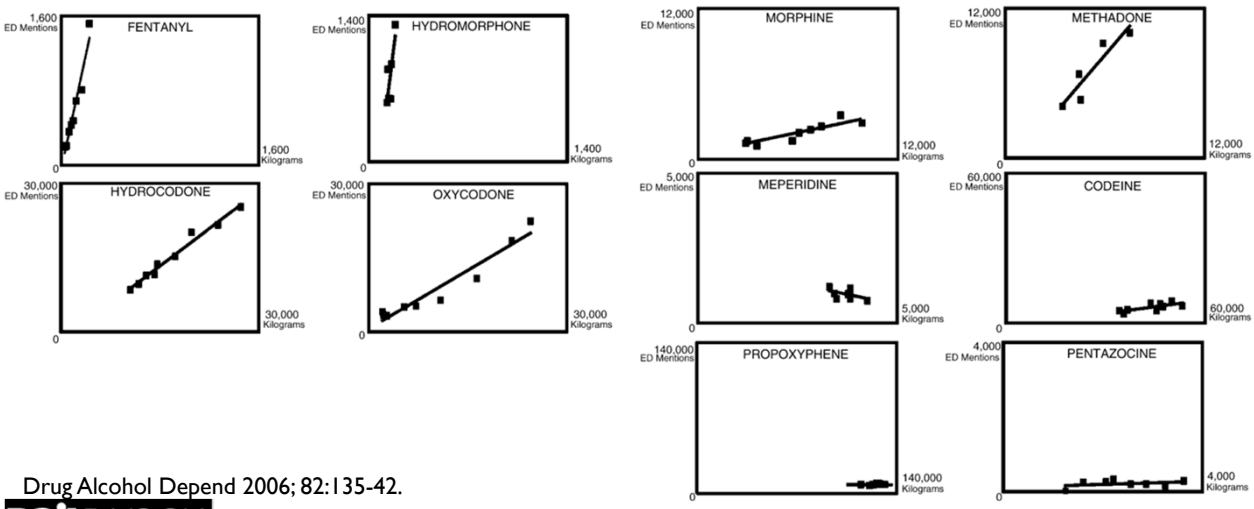
PAINWEEK

Association between Nonmedical & Rx Use



Drug Alcohol Depend 2006; 82:135-42.

PaiNweek

Opioid prescribing and incidence of fatalities by medical specialty of prescribers, Utah, 2002–2010

	Opioid Prescribing		Fatality	
Specialty	**# of Prescriptions**	**% of All Opioid Prescriptions**	**Prescriptions Associated with Fatalities**	**% of All Fatalities Associated**
Pain medicine	232,246	1.0	2,735	2.0
Physical medicine and rehabilitation	607,594	2.6	6,105	4.6
Psychiatry and neurology	221,394	1.0	2,015	1.5
Anesthesiology	245,629	1.0	1,961	1.5
Family medicine	5,626,869	24.1	40,107	30.2
Missing specialty	1,927,060	9.8	14,341	10.8
Emergency medicine	1,498,069	6.4	7,575	5.7
Podiatrist	278,571	1.2	1,384	1.0
Internal medicine	2,508,085	10.8	11,775	8.8
Orthopedic surgery	1,502,771	6.4	7,015	5.3
Dentist	2,038,377	8.7	6,534	4.9
Obstetrics and gynecology	644,763	2.8	1,532	1.2

PaiNweek

Pain Med. 2014 Jan;15(1):73-8.

