Narcotics in Pain Management

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Updated 5/2016

Addiction

- Addiction is a primary chronic and relapsing brain disease characterized by an individual pathologically pursuing reward and/or relief by substance use or other behaviors [1]

1. National Institute on Drug Abuse. (2015). Drugs of Abuse: Opioids. Bethesda, MD: National Institute on Drug Abuse. Available at http://www.drugabuse.gov/drugs-abuse/opioids

Addiction

- Face of addiction has changed from the images of a strung out junkie to the soccer mom, corporate executive or bright young college athlete

Addiction

- Drug overdose is the leading cause of accidental death in the US with 47,055 lethal drug overdoses in 2014
- Opioid addiction is driving the epidemic
  - 18,893 related to prescription pain relievers
  - 10,574 related to heroin [1]

1.http://www.cdc.gov/nchs/data/health_policy/AADR_drug_poisoning_involving_OA_Heroin_US_2000- 2014.pdf.

Opiates

- Class of drugs that include the illicit drug heroin as well as pain relievers, hydrocodone, codeine, morphine, fentanyl
- Prevalence
  - 21.5 million Americans 12 or older had a substance abuse disorder in 2014
    - **1.9 million were a result of prescription drugs**
    - 586,000 had a substance abuse disorder involving heroin

Image Credit: www.rehabcenter.net

Addiction on the Rise

- Overdose deaths **directly parallel** the dramatic increase in sales of opioids pharmaceuticals between 1999 and 2012 (1)
- Overdose death rates in 2008 were **4 times** higher than the 1999 rate
- In 2010 sales of prescription pain relievers was **4 times** higher than those in 1999 (2)
- Opiates contribute to more deaths than cocaine and heroin combined
- **More than 40 people die everyday from opioid overdose**

1. Paulozzi, Leonard J., Richard H. Weisler, and Ashwin A. Patkar. "Commentary: a national epidemic of unintentional prescription opioid overdose deaths: how physicians can help control it." The Journal of clinical psychiatry 72.5 (2011): 1-478.
2. http://www.nashvillemedicalnews.com/clinical/article/20493131/addiction-to-opioids-and-heroin-is-on-the-rise-in-tennessee-and-the-united-states-with-many-addicted-to-prescription-pain-medicine
3. http://www.asam.org/docs/default-source/advocacy/opioid-addiction-disease-facts-figures.pdf

Addiction on the Rise

- Substance abuse disorder treatment admission rates in 2013 was double that in 2002 (1)
  - In 2002, 360,000 treatment admissions
  - In 2013, 746,000 treatment admissions
- In 2012, 259,000,000 prescriptions were written for opioids
  - More than enough to give **every American adult their own bottle of pills** (2)

1. Paulozzi MD, Jones PharmD, Mack PhD, Rudd MSPH. Vital Signs: Overdoses of Prescription Opioid Pain Relievers – United State, 1999-2008. Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, Center for Disease Control and Prevention. 2011:60:5.
2. http://www.cdc.gov/vitalsigns/opioid-prescribing/

Addiction on the Rise

AHRQ Data Reveal Wider Impact of Opioid Overuse

By Richard Kronick Ph.D.

- ER Visits
  - Between 2002 and 2012 **hospitalizations for overuse increased 60%**
    - In 2012 the U.S. recorded 709,000 admissions
  - In 2002 young adults between the age of 25 and 44 had the hospitalization rates for opiate misuse
  - In 2012 adults between 45 and 64 became the highest age group in hospitalizations
  - Oxycodone overdoses increased from 41,000 to 105,200 over the same 5 years
  - Use of oxycodone increased **6 fold from 1997 to 2005**

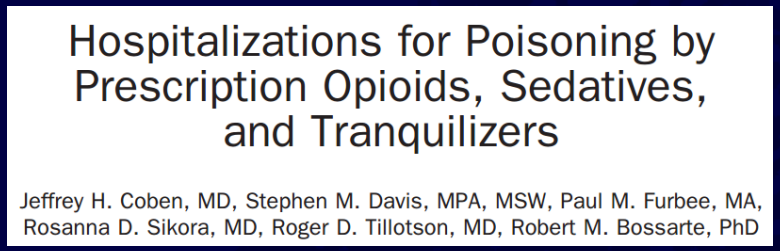
Addiction on the Rise

Frequency of non-fatal heroin overdose: survey of heroin users recruited in non-clinical settings

Michael Gossop, Paul Griffiths, Beverly Powis, Sara Williamson, John Strang

- Nonfatal Overdose
  - Survey of 438 heroin abusers
    - 23% reported at least one overdose
    - Mean number of nonfatal overdoses was **3.6 per person**

Addiction on the Rise



- Nonfatal Overdose
  - Found that **7 nonfatal overdoses occur for every fatal overdose** among patients receiving long-term opioid therapy for noncancer pain.
  - From 1999 to 2006, U.S. hospitalizations for poisoning by prescription opioids, sedatives, and tranquilizers increased a total of 65%

Heroin

Medical News & Perspectives

SAMHSA: Pain Medication Abuse a Common Path to Heroin

Experts Say This Pattern Likely Driving Heroin Resurgence

- "I swore that I would NEVER use a needle"
  - Common thought in heroin users
    - Often times the switch to heroin is due to a prescription opiate misuser going through withdrawal that needs higher doses to ease symptoms and can`t afford to purchase prescription drugs

Heroin

Medical News & Perspectives

SAMHSA: Pain Medication Abuse a Common Path to Heroin

Experts Say This Pattern Likely Driving Heroin Resurgence

- Heroin use is 19X higher in individuals who have abused prescription pain meds compared to those who haven't
- 79.5% of people who have used heroin in the last year previously abuse prescriptions
- Only 3.6% of heroin users never tried prescription opiates but 90% of heroin users reported that they started with prescription opiates
- Large surge in heroin users from 2007 to 2011
  - 106,000 to 178,000

