From Opioid-Only to "Opioid-Free" – *Where Does Multimodal Analgesia Fit In?*

Edward R. Mariano, M.D., M.A.S.
Professor of Anesthesiology, Perioperative & Pain Medicine
Stanford University School of Medicine
Chief, Anesthesiology and Perioperative Care
Veterans Affairs Palo Alto Health Care System

Stanford Children's Health | Lucile Packard Children's Hospital Stanford

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Overview

- *How did this happen?*
- *Where are we now?*
- *What do we do to move forward?*

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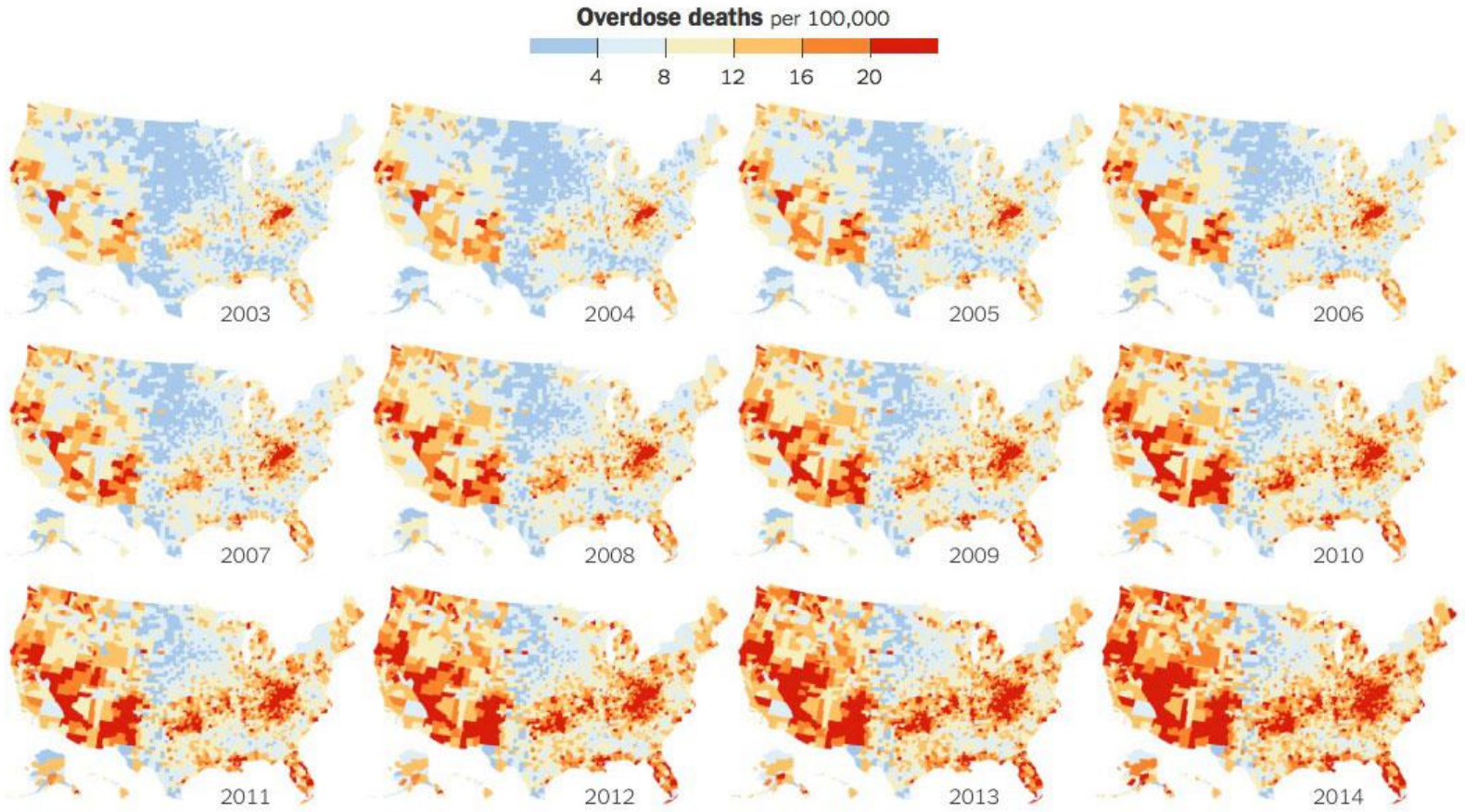
The Opioid Epidemic



https://www.nytimes.com/interactive/2016/01/07/us/drug-overdose-deaths-in-the-us.html?_r=0
https://www.cdc.gov/drugoverdose/epidemic/index.html

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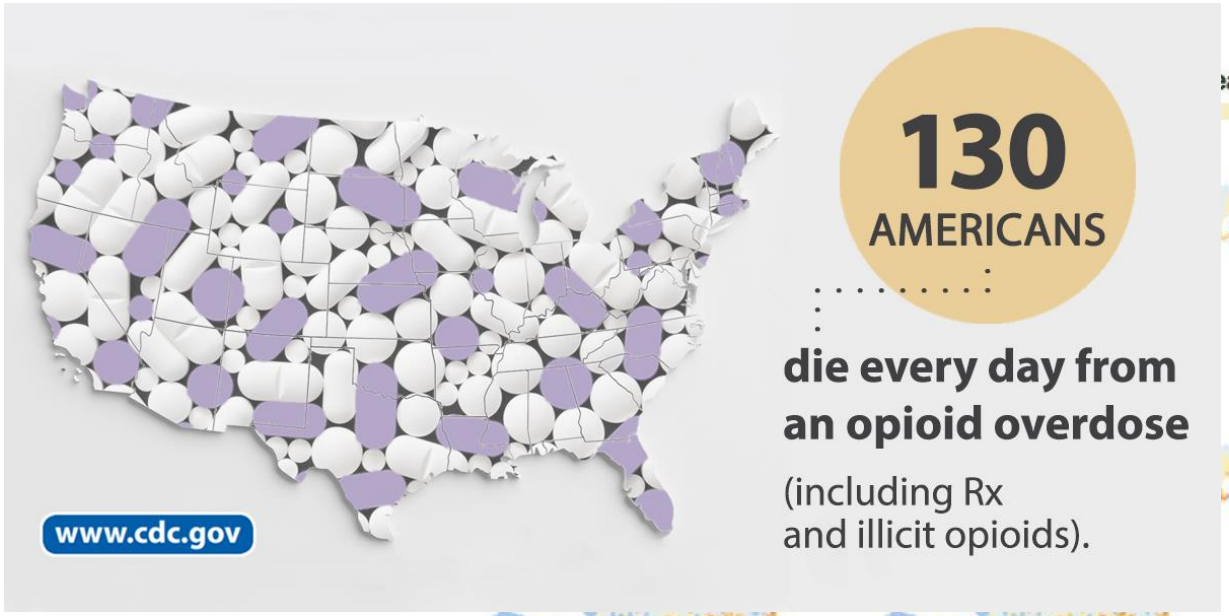

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https://www.cdc.gov/drugoverdose/epidemic/index.html

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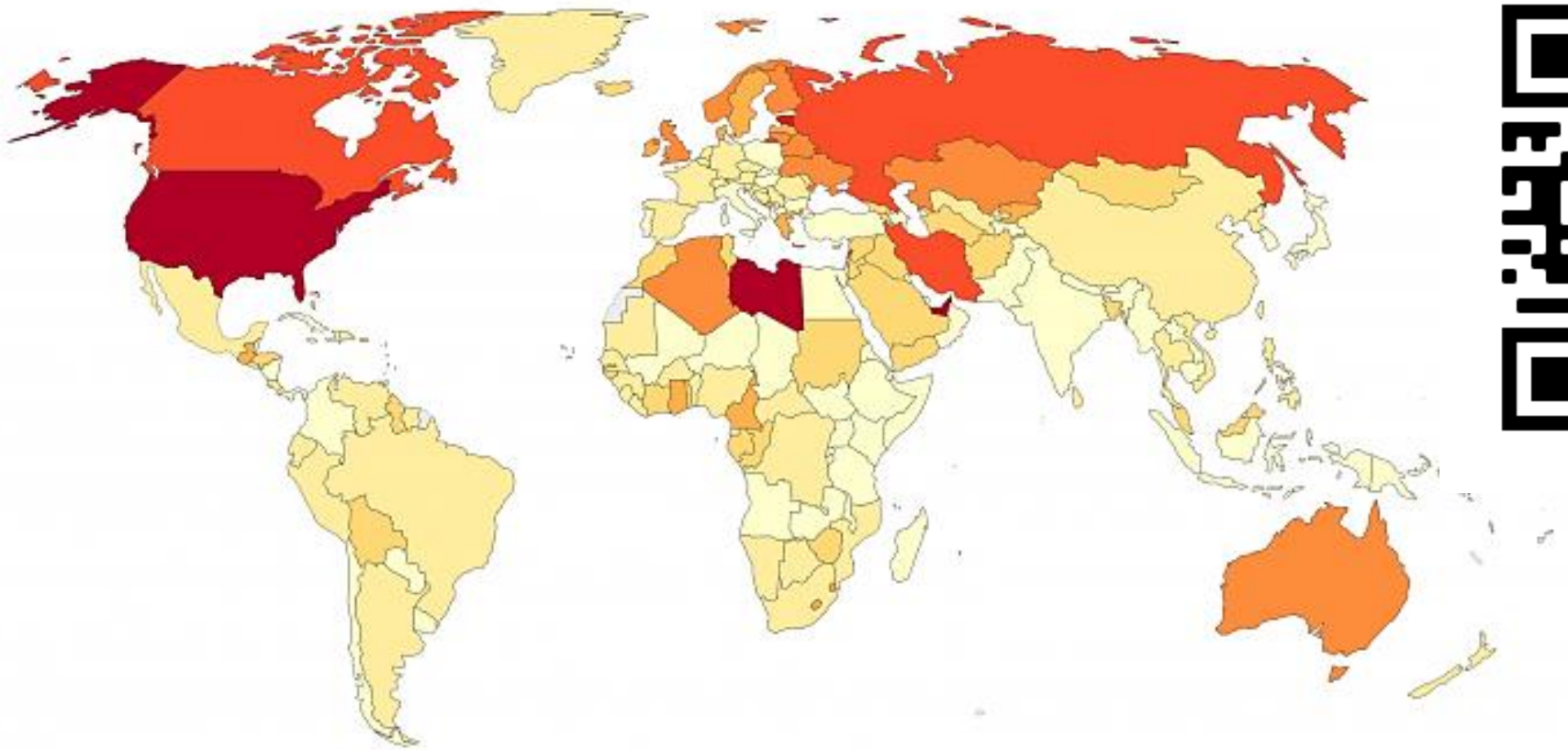
Death rate from opioid use, 2017

Death rates from opioid use disorders are measured as the number of deaths per 100,000 individuals.

Our World in Data



Source: IHME, Global Burden of Disease (GBD)
to allow comparisons between countries and over time this metric is age-standardized. • CC BY

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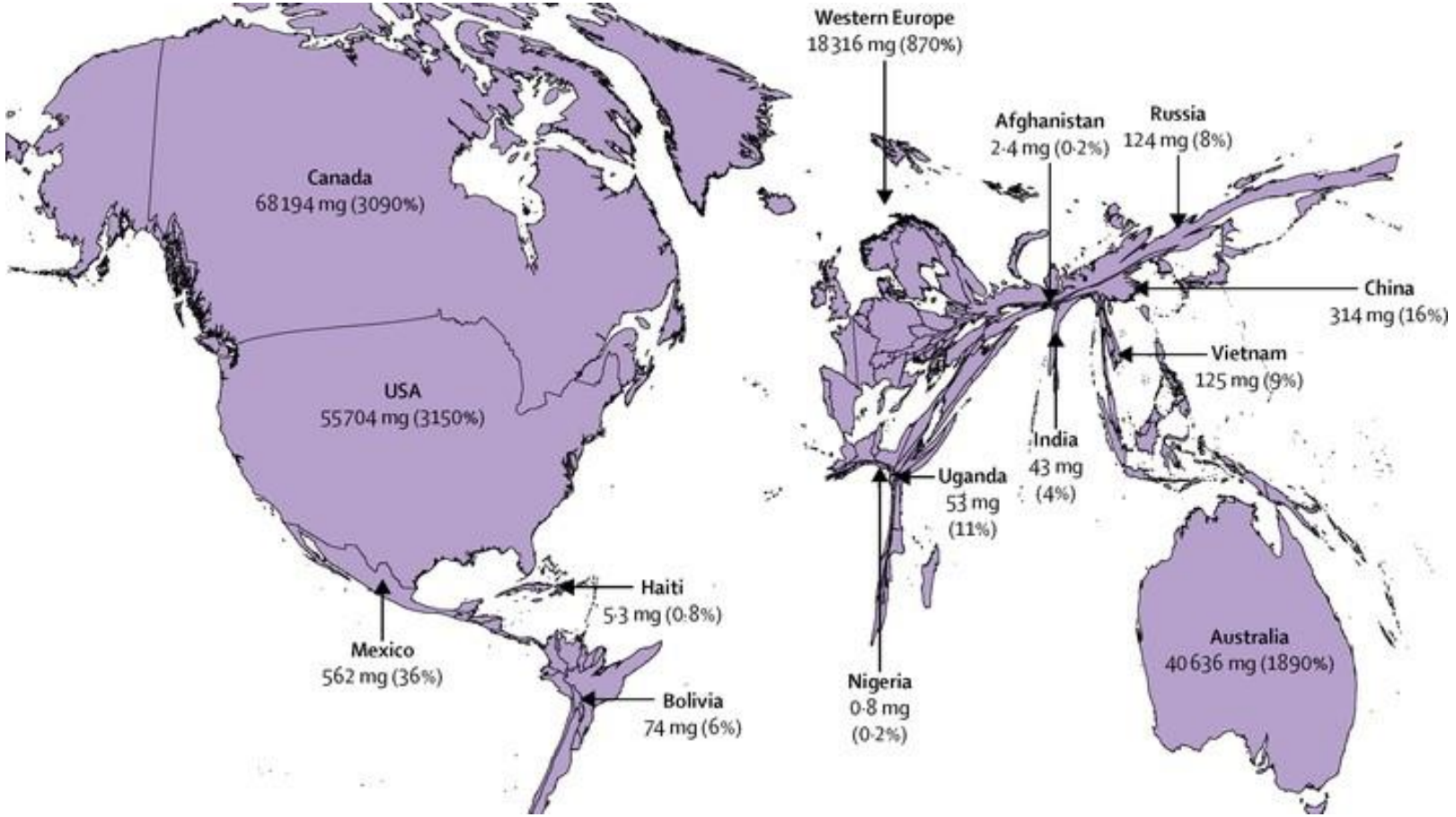
Where the Opioids Go

While the United States faces an epidemic of narcotic addiction, most of the world dies in pain.

