The Role of Surgeons in Addressing the Opioid Crisis

Friday, April 6, 2018

SURGICAL COLLABORATIVE OF WISCONSIN

What is the Surgical Collaborative of Wisconsin?

- A collaborative practice change community that aims to optimize quality and reduce costs by improving surgical care and fostering provider professional development across practice settings.

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How to be a part of the conversation

- Today:
  - As you have questions or comments, enter them in the comments box in GoToMeeting.
  - We'd love for you to include your name and community in your comment. If you don't, we'll consider the comment anonymous.
  - I'll present your questions to our panel.
- Tomorrow:
  - Continue the conversation as a member of the collaborative: scwisconsin.org

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Speaker Panel

- Jonathan Kohler, MD – Moderator
- Tom Engels, Deputy Secretary, Department of Health Services
- David Melnick, MD
- Joseph Imbus, MD
- Nathan Rudin, MD
- Elise Lawson, MD
- Caprice Greenberg, MD

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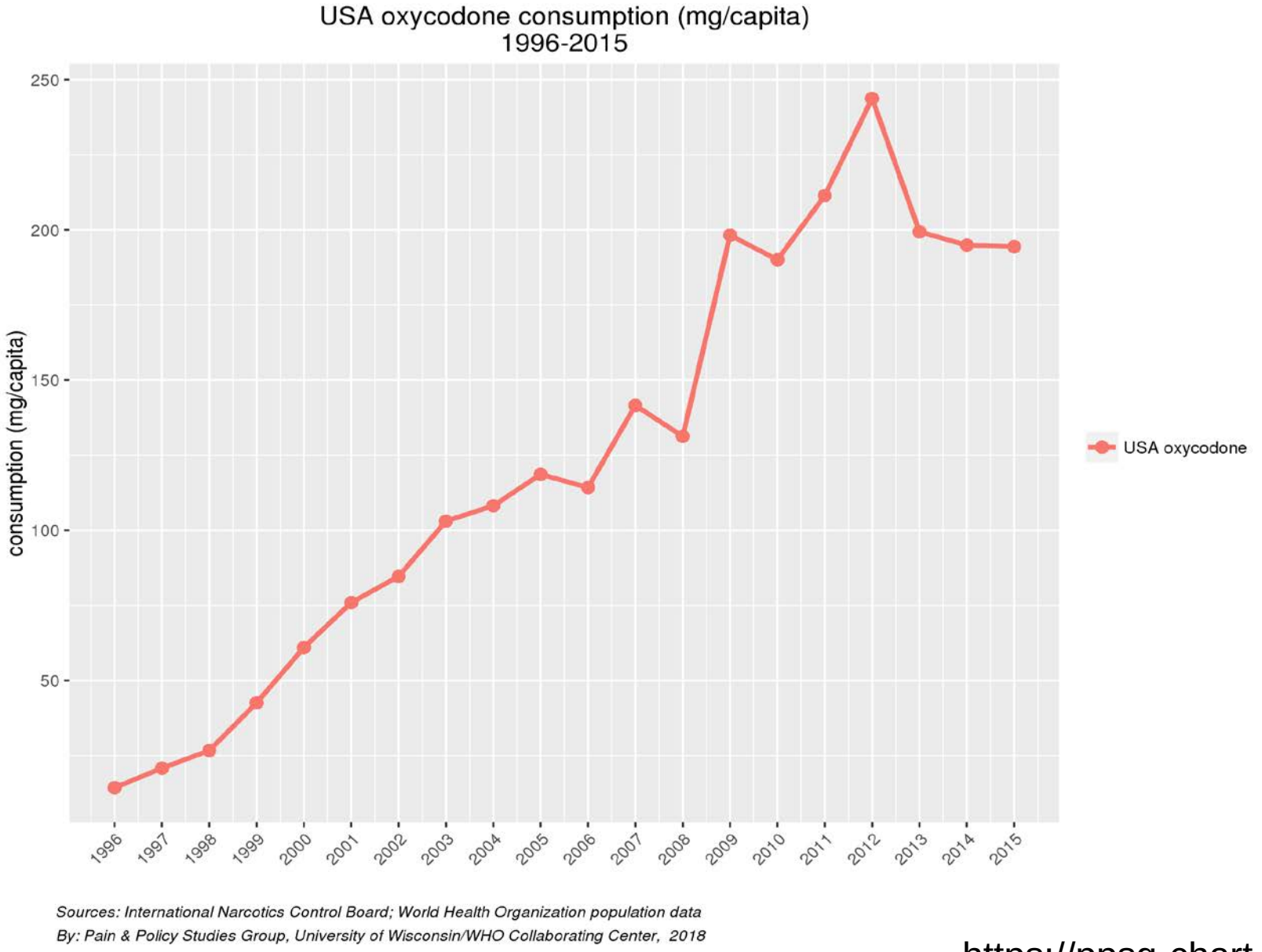
WISCONSIN DEPARTMENT of HEALTH SERVICES