Heroin

- > 4/5 new heroin users started out misusing prescription painkillers
- Rate of overdose deaths due to heroin overdose deaths nearly quadrupled from 2000 to 2013
- 94% of 2014 survey in people in treatment for opioid addiction said they chose to use heroin because prescription opioids were “Far more expensive and harder to obtain”

Cicero TJ, Ellis MS, Surratt HL, Kurtz SP. The changing face of heroin use in the United States: a retrospective analysis of the past 50 years. JAMA Psychiatry. 2014;71(7):821-826

Why the switch to heroin

- Both drugs affect the same receptors and both produce the same physical dependence

- How likely is someone to switch to heroin
  - Alcohol 2x more likely
  - Marijuana 3x more likely
  - Cocaine 15x more likely
  - Opioid Painkillers **40X** more likely

http://america.aljazeera.com/articles/2015/9/26/heroin-addiction-record-high.html

Why the switch to heroin

- Someone spending $300 dollars a day on Oxycontin can save money by using heroin
  - Hydrocodcone-$5-$7-per pill
  - Oxycodone IR $30-$40 per pill
  - Percocet $7-$10 per pill
  - Oxycontin $80 per pill
  - **Heroin $15 per bag**
    - Source: Tennessee Bureau of Investigation

Fentanyl (The New Heroin)

- Fentanyl
  - The synthetic painkiller was created in the 1960s and first used as an anesthetic
  - 40-50X the potency of heroin
  - Often times mixed with heroin to increase potency
  - Cheaper to produce than heroin
    - $90,000 supply of fentanyl diluted to make 10 kilograms would yield more than $1 million in sales

http://www.wsj.com/articles/hooked-one-familys-ordeal-with-fentanyl-1463158112

Fentanyl (The New Heroin)

- Fentanyl
  - Testifying before Congress in January, Manchester Police Chief Nick Willard called the increase in fentanyl overdose deaths in the city “staggering.” “Fentanyl is what’s killing our citizens,” he said. “Not only is it taking lives, it’s deteriorating communities, devastating families and leaving children without parents.”

http://www.wsj.com/articles/hooked-one-familys-ordeal-with-fentanyl-1463158112

US Prescribing Practices

- US represents less than 5% of the world population but consumes 80% of the opioid supply
  - **99% of the hydrocodone supply used in the US** (1)
  - US prescribes more than 80% of the oxycodone
  - Overall, 92% of the opioid supply is consumed by 17% of the worlds population (2)
  - US prescribes more opioids by the gram than anywhere else in the world (1)
    - **27,500,000 grams** of hydrocodone prescribed annually in the United States (1)
    - 3,237 grams prescribed in Great Britain, Germany and Italy combined (1)

1. Manchikanti, Laxmaiah, and Angelie Singh. "Therapeutic opioids: a ten-year perspective on the complexities and complications of the escalating use, abuse, and nonmedical use of opioids." *Pain physician* 11.2 Suppl (2008): S63-S88.
2. Morris, Brent J., and Hassan R. Mir. "The opioid epidemic: impact on orthopaedic surgery." Journal of the American Academy of Orthopaedic Surgeons 23.5 (2015): 267-271.

US Prescribing Practices

Opioid Pain Medication Use After Dermatologic Surgery

A Prospective Observational Study of 212 Dermatologic Surgery Patients

KaLynne Harris, MD†; Julia Curtis, MD; Brooke Larsen, RN; Scott Calder, BS; Keith Duffy, MD; Glen Bowen, MD; Michael Hadley, MD; Payam Tristani-Firouzi, MD

- Another study looking at patients undergoing dermatologic procedures
  - 35% of patients prescribed opiates did not use them
  - 86% had leftover pills (POTENTIAL FOR DIVERSION)
  - 53% planned on keeping the unused

US Prescribing Practices

Opioid Consumption Following Outpatient Upper Extremity Surgery

Jeffrey Rodgers, MD, Kimberly Cunningham, MS IV, Keely Fitzgerald, MS IV, Edward Finnerty, PhD

- Rodgers et al found that most of the patients in the study did not take all of there prescribed opiates
  - 77% took 15 or fewer pills
  - 45% took 5 or fewer pills
  - Over half of the patients used opiates for less than 2 days
  - **Total amount of unused opiates in 250 patients was 4,639** tablets
    - EXCESS LEADS TO DIVERSION
  - Found that prescribing 15 tablets with 1 refill for a scheduled outpatient upper extremity procedure lead to
    - Only 23% requiring any refill
    - Reduced number of leftover medication by 79%

US Prescribing Practices

Overprescription of Postoperative Narcotics: A Look at Postoperative Pain Medication Delivery, Consumption and Disposal in Urological Practice

Cory Bates,*,† Robert Laciak,† Andrew Southwick† and Jay Bishoff‡

From the University of Utah Health Sciences Center (CB, RL, AS) and Intermountain Health Care (JB), Salt Lake City, Utah

- Bates et al found 67% of patients in the study had a surplus of medication from the initial prescription
  - 58% of the dispensed narcotic were consumed
  - Of those with excess medication,
    - 91% stated they were keeping them

Conclusions: Overprescription of narcotics is common and retained surplus medication presents a readily available source of opioid diversion. It appears that no entity on the prescribing or dispensing ends of prescription opioid delivery is fulfilling the responsibility to accurately educate patients on proper surplus medication disposal. Surgeons should analyze prescribing practices and consider decreasing the quantity of postoperative narcotics prescribed.

Other Countries

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

Lindenhovious, Anneluuk L. C. MSc; Helmerhorts, Gijs T. T. MSc; Schnellen, Alexandra C. MSc; Vrahas, Mark MD; Ring, David MD; Kloen, Peter MD, PhD

Author Information

From the Massachusetts General Hospital, Boston, Massachusetts; and Academic Medical Center, Amsterdam, The Netherlands.

Submitted for publication March 2, 2008.

Accepted for publication August 28, 2008.