JAMES HAMBLIN OCTOBER 18, 2017



Percentage of opioid need met to address serious health-related suffering

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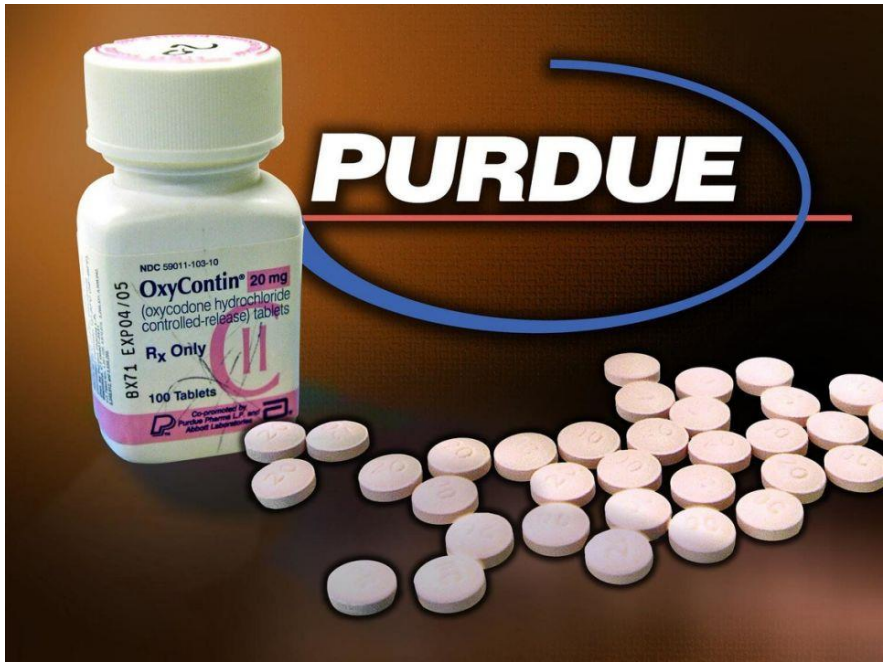
Pain the 5th vital sign™
American Pain Society



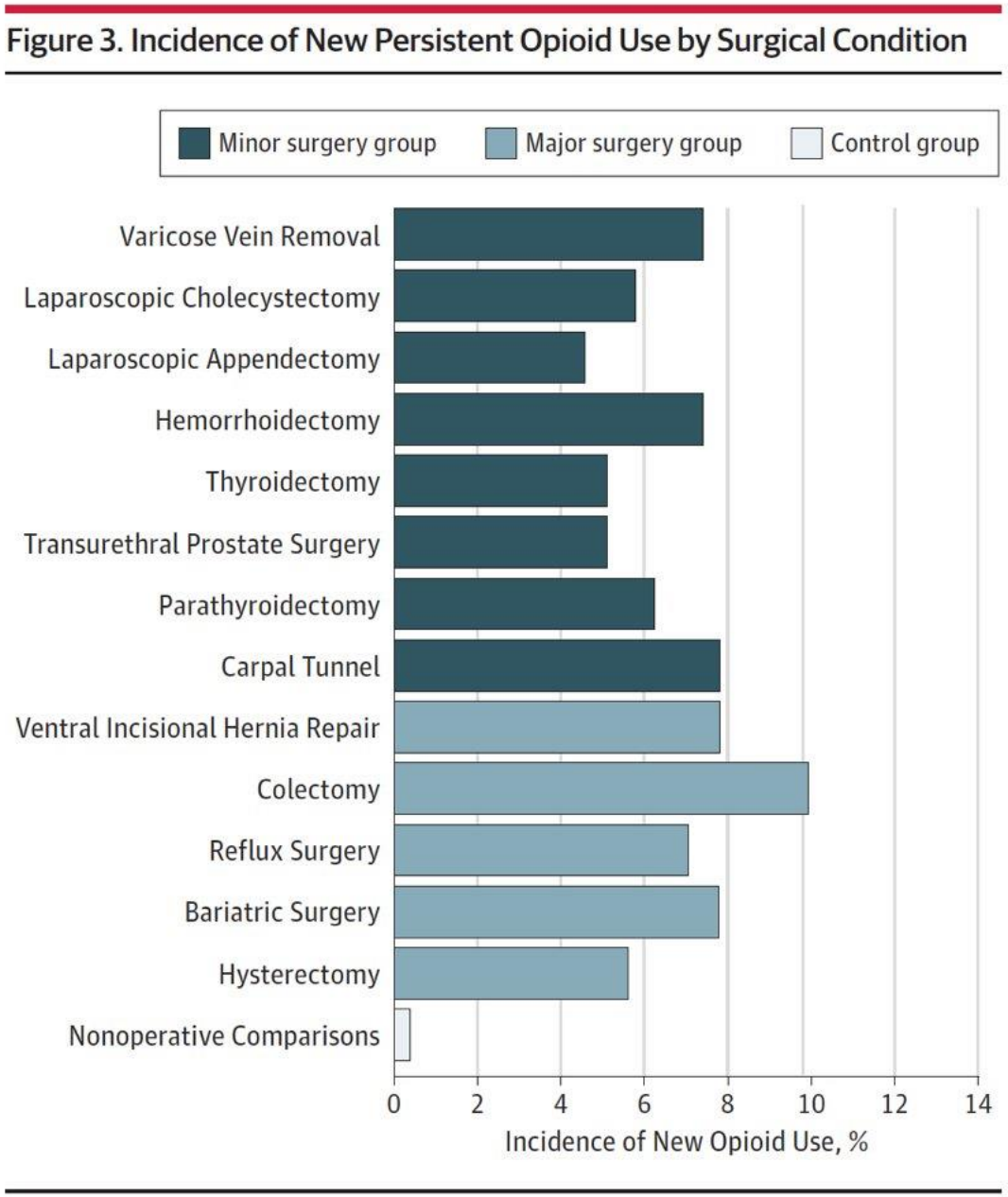
npr

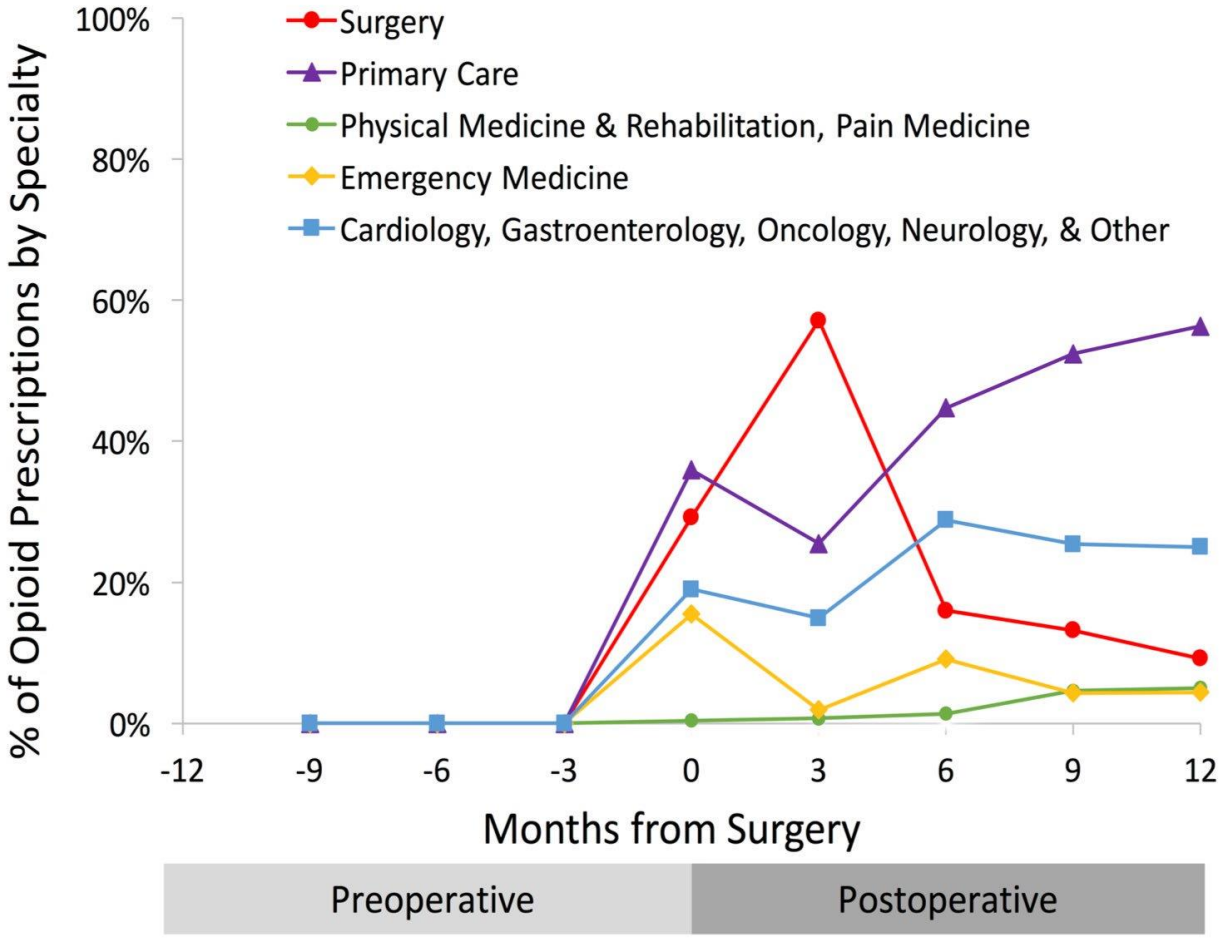
NEWS ARTS & LIFE MUSIC SHOWS & PODCASTS SEARCH

NATIONAL

Spike In Heroin Use Can Be Traced To Prescription Pads

February 4, 2014 · 6:11 PM ET
Heard on All Things Considered





The Role of Surgery

Brummett, et al. JAMA 2017
Klueh, et al. JGIM 2018

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 65 / No. 1
March 18, 2016

CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016

"Acute pain can often be managed without opioids…. More than 7 days will rarely be needed."

Updates Coming Soon!

