

How to Stop Surgeons from Prescribing Opioids

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Financial Disclosures

- I have no disclosures

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Overview

- Opioid epidemic with emphasis on prescription opioids
- Preoperative opioid use and outcomes
 - Feasibility of tapering
 - Risk assessment
 - Pain management consultation
- Tools to limit opioid exposure and risk for opioid use disorder
 - Intraoperative (ERAS, multimodal, regional)
 - Postoperative (transitional pain clinic, discharge tools, MOPIS)

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Opioid Epidemic

- Recognized within the past few years as a major public health concern
- Massive amount of research funding available
- Public policy initiatives
- Role of the anesthesiologist seems relatively underexplored
 - Minimizing or optimizing opioid exposure through ERAS protocols
 - Pain specialists instrumental in tougher cases of already opioid tolerant patients
 - We are in a unique position to have the ability to manage a patient's pain while minimizing opioid exposure

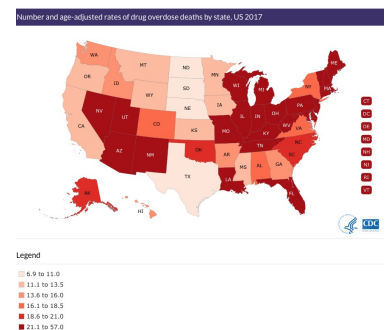
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Opioid Epidemic – CDC stats

- 218,000 Americans died from overdoses related to prescription opioids from 1999 to 2017
 - 46 people die everyday from overdoses involving prescription opioids
- 48.5 million Americans have used illicit drugs or misused prescription drugs
- 70,237 drug overdose deaths occurred in the U.S. in 2017
 - Rate of overdose deaths increased significantly by 9.6% from 2016 to 2017
 - Opioids (mainly synthetic opioids) are currently the main driver of drug overdose deaths
 - 67.8% of all drug overdose deaths in 2017

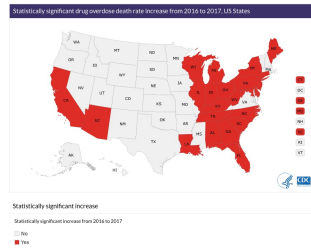
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Drug overdose deaths
by state
US 2017



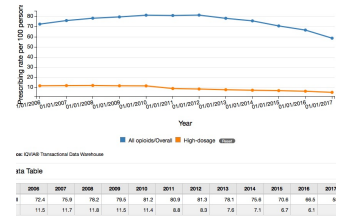
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Rate of increase



Rx Trends

Trends in Annual Opioid Prescribing Rates by Overall and High-Dosage Prescriptions



- Overall opioid prescribing rate in US peaked and leveled off from 2010-2012 and has been declining since 2012
- Amount of MME prescribed per person is still ~3x higher than in 1999
- > 19% reduction in annual prescribing rate from 2006 to 2017
- Healthcare providers are getting the message!

Total number and rate of opioid prescriptions dispensed, United States, 2006–2017

Year	Total Number of Prescriptions	Prescribing Rate Per 100 Persons
2006	215,917,663	72.4
2007	228,543,773	75.9
2008	237,860,213	78.2
2009	243,738,090	79.5
2010	251,088,904	81.2
2011	252,167,963	80.9
2012	255,207,954	81.3
2013	247,090,443	78.1
2014	240,993,021	75.6
2015	226,819,924	70.6
2016	214,881,622	66.5
2017	191,218,272	58.7

Deaths from prescription opioid overdose

- For people who died from prescription opioid overdose in 2017
 - Overdose rates significantly increased among people over age 65
 - Rates higher among non-Hispanic whites and American Indian or Alaskan Natives, compared to non-Hispanic blacks and Hispanics
- Rate of overdose deaths by gender
 - Males: 6.1 per 100,000
 - Females: 4.2 per 100,000
- Highest rates in West Virginia, Maryland, Kentucky, Utah