Address for reprints: David Ring, MD, Yawkey Center, Suite 2100, 55 Fruit Street, Boston, MA 02114; email: dring@partners.org.

- **85%** of hip fracture in the U.S. given opiates on discharge
- In Dutch population **0%** are given at discharge
- **82%** of ankle fractures in the U.S. prescribed opiates on discharge
- **6%** of ankle fractures in the Netherlands prescribed opiates on discharge

Problems That Surgeons Face

- Patient perception of pain has changed from the expected consequence of surgery to a “measureable” vital sign requiring treatment [1]
- Orthopedic trauma population has a high prevalence of substance abuse [2,3]
  - Many demographic characteristics identified for ortho trauma overlap substantially with risk factors for substance abuse and addiction [4,5]
  - **Not only is there a higher incidence of use of opiates, there is a higher degree of opiate use in orthopedic trauma patients** [1]
  - Surgeons not educated on prescribing practices

1.Rodgers, Jeffrey, et al. "Opioid consumption following outpatient upper extremity surgery." *The Journal of hand surgery* 37.4 (2012): 645-650.
2. Levy, Richard S., et al. "Drug and alcohol use in orthopedic trauma patients: a prospective study." *Journal of orthopaedic trauma* 10.1 (1996): 21-27.
3. MacKenzie, Ellen J., et al. "Characterization of patients with high-energy lower extremity trauma." *Journal of orthopaedic trauma* 14.7 (2000): 455-466.
4. Adamson, Simon J., John Douglas Sellman, and Chris MA Frampton. "Patient predictors of alcohol treatment outcome: a systematic review."*Journal of substance abuse treatment* 36.1 (2009): 75-86.
5. Brady, Kathleen T., Marcia L. Verduin, and Bryan K. Tolliver. "Treatment of patients comorbid for addiction and other psychiatric disorders." *Current psychiatry reports* 9.5 (2007): 374-380.

Orthopedic Patients

Risk Factors for Continued Opioid Use One to Two Months After Surgery for Musculoskeletal Trauma

Gijs T.T. Helmerhorst, MD; Ana-Maria Vranceanu, PhD; Mark Vrahas, MD; Malcolm Smith, MD; David Ring, MD, PhD

J Bone Joint Surg Am, 2014 Mar 19; 96 (6): 495 -499 . http://dx.doi.org/10.2106/JBJS.L.01406

- Patients who scored higher on
  - Catastrophic thinking
  - Anxiety
  - Depression
  - PTSD
    - More likely to be taking opioid pain medications one to two months after surgery REGARDLESS OF INJURY SEVERITY

Original Articles

Toxicology Screening in Orthopedic Trauma Patients Predicting Duration of Prescription Opioid Use

- Orthopedic trauma patients inherently at risk
  - Patients hospitalized for high-energy fractures with positive admission toxicology are at risk for prolonged opiate use during the initial six months following discharge.

Risk Factors

- Risk factors for future misuse is DYNAMIC
  - Changes or will vary over the course of patients disease state as the physical and mental state changes

J Opioid Manag. 2007 Mar-Apr;3(2):89-100.

Psychological factors as predictors of opioid abuse and illicit drug use in chronic pain patients.

Manchikanti L[1], Giordano J, Boswell MV, Fellows B, Manchukonda R, Pampati V.

⊕ **Author information**

  - Depression linked to opioid misuse
    - **Drug misuse found to be higher in depressed patients (12% vs 5%)**

Risk Factors

Psychiatric Illness Is Common Among Patients with Orthopaedic Polytrauma and Is Linked with Poor Outcomes

Douglas S. Weinberg, MD, Arvind S. Narayanan, BBA, Kaeleen A. Boden, BA, Mary A. Breslin, BA, and Heather A. Vallier, MD

Investigation performed at the MetroHealth Medical Center, Cleveland, Ohio

- Three hundred and thirty-two skeletally mature patients with surgically treated axial and/or femoral fractures and injuries to other body systems (Injury Severity Score of ‡16 points)
  - Preexisting psychiatric disorders were identified in 130 patients (39.2%)
  - depression in seventy-four patients (22.3%)
  - substance abuse in fifty-six patients (16.9%)
    - depression was an independent predictor of increased complications, with an odds ratio of 2.956 (95% confidence interval, 1.502 to 5.816).

Risk Factors

Co-morbid pain and psychopathology in males and females admitted to treatment for opioid analgesic abuse ☆

Theodore J. Cicero [a,*], Michael Lynskey [a], Alexandre Todorov [a], James A. Inciardi [b], Hilary L. Surratt [b]

[a] *Department of Psychiatry, Washington University School of Medicine, 660 South Euclid Avenue, Campus Box 8134, St. Louis, MO 63110-1093, USA*
[b] *University of Delaware Research Center, Coral Gables, FL, USA*

Received 4 October 2007; received in revised form 12 March 2008; accepted 17 March 2008

- Found that patients who took opioids with an appropriate prescription but went on to misuse opiates were female and in **worse physical condition**

Risk Factors

- Identifying the At-Risk Patient
  - Personal or family history of substance abuse
  - Nicotine dependency
  - Age <45 yr
  - History of bipolar depression or other psychiatric diagnoses
  - Lower level of education
  - History of preinjury/preoperative opioid use

Morris, Brent J., and Hassan R. Mir. "The opioid epidemic: impact on orthopaedic surgery." Journal of the American Academy of Orthopaedic Surgeons 23.5 (2015): 267-271.

Risk Factors

- Objective Measures to identify at risk pts
  - Patient history
  - Drug monitoring
  - Urine testing
  - Opioid risk assessment tool
  - Aberrant behavior

Risk Factors

- Recognizing Aberrant behavior [1,2]
  - Early refill requests
  - Treatment noncompliance
  - Lost or stolen meds
  - Doctor shopping
  - Cancelled or missed appointments
  - Requesting refills instead of appointments
  - Urine testing
    - Up to 50% of nonadherence rate to opioid prescription therapy in chronic pain patients

1. Owen, Graves T., et al. "Urine drug testing: current recommendations and best practices." *Pain Physician* 15.3 Suppl (2012): ES119-33.
2. Pergolizzi, Joseph V., et al. "Dynamic risk factors in the misuse of opioid analgesics." *Journal of psychosomatic research* 72.6 (2012): 443-451.