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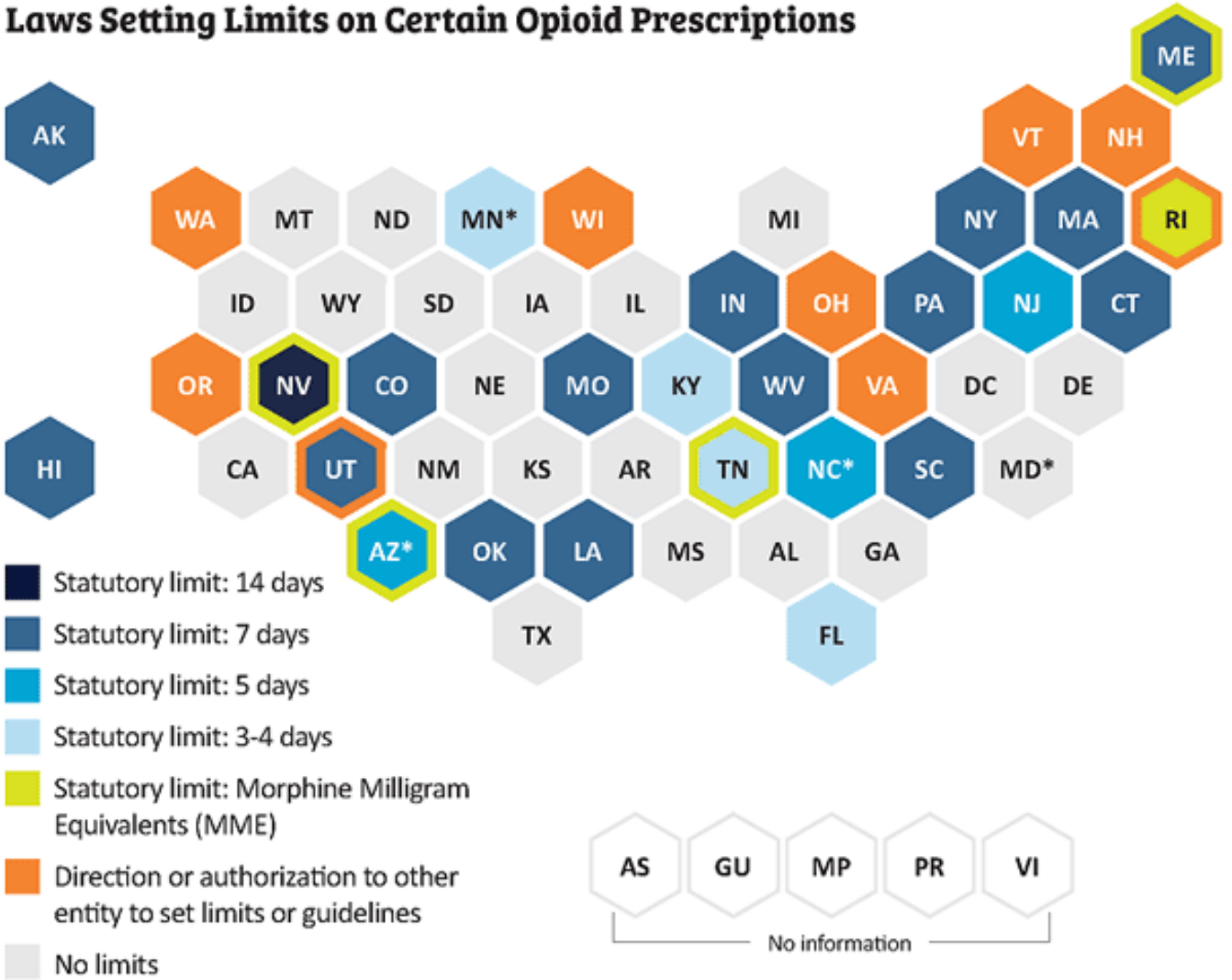

*** Note:** The map displays the state's primary opioid prescription limit and does not include additional limits on certain providers or in certain settings. Arizona allows prescriptions up to 14 days following surgical procedures and North Carolina allows up to seven days for post-operative relief. Maryland requires the "lowest effective dose." Minnesota's limit is for acute dental or ophthalmic pain. The map also does not reflect limits for minors that exist in at least eight states.

Source: NCSL, StateNet

https://www.ncsl.org/research/health/prescribing-policies-states-confront-opioid-overdose-epidemic.aspx

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APR 25, 2016 @ 10:34 AM 4,236 VIEWS

How Long Does It Take Patients To Stop Taking Opioids After Surgery?

CJ Arlotta, CONTRIBUTOR

I cover end-of-life care and dabble in the culture of medicine. FULL BIO

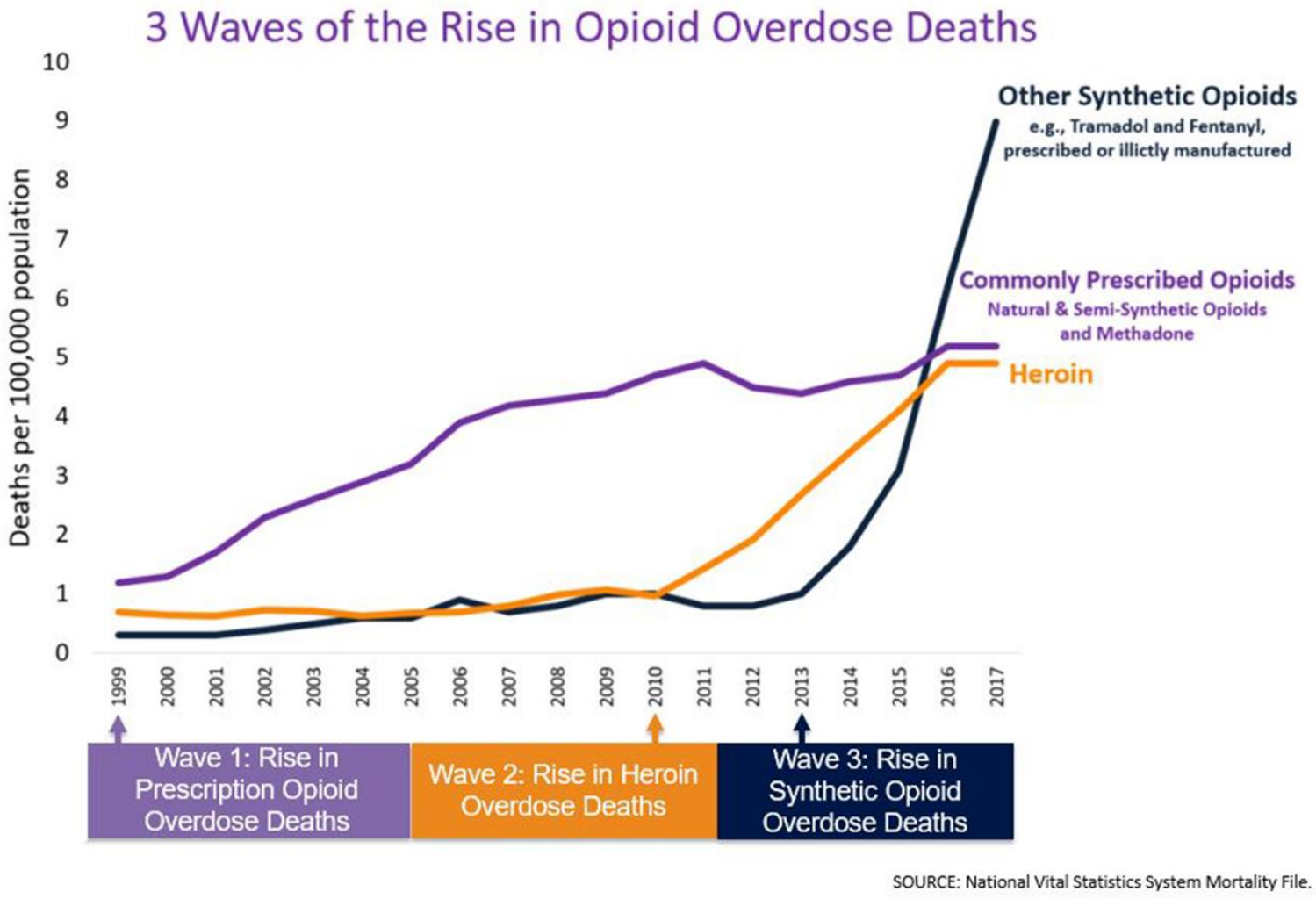
Opinions expressed by Forbes Contributors are their own.

FEATURED

Local doctor disciplined for over prescribing

By Brooke Curley Arizona Range News 9 hrs ago 0

The Opioid Epidemic



https://www.cdc.gov/drugoverdose/epidemic/index.html

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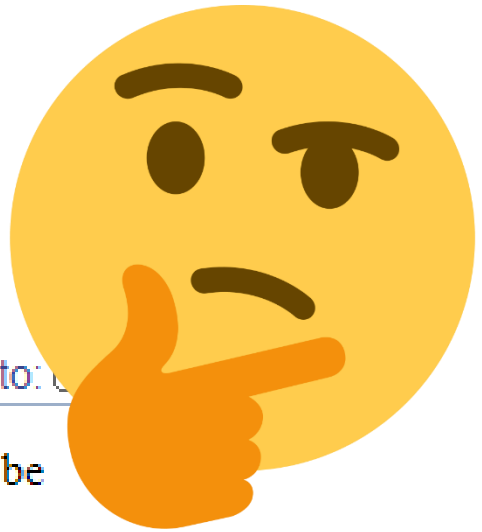
The Ochsner Journal

Ochsner J. 2018 Summer; 18(2): 121–125.
Published online Summer 2018. doi: 10.31486/toj.17.0072
PMCID: PMC6135289
PMID: 30258291

An Evidence-Based Opioid-Free Anesthetic Technique to Manage Perioperative and Periprocedural Pain

Philip G. Boysen, II, MD, MBA, FACP, FCCP, FCCM,[1,2] Marisa M. Pappas, MD,[1] and Bryan Evans, MD[1]



AN OPIOID-FREE ANESTHETIC PRESCRIPTION

Go to:

Based on evidence of drug action and interaction, an opioid-free anesthetic can be delivered with infusions of lidocaine (0.03 mg/kg/min), dexmedetomidine (0.5 mcg/kg/hr), and 0.5 MAC isoflurane. For procedures of less than 2 hours' duration, a bolus dose of lidocaine and dexmedetomidine can be considered. For procedures greater than 2 hours, no bolus dose is necessary.

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The Society for Opioid Free Anesthesia

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THERE'S A BETTER WAY

DITCH OPIOIDS
JOIN THE MOVEMENT

Provide Your Patients the Best Available Pain Management.

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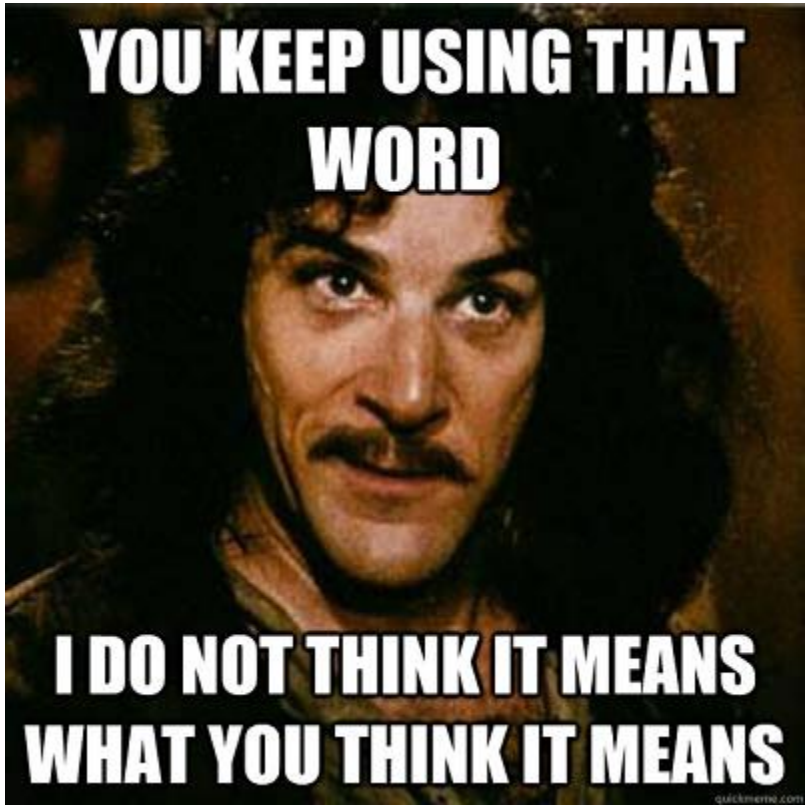
Anaesthesia 2019 doi:10.1111/anae.14611

Editorial

Opioid-free anaesthesia – what would Inigo Montoya say?

N. M. Elkassabany[1] and E. R. Mariano[2,3]



Elkassabany & Mariano. Anaesthesia 2019

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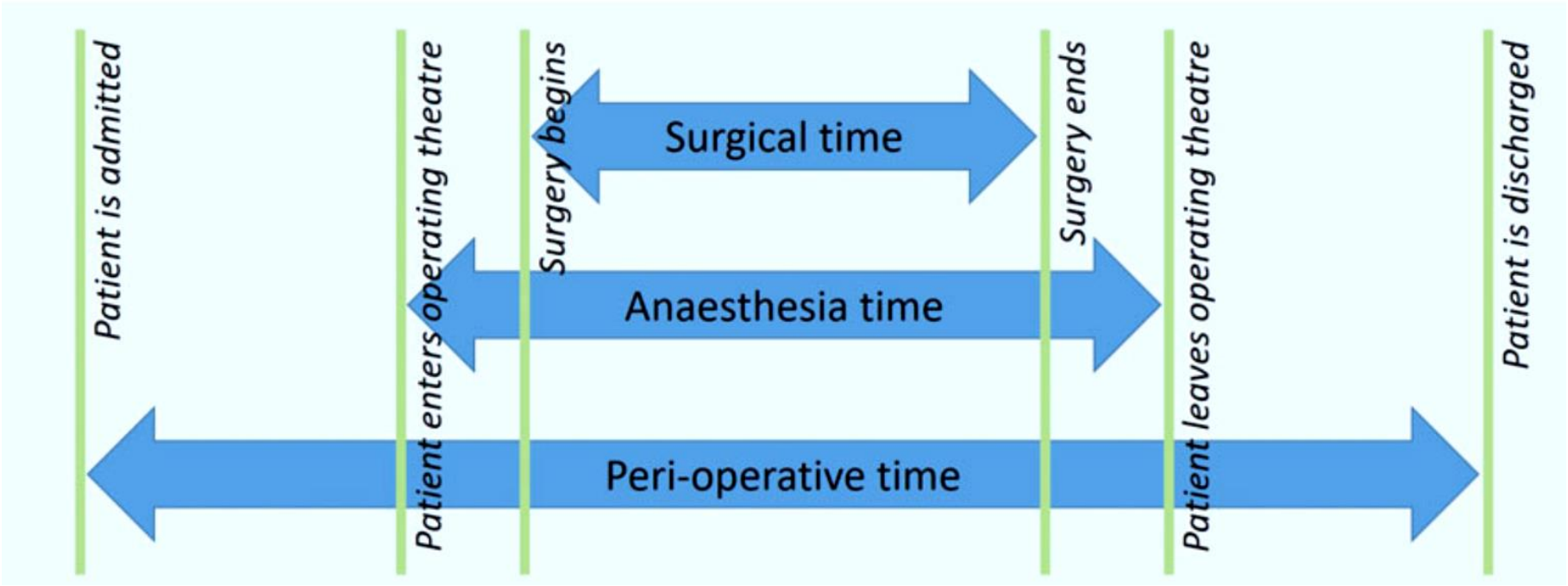
Anaesthesia 2019 doi:10.1111/anae.14611

Editorial

Opioid-free anaesthesia – what would Inigo Montoya say?