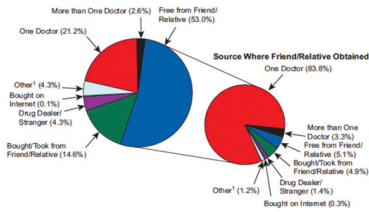
Most common drugs involved

- Methadone
 - Extremely long and variable half-life (8-59 hours)
- Oxycodone (such as OxyContin or Percocet)
- Hydrocodone (such as Vicodin or Norco)

Lake of Opioids

- For many patients with opioid use disorder, initial exposure occurs in the perioperative period
 - If the quantity isn't sufficient – phone call
 - If the dose isn't high enough – phone call
- Best method to avoid phone calls
 - Prescribe more than what is needed
 - Average amount needed
 - What is enough
 - One standard deviation over average?
 - Two standard deviations?

Source of opioids for non-medical use



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Opioids Prior to Surgery

Annals of Surgery; April 2017

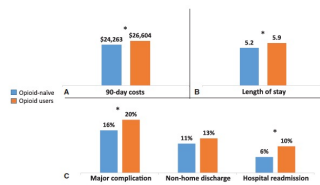
Preoperative Opioid Use is Independently Associated With Increased Costs and Worse Outcomes After Major Abdominal Surgery

David C. Cron, BS,* Michael J. Englebe, MD,* Christian J. Bolton, BS,† Melvin T. Joseph, BS,‡ Kristen L. Carrier, BS,§ Stephanie E. Moser, PhD,¶ Jennifer F. Waljee, MD, MPH, MS,§ Paul E. Hilliard, MD,‡ Sachin Kheterpal, MD, MBA,† and Chad M. Brummett, MD†

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Opioids Prior to Surgery

Annals of Surgery; April 2017



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Opioids Prior to Surgery

The Spine Journal 2018



The Spine Journal 28 (2018) 1111–1118



Clinical Study

Chronic preoperative opioid use is a risk factor for increased complications, resource use, and costs after cervical fusion

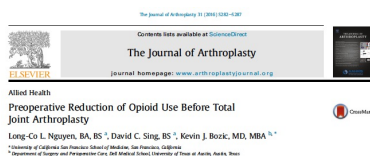
Nikhil Jain, MD, John L. Brock, BA, Frank M. Phillips, MD, Tristan Weaver, MD, Safdar N. Khan, MD*

*The Ohio State University Wexner Medical Center, 410 W 10th Ave, Columbus, OH 43210, USA
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‡University of Michigan School of Medicine, 300 Zeeb Road, Ann Arbor, MI 48106, USA

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Opioids Prior to Surgery

The Journal of Arthroplasty 2016



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Opioids Prior to Surgery

The Journal of Bone and Joint Surgery 2019

Prediction of Complications, Readmission, and Revision Surgery Based on Duration of Preoperative Opioid Use

Analysis of Major Joint Replacement and Lumbar Fusion

Nikhil Jain, MD, John L. Brock, BA, Azeem Tariq Malik, MBBS, Frank M. Phillips, MD, and Safdar N. Khan, MD
Investigation performed at The Ohio State University Wexner Medical Center, Columbus, Ohio

