Implementing Best Practices for Opioid Prescribing for Acute Dental Pain

Raymond A. Dionne, DDS, MS, PhD

July 30, 2019

Opioid Response Network
STR-TA

Iowa Department of Public Health
Protecting and Improving the Health of Iowans

Working with communities to address the opioid crisis.

- SAMHSA's State Targeted Response Technical Assistance (STR-TA) grant created the *Opioid Response Network* to assist STR grantees, individuals and other organizations by providing the resources and technical assistance they need locally to address the opioid crisis .
- Technical assistance is available to support the evidence-based prevention, treatment, and recovery of opioid use disorders.

Funding for this initiative was made possible (in part) by grant no. 6H79TI080816 from SAMHSA. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

Working with communities to address the opioid crisis.

- The Opioid Response Network (ORN) provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis.
- The ORN accepts requests for education and training.
- Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.

Contact the Opioid Response Network

- To ask questions or submit a request for technical assistance:
  - Visit www.OpioidResponseNetwork.org
  - Email orn@aaap.org
  - Call 401-270-5900

Objectives

- Understand why opioids are bad medicine for acute pain, patients, and society
- Learn how to target inflammation to minimize acute pain after a procedure
- Be able to individualize prescribing based on the level of pain
- How to minimize opioid abuse related to analgesics prescribed for orofacial pain

Disclaimer & Conflict of Interest

Disclaimer: The drugs, doses and therapeutic recommendations discussed in this talk are based on the speaker's interpretation of the scientific literature and 30 years of clinical research on the management of acute pain and perioperative anxiety. **Clinical application** of this information requires knowledge of the information contained in the **FDA labeling** of the specific drugs, careful review of the individual **patient's medical history** and current **medications**, appropriate monitoring of the response to the drug(s) and doses administered, and s**kill in the prevention and management of adverse reactions that occur with all drugs with variable but finite prevalence.**

Conflict of Interest Statement: The speaker is on the faculty of the ECU School of Dental Medicine and Brody School of Medicine, serves on the scientific advisory board of Charleston Laboratories and the GSK Global Pain Advisory Board and is a consultant to Rilento Pharmaceuticals. He is also on the editorial board of the Compendium, Applied Clinical Pharmacology and Toxicology, and Clinical Pharmacology and Translational Medicine.

Analgesic Prescribing in the Opioid Overdose Era

Opioids: Bad Medicine for Dental Pain, Patients and Society

- **Current status of the opioid overdose crisis in the US**
- **Risk factors for opioid prescribing contributing to substance abuse**
- **Dental profession leadership in fighting substance abuse:**
  - **Opioid stewardship – avoid use of irrational analgesic combinations**
  - **Recognizing inherent vulnerability for substance abuse**
  - **Early prevention through patient education in the dental office**
- **Beware the potential consequences of inappropriate opioid prescribing**

JAMAInternalMedicine | OriginalInvestigation

Association of Opioid Prescriptions From Dental Clinicians for US Adolescents and Young Adults With Subsequent Opioid Use and Abuse

Alan R. Schroeder, MD; Melody Dehghan, BA; Thomas B. Newman, MD, MPH; Jason P. Bentley, PhD; K. T. Park, MD, MS

Supplemental content
JAMA Intern Med. doi:10.1001/jamainternmed.2018.5419 Published online December 3, 2018.

Table 2. Outcomes in the Opioid-Exposed and Opioid-Nonexposed Cohorts

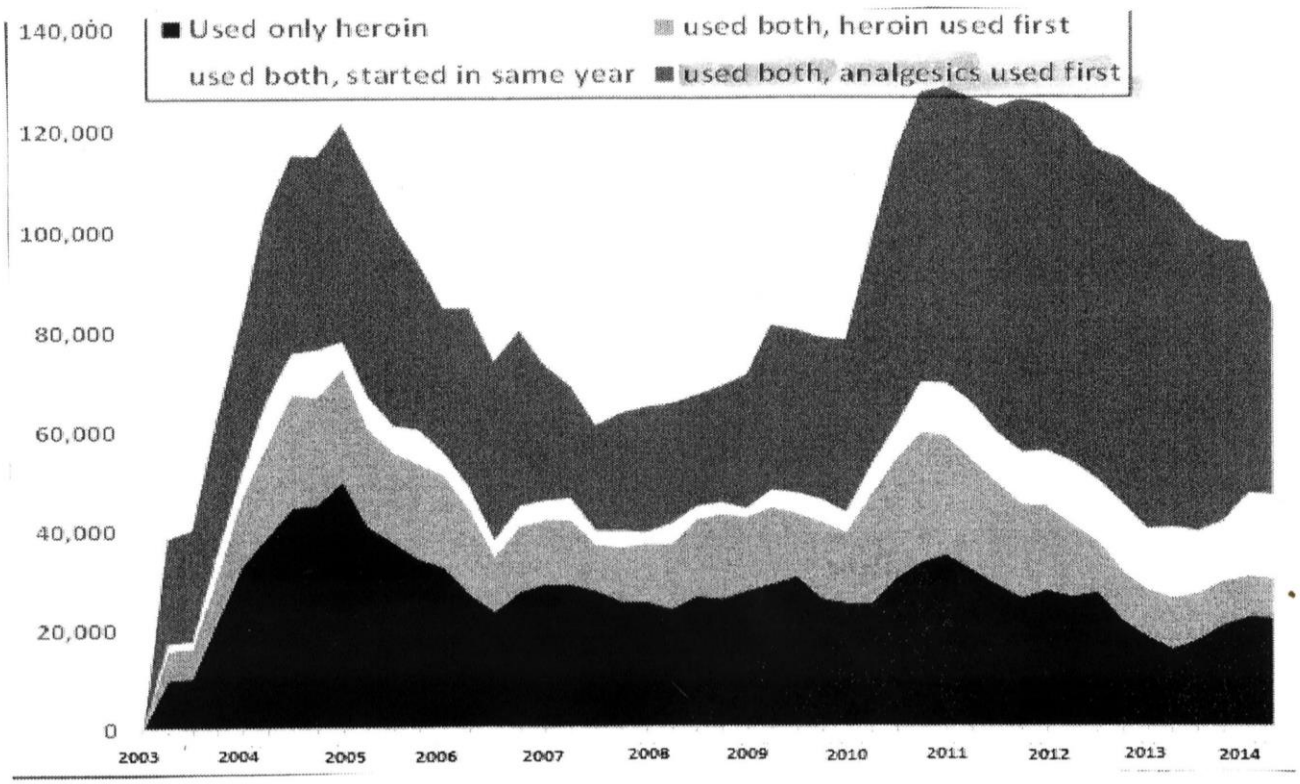
Outcome (N = 44 664)	Cohort, No. (%)			
	Opioid-Exposed (n = 14 888)	Opioid-Nonexposed (n = 29 776)	*P* Value[a]	Adjusted Absolute Risk Difference, % (95% CI)[b]
Opioid prescription at 90 to 365 d	1021 (6.9)	30 (0.1)	<.001	6.8 (6.3 to 7.2)
>1 Opioid prescription	387 (2.6)	3 (0.01)	<.001	2.5 (2.2 to 2.7)
At least 1 diagnosis of opioid abuse in subsequent 365 d	866 (5.8)	115 (0.4)	<.001	5.3 (5.0 to 5.7)
Site of encounter[c]				
Office visit	790 (5.3)	97 (0.3)	<.001	4.9 (4.5 to 5.3)
Emergency department visit	25 (0.2)	24 (0.1)	.005	0.1 (0.02 to 0.2)
Hospitalization	74 (0.5)	79 (0.3)	<.001	0.2 (0.1 to 0.4)
Most common diagnoses of opioid abuse[c]				
Opioid type dependence, unspecified	602 (4.0)	66 (0.2)	<.001	3.8 (3.5 to 4.1)
Poisoning by opium (alkaloids), unspecified	82 (0.6)	8 (0.03)	<.001	0.5 (0.4 to 0.6)
Opioid abuse, unspecified	51 (0.3)	25 (0.08)	<.001	0.3 (0.2 to 0.4)
Death	1 (0.007)	1 (0.003)	.62	0.003 (−0.002 to 0.005)