Tom Engels

Deputy Secretary

An Introduction to the Opioid Problem

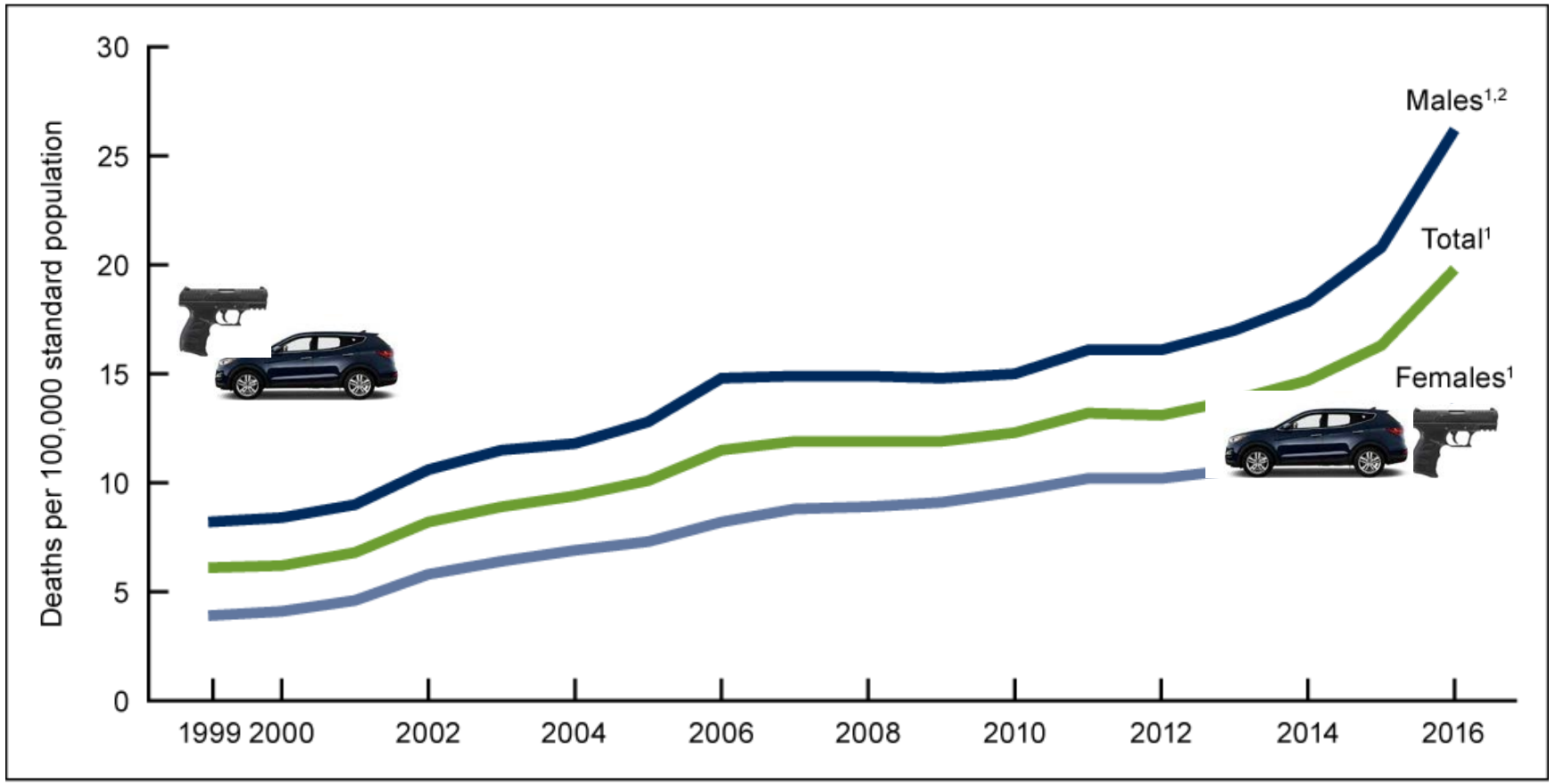
David Melnick, MD, MPH
Clinical Associate Professor of Surgery
UWSMPH