N. M. Elkassabany[1] and **E. R. Mariano**[2,3]

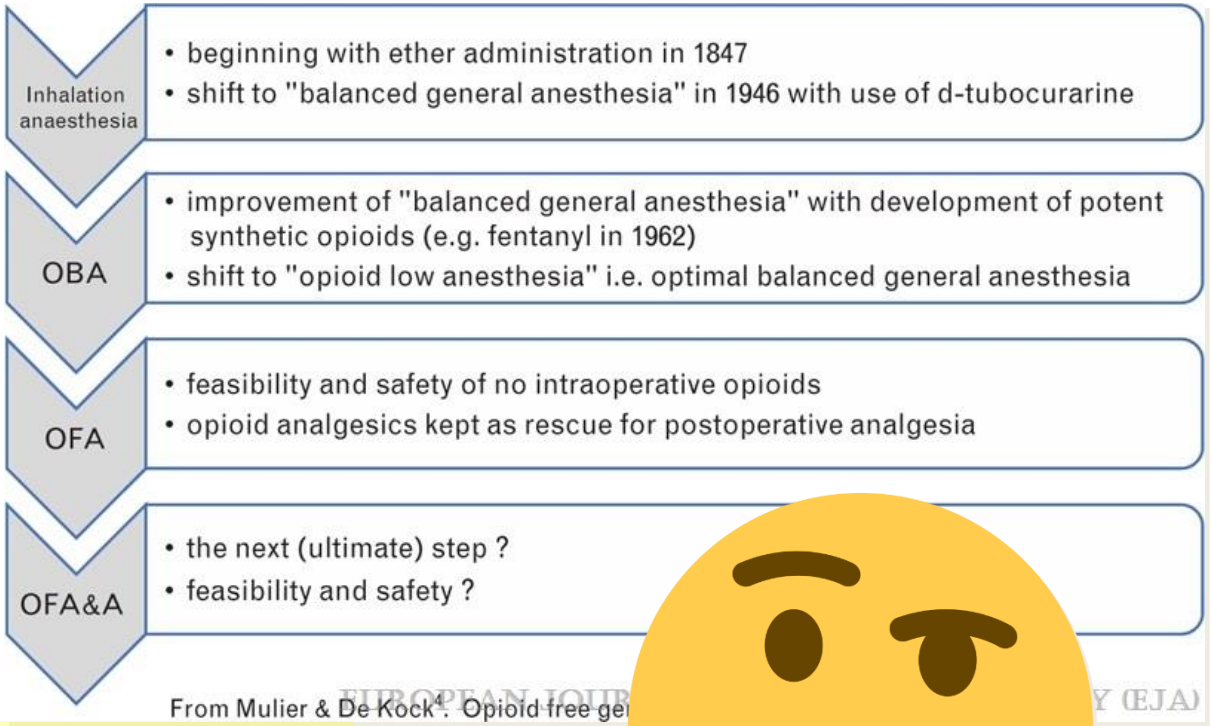
Defining "time" for opioid-free anaesthesia



Elkassabany & Mariano. Anaesthesia 2019

Opioid-Free Anesthesia: PRO?

EJA European Journal of Anaesthesiology



From Mulier & De Kock[4]. Opioid free ge

We will discuss opioid-free anaesthesia (OFA) – not yet 'opioid-free anaesthesia & analgesia' which involves the total peri-operative period and still is a goal that remains difficult to achieve. We argue here that OFA is a new paradigm, by opposition to the old OBA dogma, and as an important step to a more rational use of peri-operative opioids. The

Lavand'homme. EJA 2019

Opioid-Free Anesthesia: CON

Opioid-free anaesthesia

Con

it is too early to adopt opioid-free anaesthesia today

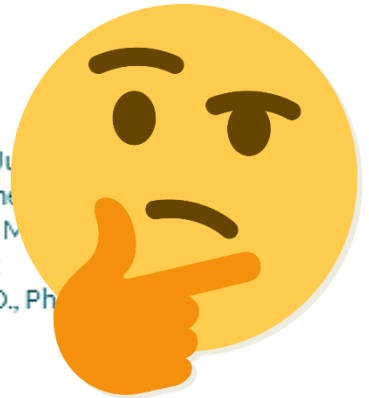
Can (/should) we eliminate opioids altogether? Multimodal analgesia has been shown again and again to be superior to opioid-only regimens.[27] Should we take this to the extreme and simply give drugs such as beta-blockers to attenuate the surgical stress response, eliminating opioids altogether? There is ample evidence that reducing opioids and resting postoperative analgesia on a broader base is a noble undertaking. Whether it is necessary to eliminate opioids completely for all surgeries is another question. Even if we succeed in introducing an entirely opioid-free anaesthetic, we would need to weave this together with an analgesic plan that will extend well beyond the operating room and hospital discharge.

Lirk & Rathmell. EJA 2019

Perioperative Medicine | April 2021

Balanced Opioid-free Anesthesia with Dexmedetomidine *versus* Balanced Anesthesia with Remifentanil for Major or Intermediate Noncardiac Surgery: The Postoperative and Opioid-free Anesthesia (POFA) Randomized Clinical Trial

Helene Beloeil, M.D., Ph.D.; Matthias Garot, M.D.; Gilles Lebuffe, M.D., Ph.D.; Alexandre Gerbaud, M.D.; Ju
Philippe Cuvillon, M.D., Ph.D.; Elisabeth Dubout, M.D.; Sebastien Oger, M.D.; Julien Nadaud, M.D.; Antoine
Nicolas Coullier, M.D.; Sylvain Lecoeur, M.D.; Julie Fayon, M.D.; Thomas Godet, M.D.; Michel Mazerolles, M
Fouad Atallah, M.D.; Stephanie Sigaut, M.D.; Pierre-Marie Choinier, M.D.; Karim Asehnoune, M.D., Ph.D.;
Antoine Roquilly, M.D., Ph.D.; Gerald Chanques, M.D., Ph.D.; Maxime Esvan, Ms.C.; Emmanuel Futier, M.D., Ph
Bruno Laviolle, M.D., Ph.D.; POFA Study Group ; SFAR Research Network



In this multicenter randomized, open-label trial, opioid-free balanced anesthesia with dexmedetomidine resulted in a greater incidence of postoperative opioid-related serious adverse events compared with balanced anesthesia with remifentanil in patients undergoing elective intermediate or major noncardiac surgery. Patients in the opioid-free balanced anesthesia with dexmedetomidine group had more postoperative hypoxemia, delayed extubation, prolonged PACU stay, and intraoperative bradycardia. Five cases of severe bradycardia in the dexmedetomidine group led to the early termination of the study.

Unintended Consequences

The panel also noted the potential for misapplication of the recommendations to populations outside the scope of the guideline. Such misapplication has been reported for patients with pain associated with cancer,[5] surgical procedures,[5] or acute sickle cell crises. There have also been reports of misapplication of the guideline's dosage thresholds to opioid agonists for treatment of opioid use disorder. Such actions are likely to result in harm to patients.

Perspective
JUNE 13, 2019

No Shortcuts to Safer Opioid Prescribing

Deborah Dowell, M.D., M.P.H., Tamara Haegerich, Ph.D., and Roger Chou, M.D.

The Opioid Epidemic

APR 25, 2016 @ 10:34 AM 4,236 VIEWS

How Long Does It Take Patients To Stop Taking Opioids After Surgery?

CJ Arlotta, CONTRIBUTOR

I cover end-of-life care and dabble in the culture of medicine. FULL BIO

Opinions expressed by Forbes Contributors are their own.

FEATURED

Local doctor disciplined for over prescribing

By Brooke Curley Arizona Range News 9 hrs ago 0

Feds issue new warning to doctors: Don't skimp too much on opioid pain pills

Jayne O'Donnell and Ken Alltucker, USA TODAY Published 5:08 p.m. ET April 24, 2019 | Updated 10:01 a.m. ET April 25, 2019

EDITORIAL

Rational Perioperative Opioid Management in the Era of the Opioid Crisis

Evan D. Kharasch, M.D., Ph.D., Michael J. Avram, Ph.D., J. David Clark, M.D., Ph.D.

"Opioid-free anesthesia" has recently become a *cause célèbre*. It is touted by its advocates as having potential advantages in providing superior (or at least equivalent) anesthetic outcomes and potentially reduced risks of developing chronic postoperative opioid use or even the likelihood of developing a frank opioid use disorder. Regrettably, very little information from clinical trials involving these techniques is available. While a few reports do variably suggest possible short-term reductions in postoperative opioid use or nausea and vomiting,[10–12] whether these effects are generalizable, or in whom these properties might be considered sufficiently advantageous to routinely employ opioid-free techniques, has yet to be defined. More broadly, it is entirely unclear whether there are long-term detriments to intraoperative opioid administration. Moreover, if intraoperative opioids are eliminated, but patients receive equivalent postoperative postanesthesia care unit, ward, and take-home opioids, it is unclear that much would be gained. In fact, an opioid-free anesthesia protocol for colorectal surgery was observed to have minimal effect on discharge opioid prescribing.[13] Importantly, a link between persistent postoperative opioid use and specific approaches to intraoperative or even early postoperative opioid administration has yet to be demonstrated.

Kharasch, et al. Anesthesiology Feb 2020

EDITORIAL

Rational Perioperative Opioid Management in the Era of the Opioid Crisis

Evan D. Kharasch, M.D., Ph.D., Michael J. Avram, Ph.D., J. David Clark, M.D., Ph.D.

> "Let us avoid making surgical patients pay with unnecessary suffering for the opioid overprescribing sins of others."

Kharasch, et al. Anesthesiology Feb 2020

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Anaesthesia
Peri-operative medicine, critical care and pain
Association of Anaesthetists

Guidelines | Free Access

An international multidisciplinary consensus statement on the prevention of opioid-related harm in adult surgical patients

N. Levy, J. Quinlan, K. El-Boghdadly, W. J. Fawcett, V. Agarwal, R. B. Bastable, F. J. Cox ✉, H. D. de Boer, S. C. Dowdy, K. Hattingh, R. D. Knaggs, E. R. Mariano, P. Pelosi, M. J. Scott, D. N. Lobo ✉, P. E. Macintyre

SETTING	MODIFIABLE RISK FACTORS	RECOMMENDATIONS OR RATIONALE
Pre-assessment clinic	Pre-operative opioids	Patients taking long-term opioids are more likely to develop PPOU: wean or taper opioids before surgery
	Psychological comorbidities	Psychological interventions may reduce pre-operative anxiety, depression and catastrophic thinking, thus decreasing postoperative pain and opioid requirements
	Unrealistic expectations	Educate patients and carers about pain management, including non-pharmacological strategies and safe analgesic use
Postoperative period in hospital	Reliance on unidimensional pain scores alone	Use functional outcomes to ensure that analgesic use leads to improved recovery
	Abnormal pain trajectory	Patients whose pain is not following an expected trajectory should be identified early as this may signify postoperative complications, neuropathic pain or psychological distress
	Reliance on opioid analgesia	Use multimodal analgesia and non-pharmacological techniques for pain relief
	Long-acting opioids	Avoid initiating long-acting formulations; use short-acting opioids as needed only
	Compound opioids	Do not prescribe compound tablets: give each drug separately

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Preparation for discharge	Over-emphasis on opioids for discharge medication	Educate patients and carers to use multimodal analgesia and non-pharmacological techniques for pain relief
	Large number of opioid tablets	Limit the number of tablets given at discharge
	Long duration of discharge opioid prescription	Limit the duration of opioids given at discharge
	Lack of deprescribing advice	Educate patients and carers about reducing analgesia (opioids first)
Post-discharge	Repeat prescriptions	The risk of PPOU increases considerably with each repeat prescription: review the patient before dispensing more opioids
	Chronic postsurgical pain	Refer to a pain service if pain exceeds expected healing time
	Unsafe storage of opioids at home	Unsecured opioids risk unintended overdose or diversion
	Unsafe disposal of unused opioids	Educate patients and carers about safe disposal of unused opioids

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OPEN
OPIOID PRESCRIBING ENGAGEMENT NETWORK

@DrChadB

Prescribing Recommendations

Procedure	Oxycodone* 5mg Tablets
Dental Extraction	0
Thyroidectomy	0 - 5
Laparoscopic Anti-reflux (Nissen)	0 - 10
Appendectomy – Lap or Open	0 - 10
Laparoscopic Donor Nephrectomy	0 - 10
Hernia Repair – Minor or Major	0 - 10
Sleeve Gastrectomy	0 - 10
Laparoscopic Cholecystectomy	0 - 10
Open Cholecystectomy	0 - 15
Laparoscopic Colectomy	0 - 10
Open Colectomy	0 - 15

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National Academy of Medicine
Action Collaborative on Countering the U.S. Opioid Epidemic

Working Group Co-Leads

Helen Burstin, MD, MPH (Council of Medical Specialty Societies)
Debra Houry, MD, MPH (US Centers for Disease Control and Prevention)