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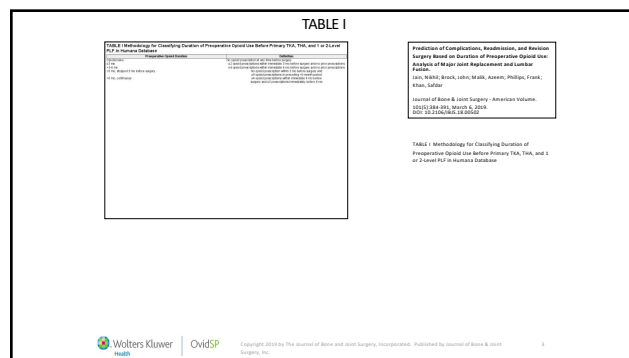
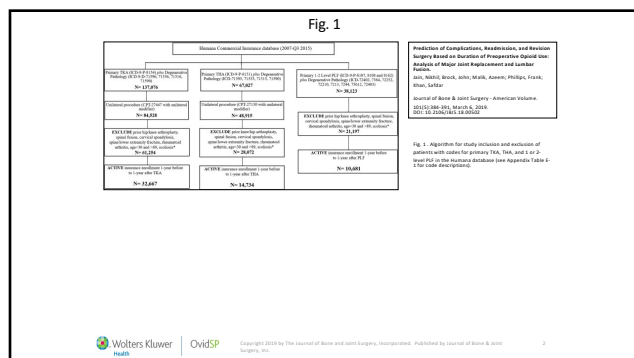


TABLE II

TABLE 1 Demographic and Clinical Profile of Patients in Lumbar Dissection With Instrumented Primary TKA, Total, or 1 or 2 Levels				
Group	Sex	Age, years	Height, cm	Weight, kg
Primary	Male	10	67.6 ± 10.1	80.5 ± 14.5
	Female	10	67.6 ± 10.1	68.5 ± 12.5
	Total	20	67.6 ± 10.1	74.5 ± 13.5
1 Level	Male	10	67.6 ± 10.1	80.5 ± 14.5
	Female	10	67.6 ± 10.1	68.5 ± 12.5
	Total	20	67.6 ± 10.1	74.5 ± 13.5
2 Levels	Male	10	67.6 ± 10.1	80.5 ± 14.5
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Definition of Complications, Revisions, and Revision Surgery Based on Duration of Preoperative Optimal dose Anticoagulation with Suppression and another Points.

John, Nishi, Nishi, John, Nishi,

[illegible][illegible][illegible]

Preoperative Opioid Tapering

The challenges

- Opioid withdrawal
- Increased pain
- Psychological burden
- **TIME and RESOURCES**

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Preoperative Opioid Tapering

University of Michigan

- ID patients at high risk for post-operative analgesic related complications
- Taper over 2 weeks to 6 months
- Longer tapers of 18-24 months in select patients
- 10% reduction every 1-2 weeks
- Once 1/3 reduced, 5% reduction every 1-2 weeks

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Preoperative Opioid Tapering

Mayo Clinic

- Decrease 10% original dose every 5-7 days
- After 30% decrease, 10% weekly reduction from the remaining dose

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Preoperative Opioid Tapering

- We need a team approach:
 - Surgeons
 - Primary care physicians
 - Addiction specialists
 - Anesthesiologists

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What about the refills???



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Postoperative Prescriptions

Research

JAMA Surgery | Original Investigation

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

Chad M. Brummett, MD, Jennifer F. Wilsey, MD, MPH, MS, James Gunning, PhD, Stephanie Mauer, PhD, Paul G. McMichael, II, Eugene, MD, Amy S. B. Bohnert, PhD, MS, Justin E. Hays, MD, MS, Douglas A. Nierenberg, MD, MPH

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Postoperative Prescriptions

JAMA Surgery | Review

Prescription Opioid Analgesics Commonly Unused After Surgery A Systematic Review

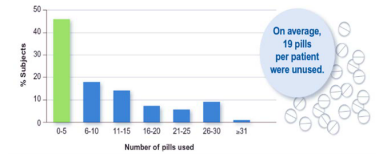
Mark C. Bicket, MD, Jane J. Long, BS, Peter J. Pronovost, MD, PhD, G. Caleb Alexander, MD, MS, Christopher L. Wu, MD

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Over Prescribing

Excess pills are a readily available source for non-medical use

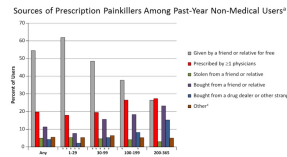
- **Surgeons Tend to Overprescribe**
- >50% of pts use ≤5 pills
- Average Prescription = 30 pills