Risk Factors

Rates of Prescription Opiate Use Before and After Injury in Patients with Orthopaedic Trauma and the Risk Factors for Prolonged Opiate Use

Joel E. Holman, MD, Gregory J. Stoddard, MPH, and Thomas F. Higgins, MD

Investigation performed at the Department of Orthopaedics, University of Utah, Salt Lake City, Utah

- Pre-injury opioid use
  - Query of Utah Controlled Substances Database
    - 613 patients
      - Results
        - » 15.5% that presented with orthopedic trauma filled a prescription for opiates within 3 months before injury compared to 9.2% in general population
        - » 12.2% of orthopedic trauma patients filled more than one prescription within 3 months preinjury compared to 6.4% in the general population

Risk Factors

Rates of Prescription Opiate Use Before and After Injury in Patients with Orthopaedic Trauma and the Risk Factors for Prolonged Opiate Use

Joel E. Holman, MD, Gregory J. Stoddard, MPH, and Thomas F. Higgins, MD

Investigation performed at the Department of Orthopaedics, University of Utah, Salt Lake City, Utah

- Pre-injury opioid use
  - Found that patients that filled more than one opiate prescription within 3 months preinjury was 6 times more likely to use opiates more than 12 weeks and 3.5 times more likely to obtain opiates from another prescriber
    - Concluded that orthopedic trauma patients were significantly more likely to use opiates preinjury
    - Preinjury use is predictive of prolonged use post surgery and predictive of patients who will seek opiates from another provider

Risk Factors

Long-acting Opioid Use Independently Predicts Perioperative Complication in Total Joint Arthroplasty

David C. Sing, BS, Jeffrey J. Barry, MD, Jonathan Cheah, MD, Thomas P. Vail, MD, Erik N. Hansen, MD

Department of Orthopaedic Surgery, University of California, San Francisco, 500 Parnassus Ave, MU320W, San Francisco, CA 94143

- Pre-operative opioid use
  - UCSF
    - 3 groups
      - Non-users (NU)
      - Short acting opioids (SA)
      - Long acting opioids (LA)

Risk Factors

Long-acting Opioid Use Independently Predicts Perioperative Complication in Total Joint Arthroplasty

David C. Sing, BS, Jeffrey J. Barry, MD, Jonathan Cheah, MD, Thomas P. Vail, MD, Erik N. Hansen, MD

Department of Orthopaedic Surgery, University of California, San Francisco, 500 Parnassus Ave, MU320W, San Francisco, CA 94143

- Pre-operative opioid use
  - Higher in-hospital opioid use (46mg NU vs 102 mg SA vs 366 MME LA) $p<.001$
  - Increased 90 day complication rates (5.2% NU, 19.0% SA, 25.9% LA)$p<.001$
  - Higher rate of discharge to a facility (12.% NU,27.5% SA,53.4%) $p<.001$
  - Longer avg LOS (1.2 days NU, additional 1.6 days for SA and LA)
  - Multivariate analysis found that preop opioid use with long-acting opiods was an independent risk factor for DC to a facility (OR 6.74, CI [2.39,19.03],$p<.001$ and complications (OR 6.15, CI:[1.46,25.95)$p=.013$

Lack of Education

The Effect of an Educational Program on Opioid Prescription Patterns in Hand Surgery: A Quality Improvement Program

Joel J. Stanek, BA, Mark A. Renslow, BS, Loree K. Kalliainen, MD, MA

- Chart review to assess the range of prescription sizes for 4 common hand surgery procedures
- Postoperative opioid prescriptions written based on an evaluation of historical prescription patterns (Pink Card)
- With the opioid prescribing reference(Pink Card)
  - Average postoperative prescription size decreased for all types of cases by 15% to 48%

Misconceptions leading to abuse

Curtailing Diversion and Abuse of Opioid Analgesics Without Jeopardizing Pain Treatment

Nora D. Volkow, MD; Thomas A. McLellan, PhD

- Prescribed drugs are safer than illegal drugs
- Greater access to these drugs
- Mandate of pain as the "5th " vital sign
- Concerns over nonopioid analgesics like NSAIDs
  - Acute renal failure
  - GI bleed
  - MI

Iatrogenic Addiction

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

- Study on opiate ”naïve” patients receiving an opioid prescription within 7 days after short stay surgery
  - **44%** more likely to become long term opioid users within 1 year compared to those not receiving opiates

Conclusion Prescription of analgesics immediately after ambulatory surgery occurs frequently in older adults and is associated with long-term use.

Pharmacology

- Nsaids
  - **Blocks the cyclooxygenase enzyme**
    - Major side effects
      - GI bleed
      - Acute renal failure
      - Possibly increases the risk of nonunion

- Acetominophen
  - **Blocks prostaglandins centrally**
    - Major side effect is dose dependent hepatic necrosis

Reuben, Scott S., and Joseph Sklar. "Pain management in patients who undergo outpatient arthroscopic surgery of the knee*." J Bone Joint Surg Am 82.12 (2000): 1754-1754.