https://ppsg-chart.medicine.wisc.edu/

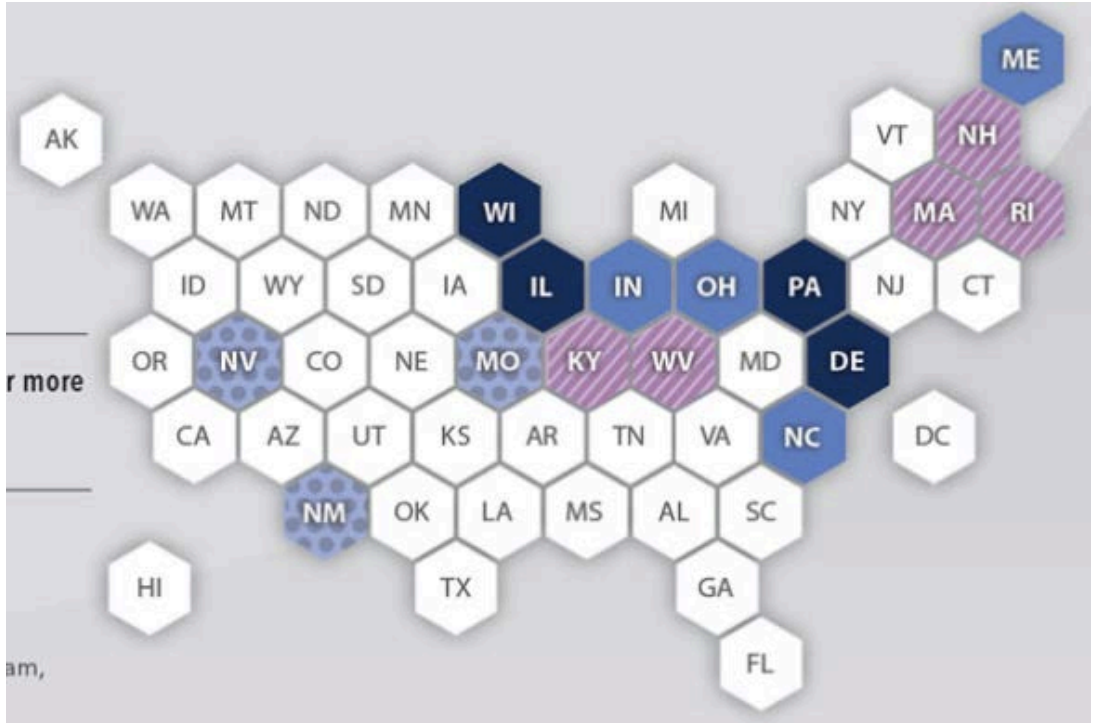
Age adjusted drug OD deaths ‘99-’16

Figure 1. Age-adjusted drug overdose death rates: United States, 1999–2016



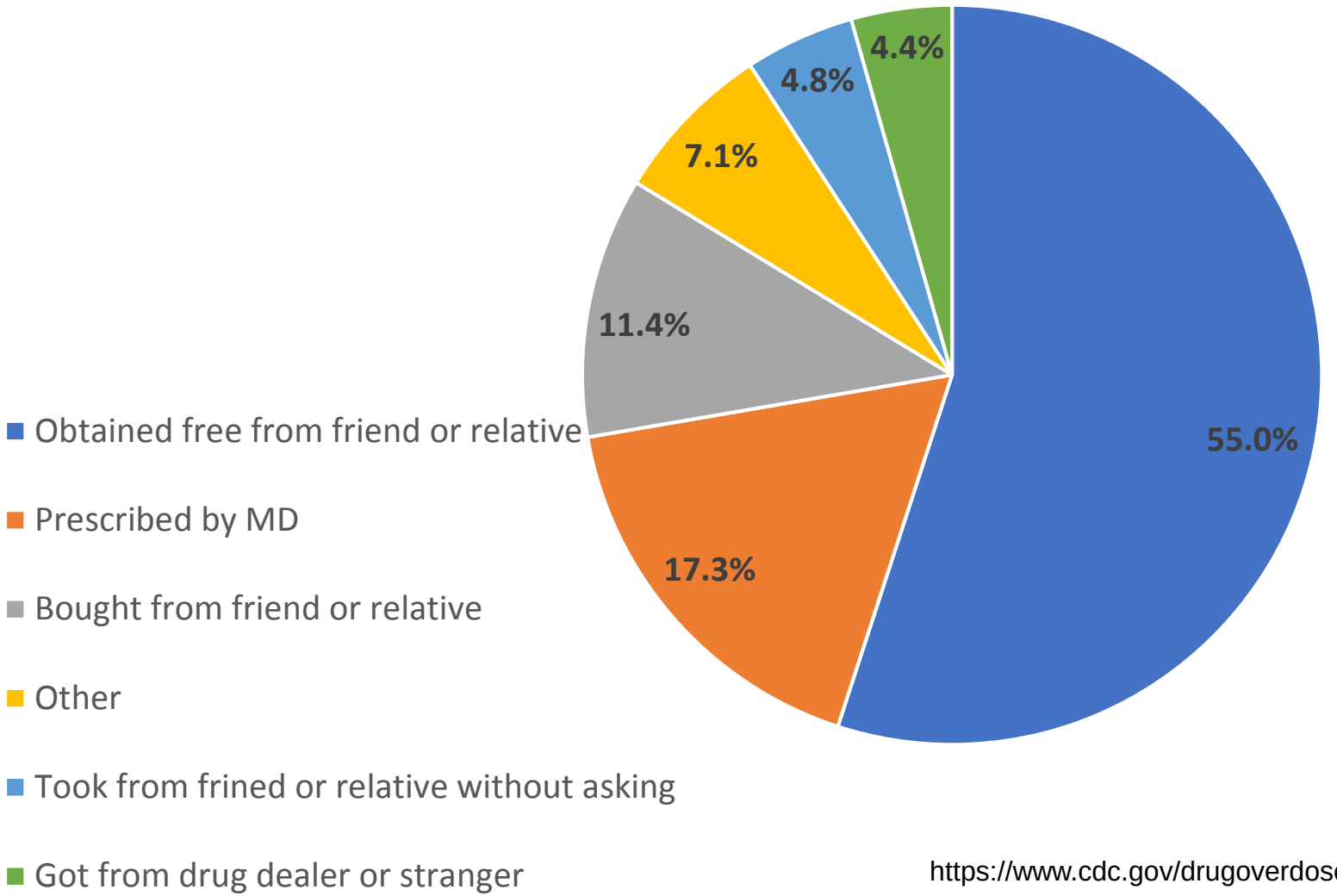
[1]Significant increasing trend from 1999 to 2016 with different rates of change over time, $p < 0.001$.
[2]2016 rate for males was significantly higher than for females, $p < 0.001$.
NOTES: Deaths are classified using the *International Classification of Diseases, Tenth Revision*. Drug-poisoning (overdose) deaths are identified using underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. The number of drug overdose deaths in 2016 was 63,632. Access data table for Figure 1 at: https://www.cdc.gov/nchs/data/databriefs/db294_table.pdf#1.
SOURCE: NCHS, National Vital Statistics System, Mortality.