[a] *P* value obtained from χ^2 analysis.
[b] Adjusted for race/ethnicity and previous nonopioid substance abuse.
[c] Some patients had more than 1 site of encounter or diagnosis of opioid abuse.

Opioid Overdose Epidemic 2019

- **Leveling off in national death rate but little sign of improvement in some parts of the country: 20% increase in opioid overdose deaths in NC**
- **Decreased life expectancy in US due to opioid overdoses**
- **Overall drug overdose mortality has grown exponentially over the past 40 years** Jalal et al. Science 2018
- **Victims not just those who OD**
- **'Economic cost of the opioid crisis: $1 trillion and growing faster'** CNBC.com, 2/13/2018
- **Drug rehabilitation 15 - 20% recovery**

Opioid drug abuse often starts with an opioid prescription drug



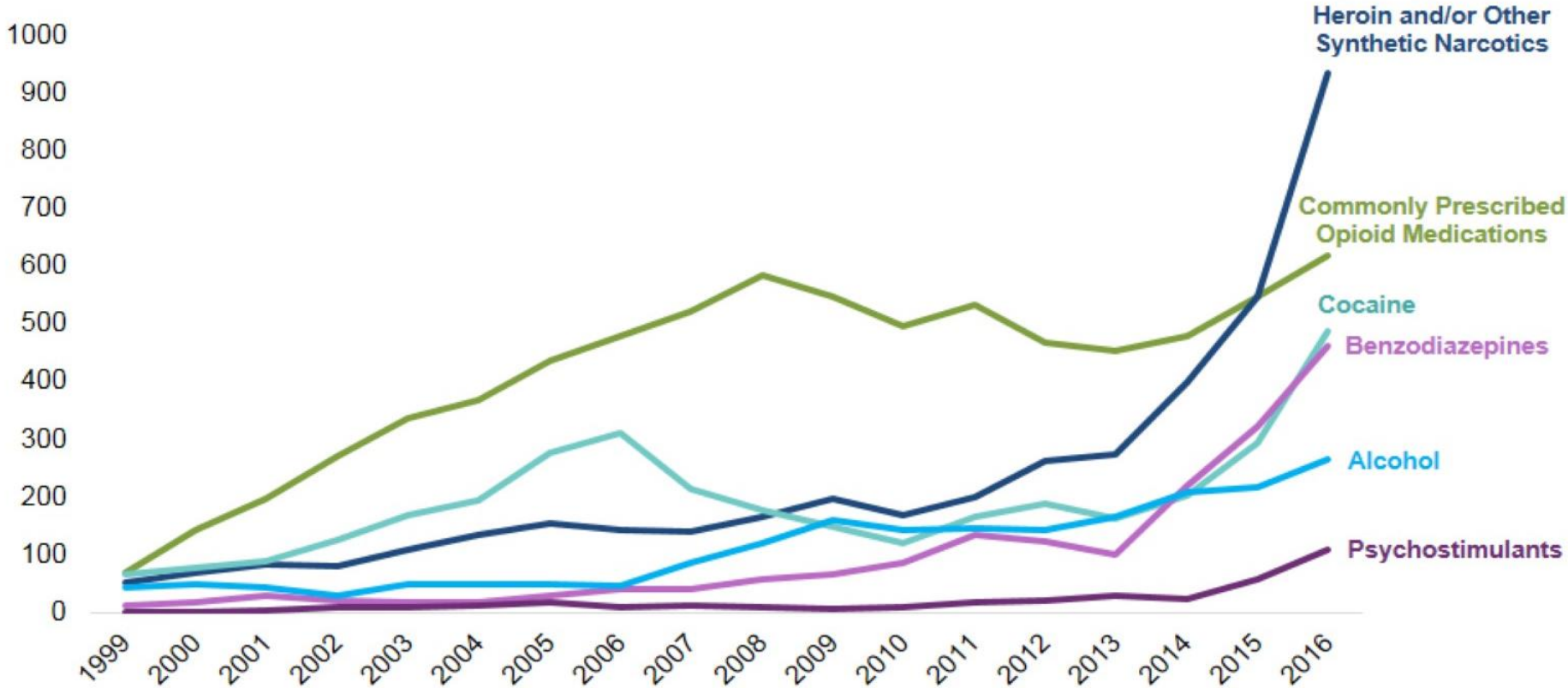
Used both, analgesics used first

Heroin only

Pain Management and the Opioid Epidemic
National Academy of Science July 2017

Substances* Contributing to Unintentional Medication, Drug, and Alcohol Poisoning Deaths