Opiates May Impair Healing in Rat Femur Fracture Model

Clin Orthop Relat Res. 2013 Dec; 471(12): 4076–4081. PMCID: PMC3825887
Published online 2013 Aug 17. doi: 10.1007/s11999-013-3232-z

Postoperative Opioid Administration Inhibits Bone Healing in an Animal Model

Jesse Chrastil, MD, Christopher Sampson, BS, Kevin B. Jones, MD, and Thomas F. Higgins, MD

- Femur fracture model used in 75 Spague-Dawley rats
  - Midshaft facture produced
  - Randomized into 3 groups
    - Control (C)
    - Morphine (M)
    - Morphine + Testosterone
  - Results
    - 4 weeks- no difference in callus strength
    - 8 weeks- morphine group statistically significant drop in callus strength (48.0% vs 32.8% $p<0.05$) compared to controls

Concluded

Opioids appear to inhibit fracture callus strength by inhibiting callus maturation and remodeling

How we got here

- Permissive attitude towards opiates began in the 1980`s

Chronic use of opioid analgesics in non-malignant pain: Report of 38 cases

Russell K. Portenoy, Kathleen M. Foley

- 1986 Portenoy and Foley described 38 patients treated with opioids for intractable noncancer pain for more than 6 months with a daily median dose of 20 MME per day
  - **Found no clinically significant adverse events leading to conclude that physicians could safely and effectively prescribe opiates in patients with no history of opioid abuse with “relatively” little risk of producing the maladaptive behavior called opiate abuse**

How we got here

The Use of Opioids for the Treatment of Chronic Pain*

A Consensus Statement From the American Academy of Pain Medicine and the American Pain Society

Author Information

The statement was prepared by the following committee members: J. David Haddox, DDS MD (Chair); David Joranson, MSSW (Vice Chairman); Robert T. Angarola, Esq.; Albert Brady, MD; Daniel B. Carr, MD; E. Richard Blonsky, MD; Kim Burchiel, MD; Melvin Gitlin, MD; Matthew Midcap, MD; Richard Payne, MD; Dana Simon, MD; Sridhar Vasudevan, MD; Peter Wilson, MBBS, PhD.

Consultant: Russell K. Portnenoy, MD

Approved by the AAPM Board of Directors on June 29, 1996

Approved by the APS Executive Committee on August 20, 1996

- 1997 consensus statement concluded that there was insufficient evidence that opioids lead to iatrogenic addiction
- Attempts to improve pain management
- Patient satisfaction
- Inclusion of pain in satisfaction assessments

How we got here

Trends in De-facto Long-term Opioid Therapy for Chronic Non-Cancer Pain

Denise Boudreau, PhD,[1] Michael Von Korff, ScD,[1] Carolyn M. Rutter, PhD,[1] Kathleen Saunders,[1] G. Thomas Ray,[2] Mark D. Sullivan, MD, PhD,[3] Cynthia Campbell, PhD,[2] Joseph O. Merrill, MD, MPH,[4] Michael J. Silverberg, PhD, MPH,[2] Caleb Banta-Green,[5] and Constance Weisner, DrPH, MSW[2,6]

- By 2005 long term opioid therapy was being prescribed to an estimated 10 million US adults
- In 1997 the volume was 100 Morphine Milliequivalents (MME) per person
- In 2007 this volume rose to 700 MME per person

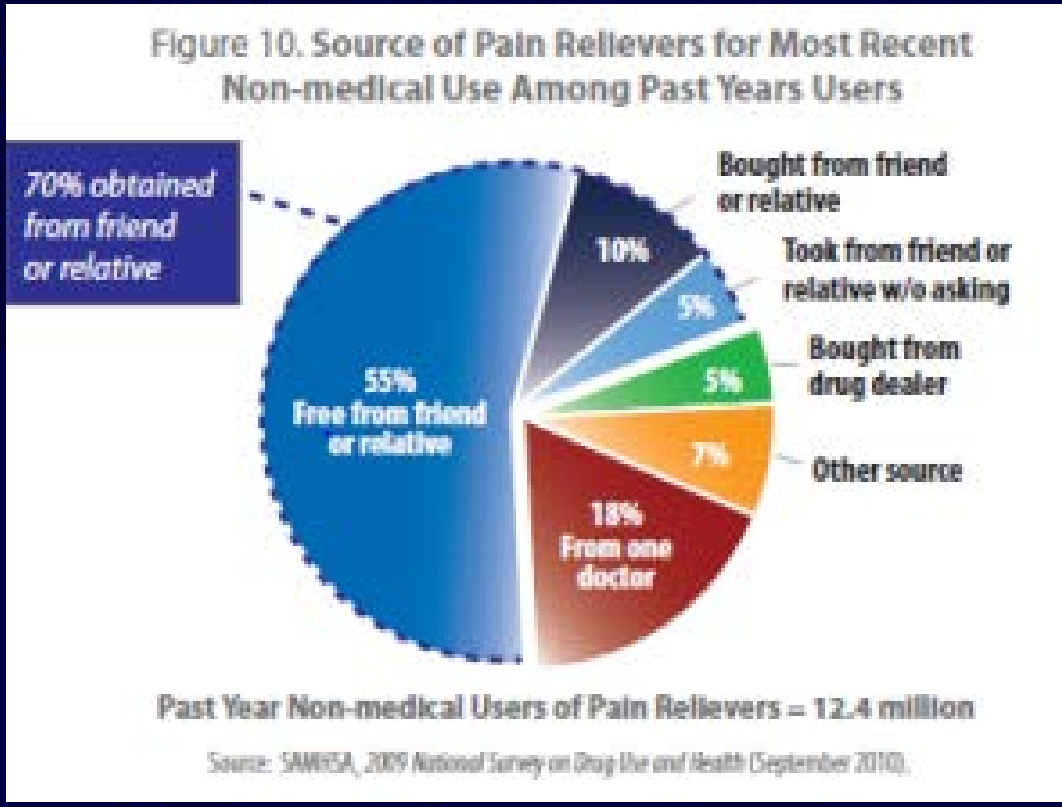
How we got here

- Reduction in the share of the drug bill paid by consumers since 1990 made pharmaceuticals more available and less expensive
  - This increase the profit margin for the resale of prescriptions (1)
    - Bottle of 100 10-80 mg pills purchased for between $3-$50 co-pay
    - Can be immediately sold for $1000-$8000 (2)
    - Lead to an increase in doctor shopping and pharmacy thefts (1)