Trends in ED visits for Opioid OD



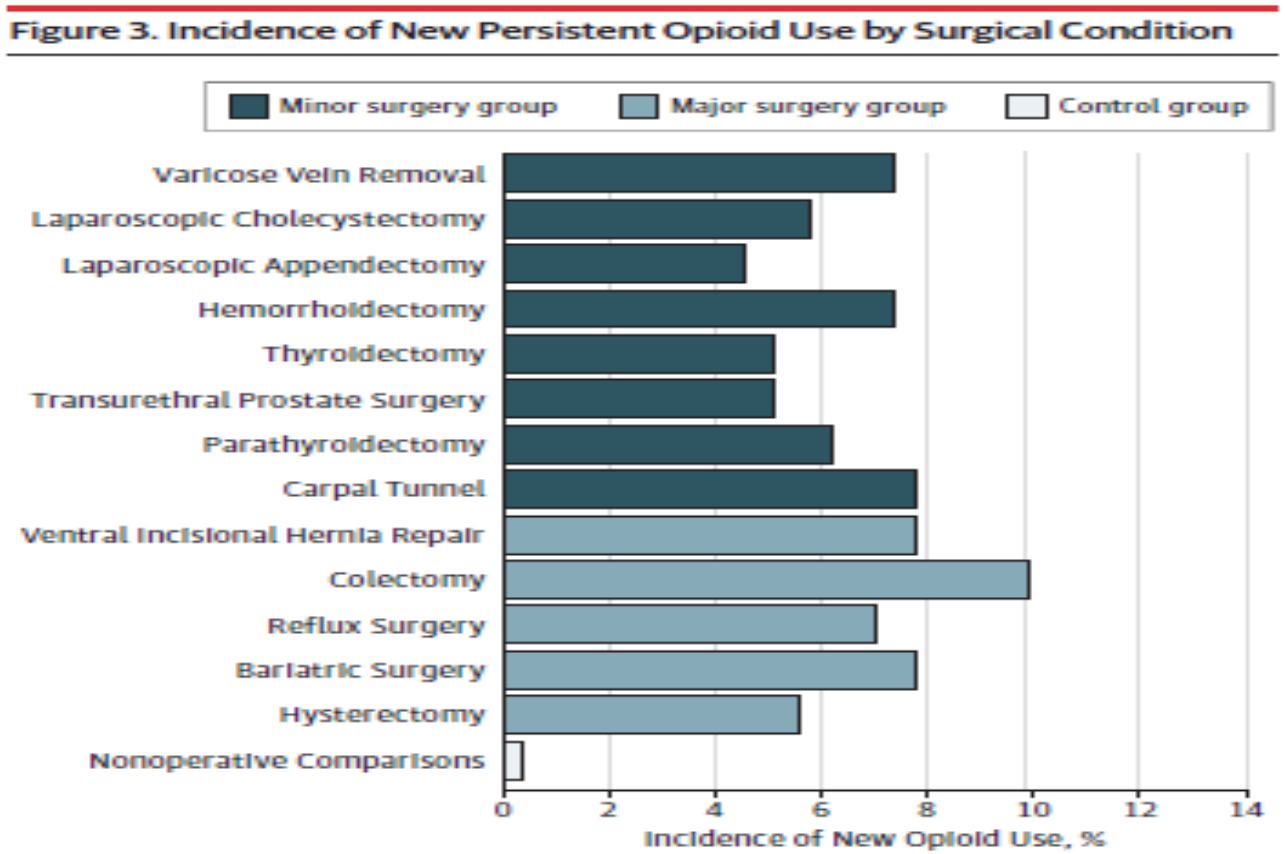
SOURCE: CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program, 16 states reporting percent changes from July 2016 through September 2017.