Medicaid Patients With CNCP in North Carolina

Proportion of all prescriptions and all opioid prescriptions filled for chronic noncancer pain patients 18 to 64 years of age, according to specialty for patients with provider specialty data

Provider specialty	n (%) of all prescriptions filled (column %)	n (%) of all opioid prescriptions filled (column %)	Opioid prescriptions as % of all prescriptions filled, according to specialty (row %)
ENT	5186 (0.40)	560 (0.36)	10.80
Dentists	28,194 (2.17)	7492 (4.78)	26.57
GP/FM/DO	405,786 (31.16)	35,881 (22.89)	8.84
Internal medicine	262,846 (20.19)	22,188 (14.16)	8.44
Emergency medicine	87,903 (6.75)	19,924 (12.71)	22.67
Orthopedists	28,178 (2.16)	11,768 (7.51)	41.76
OB/GYN	49,686 (3.82)	5032 (3.21)	10.13
Other specialty	434,389 (33.36)	53,877 (34.38)	12.40
Total prescriptions	1,302,168 (100)	156,722 (100)	12.04

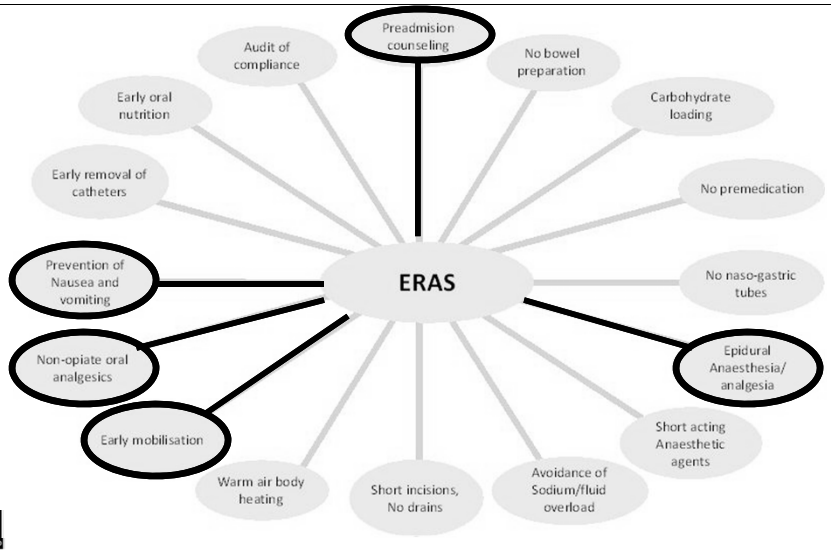
DO Doctor of osteopathic medicine; ENT Ear, nose and throat; GP General practitioner; FM Family medicine; OB/GYN Obstetrics and gynecology

PainWeek Pain Res Manag. 2014 Jul-Aug;19(4):179-85

PainWeek

The Opportunity

Enhanced Recovery after Surgery



Fearon et al. 2005

PAINWEEK

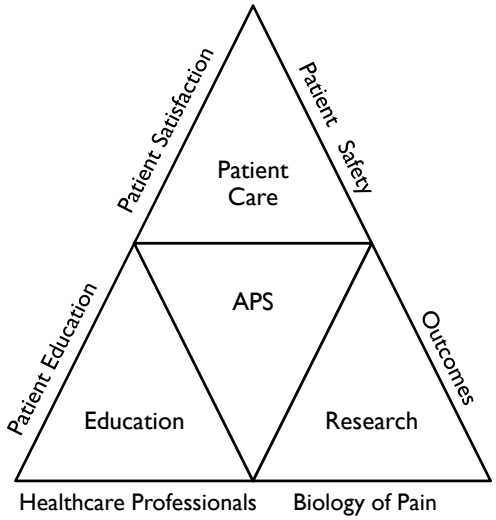
Identifying patients at risk for opioid abuse

- Key characteristics (odds ratio >2):
  - At least one prior prescription of buprenorphine (OR = 51.75) or methadone (OR = 2.97)
  - At least one diagnosis of nonopioid drug abuse (OR = 9.89)
  - Prior opioid prescriptions (OR = 2.23 for 1-5 prior Rxs; OR = 6.85 for 6+ prior Rxs)
  - Having a family member diagnosed with opioid abuse (OR = 3.01)
  - Mental illness (OR = 2.45)
  - Hepatitis (OR = 2.36)