Working Group Participants

Rebecca Baker, PhD (National Institutes of Health)
Alison Bramhall, MPH (American Dental Association)
Roger Chou, MD (Oregon Health and Science University)
Kyle P. Edmonds, MD, FAAHPM (American Academy of Hospice and Palliative Medicine)
Mary R. Grealy, JD (Healthcare Leadership Council)
Nicole Harrington, BS (CVS Health)
Trent Haywood, MD, JD (Blue Cross Blue Shield Association)
Lisa Hines, PharmD (Pharmacy Quality Alliance)
Shari Ling, MD (Centers for Medicare and Medicaid Services)
Edward Mariano, MD, MS (American Society of Anesthesiologists)
Laurence Meyer, MD, PhD (US Department of Veterans Affairs)
Robert "Chuck" Rich, Jr., MD, FAAFP (American Academy of Family Physicians)
Michael Schlosser, MD, MBA (HCA Healthcare)
Bob Twillman, PhD (Academy of Integrative Pain Management)
Scott G. Weiner, MD, MPH, FAAEM, FACEP (American College of Emergency Physicians)

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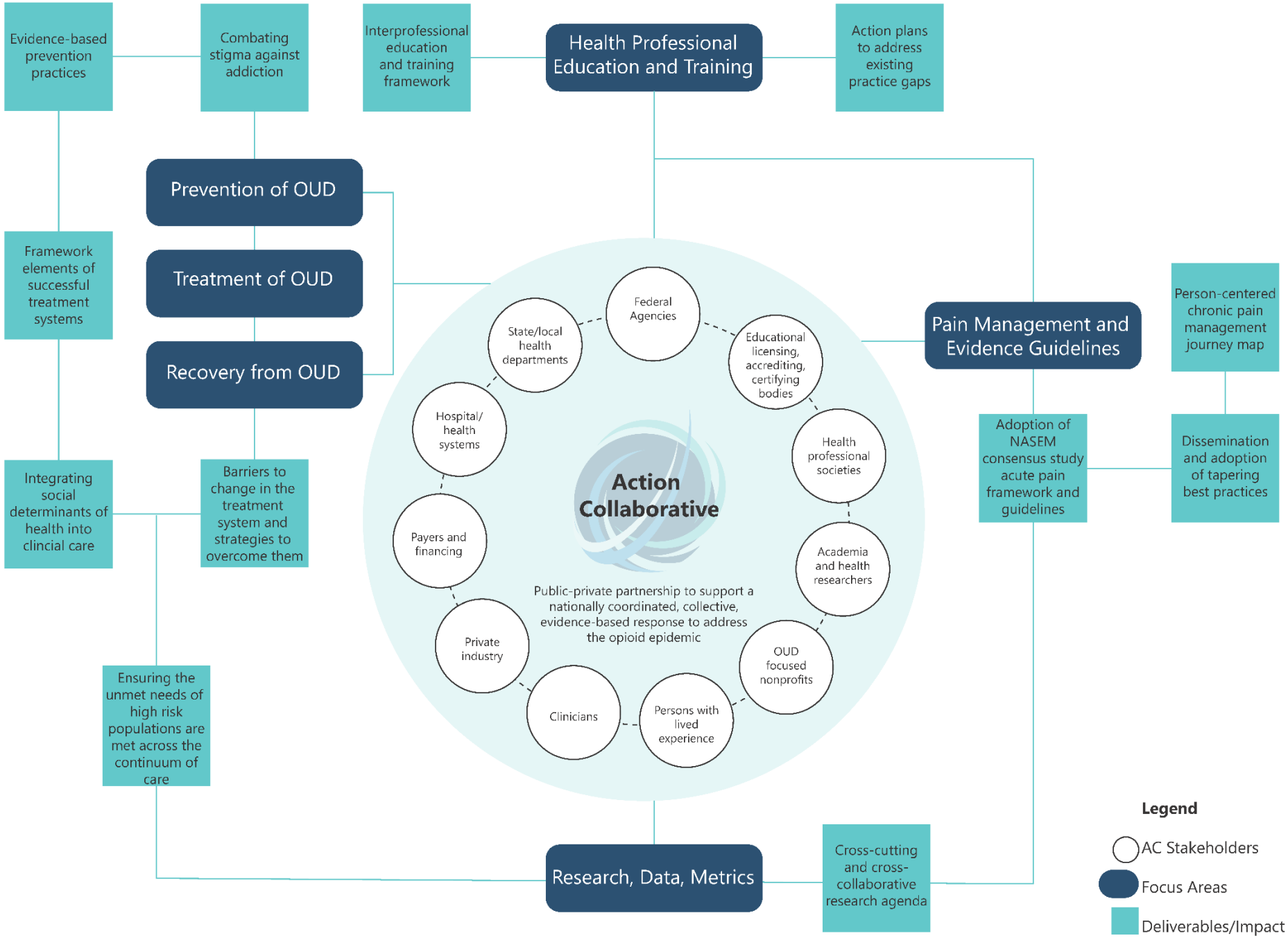
Evidence-based prevention practices
Combating stigma against addiction
Interprofessional education and training framework
Health Professional Education and Training
Action plans to address existing practice gaps
Prevention of OUD
Framework elements of successful treatment systems
Treatment of OUD
Recovery from OUD
Federal Agencies
State/local health departments
Educational licensing, accrediting, certifying bodies
Hospital/ health systems
Health professional societies
Action Collaborative
Payers and financing
Academia and health researchers
Public-private partnership to support a nationally coordinated, collective, evidence-based response to address the opioid epidemic
Private industry
OUD focused nonprofits
Clinicians
Persons with lived experience
Pain Management and Evidence Guidelines
Person-centered chronic pain management journey map
Adoption of NASEM consensus study acute pain framework and guidelines
Dissemination and adoption of tapering best practices
Integrating social determinants of health into clincial care
Barriers to change in the treatment system and strategies to overcome them
Ensuring the unmet needs of high risk populations are met across the continuum of care
Research, Data, Metrics
Cross-cutting and cross-collaborative research agenda
Legend
AC Stakeholders
Focus Areas
Deliverables/Impact

ASA-Premier Pilot Collaborative

Be a Leader in Curbing the Opioid Epidemic

Improve safe inpatient use of opioids.
Prevent opioid misuse and potential for abuse post discharge.

JOIN PREMIER HIIN AND ASA'S PILOT COLLABORATIVE

Safer Post-Operative Pain Management: Reducing Opioid-Related Harm

BACKGROUND

The opioid epidemic is a national priority. Research and studies show that opioid misuse and potential for abuse can begin with legitimately prescribed opioids following a medical procedure. Moreover, the prevalence of prescribed opioids is contributing to the drugs availability in society.

WHO

Premier's Hospital Improvement Innovation Network (HIIN) and the **American Society of Anesthesiologists (ASA)** have partnered to offer **HIIN participating hospitals** a pilot project to collaboratively address the national opioid epidemic and priority.

WHY

Improve safe inpatient use of opioids and prevent opioid misuse and potential for abuse post discharge.

WHAT

Measurably reduce and/or prevent opioid-related harm among adult surgical patients having elective hip and knee arthroplasty or colectomy procedures.

HOW

Safer Post-Operative Pain Management is a team activity requiring active leadership, provider champions, a multidisciplinary team, and patient-family engagement.

WHAT TO EXPECT

- Monthly Live Webinars & Technical Assistance
- Tools & Resources
- Data Collection & Chart Audits
- Industry-Leading Subject Matter Experts
- Peer-to-Peer Learning

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ASA-AAOS Collaboration

Modules for Physicians and Patients

Plan for the Alleviation of Pain After Surgery >

Prepare patients for discomfort and recovery

Optimize the Safe and Effective Alleviation of Pain >

Implement routine screening and improve outcomes

Help Patients Get Comfortable After Injury or Surgery >

Remind patients that pain is normal

Implement a Practice-wide Strategy for Safe, Effective Pain Alleviation >

Tips and strategies for your practice

Safe Use, Storage and Disposal of Opioid Medications >

Limit diversion of unused opioids

Physician Resources >

Download resources, including slides and scripts

Patient Resources >

Helpful videos and pain management plan

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Turn Research into Action

Review Article
pISSN 2005-6419 · eISSN 2005-7563

Designing the ideal perioperative pain management plan starts with multimodal analgesia

Practice Patterns in Perioperative Nonopioid Analgesic Administration by Anesthesiologists in a Veterans Affairs Hospital

Jereen Z. Kwong, MD, MS,* Seshadri C. Mudumbai, MD, MAS,*,† Tina Hernandez-Boussard, PhD, MPH, MS,‡,§,¶ Rita A. Popat, PhD, MS,‖ and Edward R. Mariano, MD, MAS*,†

Four New Quality Pain Measures Approved for 2018

Jan 13, 2018

ASRA is thrilled to announce that the Centers for Medicare and Medicaid Services (CMS) has approved the Anesthesia Quality Institute (AQI) National Anesthesia Clinical Outcomes Registry (NACOR) as a Qualified Registry and Qualified Clinical Data Registry (QCDR) for 2018 MIPS reporting.

ASRA collaborated with the American Society of Anesthesiologists this past fall to develop pain quality measures for submission to CMS. Four of the measures were accepted and are now part of the QCDR. They are:

- AQI56: Use of Neuraxial Techniques and/or Peripheral Nerve Blocks for Total Knee Arthroplasty (TKA)
- AQI57: Safe Opioid Prescribing Practices
- AQI58: Infection Control Practices for Open Interventional Pain Procedures
- AQI59: Multimodal Pain Management

2020: Now a National Quality Metric

Multimodal Pain Management

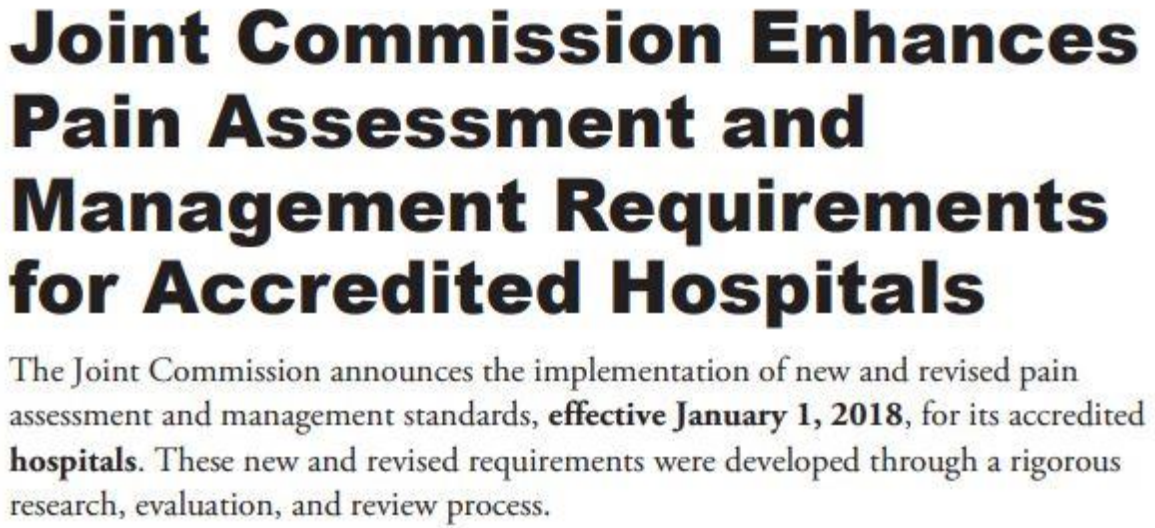
High Priority Measure: Process

Percentage of patients, aged 18 years and older, undergoing selected surgical procedures that were managed with multimodal pain medicine.