Source of Abused Prescriptions



https://www.cdc.gov/drugoverdose/data/prescribing.html

Incidence of New Persistent Opioid Use



Brummett et. Al. JAMA Surgery 2017

50%

(% opioid overdose deaths involving **Rx opioids)**

75%

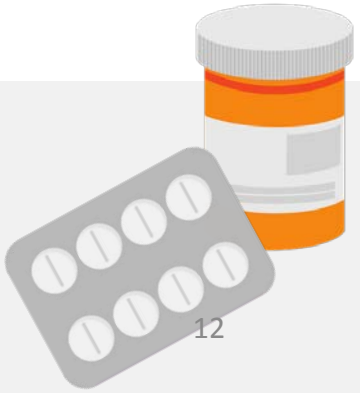
(% heroin users who report **first using Rx opioids)**

88%

(% misused/diverted Rx opioids obtained from friends, family, or personal Rx)

Addressing the epidemic: chronic pain & acute pain

United States Opioid Epidemic



> 1 million annual outpatient cholecystectomies, herniorrhaphies, and lumpectomies

Surgeons: 2nd highest opioid prescribing rate

36.5%

(1 out of 3 scripts written)

Appropriate post-operative Rx practices have not been established

Little known about how many pills patients use after surgery, & factors that influence use

Surgeons and the Opioid Epidemic

Opioids after Outpatient General Surgery:

Surgeon Prescribing Practices & Patient Use

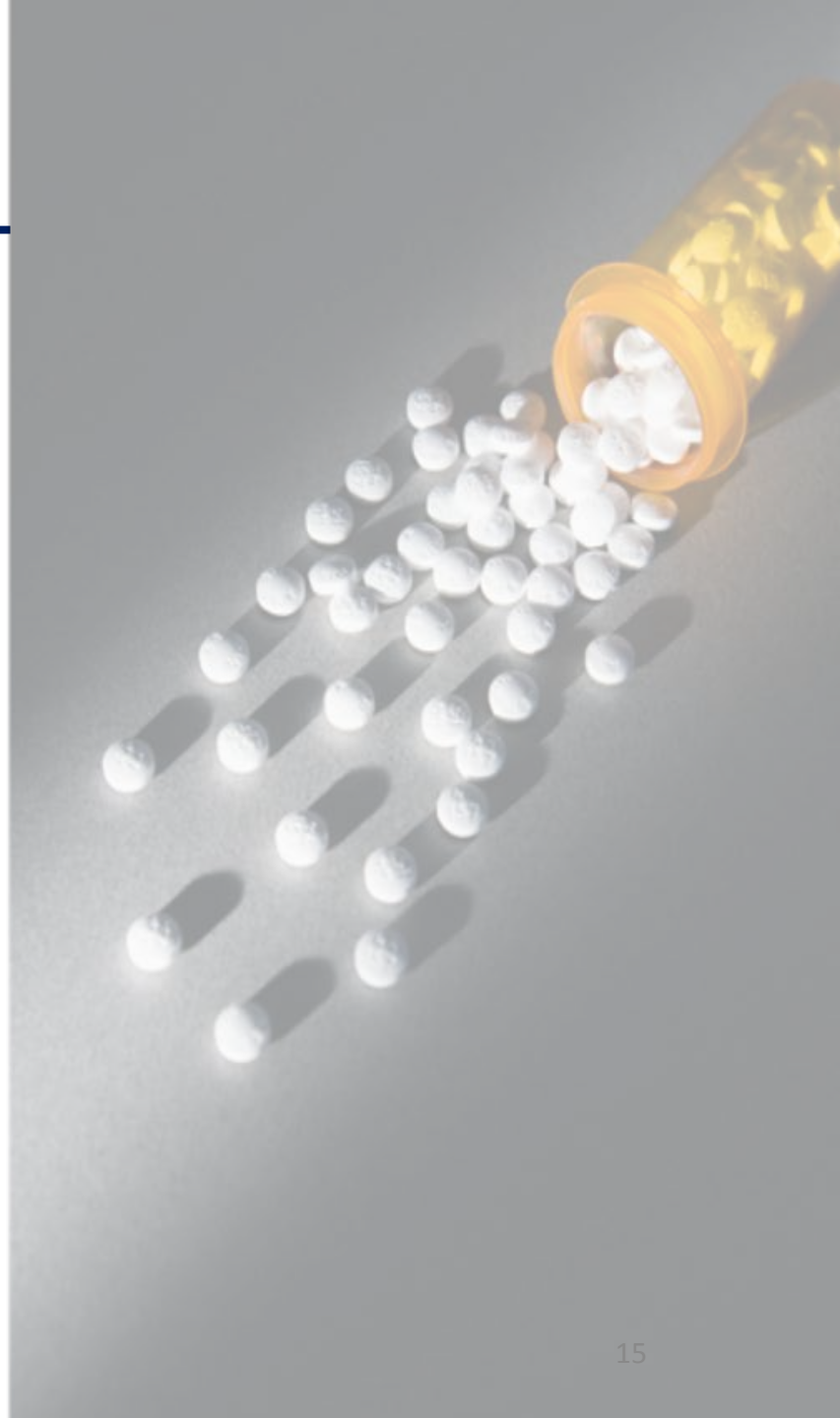
DEPARTMENT OF SURGERY
Wisconsin Surgical Outcomes Research Program
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