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Over Prescribing Can Lead to Diversion

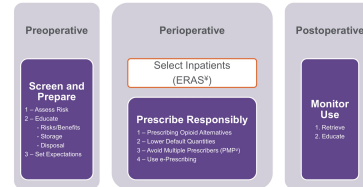
- **Diversion is Common**
- Diversion = >70% of Non-Medical Use
- Diversion is non-medical use of legally prescribed prescription medication



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MOPiS

MOPiS: A Comprehensive Solution Minimizing Opioid Prescribing in Surgery



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MOPiS

Minimizing Opioid Prescribing in Surgery (MOPiS) Initiative: An Analysis of Implementation Barriers

Julia M. Coughlin, MD,^a Meagan L. Shallcross, MPH,^a Willemijn L.A. Schäfer, PhD,^a Barbara A. Buckley, RN, MS,^b Jonah J. Stulberg, MD, PhD, MPH,^{a,b} Jane L. Holl, MD, MPH,^{a,c} Karl Y. Bilimoria, MD, MS,^{a,b} and Julie K. Johnson, MSPH, PhD^{a,*}

^aSurgical Outcomes and Quality Improvement Center (SOQIC), Department of Surgery and Center for Healthcare Studies, Northwestern University Feinberg School of Medicine, Chicago, Illinois

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^cDepartment of Pediatrics, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois

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MOPiS

Background: The United States is in the midst of an opioid epidemic. In response, our institution developed the Minimizing Opioid Prescribing in Surgery (MOPiS) initiative. MOPiS is a multicomponent intervention including (1) patient education on opioid safety and pain management expectations; (2) clinician education on safe opioid prescribing; (3) prescribing data feedback; (4) patient risk screening to assess for addictive behavior; and (5) optimizations to the electronic health record (EHR). We conducted a preintervention formative evaluation to identify barriers and facilitators to implementation.

Materials and methods: We conducted 22 semistructured interviews with key stakeholders (surgeons, nurses, pharmacists, and administrators) at six hospitals within a single health care system. Interviewees were asked about perceived barriers and facilitators to the components of the intervention. Responses were analyzed to identify common themes using the Consolidated Framework for Implementation Research.

Results: We identified common themes of potential implementation barriers and classified them under 12 Consolidated Framework for Implementation Research domains and three intervention domains. Time and resource constraints (needs and resources), the modality of educational material (design quality and packaging), and prescribers' concern for patient satisfaction scores (external policy and incentives) were identified as the most significant structural barriers. Resident physicians, pharmacists, and pain specialists were identified as potential key facilitating actors to the intervention.

Conclusions: We identified specific barriers to successful implementation of an opioid reduction initiative in a surgical setting. In our MOPiS initiative, a preintervention formative evaluation enabled the design of strategies that will overcome implementation barriers specific to the components of our initiative.

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**Patient
completed risk
survey**

Illinois Department of Transportation
 101 North Dear Street, 10th Floor
 Chicago, Illinois 60610
 Phone: (312) 344-0100
 Email: info@idot.state.il.us



ISQ
 International
 Standards
 Quality

Optical Risk Test

Risk Task Risk Rating:	Pass	Fail
History of Criminal Record	0	1
Alcohol	0	1
Drugs	0	1
Medical History of Substance Abuse	0	1
Alcohol	0	1
Drugs	0	1
Age Between 21-18 years	0	1
History of a Substantial Criminal Offense	0	1
Sexual Abuse	0	1
Domestic Violence	0	1
Sexual Offense	0	1
Domestic Violence	0	1
Sexual Abuse	0	1

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IV opioids

Oral opioids

Nonopioids, nerve blocks, adjuvant analgesics, low-dose sedatives, and alternative modalities such as cognitive behavioral therapy, physical therapy, massage, and TENS, etc.