PAINWEEK

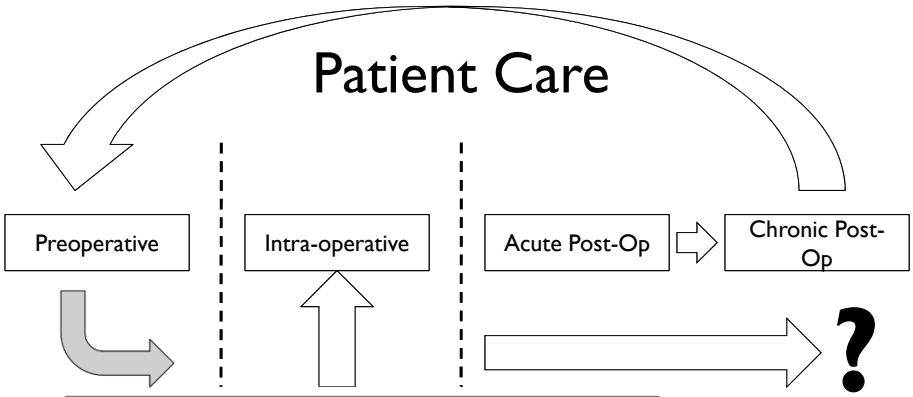
Pain Med. 2012 Sep;13(9):1162-73

Nature of the Change



PAINWEEK

Patient Care



Benefits of regional anesthesia

(i) Improve acute perioperative pain management

(ii) Reduced opioid use along with reduced incidence of adverse events

(iii) Can obtain skeletal muscle relaxation, thus limiting need and risks of IV muscle relaxants

(iv) Option to maintain patient consciousness

(v) Continued presence of protective upper airway reflexes

(vi) An isolated regional modality will have minimal effect on pulmonary or cardiac disease

PAINWEEK

Nordquist D. et al, 2014.

Epidural local anaesthetics versus opioid-based analgesic regimens for postoperative gastrointestinal paralysis, PONV and pain after abdominal surgery (Review)

Jørgensen H, Wetterslev J, Møiniche S, Dahl JB

THE COCHRANE COLLABORATION®

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2008, Issue 4

http://www.thecochranelibrary.com

PAINWEEK

Analysis 1.1. Comparison 1 Epidural local anaesthetic (LA) vs opioid based regimens, Outcome 1 Effect on time (h) to first passage of stool.

Review: Epidural local anaesthetics versus opioid-based analgesic regimens for postoperative gastrointestinal paralysis, PONV and pain after abdominal surgery

Comparison: 1 Epidural local anaesthetic (LA) vs opioid based regimens

Outcome: 1 Effect on time (h) to first passage of stool

Study or subgroup	Epidural LA N	Mean(SD)	Opioid based analg N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Wattwil 1989	20	70 (44)	20	103 (26)		12.2 %	-33.00 [-55.40, -10.60]
Scheinin 1987	15	66 (28)	45	92 (32)		12.6 %	-26.00 [-42.98, -9.02]
Thorn 1989	11	57 (44)	11	92 (22)		11.5 %	-35.00 [-64.07, -5.93]
Wallin 1986	15	62 (18)	15	65 (27)		12.6 %	-3.00 [-19.42, 13.42]
Ahn 1988	16	57 (12)	14	192 (36)		12.4 %	-135.00 [-154.75, -115.25]
Riwar 1992	24	21 (19)	24	110 (35)		12.7 %	-89.00 [-104.93, -73.07]
Asantila 1991	20	46 (12)	40	59 (17)		13.1 %	-13.00 [-20.44, -5.56]
Bredtmann 1990	57	71 (36)	59	96 (29)		12.9 %	-25.00 [-36.92, -13.08]
Total (95% CI)	**178**		**228**			**100.0 %**	**-44.64 [-72.43, -16.85]**

Heterogeneity: Tau² = 1521.37; Chi² = 192.41, df = 7 (P<0.00001); I² =96%

Test for overall effect: Z = 3.15 (P = 0.0016)

-100 -50 0 50 100

Favours Epidural LA Favours opioid based

PAINWEEK

Analysis 1.2. Comparison 1 Epidural local anaesthetic (LA) vs opioid based regimens, Outcome 2 Effect on time (h) to first passage of flatus.