J.R. Imbus, J.L. Philip, J.S. Danobeitia,
D.F. Schneider, D.M. Melnick

Study Aims

- To characterize **prescribing practices** of surgeons and **opioid use** by patients after common outpatient general surgery procedures

- To identify **predictors** of the **number of opioid pills used** by patients post-operatively



Methods

Retrospective review of EHR (January – May 2017)

1. Laparoscopic cholecystectomy
2. Inguinal hernia repair
3. Umbilical hernia repair
4. Lumpectomy + sentinel node biopsy
5. Lumpectomy

Excluded: post-op complications, inpatient procedures

Post-op pain survey

+

Patient characteristics

+

Prescriber/prescription data

Analysis: multivariable linear regression

procedure type, patient factors,
pills prescribed

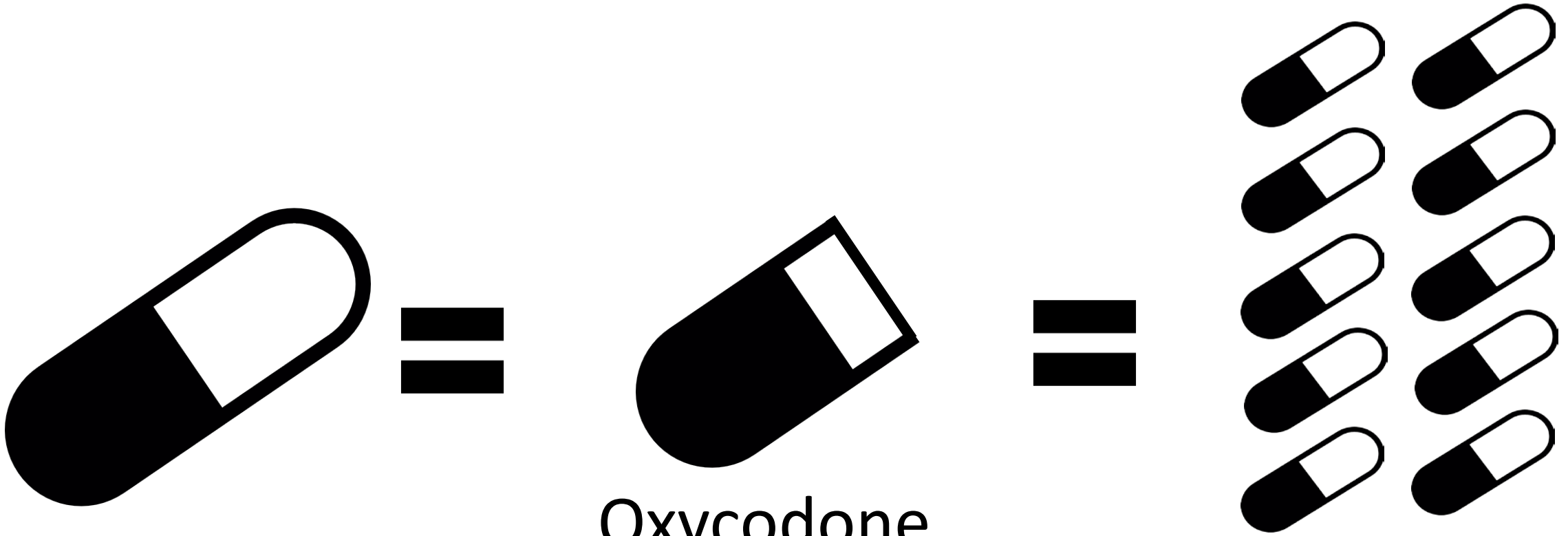
→ predict number of pills taken

(morphine milligram equivalents)

Morphine milligram equivalents =

Strength per Unit
x
conversion factor

Adjusting for different relative strengths



Hydrocodone
(1)

Oxycodone
(0.66)

Tramadol
(10)

Results

Patients (n = 374)

Hx chronic pain: 19%

Pre-op opioid Rx: 12%

Took ≤ 30 pills: 95%

Took zero pills: 24%

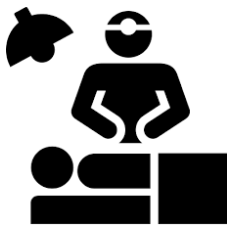
Prescribers (n = 48)

Six opioid types prescribed

Norco most common

Range: 5-80 pills

Procedures



Lap cholecystectomy
Inguinal hernia repair
Umbilical hernia repair
Lumpectomy + SLNBx
Lumpectomy

