IMPROVING OPIOID PRESCRIPTION SAFETY AFTER SURGERY

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University of Colorado Anschutz Medical Campus
Conflicts of Interest

None
Funding

NIH / NIDA #K23DA040923

Improving Opioid Prescription Safety After Surgery
Primum Non Nocere

Peter Pronovost, MD

The Fairmont Copley Plaza, Boston MA
Definition of Pain

“An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.”

Chronic pain is pain that persists or recurs for longer than three months.
Epidemiology / Women

In developed countries, chronic pain is present in:

- 30.4 % of women aged 18-35
- 42.6 % of women aged 36-50
- 55 % of women aged 51-65
- 63.1 % of women aged >66

Epidemiology / Men

In developed countries, chronic pain is present in:

- 20.9 % of men aged 18-35
- 31.5 % of men aged 36-50
- 42.5 % of men aged 51-65
- 47.2 % of men aged >66

Chronic Pain Syndromes (ICD-11)

- Chronic Pain
- Chronic Primary Pain
- Chronic Cancer Pain
- Chronic Postsurgical and Posttraumatic Pain
- Chronic Neuropathic Pain
- Chronic Headache and Chronic Orofacial Pain
- Chronic Visceral Pain
- Chronic Muskuloskeletal Pain

Pharmacologic Therapy

- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Antidepressants
  - Tricyclic antidepressants
  - Selective Serotonin and Norepinephrine Reuptake Inhibitors
- Anticonvulsants
- Opioids
- Others
Efficacy

The Number Needed to Treat (NNT) for pharmacologic therapy to significantly reduce neuropathic pain (e.g. 20 % reduction on a pain VAS) is between 2-5
Opioids

- Routes of administration include IV, IM, oral, rectal, intranasal and sublingual
- Receptors, namely mu (μ), delta (δ), and kappa (κ)
- Agonists (e.g. morphine, hydromorphone)
- Antagonists (e.g. naloxone, naltrexone)
- Partial agonists (e.g. buprenorphine)
Opioids side effects

- Mood effects (e.g. euphoria)
- Sedation
- Nausea / vomiting
- Constipation
- Respiratory depression
- Miosis
- Antitussive effect
CNS-mediated effects

• Tolerance
• Dependence
• Addiction
AHRQ 1992 Clinical Practice Guideline for Surgical Pain

“Half of all do not get adequate relief”

“Giving patients pain medicine only "as needed" can result in prolonged delays because patients may delay asking for help.”

“Aggressive prevention of pain is better than treatment because, once established, pain is more difficult to suppress.”

“Patients have a right to treatment that includes prevention of or adequate relief from pain.”
AHRQ 1992 Clinical Practice Guideline for Surgical Pain

“Physicians need to develop pain control plans before surgery and inform the patient what to expect in terms of pain during and after surgery.”

“Fears of postsurgical addiction to opioids are generally groundless.”

Daniel B. Carr, M.D., Massachusetts General Hospital's Division of Pain Management, and Ada Jacox, Ph.D., R.N., Johns Hopkins University School of Nursing.
Guideline Release Date: March 5, 1992.
### Medicare Part D: OxyContin® - Cost

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Total Claims</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>NEXIUM</td>
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<td>ADVAIR DISKUS</td>
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<td>OXYCONTIN</td>
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</table>

OXYCONTIN is #18 on the list with 1.92M Total Claims and $945M Total Cost.
Medicare Part D: Vicodin® - Prescriptions

### Prescriptions by State

<table>
<thead>
<tr>
<th>State</th>
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<td>Arkansas</td>
<td>$1000M</td>
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### All Drugs

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<th>Drug Name</th>
<th>Total Claims</th>
<th>Total Cost</th>
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<tbody>
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<td>SIMVASTATIN</td>
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<tr>
<td>HYDROCODONE-ACETAMINOPHEN</td>
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</table>
Hydrocodone

• On August 22, 2014, the Drug Enforcement Administration (DEA) published the final rule in the Federal Register to rescheduling hydrocodone combination products to Schedule II of the Controlled Substances Act

• Need to be converted into active metabolites (hydromorphone) via CYP2D6
Hydrocodone & Codeine Metabolism

- 5% to 10% of white people possess allelic variants of the CYP2D6 gene that are associated with reduced clearance
- 1% to 7% of white people carry CYP2D6 allelic variants associated with rapid metabolism
- African populations are highly variable in their (0%-34%) in regards to reduced clearance


presented by Nora D. Volkow, M.D.; Senate Caucus on International Narcotics Control
“The Annual direct costs from opioid pain relievers to insurance companies are more than double the total NIH budget or about 70x the annual NIDA budget”
May 8, 2012

John H. Stewart
President and Chief Executive Officer
Purdue Pharma L.P.
One Stamford Forum
201 Tresser Boulevard
Stamford, Connecticut 06901-3431

Dear Mr. Stewart:

As Chairman and a senior member of the Senate Finance Committee, we have a responsibility to the more than 100 million Americans who receive health care under Medicare, Medicaid, and CHIP. As part of that responsibility, this Committee has investigated the
Photo of a typical death scene investigated by the Milwaukee County Medical Examiners Office. The office has finalized it statistics from 2015 and found a record-high 255 drug deaths compared to 251 in 2014.

By of the Milwaukee Journal Sentinel
Age-adjusted rates per 100,000 population for opioid pain releaver (OPR) deaths, crude rates per 10,000 population for OPR abuse treatment admissions, and crude rates per 10,000 population for kilograms of OPR sold.