Review: Epidural local anaesthetics versus opioid-based analgesic regimens for postoperative gastrointestinal paralysis, PONV and pain after abdominal surgery

Comparison: 1 Epidural local anaesthetic (LA) vs opioid based regimens

Outcome: 2 Effect on time (h) to first passage of flatus

Study or subgroup	Epidural LA N	Mean(SD)	Opioid based analg N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Ahn 1988	16	48 (10)	14	128 (21)		14.4 %	-80.00 [-92.04, -67.96]
Liu 1995	14	40 (7.5)	24	65 (13)		14.9 %	-25.00 [-31.52, -18.48]
Riwar 1992	24	18 (12)	24	81 (18)		14.8 %	-63.00 [-71.65, -54.35]
Scheinin 1987	15	66 (28)	45	92 (32)		13.6 %	-26.00 [-42.98, -9.02]
Thorn 1989	11	22 (16)	11	56 (22)		13.8 %	-34.00 [-50.08, -17.92]
Wallin 1986	12	43 (20)	15	39 (18)		14.0 %	4.00 [-10.53, 18.53]
Wattwil 1989	20	31 (22)	20	58 (14)		14.5 %	-27.00 [-38.43, -15.57]
Total (95% CI)	**112**		**153**			**100.0 %**	**-36.11 [-55.76, -16.47]**

Heterogeneity: $Tau^2 = 661.34$; $Chi^2 = 131.86$, df = 6 (P<0.00001); $I^2 = 95\%$

Test for overall effect: Z = 3.60 (P = 0.00032)

-100 -50 0 50 100

Favours Treatment Favours Control

PAINWEEK

Analysis 1.3. Comparison 1 Epidural local anaesthetic (LA) vs opioid based regimens, Outcome 3 Effect on time (h) to return of gastrointestinal function (flatus or stool) - subgroups.

Review: Epidural local anaesthetics versus opioid-based analgesic regimens for postoperative gastrointestinal paralysis, PONV and pain after abdominal surgery

Comparison: 1 Epidural local anaesthetic (LA) vs opioid based regimens

Outcome: 3 Effect on time (h) to return of gastrointestinal function (flatus or stool) - subgroups

Study or subgroup	Epidural LA N	Mean(SD)	Opioid based analg N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Epi LA vs systemic opioid							
Ahn 1988	16	48 (10)	14	128 (21)		14.5 %	-80.00 [-92.04, -67.96]
Bredtmann 1990	57	71 (36)	59	96 (29)		14.5 %	-25.00 [-36.92, -13.08]
Liu 1995	14	40 (7.5)	12	81 (10)		15.2 %	-41.00 [-47.89, -34.11]
Riwar 1992	25	18 (12)	25	81 (18)		15.0 %	-63.00 [-71.48, -54.52]
Scheinin 1987	15	66 (28)	15	91 (35)		12.3 %	-25.00 [-47.68, -2.32]
Wallin 1986	12	43 (20)	15	39 (18)		14.0 %	4.00 [-10.53, 18.53]
Wattwil 1989	20	31 (22)	20	58 (14)		14.6 %	-27.00 [-38.43, -15.57]
Subtotal (95% CI)	**159**		**160**			**100.0 %**	**-37.24 [-55.67, -18.82]**
Heterogeneity: $Tau^2 = 573.76$; $Chi^2 = 116.86$, df = 6 (P<0.00001); $I^2 = 95\%$							
Test for overall effect: Z = 3.96 (P = 0.000074)							
2 Epi LA vs epi opioid							
Asantila 1991	20	46 (12)	20	55 (7)		26.6 %	-9.00 [-15.09, -2.91]
Liu 1995	14	40 (7.5)	14	71 (15)		26.0 %	-31.00 [-39.78, -22.22]
Scheinin 1987	15	66 (28)	30	93 (28)		23.5 %	-27.00 [-44.35, -9.65]
Thorn 1989	11	22 (16)	11	56 (22)		23.9 %	-34.00 [-50.08, -17.92]
Subtotal (95% CI)	**60**		**75**			**100.0 %**	**-24.42 [-38.81, -10.03]**
Heterogeneity: $Tau^2 = 175.83$; $Chi^2 = 21.62$, df = 3 (P = 0.00008); $I^2 = 86\%$							
Test for overall effect: Z = 3.33 (P = 0.00088)							
3 Epi LA vs epi LA/opioid							
Asantila 1991	20	46 (12)	20	62 (19)		49.8 %	-16.00 [-25.85, -6.15]
Liu 1995	14	40 (7.5)	12	43 (14)		50.2 %	-3.00 [-11.84, 5.84]
Subtotal (95% CI)	**34**		**32**			**100.0 %**	**-9.31 [-22.05, 3.42]**
Heterogeneity: $Tau^2 = 61.70$; $Chi^2 = 3.71$, df = 1 (P = 0.05); $I^2 = 73\%$							
Test for overall effect: Z = 1.43 (P = 0.15)							