Results

Gallbladder

54%
not used

Hernia

64%
not used

Breast

77%
not used

Factors associated with opioid amount taken

- Age (p<.001)
- Operation type (p<.001)
- BMI (p<0.01)
- Chronic pain (p<0.01)
- Pre-op opioid Rx (p<0.01)
- Regional anesthesia (p<0.001)
- Amount prescribed (p<.001)

Results – linear regression model

Patient age (β = - 0.03; C.I. -0.042, -0.018), $p < 0.001$)

- As age ↑, opioid use ↓
- For every 10 year increase in age → 30% less pills taken

Procedure type (β = 0.71; CI = 0.11-1.31), $p < 0.05$)

- Lap chole patients took twice as much as umbilical hernia patients

The following were not predictive after adjustment: BMI, sex, race, regional anesthesia, pre-op opioid Rx, pre-op benzo Rx, Hx chronic pain

Amount prescribed (β = 0.0043; CI = 0.0021-0.0064), $p < 0.001$)

- As prescription amount ↑, opioid use ↑
- For every 10 additional pills prescribed → 24% more pills taken

Results

Evaluating age-based prescribing thresholds:

(Ex): inguinal hernia repairs

80%* of all patients **took 15 or fewer pills**

Age categories	80% of patients took fewer than:
Less than 40 years	26 pills
41 to 55 years	20 pills
56 to 65 years	**12 pills**
Greater than 65 years	**6 pills**

50% of all patients **took 5 or fewer pills**

(*Hill et al., 2017)

Summary

- Variation in prescribing practices
- Overprescribing
- Many patients took few pills
- Prescription amount matters
- Age matters

Limitations

- Single institution study
- Recall bias for number of pills taken
- Over-the-counter analgesia effect unknown

Future directions

- Surgeon education
- Post-operative order set implementation
- Investigate other procedures
- Audit and feedback
- Refine predictions

Conclusions

Opportunity to better align opioid prescriptions with actual patient use

Reduce opioid-related overdoses and heroin use

THANK YOU

Acknowledgements

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  - Jennifer Philip, MD
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  - David Melnick, MD, MPH
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Postoperative Pain Management:
Alternatives and Adjuncts to Opioids

Nathan J. Rudin, M.D., M.A.
Professor (CHS), Orthopedics and Rehabilitation
University of Wisconsin School of Medicine and Public Health

Start Preoperatively

- Establish expectations
  - How painful is this surgery likely to be?
  - What treatments will be used to control pain?
  - Is there a standard discharge prescription? Tapering protocol?
  - What level of postoperative pain are we aiming for?
    - Able to sleep, transfer, get around house, etc.

Continue Perioperatively

- Pre-emptive analgesia: Start before incision
  - Surgical site infiltration (local anesthetic)
  - Epidural or spinal anesthesia
  - Regional nerve block
  - Medications
- Adequate immediate postoperative analgesics

Gabapentin

- Starting it preoperatively reduces opioid consumption following mastectomy and spinal, abdominal, and thyroid surgeries
- More somnolence
- No change in nausea/vomiting rates
- Safe to continue postoperatively

Arumugam S *et al., J Pain Res.* 2016 Sep 12;9:631-40

Pregabalin

- Similar findings to gabapentin but fewer studies
- 75-300 mg x 3 preop: reduced postop pain after lap hysterectomy in placebo-controlled dbRCT
  - Azgari Z *et al., J Clin Anesth*. 2017 May;38:13-17
- Safe for postoperative use
- Higher doses cause somnolence

Celecoxib

- Frequently added to multi-drug preemptive “cocktails” (with acetaminophen, ketamine, gabapentin, local anesthetics, *et al.*)
- Use in preemptive analgesia appears to be safe

  Kim *et al., Eur Spine J*. 2016 May;25(5):1614-1619
- Reduced post-op pain, less opioid use, shorter LOS

  Penprase B *et al., AORN J.* 2015 January;101: 94-105
- Postoperative continuation – not studied
- In Europe, IV rofecoxib has been helpful preemptively
- Be cautious of NSAID side effects

Ketamine

- NMDA receptor antagonist
- Pre-emptive analgesic effects (given IV)
  - Jain & Kochhar, *Anesth Essays Res.* 2017 Apr-Jun;11(2):406-410
  - Lin & Jla, *J Huazhong Univ Sci Technolog Med Sci.* 2016 Aug;36(4):584-7
- Has postoperative opioid-sparing effects (given IV, intranasally, or epidurally)
  - Bell RF, Dahl JB, Moore RA, *et al.* Perioperative ketamine for acute postoperative pain. *Cochrane Database Syst Rev* 2006;(1):CD004603
- Psychotomimetic effects possible; keep doses low

Acetaminophen

- Available oral, rectal, IV
- IV acetaminophen pre-op and intra-op (15 mg/kg) reduced pain scores and time to next analgesic use in lower limb surgery w/spinal anesthesia (placebo-controlled dbRCT)
  - Khalili G *et al., J Clin Anesth.* 2013 May;25(3):188-92
- Often studied as part of combinations
- Can be continued postoperatively