Preoperative (3 hours before surgery)	• Acetaminophen (Tylenol) 1,000mg • Ibuprofen (Motrin) 600 mg • Gabapentin 300mg (optional)
Perioperative	• Refillation of local anesthetic recommended prior to incision • Correlation with anesthesia recommended to minimize intra-operative opioid use
Post-operative (Days 1-3)	• Use oral pain on surgical site 30 minutes in, 30 minutes out • Acetaminophen (Tylenol) 1,000mg every 6 hours • Ibuprofen (Motrin) 600 mg every 6 hours • Gabapentin 300mg every 6 hours • Tramadol 50 mg surgical site, as needed for breakthrough pain
Post-operative (Days 4-7)	• Use oral pain on surgical site 20 minutes on, 20 minutes out, as needed • Acetaminophen (Tylenol) 1,000mg every 6 hours, as needed • Ibuprofen (Motrin) 600 mg every 6 hours, as needed • Gabapentin 300mg every 6 hours • Tramadol 50 mg every 6 hours, as needed
Post-operative (Days 8-14)	• Gabapentin 300mg every 6 hours • Acetaminophen (Tylenol) 1,000mg every 6 hours, as needed • Ibuprofen (Motrin) 600 mg every 6 hours, as needed

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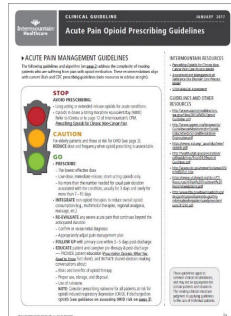
Michael J. Nooromid^{a,b,c,*}, Eddie Blay Jr^b, Jane L. Holf, Karl Y. Bilimoria^{b,c}, Julie K. Johnson^{b,c}, Mark K. Eskandari^{a,b},
Jonah J. Stulberg^{b,c}

Range	4
10E: positive culture analysis	

PROCEDURE	Recommended quantity of spinal grids to prescribe
Lumpectomy, chemotherapy	15
Lumpectomy, axerceptin	15
Lumpectomy, ligated and nerve repair	15
Open inguinal hernia repair	15
Circumcision	25
Open inguinal hernia repair	15
Lumpectomy, axerceptin, nerve repair	15
Open inguinal hernia repair	15
Open whorls	30
Open low incision	30
Minimally and open excisional inguinal	30
Open herniotomy	30
Open herniotomy	30
Breast biopsy	3
Cervical endometrial biopsy	3
Excisional biopsy	3
Cervical surgery	3
Concave uterine biopsy	3
Diagnosis of axonal	variable
Craniotomy and biopsy	variable
Neuroendoscopy	20 (one quadrant, axon, confocal)
Neuroendoscopy	20 (one quadrant, axon, confocal)
Tissue morphology, style or style	25
Partial neuroendoscopy	25
Open prosthesis repair	25
Robotic prosthesis repair	25
Transfemoral	5
Transfemoral	100
Prosthesis repair	25
Open neuroendoscopy, surgery, biopsy	25
Open biopsy	25
Excisional or mechanical prosthesis	25
Open replacement	25
Tissue endoscopy	25

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Guideline Examples



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The James A. Rand Young Investigator's Award: Large Opioid Prescriptions Are Unnecessary After Total Joint Arthroplasty: A Randomized Controlled Trial

Article in Press: Corrected Proof
Charles P. Hannon MD, Tyler E. Calkins BS, Jefferson LI BS, Chris Culvern MS, Brian Darrih MD, Denis Nam MD, MS, Tad L. Gerlinger MD, Asokumar Buvanendran MD and Craig J. Della Valle MD
Journal of Arthroplasty, The, Copyright © 2019 Elsevier Inc.

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Table 2
Pain and Opioid-Related Outcomes.