1. Paulozzi, Leonard J., Richard H. Weisler, and Ashwin A. Patkar. "Commentary: a national epidemic of unintentional prescription opioid overdose deaths: how physicians can help control it." *The Journal of clinical psychiatry* 72.5 (2011): 1-478.
2. http://www.deadiversion.usdoj.gov/drugs_concern/oxycodone/summary.htm

Diversion

- Excessive postsurgical prescription of opiates is commonly reported contributing to diversion and abuse (1)
- Access to leftover pills is the main source of diversion in young people (2)
  - 71% of young adults stated that drugs were obtained by stealing or was given pills by a friend or relative
  - 90% of these stated that these opiates came from a legitimate physician prescription (3)

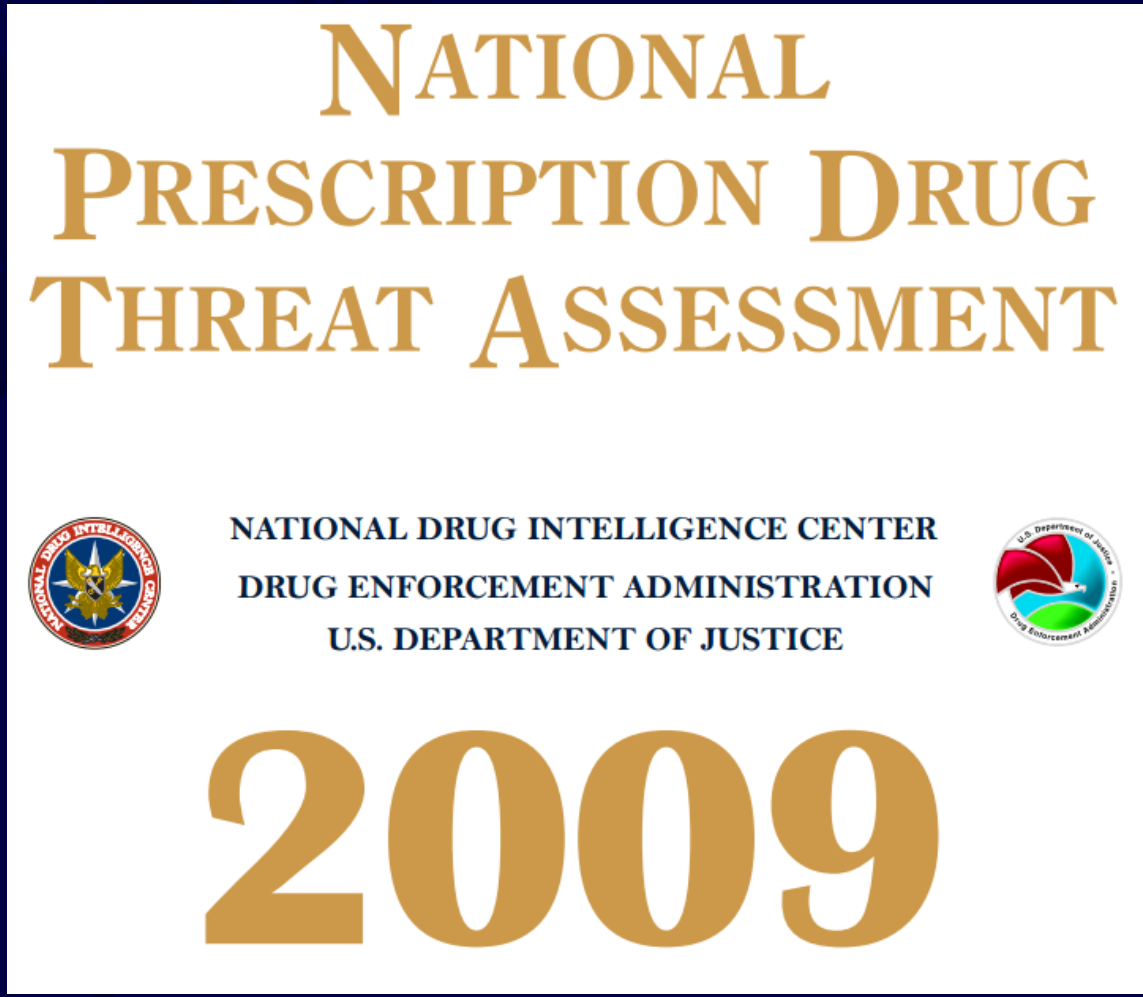


https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/figure10source.png

1. Stanek, Joel J., Mark A. Renslow, and Loree K. Kalliainen. "The effect of an educational program on opioid prescription patterns in hand surgery: a quality improvement program." *The Journal of hand surgery* 40.2 (2015): 341-346.
2. Volkow, Nora D., and Thomas A. McLellan. "Curtailing diversion and abuse of opioid analgesics without jeopardizing pain treatment." *Jama* 305.13 (2011): 1346-1347.
3. Manchikanti, Laxmaiah, and Angelie Singh. "Therapeutic opioids: a ten-year perspective on the complexities and complications of the escalating use, abuse, and nonmedical use of opioids." *Pain physician* 11.2 Suppl (2008): S63-S88.

Economic Burden of Diversion

- Diversion of Controlled Prescription Drugs
  - **Costs insurers up to $72.5 Billion per year**
  - Pain relievers are the most commonly used controlled substance used illegally
  - Pain relievers most often involved in overdose
- **Annual cost of addiction in the United States is greater than 50 billion dollars**
  - 94% of this due to lost productivity and criminal justice costs [1]



1. Hansen, Ryan N., et al. "Economic costs of nonmedical use of prescription opioids." *The Clinical journal of pain* 27.3 (2011): 194-202.

Who is at risk ?

Do Users of Regularly Prescribed Opioids Have Higher Rates of Substance Use Problems Than Nonusers?