North Carolina Residents, 1999-2016



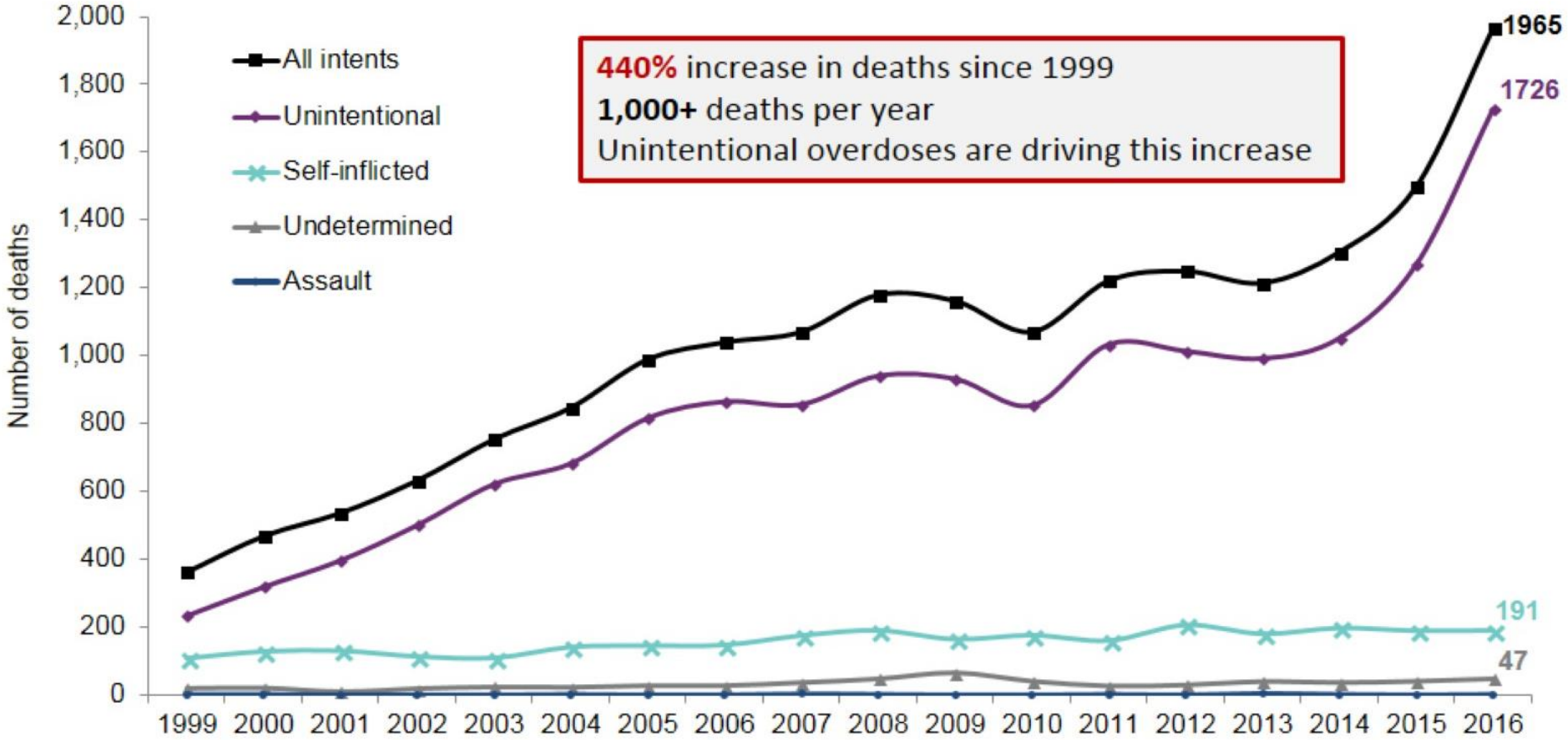
*These counts are not mutually exclusive. If the death involved multiple drugs it can be counted on multiple lines.

Source: N.C. State Center for Health Statistics, Vital Statistics-Deaths, 1999-2016,
Unintentional medication, drug, alcohol poisoning: X40-X45 with any mention of specific T-codes by drug type (Commonly Prescribed Opioids, Heroin, Other Synthetics, Benzodiazepines, Cocaine, Alcohol, and Psychostimulants).
Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