-100 -50 0 50 100

Favours treatment Favours control

PAINWEEK

Analysis 1.7. Comparison 1 Epidural local anaesthetic (LA) vs opioid based regimens, Outcome 7 Effect on the incidence of postoperative nausea.

Review: Epidural local anaesthetics versus opioid-based analgesic regimens for postoperative gastrointestinal paralysis, PONV and pain after abdominal surgery

Comparison: 1 Epidural local anaesthetic (LA) vs opioid based regimens

Outcome: 7 Effect on the incidence of postoperative nausea

Study or subgroup	Epidural LA n/N	Opioid based analg n/N	Peto Odds Ratio Peto,Fixed,95% CI	Weight	Peto Odds Ratio Peto,Fixed,95% CI
Asantila 1991	5/20	8/40		13.5 %	1.34 [0.37, 4.86]
Beeby 1984	0/10	2/23		2.4 %	0.23 [0.01, 4.87]
Brodner 2000	5/22	13/81		14.8 %	1.58 [0.46, 5.44]
Cooper 1996	2/18	0/38		2.5 %	23.78 [1.19, 475.13]
Delilkan 1993	3/20	14/38		16.2 %	0.35 [0.11, 1.15]
George 1992	3/10	7/20		9.0 %	0.80 [0.17, 3.92]
Lee 1988	12/20	19/40		19.9 %	1.64 [0.56, 4.75]
Liu 1995	2/14	6/38		8.0 %	0.89 [0.17, 4.80]
Thorn 1989	0/11	5/11		5.9 %	0.08 [0.01, 0.59]
Wattwil 1989	0/20	6/20		7.7 %	0.10 [0.02, 0.56]
Total (95% CI)	**165**	**349**		**100.0 %**	**0.76 [0.47, 1.23]**

Total events: 32 (Epidural LA), 80 (Opioid based analg)
Heterogeneity: $Chi^2 = 21.61$, df = 9 (P = 0.01); $I^2 = 58\%$
Test for overall effect: Z = 1.12 (P = 0.26)
Test for subgroup differences: Not applicable

PAINWEEK

Analysis 1.8. Comparison 1 Epidural local anaesthetic (LA) vs opioid based regimens, Outcome 8 Effect on the incidense of postoperative vomiting.

Review: Epidural local anaesthetics versus opioid-based analgesic regimens for postoperative gastrointestinal paralysis, PONV and pain after abdominal surgery

Comparison: 1 Epidural local anaesthetic (LA) vs opioid based regimens

Outcome: 8 Effect on the incidense of postoperative vomiting

Study or subgroup	Epidural LA n/N	Opioid based analg n/N	Peto Odds Ratio Peto,Fixed,95% CI	Weight	Peto Odds Ratio Peto,Fixed,95% CI
Asantila 1991	3/20	14/40		55.8 %	0.38 [0.12, 1.24]
Brodner 2000	1/22	7/81		25.4 %	0.57 [0.10, 3.27]
Cooper 1996	1/18	0/38		4.4 %	22.45 [0.34, 1491.91]
Wattwil 1989	0/20	3/20		14.4 %	0.12 [0.01, 1.24]
Total (95% CI)	**80**	**179**		**100.0 %**	**0.43 [0.18, 1.03]**