Mark J. Edlund, MD, PhD,*† Mark Sullivan, MD, PhD,‡ Diane Steffick, PhD,*† Katherine M. Harris, PhD,§ and Kenneth B. Wells, MD, MPH¶††

- Large population based study(n=9279),
  - Found that patients who took prescription opioids to manage pain had a **significantly higher rates of opioid misuse compared to individuals who did not take prescription opioids**
    - **Odds Ratio 5.48, P<.001**

Who is at risk ?

Painfully Obvious: A longitudinal examination of medical use and misuse of opioid medication among adolescent sports participants

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- Youth at Risk
  - Longitudinal study on medical use and misuse of opioid medication in adolescent sports participants
    - 1,540 adolescents participated in study
      - Adolescent males who participated in organized sports compared to those not involved in organized sports
        - » **2x risk** of being prescribed opiate
        - » **10x higher odds** of medical misuse of opioid medication as a result of taking too much
        - » **4x higher odds** of medical misuse of opioid medications to get high

Who is at risk ?

Opioid epidemic affects all Tennesseans

David Edwards *8:02 a.m. CDT April 24, 2016*

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- For non opiate users,
  - At least a **1/10 chance** of being genetically inclined to addiction with first exposure to opiates

Who is at risk ?

Surgeon Substance Abuse: A Real and Present Danger

By: Michael M. Albrecht, MPAff, MD

- Electronic Survey of 8,000 surgeons
  - **15.4 percent** of surgeons had a score on the Alcohol Use Disorders Identification Test (AUDIT) consistent with alcohol abuse or dependence
  - Female surgeons had a higher point prevalence for alcohol abuse or dependence than male surgeons (25.6 percent vs. 13.9 percent)
  - Without intervention and treatment, physicians who are substance abusers may have a mortality rate of as much as **17 percent**
  - More than one-third of surgeons indicated that they would be reluctant to seek help for treatment of depression, alcohol or substance use, or other mental health problems due to concerns that it could affect their license to practice medicine

Impact of nonopioid analgesics

Efficacy and Safety of Single and Repeated Administration of 1 Gram Intravenous Acetaminophen Injection (Paracetamol) for Pain Management after Major Orthopedic Surgery

Raymond S. Sinatra, M.D., Ph.D., Jonathan S. Jahr, M.D.,† Lowell W. Reynolds, M.D.,‡ Eugene R. Viscusi, M.D.,§ Scott B. Groudine, M.D.,‖ Catherine Payen-Champenois, M.D.#*

- Effectiveness of 1 gm IV acetaminophen Q6 hrs assessed in patients undergoing THA or TKA
  - Those who used both opiates and IV acetaminophen required **46% less morphine at 6 hrs and 33% less morphine at 24 hrs** 13(13)
  - Pain score reduced 33% from 4.2 to 2.8 13(13)
  - Mean narcotic use reduced by 31% from 41.8 to 28.3 mg 13(13)
  - Rate of missed PT appointments decreased 52% 13(13)
  - More than 2x more likely to be discharged home (19% vs 7%) 13(13)

Acute Pain Physiology

- Pain controlled by neural, humeral and cellular mechanisms
- Strong emotional and psychological component
- Trauma
  - Produces a barrage of afferent signals and generates a secondary inflammatory response
    - This can initiate prolonged change in both the central and peripheral signals leading to the amplification of pain
    - Peripheral sensitization , reduction in nociceptor afferent peripheral terminals is a result at the site of inflammation which is the site of surgical trauma

Reuben, Scott S., and Joseph Sklar. "Pain management in patients who undergo outpatient arthroscopic surgery of the knee*." *J Bone Joint Surg Am*82.12 (2000): 1754-1754.

Cause of Postsurgical Pain

- Trauma
  - Central sensitization, an activity dependent increase in excitability of spinal neurons is a result of persistent exposure to nociceptive afferent input from peripheral neurons
  - Combined central and peripheral together is responsible for postoperative hypersensitivity to pain called “spinal windup”
    - This is responsible for the decrease in the pain threshold both at the site of injury and centrally

Reuben, Scott S., and Joseph Sklar. "Pain management in patients who undergo outpatient arthroscopic surgery of the knee*." J Bone Joint Surg Am 82.12 (2000): 1754-1754.