Antispasm Agents

- Few studies
- Tizanidine: Limited evidence of preemptive efficacy in lap cholecystectomy
  - Talakoub R *et al.*, *Adv Biomed Res.* 2016 Feb 8;5:19
- Baclofen: Not well studied; epidural baclofen not helpful in children after CP surgery
  - Nemeth BA *et al., J Pediatr Orthop.* 2015 Sep;35(6):571-5
- Cyclobenzaprine: Not studied

Regional Anesthesia

- Regional nerve blocks, maintained for a time postoperatively, are safe and effective methods for reducing postoperative pain
  - Pediatric patients – Simić D *et al., Front Med (Lausanne).* 2018 Mar 9;5:57
  - Interscalene block after rotator cuff repair – Kim JH *et al., J Shoulder Elbow Surg.* 2018 Mar 29
  - Femoral + sciatic nerve blocks for TKA – Zorrilla-Vaca A *et al., J Anesth.* 2018 Mar 8
- Bolus blocks versus indwelling catheters
- Continuous versus patient-controlled dosing

Physical Modalities

- Elevation
- Edema control: massage, compression
- **Cold:** Reduced pain and morphine use post-op in spinal fusion patients
  - Quinlan P *et al.*, *Orthop Nurs*. 2017 Sep/Oct;36(5):344-349
- **TENS:** Moderate evidence for reduced pain and reduced opioid use
  - In general: Johnson MI, *Expert Rev Neurother.* 2017 Oct;17(10):1013-1027
  - In TKA: Zhu Y *et al.*, *J Rehabil Med*. 2017 Nov 21;49(9):700-704

Cognitive-Behavioral Therapy (CBT)

- Pain catastrophizing is associated with worse postsurgical pain outcomes
  - Riddle DL *et al., Clin Orthop Relat Res*. 2010 Mar;468(3):798-806
- Goals: Improve coping, reduce catastrophizing and anxiety
- Postoperative CBT improved pain coping following lumbar spinal fusion
  - Lindgreen P *et al., Orthop Nurs.* 2016 Jul-Aug;35(4):238-47
- Preoperative CBT reduced time to independent mobility and slightly reduced analgesic use following lumbar spinal fusion
  - Rolving N *et al., BMC Musculoskelet Disord.* 2016 May 20;17:217

Rehabilitation

- Postoperative rehab is important to restore mobility, function and independence
- Paucity of evidence that rehab reduces postoperative *pain*
- *Pre*habilitation may reduce LOS and postop rehab admissions, but no solid evidence that it reduces pain
  - Cabilan CJ *et al., Orthop Nurs.* 2016 Jul-Aug;35(4):224-37

What if Pain Persists?

- Validate the presence of pain
- Reevaluate for complications and treat as appropriate
- Adjust analgesic taper or regimen
- Refer early to pain specialist if additional help is needed

Thank you!

How can SCW help?

1. Create benchmarked reports on opioid prescribing

2. Provide guidance for changing practice

3. Platform for collaborative learning

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How can SCW help?

1. Create benchmarked reports on opioid prescribing
   - Hospital and surgeon level
   - Average # pills prescribed by procedure, refills
   - Benchmark to other surgeons/hospitals
   - Use existing data from WHIO

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How can SCW help?

2. Provide guidance for changing practice
   - Patient education materials to set expectations
   - Strategies for non-opioid postoperative pain management
   - Address over-prescribing at discharge with suggested default orders for opioids
   - Options for safe opioid disposal

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Patient Education Materials

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Opioid Prescribing Recommendations

Procedure	Hydrocodone (Norco) 5 mg tablets Codeine (Tylenol #3) 30 mg tablets Tramadol 50 mg tablets	Oxycodone 5 mg tablets Hydromorphone (Dilaudid) 2 mg tablets
Laparoscopic Cholecystectomy	15	10
Laparoscopic Appendectomy	15	10
Inguinal/Femoral Hernia Repair (open/laparoscopic)	15	10
Open Incisional Hernia Repair	30	20
Laparoscopic Colectomy	30	20
Open Colectomy	30	20
Ileostomy/Colostomy Creation, Re-siting, or Closure	40	25
Open Small Bowel Resection or Enterolysis	30	20
Thyroidectomy	10	5
Hysterectomy		
Vaginal	20	10
Laparoscopic & Robotic	25	15
Abdominal	35	25
Breast Biopsy or Lumpectomy Alone	10	5
Lumpectomy + Sentinel Lymph Node Biopsy	15	10
Sentinel Lymph Node Biopsy Alone	15	10
Simple Mastectomy ± Sentinel Lymph Node Biopsy	30	20
Modified Radical Mastectomy or Axillary Lymph Node Dissection	45	30
Wide Local Excision ± Sentinel Lymph Node Biopsy	30	20

https://opioidprescribing.info/

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Question and Answer

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How can you get involved in SCW?

- Take the post event survey – next week via email
- Join us for future educational events
- Become a collaborating member
- Engage in one or more inaugural initiatives

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