Collection Type and Documentation

MIPS clinical quality measures (MIPS CQMs) Specifications (PDF)

Leadership Starts at the Local Level



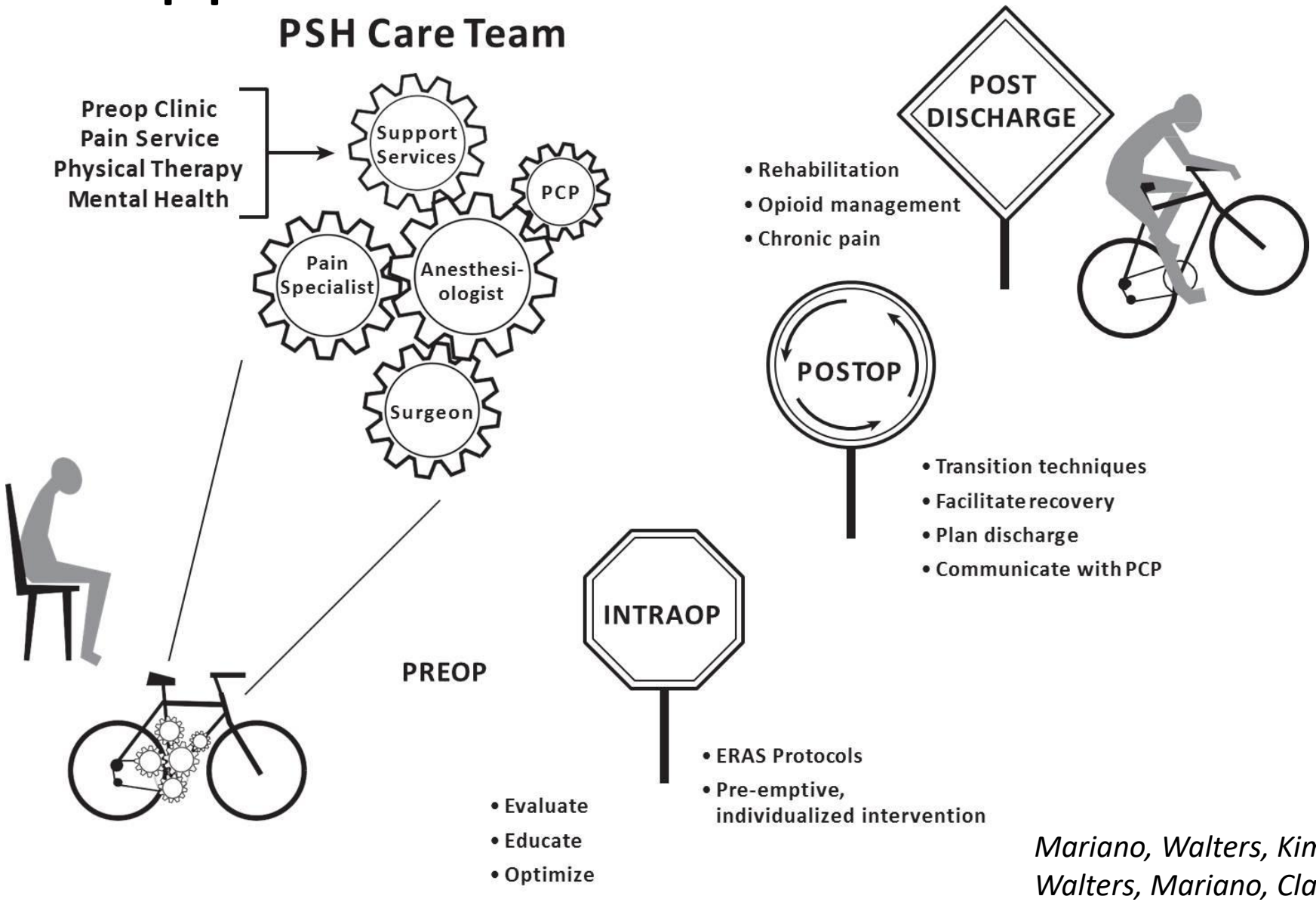
Joint Commission Enhances Pain Assessment and Management Requirements for Accredited Hospitals

The Joint Commission announces the implementation of new and revised pain assessment and management standards, **effective January 1, 2018**, for its accredited **hospitals**. These new and revised requirements were developed through a rigorous research, evaluation, and review process.

Elements of Performance for LD.04.03.13

1. The hospital has a leader or leadership team that is responsible for pain management and safe opioid prescribing and develops and monitors performance improvement activities.

Approach Pain as a Continuum



Mariano, Walters, Kim, Kain. A&A 2015
Walters, Mariano, Clark. Pain Med 2015

Anaesthesia 2019 doi:10.1111/anae.14611

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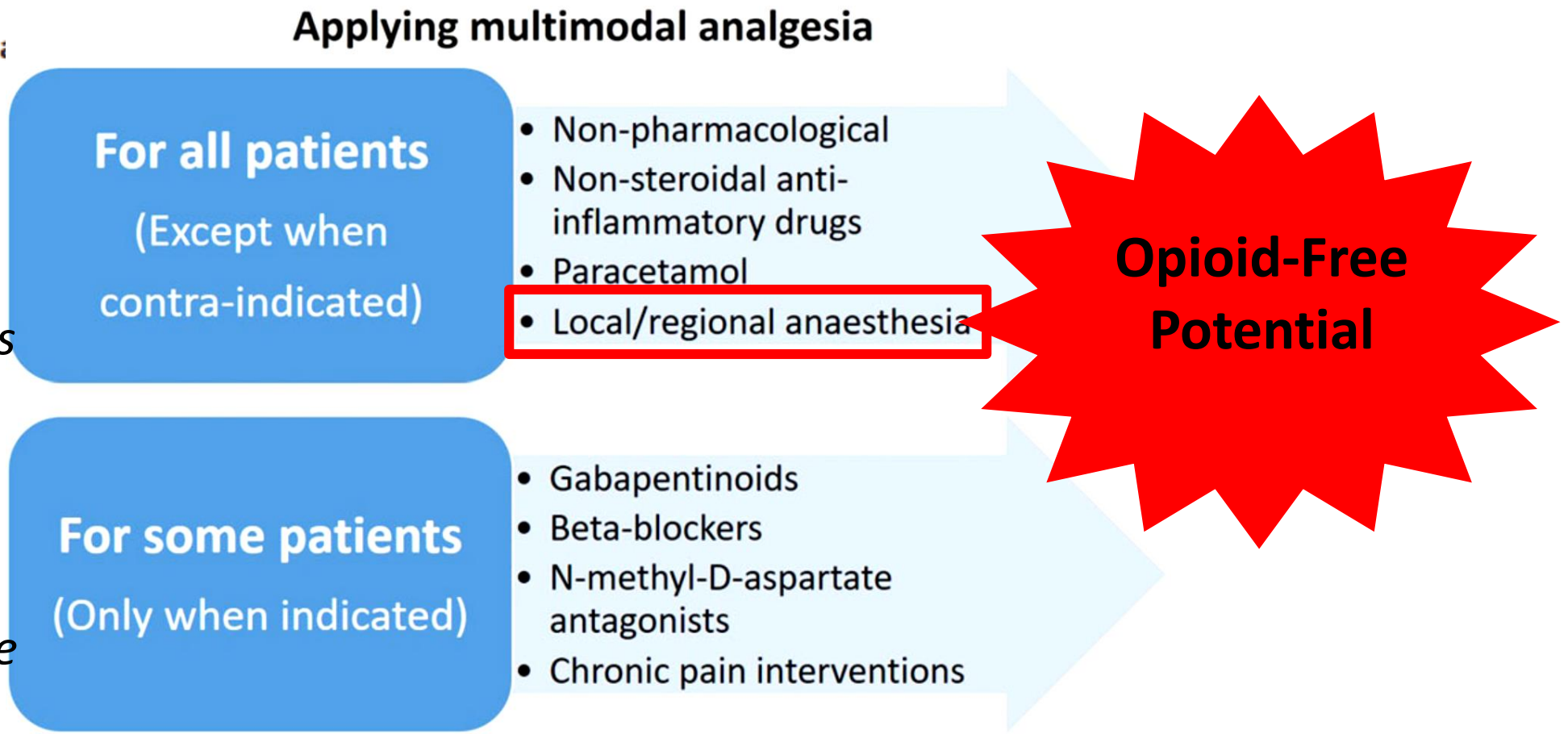
Opioid-free anaesthesia – what would Inigo Montoya say?

N. M. Elkassa

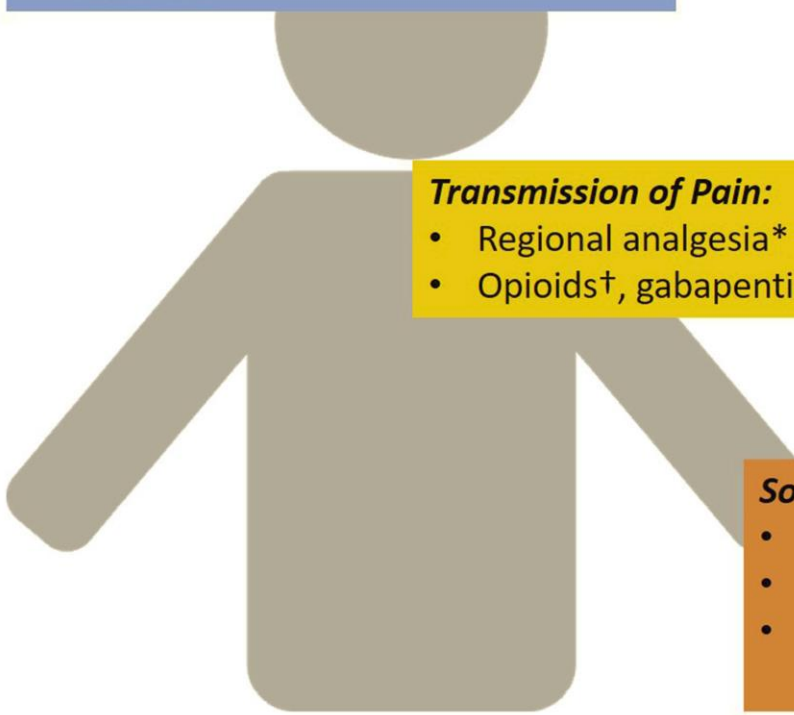
'a strategy that maximises non-opioid modalities for anaesthesia and analgesia and reserves the use of opioids for severe acute pain unrelieved by other methods from admission to discharge from the hospital.'



Elkassabany & Mariano. Anaesthesia 2019

A Commonsense Patient-Centered Approach to Multimodal Analgesia Within Surgical Enhanced Recovery Protocols

Processing of Pain:
- Cognitive-behavioral therapy*
- Patient education*
- Acetaminophen*
- Opioids†, gabapentinoids†, ketamine†



Transmission of Pain:
- Regional analgesia*
- Opioids†, gabapentinoids†, ketamine†

Source of Pain:
- Compression*, cryotherapy*
- Local anesthetics*
- Non-steroidal anti-inflammatory drugs*

Mariano, Schatman. J Pain Res 2019

Multimodal Analgesia: a Checklist, NOT a Recipe

Class	Mechanism of Action	Options	Frequency	Considerations
Nonpharmacologic	Variable	Patient Education Compression Cryotherapy Acupuncture Electrical Stimulation	Routine	No clear guidelines
NSAIDs	Nonselective COX-1,2 inhibition Selective COX-2 inhibition	Ketorolac Ibuprofen Celecoxib	Routine	Renal insufficiency, gastric ulcers, platelet dysfunction, cardiovascular disease
Acetaminophen	Central prostaglandin synthesis inhibition	Acetaminophen (Paracetamol)	Routine	Hepatic dysfunction
Gabapentinoids	Binding to alpha-2-delta subunits of voltage-dependent calcium channels	Gabapentin Pregabalin	If indicated	Renal impairment
NMDA Antagonists	N-methyl-D-aspartate blockade	Ketamine Magnesium	If indicated	Severe psychiatric disorders, raised intracranial or intraocular pressure (ketamine only)
Local and Regional Analgesia	Sodium channel blockade	Spinal/Epidural Lumbar Plexus ± Sacral Plexus Femoral Nerve ± Sciatic Nerve Femoral Nerve ± LIA Adductor Canal ± LIA Adductor Canal ± IPACK LIA Only	Routine	Allergy to local anesthetic, site infection, available resources and training level of staff

NSAIDs = nonsteroidal anti-inflammatory drugs; NMDA = N-methyl-D-aspartate; LIA = local infiltration analgesia; IPACK = infiltration between the popliteal artery and capsule of the knee

Kandarian, Elkassabany, Tamboli, Mariano. Best Pract 2019

Patient Education

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Short communication

Patient education and engagement in postoperative pain management decreases opioid use following knee replacement surgery

Meghana Yajnik[a], Jonay N. Hill[a,b], Oluwatobi O. Hunter[b], Steven K. Howard[a,b], T. Edward Kim[a,b], T. Kyle Harrison[a,b], Edward R. Mariano[a,b,*]

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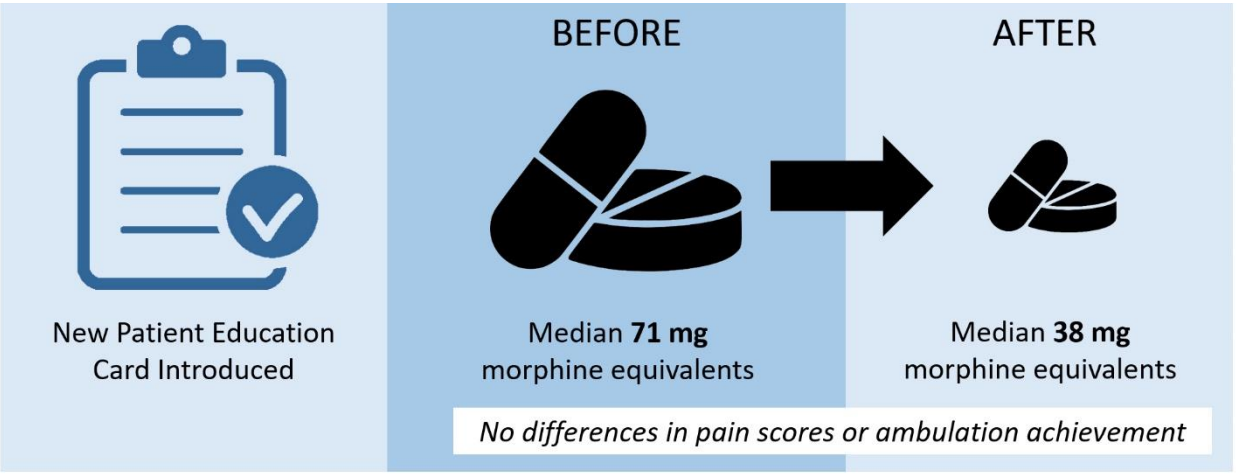
[b] Anesthesiology and Perioperative Care Service, MC 112A, 3801 Miranda Avenue, Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, 94304, USA



Yajnik et al. *Patient Educ Couns* 2018. PMID: 30219634.

Yajnik, et al. Patient Educ Couns. 2018

Patient Education

Quality of Patient Education Materials on Safe Opioid Management in the Acute Perioperative Period: What Do Patients Find Online?