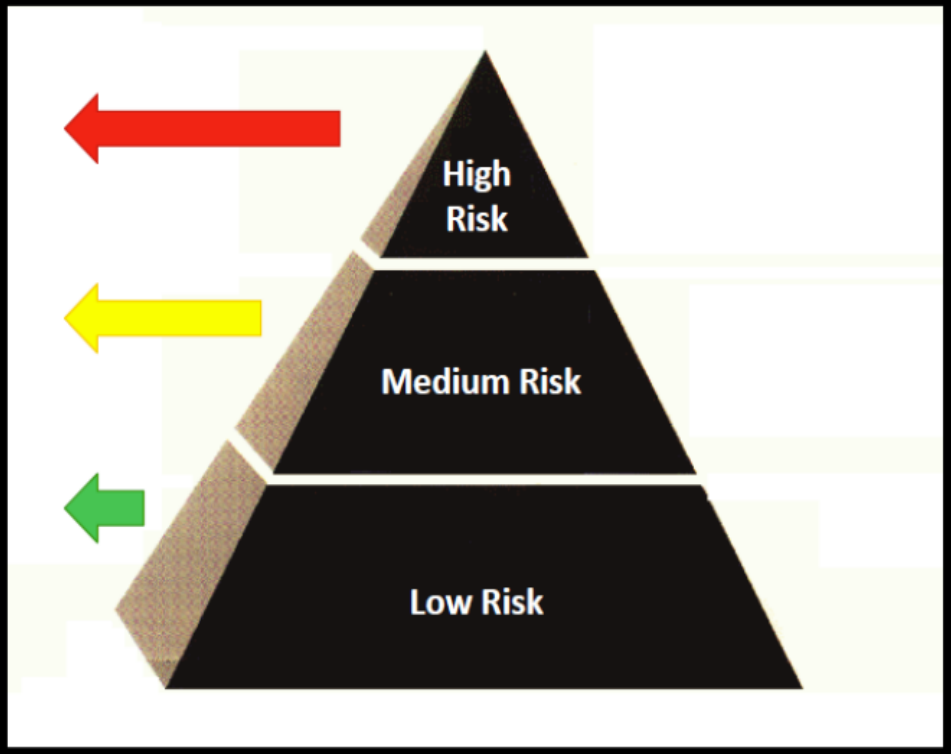
Recommendations

Identify patients at-risk and use targeted strategies

Psychosocial Barriers to Recovery
Psychologically-Informed Rehabilitation

Physical Barriers to Recovery
Physical Therapy, Medication

Minimal Barriers to Recovery
Advice and Reassurance



Recommendations

Curtailing Diversion and Abuse of Opioid Analgesics Without Jeopardizing Pain Treatment

Nora D. Volkow, MD; Thomas A. McLellan, PhD

- Standardize screening procedures
- Provide special provisions to those with a hx of substance abuse
- Monitoring of those with current substance abuse
- Indications for when and how long to prescribe analgesics
- Indications for when long and short acting opiates should be prescribed
- Limits on the number of pills that are prescribed

Recommendations

- Opioid Taper
  - Establish recommendations to specific surgical and nonsurgical treatments with an opiate taper
  - Transition from opioids to NSAIDS and Acetaminophen
  - Standardized regimen will help physicians and staff determine outliers

Morris, Brent J., and Hassan R. Mir. "The opioid epidemic: impact on orthopaedic surgery." *Journal of the American Academy of Orthopaedic Surgeons* 23.5 (2015): 267-271.

Opioid Taper

Time after discharge	Dosage
First 2 wk after discharge: Oxycodone 10 mg	1 Q4-6 hrs for 14 d
Week 3(If necessary): Hydrocodone/acetaminophen 10/325 mg	1 or 2 tablets Q 4-6 hrs for 7 d
Week 4(If necessary): Hydrocodone/acetaminophen 7.5/325 mg	1 tablet Q6 hrs for 7 d
Week 5(If necessary): Hydrocodone/acetaminophen 5/325 mg	1 tablet Q8 hrs for 7 d
Week 6 and beyond	Over the counter medications including acetaminophen and acetaminophen extra strength. Patients with fracture fixation may start NSAIDS at week 12 Patients without fracture fixation may be started on NSAIDs immediately
If stronger medication needed at week 6 postoperatively or beyond: Tramadol 50 mg	1 tablet Q8 for 14 d

Morris, Brent J., and Hassan R. Mir. "The opioid epidemic: impact on orthopaedic surgery." *Journal of the American Academy of Orthopaedic Surgeons* 23.5 (2015): 267-271.

Recommendations

- Multipronged Approach
  - Take care of your patients
    - Prevent and deal w/ pain
    - Prevent and deal w/ narcotic abuse
    - Empower and Employ patient and family
    - Talk about psych and cognitive deficits
    - Refer for help
    - Address work and Life issues

Recommendations

- Multimodal Medications
  - Multimodal works
    - Ketorolac - scheduled
    - Tylenol - scheduled
    - Neurontin - scheduled
  - Minimize narcotics

Recommendations

- Set Expectations
  - Pre op and on Discharge
    - No refills on nights/weekends
    - No long acting on D/C
    - Scheduled “wean protocol”
    - Narcotic contract
    - Off all narcotics by 1,2,4,6 weeks based on injury – pick your time period.

Recommendations

Does Regional Anesthesia Improve the Quality of Postoperative Pain Management and the Quality of Recovery in Patients Undergoing Operative Repair of Tibia and Ankle Fractures?

Nabil Elkassabany, MD, MSCE, Lu Fan Cai, MD, Samir Mehta, MD, Jaimo Ahn, MD, PhD, Lauren Pieczynski, MD, Rosemary C. Polomano, PhD, RN, FAAN, Stephanie Picon, BS, Rosemary Hogg, MD, and Jiabin Liu, MD, PhD

- Regional Block
  - Decreased pain
    - Less time in severe pain and higher overall perception of pain relief with blocks
  - Less narcotics
  - Better pain control and “Experience”

Recommendations

THE 2014 BOVILL AWARD PAPER

Continuous Popliteal Sciatic Nerve Block Versus Single Injection Nerve Block for Ankle Fracture Surgery: A Prospective Randomized Comparative Trial

David Y. Ding, MD, Arthur Manoli III, MD, David K. Galos, MD, Sudheer Jain, MD, and Nirmal C. Tejwani, MD

- Catheters BETTER
  - Continuous vs single shot
    - mean postoperative pain scores and number of pain pills taken were lower with continuous

Conclusions: Use of continuously infused regional anesthetic for pain control in ankle fracture surgery significantly reduces "rebound pain" and the need for oral opioid analgesia compared with single-shot regional anesthetic.

Recommendations

- Cognitive-behavioral therapy (CBT)
- Mindfulness based strategies
- Yoga/Tai chi
- Health coaching
- Peer support
- Centers for Integrative Medicine
  - mind, body, spirit
- Pain management centers

Summary

- Opiate abuse is an EPIDEMIC in the U.S.
- Prescription opiate misuse leads to Heroin and Fentanyl abuse
- **Anyone** prescribed opiates is at risk

Summary

- Orthopedic trauma patients are inherently at risk for opioid misuse
- Blocks are effective and reduce the need for opiates
- Over prescribing leads to diversion
  - Be cognizant of post-operative prescribing practices

Summary

- Risk for misuse is DYNAMIC
  - Assessment for misuse should be performed at every refill
- For the patient, Multimodal therapy is more effective and safer than narcotics alone
- Develop Protocols based on intervention (I.E. A Trigger finger needs less medication than a degenerative scoliosis correction)

- For questions or comments, please send to ota@ota.org