Medication or Drug Overdose Deaths by Intent

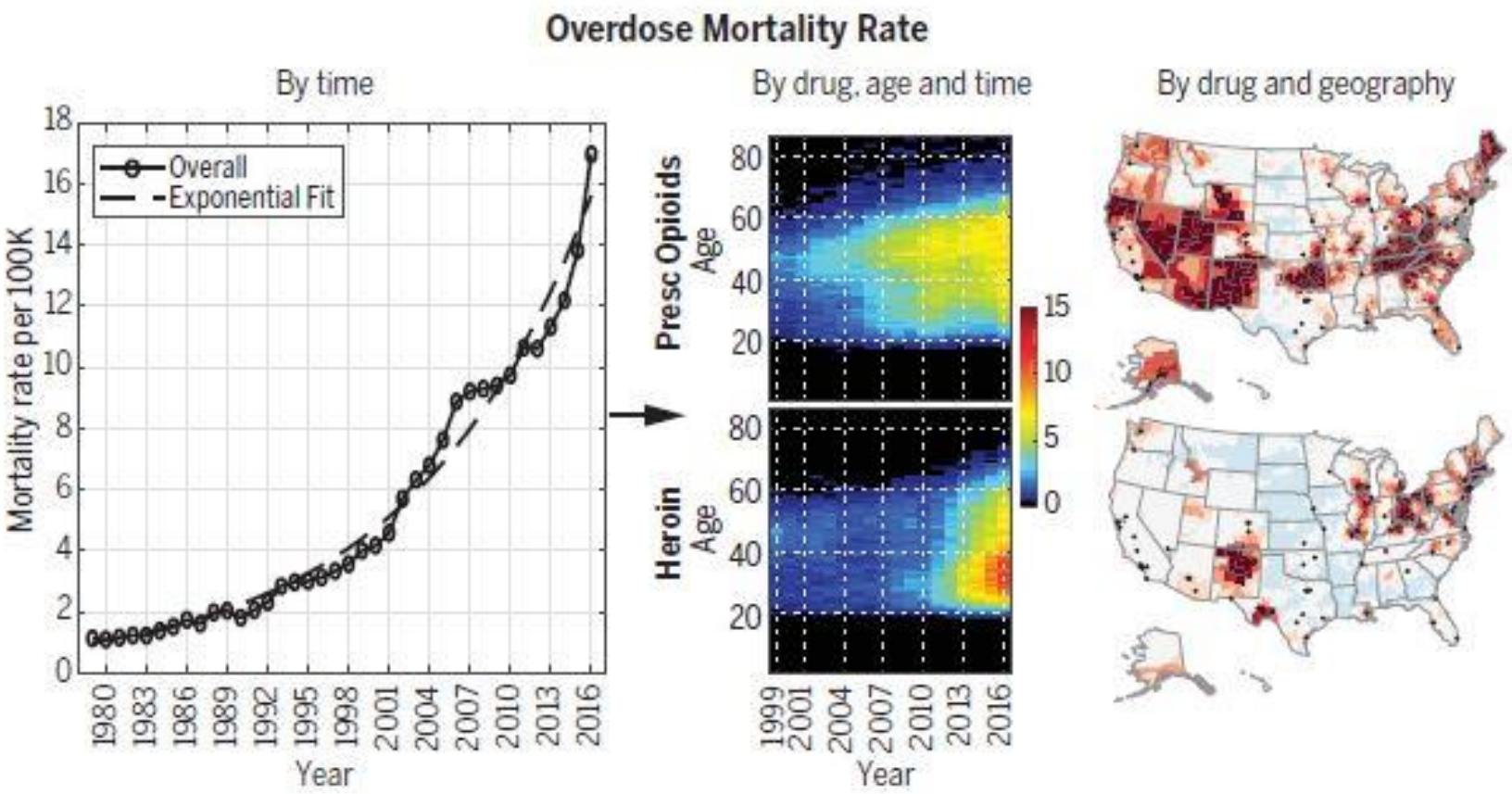
NC Residents, 1999-2016



Source: N.C. State Center for Health Statistics, Vital Statistics-Deaths, 1999-2016
Medication or drug overdose: X40-X44, X60-X64, Y10-Y14, X85.
Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

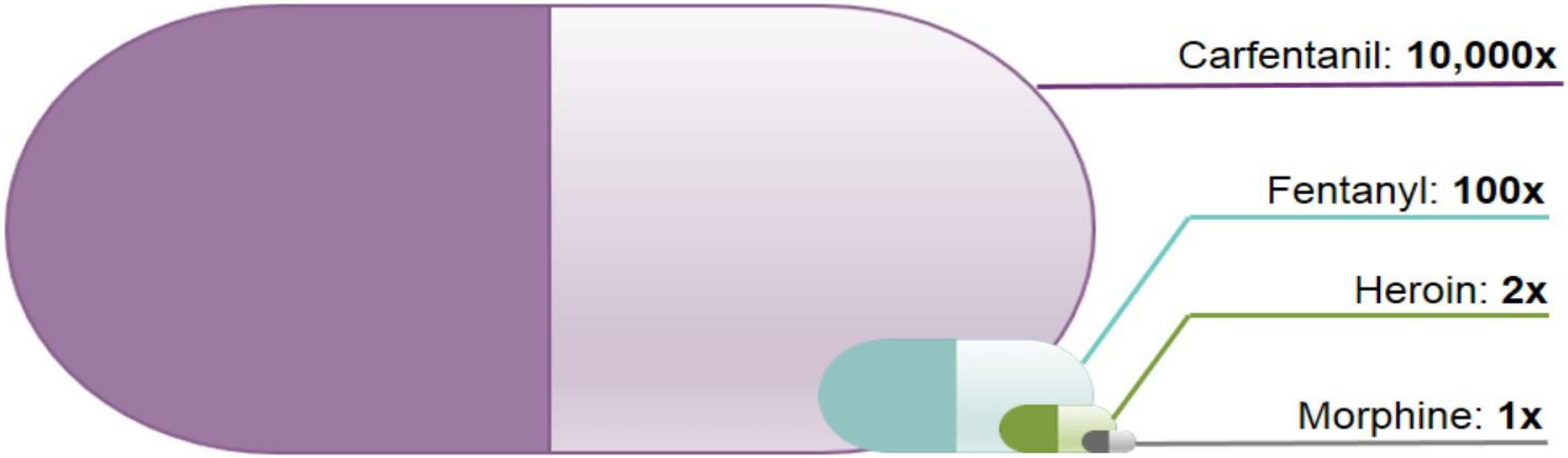
Exponential increase in mortality rate due to substance abuse over 38 years