Search for patient education materials on safe opioid management after surgery

Average reading level of online education materials was above 8th grade

6th grade is recommended!

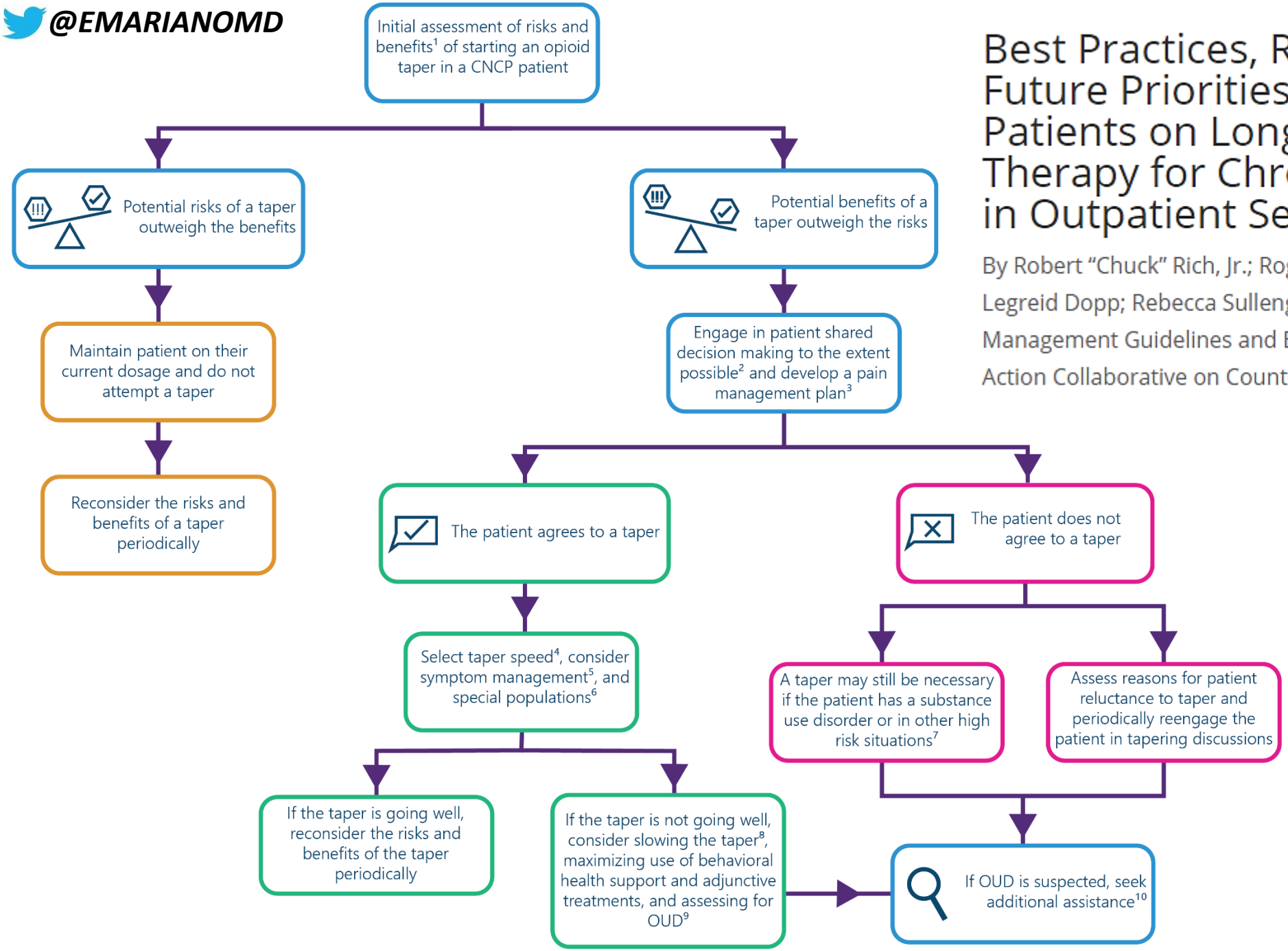
<50%

of online education materials specifically mention opioid tapering or cessation

Kumar, Jaremko, Kou, Howard, Harrison, Mariano. *Pain Med 2019.*

Pain Medicine

@EMARIANOMD



Best Practices, Research Gaps, and Future Priorities to Support Tapering Patients on Long-Term Opioid Therapy for Chronic Non-Cancer Pain in Outpatient Settings

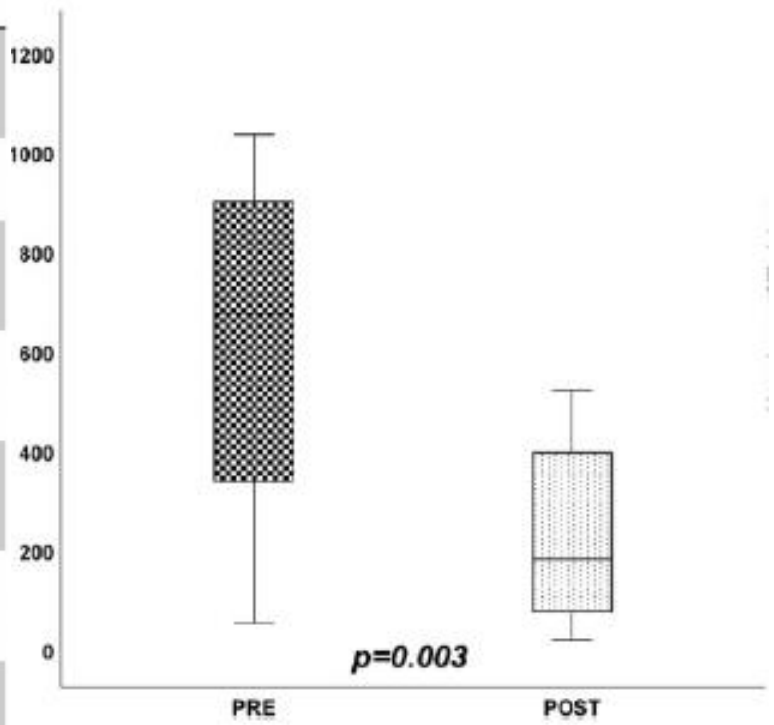
By Robert "Chuck" Rich, Jr.; Roger Chou; Edward R. Mariano; Anna Legreid Dopp; Rebecca Sullenger; Helen Burstin; and the Pain Management Guidelines and Evidence Standards Working Group of the Action Collaborative on Countering the U.S. Opioid Epidemic

A Multidisciplinary Patient-Specific Opioid Prescribing and Tapering Protocol Is Associated with a Decrease in Total Opioid Dose Prescribed for Six Weeks After Total Hip Arthroplasty

Mallika Tamboli,[*,†] Edward R. Mariano, MD, MAS,[*,†] Kerianne E. Gustafson, PA-C,[‡] Beverly L. Briones, NP,[‡] Oluwatobi O. Hunter, DNP, AG-ACNP,[†] Rachel R. Wang, MD,[*,†] T. Kyle Harrison, MD,[*,†] Alex Kou,[*,†] Seshadri C. Mudumbai, MD, MS,[*,†] T. Edward Kim, MD,[*,†] Pier F. Indelli, MD, PhD,[‡,§] and Nicholas J. Giori, MD, PhD[‡,§]

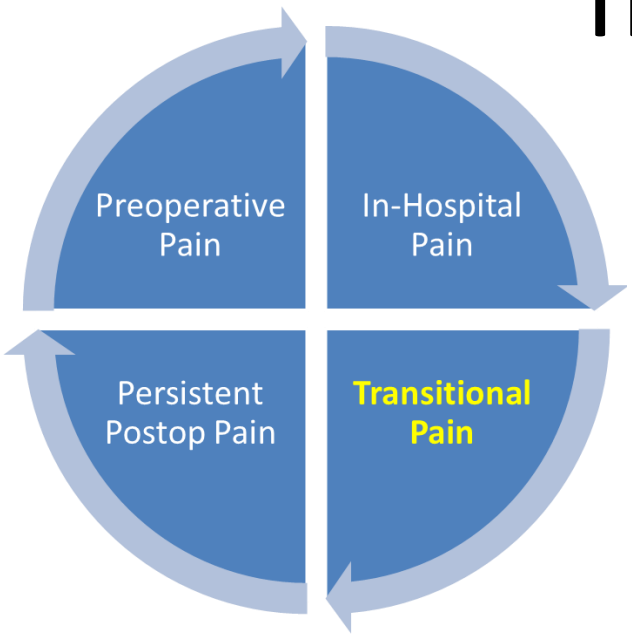
Tapering Instructions (Prescribed As-Needed)

Prior 24-hour Oxycodone (mg)	Days 1-2	Days 3-4	Days 5-6	Days 7-8	Days 9-10	Days 11-12	Total Oxycodone 5 mg Tablets Prescribed (n)
10 mg	5 mg twice daily						4
20 mg	5 mg four times daily	5 mg twice daily					12
30 mg	5 mg six times daily	5 mg four times daily	5 mg twice daily				24
40 mg	10 mg four times daily	10 mg three times daily	5 mg four times daily	5 mg twice daily			40
50 mg	10 mg five times daily	10 mg four times daily	10 mg three times daily	5 mg four times daily	5 mg twice daily		60
60 mg	10 mg six times daily	10 mg five times daily	10 mg four times daily	10 mg three times daily	5 mg four times daily	5 mg twice daily	84



Tamboli, Mariano, et al. Pain Med 2019

Transitional Pain



Journal of Pain Research

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PERSPECTIVES

The Toronto General Hospital Transitional Pain Service: development and implementation of a multidisciplinary program to prevent chronic postsurgical pain

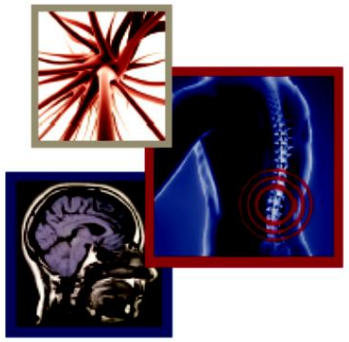
RESEARCH ARTICLE

For reprint orders, please contact: reprints@futuremedicine.com

Chronic postsurgical pain and persistent opioid use following surgery: the need for a transitional pain service

Alexander Huang[1,2], Abid Azam[1,2,3], Shira Segal[1], Kevin Pivovarov[1], Gali Katznelson[1,2], Salima SJ Ladak[1,2], Alex Mu[1,2], Aliza Weinrib[1,2,3], Joel Katz[1,2,3,4] & Hance Clarke*[1,2,4]

Pain Management



Katz, et al. J Pain Res 2015
Huang, et al. Pain Manag 2016

@EMARIANOMD

Daring discourse

Making a business plan for starting a transitional pain service within the US healthcare system

Eric C Sun [1, 2], Edward R Mariano [1, 3], Samer Narouze [4], Rodney A Gabriel [5], Hesham Elsharkawy [6, 7], Padma Gulur [8], Sharon K Merrick [9], T Kyle Harrison [1, 3] and J David Clark [1, 3]

Correspondence to Dr Edward R Mariano, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, Stanford, California 94304, USA; emariano@stanford.edu