	30 OxyIR	P Value	90 OxyIR
Total MEQ consumed while in the hospital (mg)	72.2 (±55.9)	.173 ^a	64.6 (±38.9)
Mean MEQ consumed after discharge per day (mg/d)			
Day 1-3 after discharge	31.9 (±18.8)	.698 ^b	30.9 (±19.3)
Week 1 after discharge	29.8 (±17.5)	.734 ^b	29.1 (±18.0)
Week 2 after discharge	18.8 (±14.3)	.870 ^b	18.5 (±16.6)
Weeks 3-4 after discharge	7.7 (±9.4)	.530 ^b	8.5 (±12.2)
Average pain score reported			
In the hospital	4.5 (0-10) ^c	.033 ^c	4.0 (0-8.7) ^c
Days 1-3 after discharge	4.3 (0-8.3) ^c	.369	4.0 (0-10) ^c
Week 1 after discharge	4.1 (0.3-7.7) ^c	.527 ^c	3.9 (0.4-10) ^c
Week 2 after discharge	3.1 (0-7.0) ^c	.822 ^c	3.1 (0-9.0) ^c
Weeks 3-4 after discharge	2.2 (0-6.3) ^c	.811 ^c	2.2 (0-8.4) ^c
Mean number of tramadol pills consumed in the first 30 d after discharge (n)	60 (0-170) ^d	.253 ^d	56 (0-180) ^d
Last day after discharge OxyIR was consumed (day after discharge)	6 (0-30)	.310 ^d	8 (0-30)
Patients that never took any OxyIR after discharge (n)	52 (32.2%)	.381 ^d	39 (27.3%)

MEQ, morphine equivalents; OxyIR, oxycodone immediate release.

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Consensus Statement: Toward Opioid-Free Arthroplasty: A Leadership Forum

Seth Waldman, MD • Charles N. Cornell, MD • Louis A. Shapiro, FACHE • Todd J. Albert, MD • William Schairer, MD • E. Carlos Rodriguez-Merchan, MD, PhD • Ellen M. Soffin, MD, PhD • Christopher Lee Wu, MD • Mark Barnes, JD, LL.M. • Alex Rich, MPH • Jonathan Avery, MD • Travis N. Rieder, PhD

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A Checklist for Prescribers of Opioid Analgesia After Total Knee or Hip Arthroplasty

- ☐ Is there a legitimate medical need for a prescribed opioid? If yes, state the need.
- ☐ Have appropriate non-opioid measures been implemented? If yes, list them.
- ☐ Has the patient's risk been assessed?
 - ☐ The state prescription drug monitoring program (PDMP) database has been checked.
 - ☐ The patient's history of substance use, mental health conditions, and sleep apnea has been documented.
 - ☐ Toxicology reports, if indicated, have been reviewed.
- ☐ Has the prescriber referred to the service-specific guideline when choosing a medication and dosage, adhering to the adage "start low, go slow"?
- ☐ Has the patient been educated on the risks and benefits of opioid use, including safe storage, disposal, and tapering?
- ☐ Has the patient received the name and phone number of the prescribing clinician?
- ☐ Have the patient and prescriber signed an opioid agreement?
- ☐ Has all of the above been documented?

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Prescription Education Interventions

ORIGINAL ARTICLE

An Educational Intervention Decreases Opioid Prescribing After General Surgical Operations
Maureen V. Hill, MD, Ryland S. Stucke, MD, Michelle L. McMahon, BS,y Julia L. Beeman, BS, and Richard J. Barth Jr., MD

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A Novel Approach to Avoidance of Perioperative Opioids

- Short course of levodopa + naproxen
 - Demonstrated to abolish pain behaviors in rodents
 - Spared sciatic nerve injury – neuropathic pain model
 - Carageenan injection into paws – inflammatory pain model

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Anesthesiologist's role

- Preoperative identification of patients at risk for opioid use disorder
- ERAS protocols
- Multimodal analgesia and opioid-sparing
- Regional anesthesia/analgesia
- Post-operative discharge and prescription planning
- Role of a transitional pain service

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