Jalal H et al, Science 361; 2018

With unprecedented availability of cheap heroin and fentanyl…

MORE PEOPLE ARE DYING

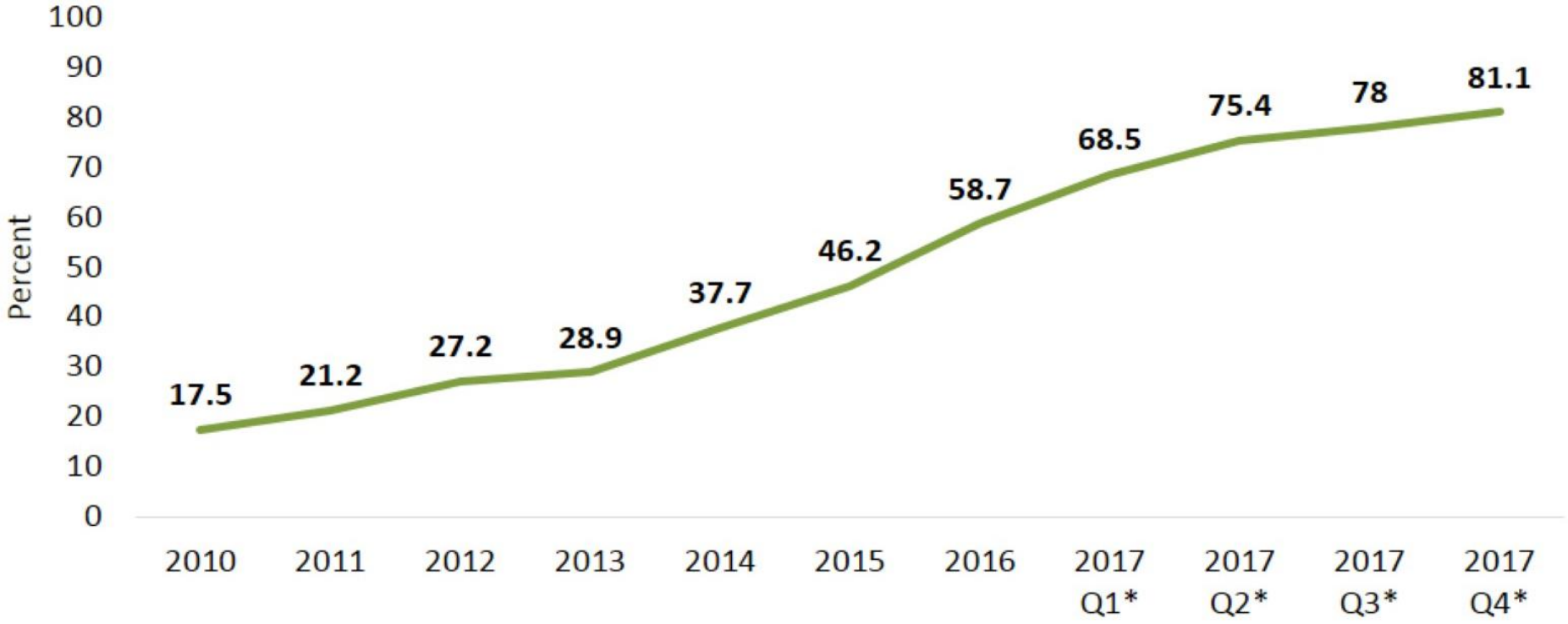


Opioid Potency

North Carolina Injury & Violence PREVENTION Branch

Percent of Opioid Overdoses Positive for Heroin, Fentanyl, and/or Fentanyl Analogues**

Office of Chief Medical Examiner Investigated Deaths, 2010-2017*



*2017 data are preliminary and subject to change
Source: NC Office of the Chief Medical Examiner (OCME) and the OCME Toxicology Laboratory, 2010-2017 Q4
**Fentanyl analogues include: Acetyl fentanyl, Butrylfentanyl, Furanylfentanyl, Fluorofentanyl, Acrylfentanyl, Fluoroisobutrylfentanyl, Beta-Hydroxythiofentanyl, Carfentanil. The presence of a drug does not necessarily indicate that it was attributed to the cause of death.

North Carolina Injury & Violence PREVENTION Branch

Self-reported Lifetime Use of Substances among North Carolina High School Students

Almost **20%** of North Carolina High School Students reported using prescription drugs recreationally.

Percentage of Students

50
40
30
20
10
0

Heroin | Sniffed Glue | Steroid | Inject Drugs | Cocaine | Meth | Marijuana | Rx | Ecstasy

2001 2003 2005 2007 2009 2011 2013 2015 2017

* Question not asked

Source: NC Department of Public Instruction, NC Youth Risk Behavioral Survey (YRBS), 2001-2017
Analysis: Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

Little Progress After A Century of Opioid Drug Research

	1950's	1960's	1970's	1980's	1990's	2000's	*beyond*
Milestones	Placebo response Category scales	Clinical trials methodology	Opiate receptor Aspirin MOA Dental model	Endogenous pain inhibitory system	Gender, Genetics Imaging	Pharmacogenomics Gene expression Proteomics Opioid OD epidemic	PRO's Phenotyping Personalized medicine
Major Drug Classes	narcotics aspirin adjuncts	opiates aspirin acetaminophen adjuncts	opioids NSAIDs acetaminophen adjuncts	opioids NSAIDs acetaminophen	coxibs antidepressants anticonvulsants opioids NSAIDs acetaminophen	NSAIDs opioids acetaminophen gabapentin	NIH Director predicts non-addictive analgesic in 5 years