Total events: 5 (Epidural LA), 24 (Opioid based analg)
Heterogeneity: $Chi^2 = 4.69$, df = 3 (P = 0.20); $I^2 = 36\%$
Test for overall effect: Z = 1.89 (P = 0.059)
Test for subgroup differences: Not applicable

PAINWEEK

Epidural *versus* Continuous Preperitoneal Analgesia during Fast-track Open Colorectal Surgery

A Randomized Controlled Trial

March 2013

Philippe Jouve, M.D.,* Jean-Etienne Bazin, M.D., Ph.D.,† Antoine Petit, M.D.,* Vincent Minville, M.D., Ph.D.,‡ Adeline Gerard, M.D.,* Emmanuel Buc, M.D., Ph.D.,§ Aurelien Dupre, M.D.,§ Fabrice Kwiatkowski, Ph.D.,‖ Jean-Michel Constantin, M.D., Ph.D.,#, Emmanuel Futier, M.D.**

Background: Effective postoperative analgesia is essential for early rehabilitation after surgery. Continuous wound infiltration (CWI) of local anesthetics has been proposed as an alternative to epidural analgesia (EA) during colorectal surgery. This prospective, double-blind trial compared CWI and EA in patients undergoing elective open colorectal surgery.

Methods: Fifty consecutive patients were randomized to receive EA or CWI for 48 h. In both groups, patients were managed according to Enhanced Recovery After Surgery recommendations. The primary outcome was the dynamic pain score measured during mobilization 24 h after surgery (H24) using a 100-mm verbal numerical scale. Secondary outcomes were time to functional recovery, analgesic technique-related side effects, and length of hospital stay.

Results: Median postoperative dynamic pain score was lower in the EA than in the CWI group (10 [interquartile range: 1.6–20] *vs.* 37 [interquartile range: 30–49], $P < 0.001$) and remained lower until hospital discharge. The median times to return of gut function and tolerance of a normal, complete diet were shorter in the EA than in the CWI group ($P < 0.01$ each). Sleep quality was also better in the EA group, but there was no difference in urinary retention rate ($P = 0.57$). The median length of stay was lower in the EA than in the CWI group (4 [interquartile range: 3.4–5.3] days *vs.* 5.5 [interquartile range: 4.5–7] days; $P = 0.006$).

Conclusion: Within an Enhanced Recovery After Surgery program, EA provided quicker functional recovery than CWI and reduced length of hospital stay after open colorectal surgery.