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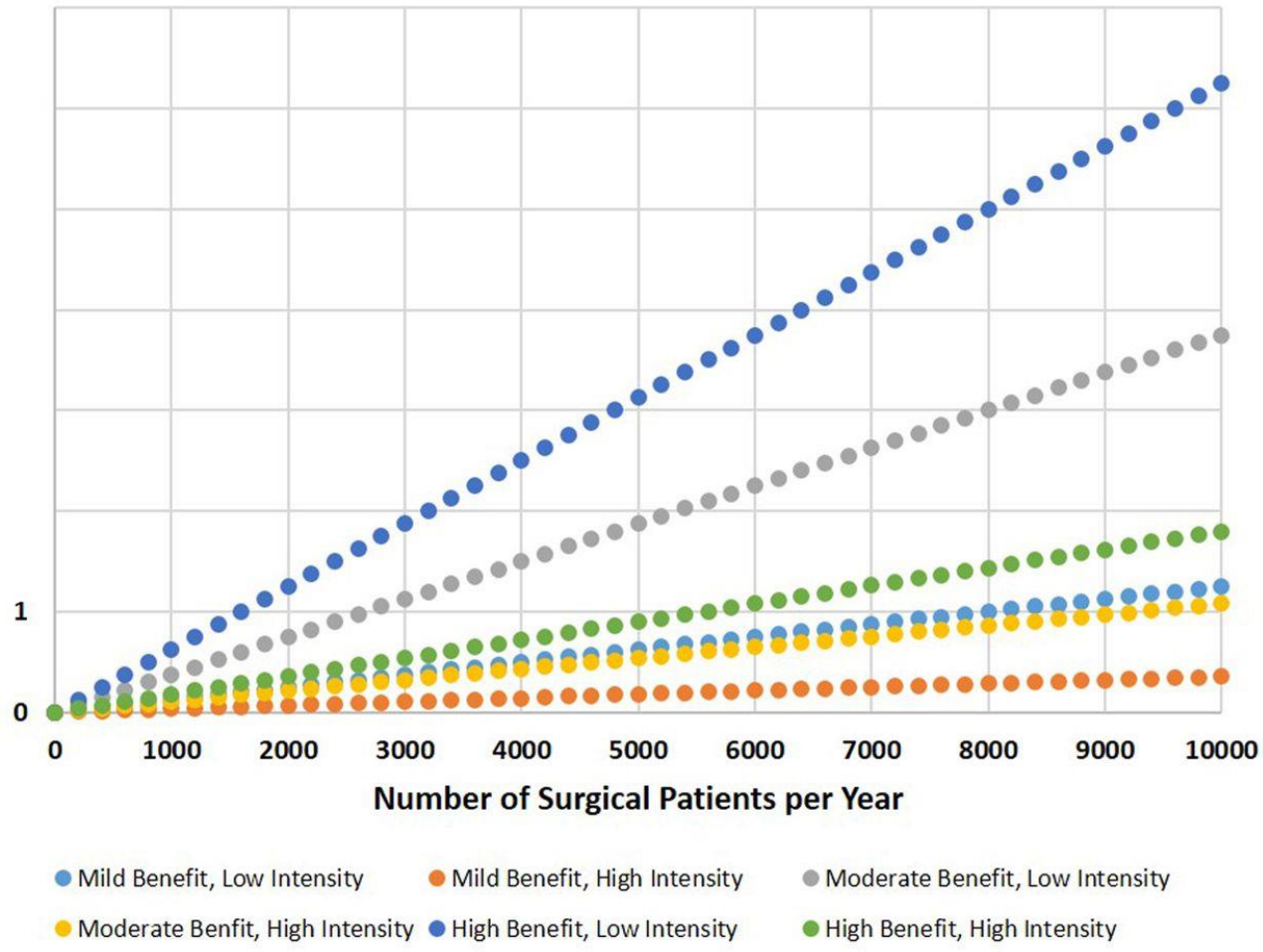
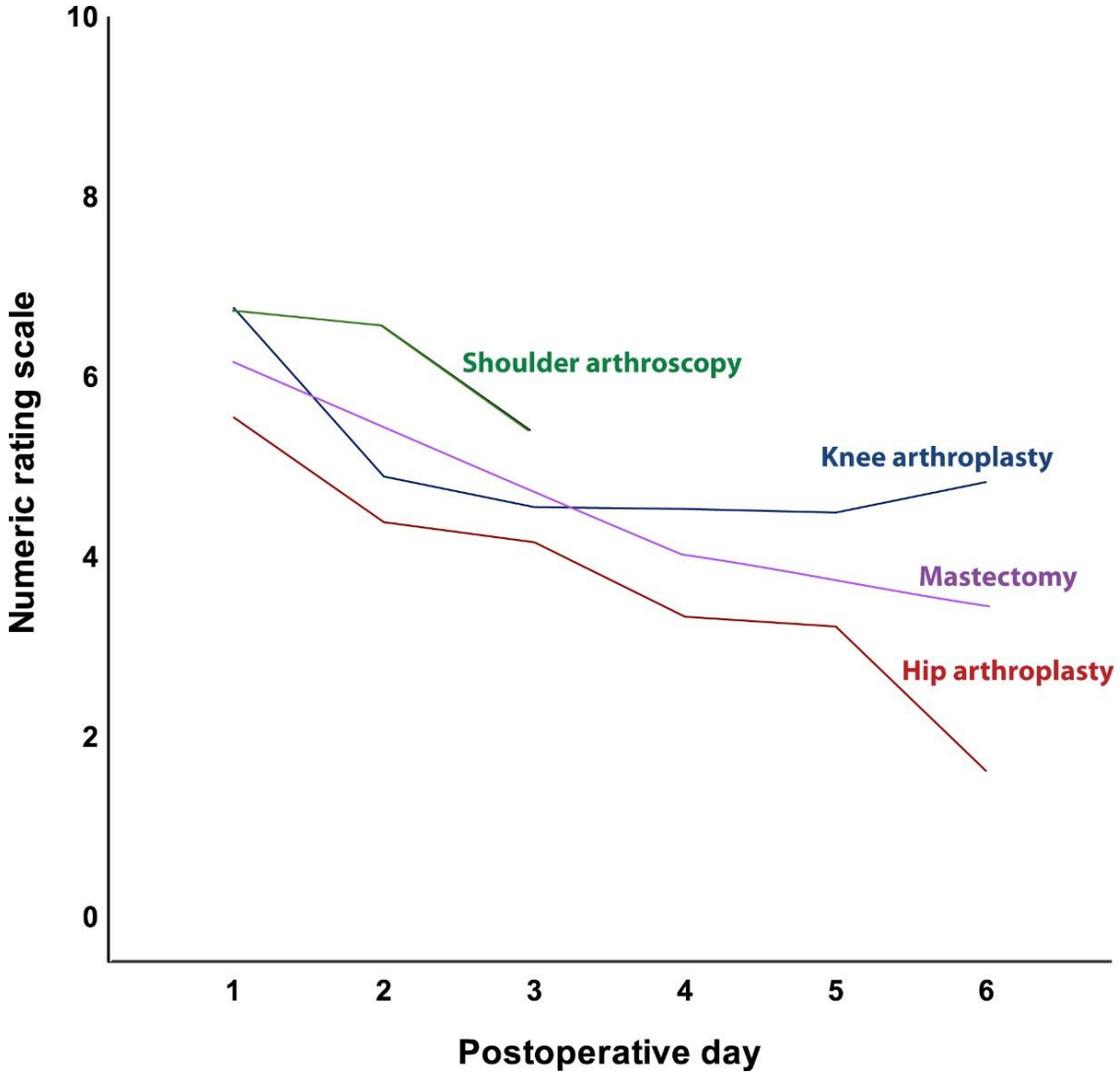
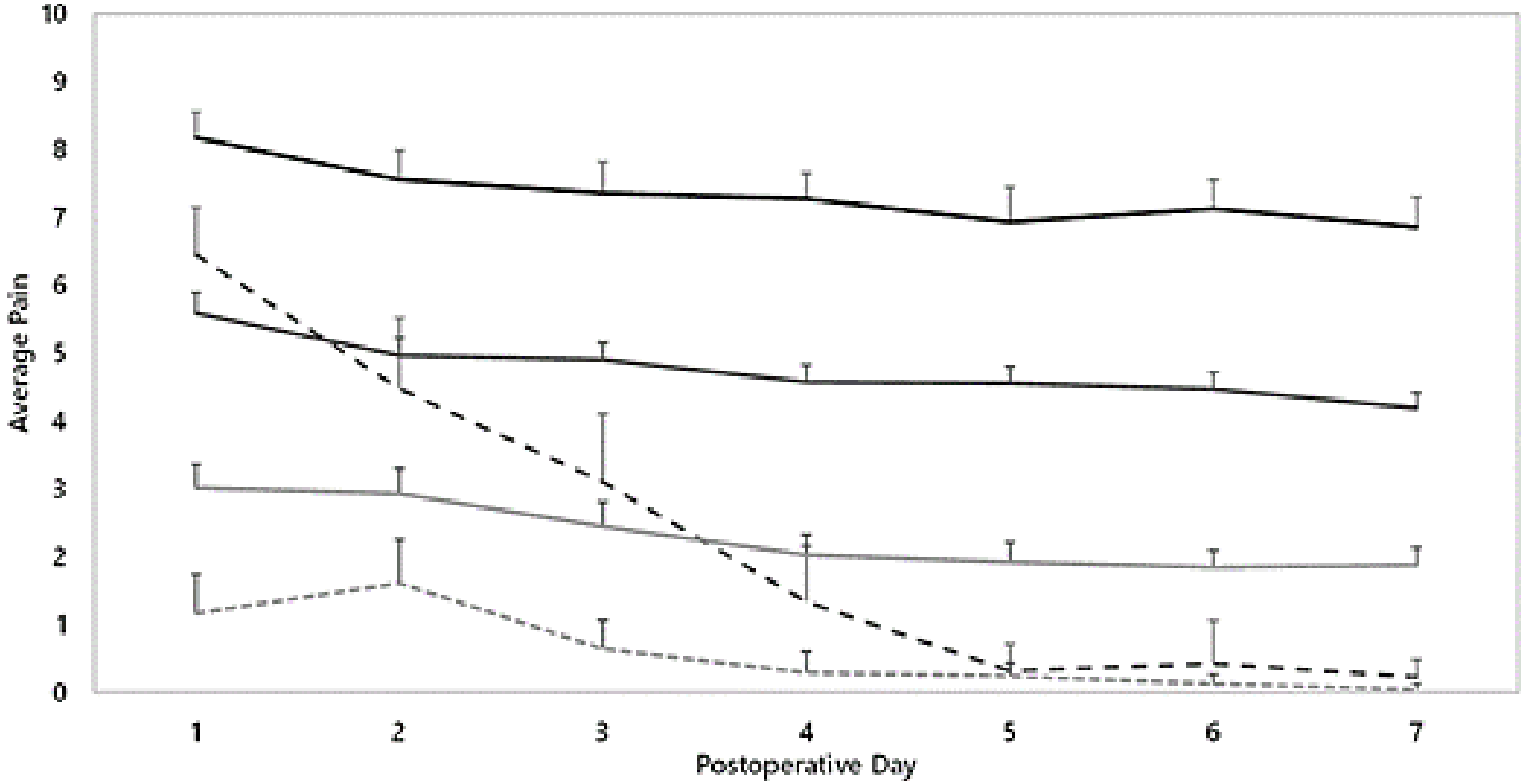


Postoperative Pain Varies by Procedure



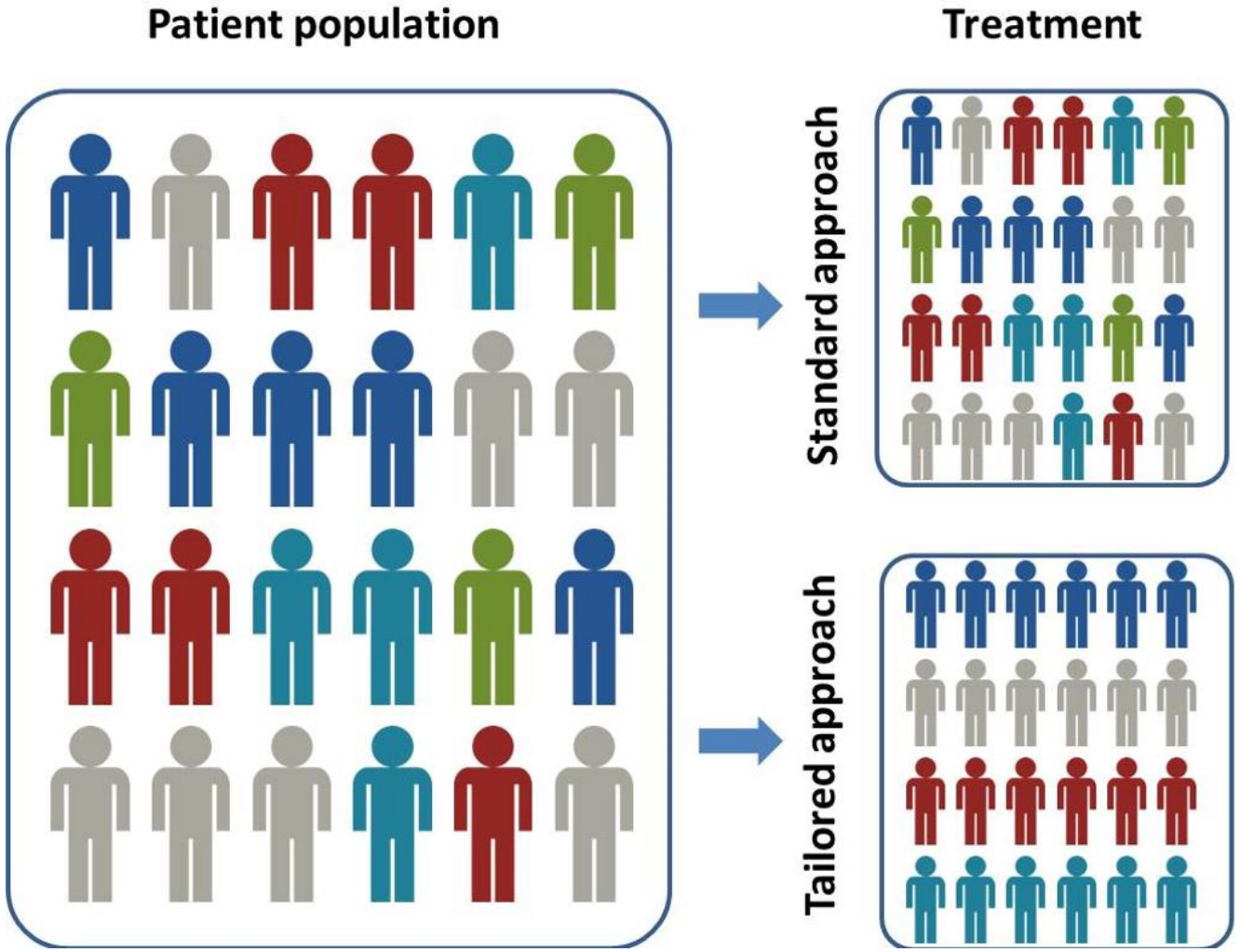
Mariano, El-Boghdadly, Ilfeld. Anaesthesia 2020

Postoperative Pain Varies by Patient



TEMPOS Group (Tighe PJ). Anesthesiology 2021

Pain Medicine Should Not Be One Size Fits All



Summary

- We discussed the role of multimodal analgesia, “opioid-free” anesthesia, and answered the following questions:
  - *How did this happen?*
  - *Where are we now?*
  - *What do we do to move forward?*