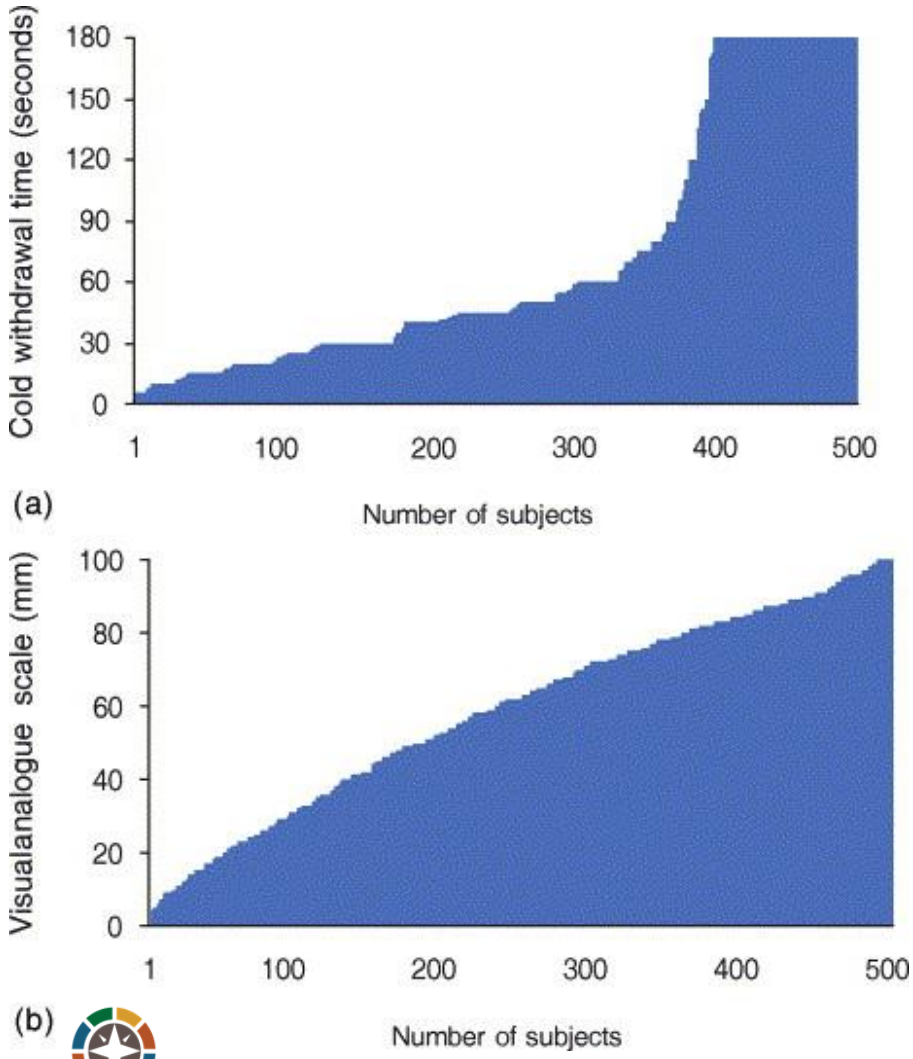
NEJM 1980 Letter: '***despite the widespread use of narcotic drugs in hospitals, the development of addiction is rare in medial patients with no history of addiction***.'

Cited in 608 times as evidence of safety

Washington Post June 2, 2017

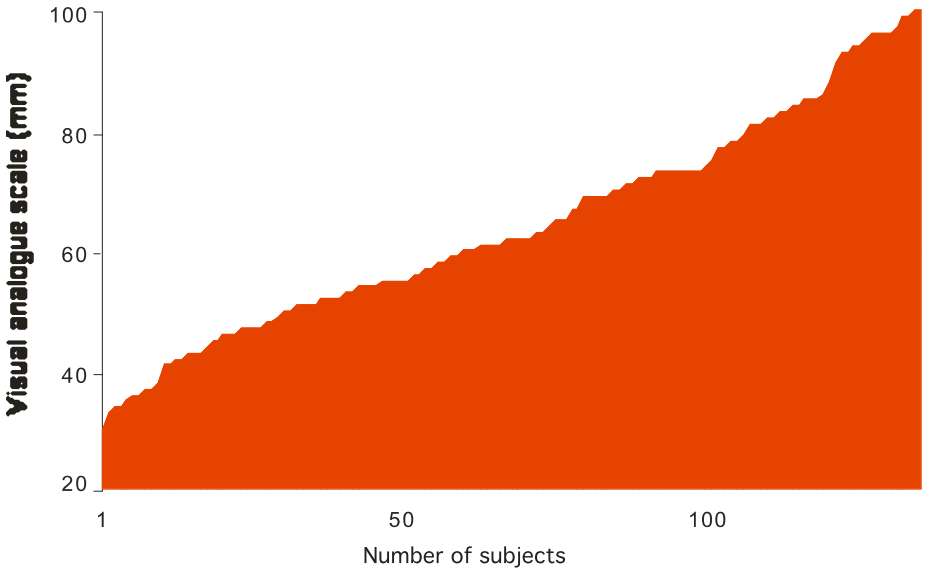
Risk Factors Related to Opioid Prescribing: Wide Variability in Pain and Analgesia Across Patients

Experimental Pain



Kim H et al., Pain 2004

Clinical Pain (3rd Molar Extraction)