PAINWEEK

Thoracic surgery: T4-8

Upper abdominal (Whipple, gastrectomy, hepatic): T6-7

Mid-abdominal (GU): T7-10

Lower abdominal (TAH, AP, colectomy): T9-10

PAINWEEK

Catheter-Incision Congruence

Reference	Epidural location	Surgical procedure	Study design	N	Epidural analgesia	Systemic analgesia	Earlier return of gastro-intestinal function	Length of stay
Scheinin et al (1987)	'Middle of planned incision'	Colectomy	RCT	60	Bupivacaine 0.25% or morphine (48 hours)	Oxycodone i.m.	Epidural	NA
Ahn et al (1988)	L2–L3	Rectal–sigmoid colectomy	RCT	30	Bupivacaine 0.25% (48 hours)	Pentazocine i.v.	Epidural	NA
Wattwil et al (1989)	T12–L1	Abdominal hysterectomy	RCT	40	Bupivacaine 0.25% (~24 hours)	Ketobemidone i.m.	Epidural	8 days versus 7 days
Seeling et al (1990)	T7–T11	Major abdominal	RCT	214	Bupivacaine 0.25% with fentanyl (~76 hours)	Piritramide i.v.–i.m.	Epidural	NA
Bredtmann et al (1990)	T8–T10	Colectomy	RCT	116	Bupivacaine 0.25% (72 hours)	Piritramide–tramadol i.m.	Epidural	20 days versus 19 days
Jayr et al (1993)	T7–T11	Major abdominal	RCT	153	Bupivacaine 0.125% with morphine (4 days)	Morphine s.c.	Epidural	Similar
Liu et al (1995a)	T8–T10	Colectomy	RCT	54	Bupivacaine (0.1–0.15%), MS, or both (60–100 hours)	Morphine i.v. PCA	Epidural	4 days versus 5 days
Scott et al (1996)	T6–T10	Colectomy	COS	128	Bupivacaine 0.10% with MS or morphine only	Morphine i.v. PCA	Epidural	9 days versus 9 days
de Leon-Casasola et al (1996)	T10–T12	Abdominal hysterectomy	COS	68	Bupivacaine 0.05% with morphine (~4 days)	Morphine i.v. PCA	Epidural	10 days versus 14 days

RCT, randomized controlled trial; COS, controlled observational study; MS, morphine sulphate.

PAINWEEK

Balliere's Clin Anaesthesiol 1999;13:9-22

Catheter-Incision Incongruence

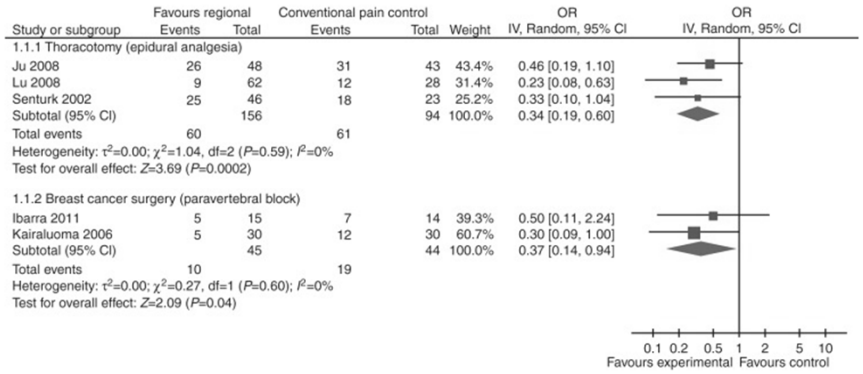
Reference	Epidural location	Surgical procedure	Study design	N	Epidural analgesia	Systemic analgesia	Earlier return of gastro-intestinal function	Length of stay
Hjortso et al (1985)	L1–L2	Major (upper) abdominal	RCT	94	Bupivacaine 0.50% with morphine	Morphine i.m.	Similar	NA
Wallin et al (1986)	T12–L1	Cholycystectomy	RCT	30	Bupivacaine 0.25% (24 hours), followed by pentazocine i.m.	Pentazocine i.m.	Similar	NA
Kilbride et al (1992)	L3–L4	Colorectal	RCT	64	Bupivacaine 0.5% intraoperatively; MS post-operatively	Morphine i.m. or i.v. PCA	Similar	Similar
Morimoto et al (1995)	Not specified	Colectomy	COS	85	Fentanyl (1 μg/kg per hour) (3 days) + MS i.v.	Morphine i.v. (mostly PCA)	Epidural	NA
Lehman and Wiseman (1995)	Not specified	Colectomy	COS	102	Bupivacaine narcotic (4–5 days)	Opioids i.m., i.v. or i.v. PCA	Similar	Similar (9 days)
Kanazi et al (1996)	Not specified	Colectomy	COS	50	'Local anaesthetics' (24 hours), followed by opioids	Morphine i.v. (mostly PCA)	Similar	Similar
Scott et al (1996)	L2–L4	Colorectal	COS	126	Bupivacaine 0.10% with MS or morphine only	Morphine i.v. via PCA	Similar	Similar (9 days)

RCT, randomized controlled trial; COS, controlled observational study; MS = morphine sulphate.