Prescription Opioid Abuse – an “American Epidemic”

• Accidents (unintentional injuries) were the 5th leading cause of death in the US in 2010.
• Among persons 1-44 years of age accidents represented #1 cause of death.
• Within this group, pharmaceuticals were the #1 cause of death

Prescription Opioid Abuse – an “American Epidemic”

• Of the 22,134 medication induced deaths in 2010, 75.2% included opioid analgesics.

• Average health care costs for patients abusing opioids are 8 times higher - $55.7 billion/year


December 17, 2015

**Morphine Equivalents Policy and PA Criteria**
In alignment with the Governor’s initiative to decrease the misuse and abuse of prescription opioids, the Department will implement a limit on total daily morphine equivalents of 300mg **effective 2/1/2016**. This includes opioid-containing products where conversion calculations are applied. Prescriptions that cause the member’s drug regimen to exceed the maximum daily limit of 300 milligrams of morphine equivalents (MME) will be denied. In addition, the current policy that limits short-acting opioids to four per day, except for acute pain situations, will continue to be in effect.

https://www.colorado.gov/hCPF/pain-management-resources-and-opioid-use
AMA seeks move toward opioid alternatives

By Steven Ross Johnson | June 15, 2016

The largest medical society in the nation is calling for a bevy of actions that would ease physicians’ prescriptions of alternatives to opioids and support tools for preventing overdose.

On the last day of the American Medical Association’s annual meeting in Chicago, 500 delegates representing 192 entities throughout the country voted on a number of resolutions aimed at helping curb the effect of opioid abuse and misuse in the country.

Dr. Andrew Gurman, who Wednesday was sworn in as the new president of the association, acknowledged physicians have played a role in creating the epidemic.

“We have taken ownership of that, and physicians have taken ownership of being part of the solution,” Gurman said. “But it doesn’t happen in a vacuum.”

The AMA House of Delegates called for the group to oppose any barriers that could limit patient access to evidence-based non-opioid and non-pharmacological pain therapies.
Dear Colleague,

I am asking for your help to solve an urgent health crisis facing America: the opioid epidemic. Everywhere I travel, I see communities devastated by opioid overdoses. I meet families too ashamed to seek treatment for addiction. And I will never forget my own patient whose opioid use disorder began with a course of morphine after a routine procedure.

It is important to recognize that we arrived at this place on a path paved with good intentions. Nearly two decades ago, we were encouraged to be more aggressive about treating pain, often without enough training and support to do so safely. This coincided with heavy marketing of opioids to doctors. Many of us were even taught — incorrectly — that opioids are not addictive when prescribed for legitimate pain.

The results have been devastating. Since 1999, opioid overdose deaths have quadrupled and opioid prescriptions have increased markedly – almost enough for every adult in America to have a bottle of pills. Yet the amount of pain reported by Americans has not changed. Now, nearly two million people in America have a prescription opioid use disorder, contributing to increased heroin use and the spread of HIV and hepatitis C.
A 1980 letter on the risk of Opioid Addiction

TO THE EDITOR

Recently, we examined our current files to determine the incidence of narcotic addiction in 39,946 hospitalized medical patients who were monitored consecutively. Although there were 11,882 patients who received at least one narcotic preparation, there were only four cases of reasonably well documented addiction in patients who had no history of addiction. The addiction was considered major in only one instance. The drugs implicated were meperidine in two patients, Percodan in one, and hydromorphone in one. We conclude that despite widespread use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction.

Jane Porter
Hershel Jick, M.D.
Boston Collaborative Drug Surveillance Program Boston University Medical Center

Likelihood to Recommend

3.4

5 responses

Patient Satisfaction, Prescription Drug Abuse, and Potential Unintended Consequences

Aleksandra Zgierska, MD, PhD; Michael Miller, MD; David Rabago, MD

Perceived impact of Incentives tied to formal patient satisfaction scores

Preliminary data will be presented here – not for public distribution
Who is at risk for long-term (>90 days) opioid prescription after surgery?

39,140 opioid naïve geriatric patients in Canada:
• younger age
• lower household income
• comorbidities
• type of surgical procedure

Clarke H, Soneji N, Ko DT, Yun L, Wijeysundera DN. Rates and risk factors for prolonged opioid use after major surgery: population based cohort study. BMJ. 2014;348:g1251
Risk Factors for long-term opioid prescribing after surgery

• 391 139 ambulatory surgery patients ≥66 y/o
• Newly prescribed 7.1% within 7 days of being discharged from the hospital
• Opioids were prescribed to 7.7% at 1 year
• Patients receiving an opioid prescription within 7 days of surgery were 44% more likely to become long-term opioid users within 1 year

Risk Factors for long-term opioid prescribing after surgery

- Combination of two databases: Epic/Clarity & CO APCD
- All adult patients who underwent inpatient surgery at the U. Colorado Hospital within a two-year time frame will be screened for inclusion using the EPIC database.
- Extraction of APCD opioid prescription data for 1-30, 61-90, and 151-180 days post-operation
Long-Term Opioid Use After Inpatient Surgery – A Retrospective Cohort Study

Preliminary data will be presented here – not for public distribution
Preliminary data will be presented here – not for public distribution

Active opioid ingredients in the post discharge opioid prescriptions in a cohort of 652 patients after Cesarean section.
Preliminary data will be presented here
– not for public distribution

Cumulative opioid dose in oral morphine equivalents (OME) prescribed to 652 patients upon hospital discharge after Cesarean section.
Bartels K et al.; Opioid Use and Storage Patterns by Patients after Hospital Discharge following Surgery. PLoS One 2016
After Surgery in Germany, I Wanted Vicodin, Not Herbal Tea

By FIROOZEH DUMAS  JAN. 27, 2018
Thank you!