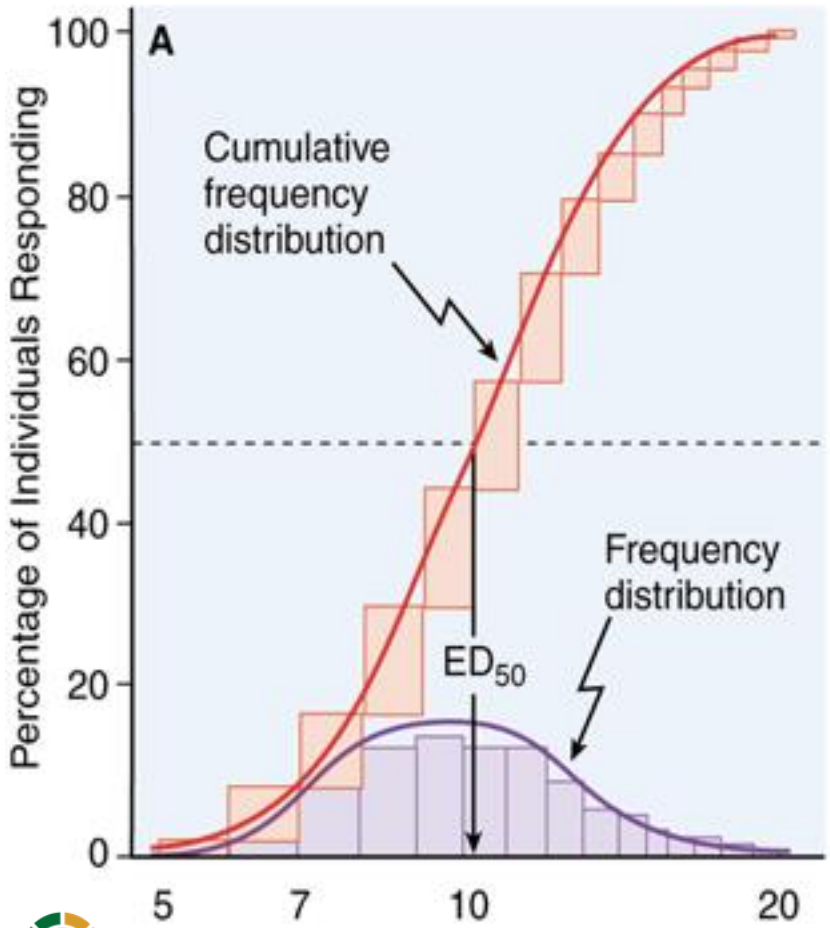


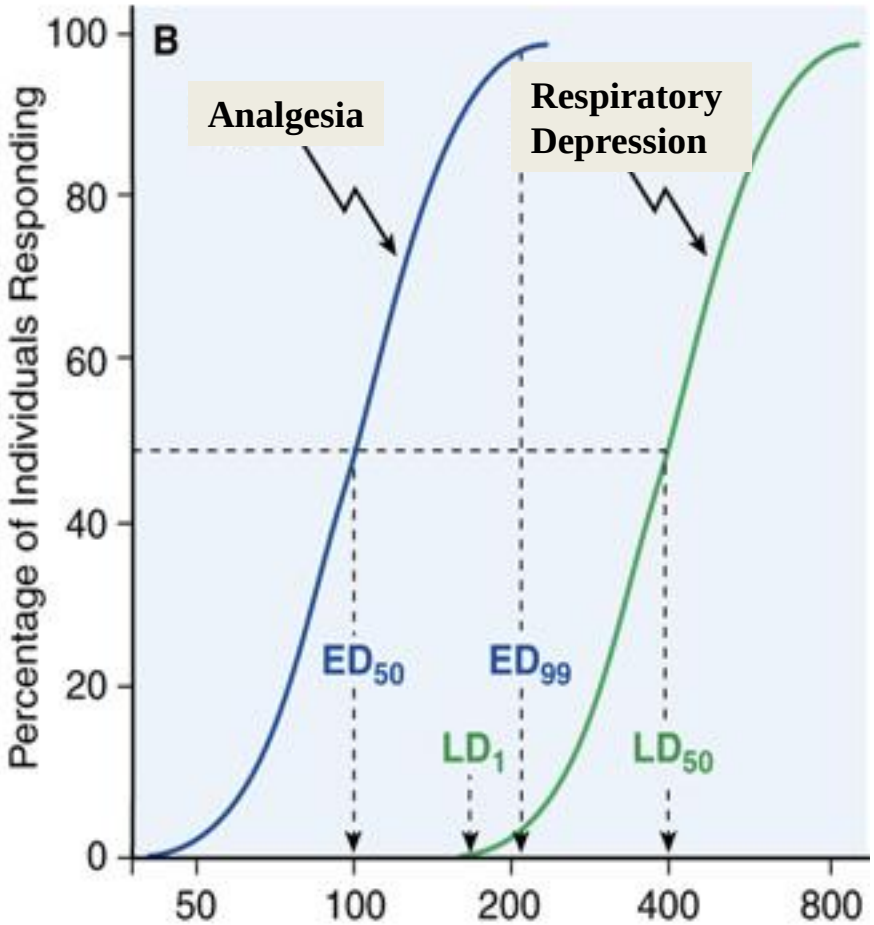
Variability in *self-administered morphine* dose for post-general surgery pain: 1 – 48 mg
mean dose = 13.3 mg

Aubrun et al. Anesthesiology 2003; 98:1415

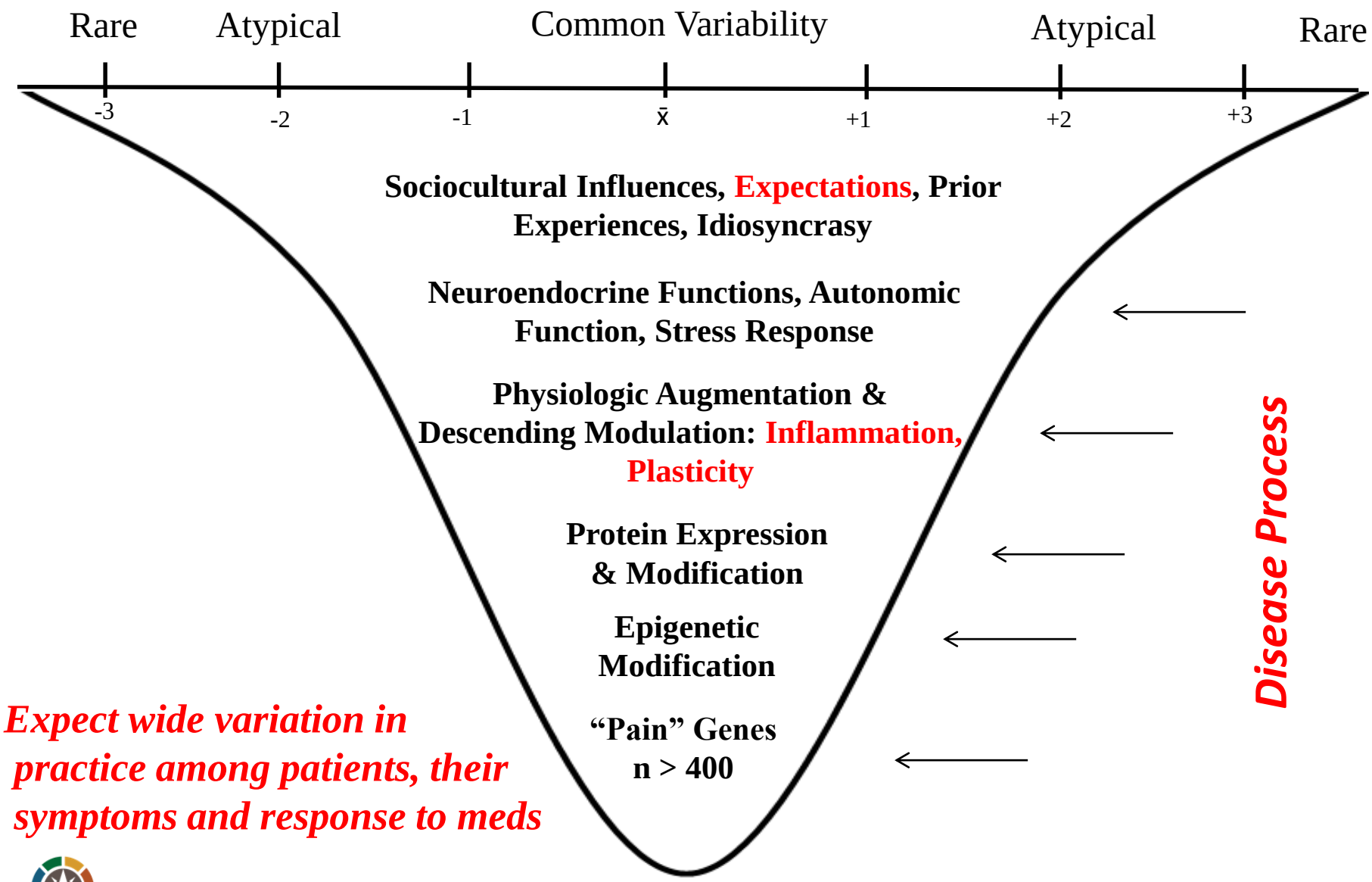
Cumulative Dose-Response Curve Masks Individual Responses