PAINWEEK

Balliere's Clin Anaesthesiol 1999;13:9-22

Chronic Postsurgical Pain



PAINWEEK

Andrae MH, 2013

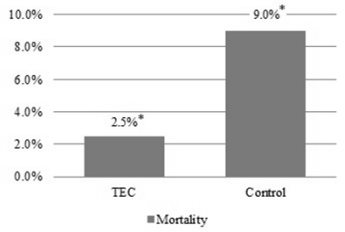
Epidurals in Trauma

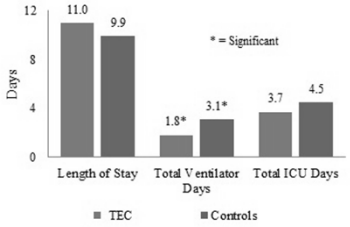
	TEC	Controls	P
N	158	301	N/A
Age (yrs)	53.4	52.2	0.44
Sex (Male/Female)	69%/31%	68%/32%	0.85
Mortality (%)	4 (2.5%)	27 (8.9%)	0.009
PE	4 (2.5%)	7 (2.3%)	0.89
DVT	5 (3.2%)	25 (8.3%)	0.034
ISS	18 (4-75)	18 (1-75)	**0.016**
Rib Fracture Count	6 (1-19)	6 (1-15)	0.054

PAINWEEK

Epidurals in Trauma (cont'd)

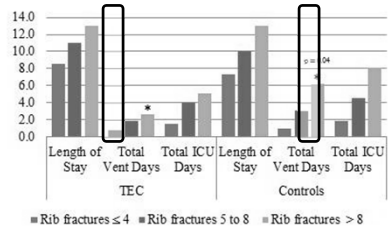
Thoracic Epidural Patients vs Matched Controls:

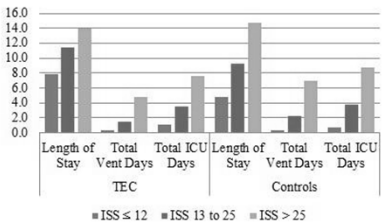


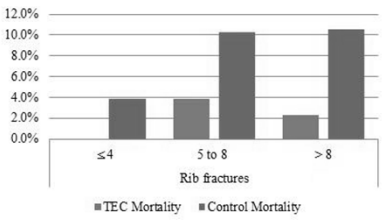


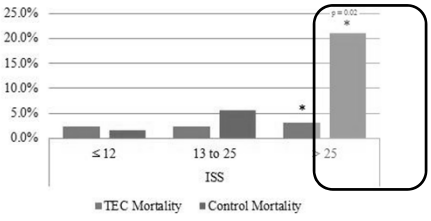
PAINWEEK

Epidurals in Trauma (cont'd)









PAINWEEK

PNAS

Morphine paradoxically prolongs neuropathic pain in rats by amplifying spinal NLRP3 inflammasome activation

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- Rodent model used to investigate whether administration of morphine following peripheral nerve injury would result in persistent neuropathic pain.
- Starting 10 days following sciatic chronic constriction injury (CCI) or sham surgery, animals were administered morphine (5mg/kg) or saline twice daily for 5 days.
- Results show that the brief course of morphine prolonged the duration of CCI-induced allodynia following treatment cessation (P <.001). First study to report such an effect.
- The researchers also confirmed that this effect was mediated by dorsal spinal microglial reactivity, as well as NOD-like receptor protein 3 (NLRP3) inflammasome and related activation of IL-1β.

PAINWEEK

Proc Natl Acad Sci U S A. 2016 Jun 14;113(24):E3441-50.

Summary

- Based on population-health statistics, a large number of people continue on opioids postoperatively
- Current postoperative prescribing practices are flooding the community with unused opioids
- Unused opioids are the main source of abused or diverted drugs
- Abused opioids appear to be a gateway to heroin and cocaine use
- Extending our reach beyond opioids can potentially impact both patients and society

PAINWEEK