Therapeutic Index: $\frac{ED_{50}}{ED_{50}} = \frac{100}{100} = 4$





Conceptual Basis for Pain Variability at the Level of Individual Patients



Expect wide variation in practice among patients, their symptoms and response to meds

GUIDELINE FOR PRESCRIBING OPIOIDS FOR CHRONIC PAIN

IMPROVING PRACTICE THROUGH RECOMMENDATIONS

CDC's *Guideline for Prescribing Opioids for Chronic Pain* is intended to improve communication between providers and patients about the risks and benefits of opioid therapy for chronic pain, improve the safety and effectiveness of pain treatment, and reduce the risks associated with long-term opioid therapy, including opioid use disorder and overdose. The Guideline is not intended for patients who are in active cancer treatment, palliative care, or end-of-life care.

DETERMINING WHEN TO INITIATE OR CONTINUE OPIOIDS FOR CHRONIC PAIN

1. Nonpharmacologic therapy and nonopioid pharmacologic therapy are preferred for chronic pain. Clinicians should consider opioid therapy only if expected benefits for both pain and function are anticipated to outweigh risks to the patient. If opioids are used, they should be combined with nonpharmacologic therapy and nonopioid pharmacologic therapy, as appropriate.

2. Before starting opioid therapy for chronic pain, clinicians should establish treatment goals with all patients, including realistic goals for pain and function, and should consider how opioid therapy will be discontinued if benefits do not outweigh risks. Clinicians should continue opioid therapy only if there is clinically meaningful improvement in pain and function that outweighs risks to patient safety.

3. Before starting and periodically during opioid therapy, clinicians should discuss with patients known risks and realistic benefits of opioid therapy and patient and clinician responsibilities for managing therapy.

CLINICAL REMINDERS

- Opioids are not first-line or routine therapy for chronic pain
- Establish and measure goals for pain and function
- Discuss benefits and risks and availability of nonopioid therapies with patient

CDC

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

LEARN MORE | www.cdc.gov/drugoverdose/prescribing/guideline.html

- Opioids are not first-line or routine therapy for chronic pain

- When opioids are needed for acute pain, prescribe no more than needed

- Do not prescribe ER/LA opioids for acute pain

- Long-term opioid use often begins with treatment of acute pain. When opioids are used for acute pain, clinicians should prescribe the lowest effective dose of immediate-release opioids and should prescribe no greater quantity than needed for the expected duration of pain severe enough to require opioids. Three days or less will often be sufficient; more than seven days will rarely be needed.

FDA to issue pain management guidelines

BY JENNIFER GARVIN

Silver Spring, Md. — The Food and Drug Administration announced Aug. 22 that it will develop prescribing guidelines in an effort to give health care providers "the most current and comprehensive guidance on the appropriate management of pain."

To do this, the FDA said it has awarded a contract to the National Academies of Sciences, Engineering, and Medicine to develop evidence-based guidelines for "appropriate opioid analgesic prescribing for acute pain resulting from specific conditions or procedures."

"The primary scope of this work is to understand what evidence is needed to ensure that all current and future clinical practice guidelines for opioid analgesic prescribing are sufficient, and what research is needed to generate that evidence in a practical and feasible manner," said FDA Commissioner Scott Gottlieb, M.D., in prepared remarks.

Dr. Gottlieb said the FDA plans to re-examine how opioids are being prescribed since "many common, acute indications" could be treated with "just a day or two of medication rather than a 30-day supply, which is typically prescribed."

which the ADA is a supporting organization.

In March the ADA adopted interim policy on opioid prescribing that supports prescription limits and mandatory continuing education for dentists.

The policy is believed to be one of the first of its kind from a major health professional organization. During a meeting with the National Institute on Drug Abuse and National Institute of Dental and Craniofacial Research, leadership from the two NIH branches praised the ADA for the policy.

ADA President Joseph P. Crowley and Executive Director Kathleen T. O'Loughlin met with Commissioner Gottlieb in March.

The two shared several opioid articles published in the April 2018 edition of the Journal of the American Dental Association, including a systematic review that found various non-steroidal anti-inflammatory drugs, alone or in combination with acetaminophen, were found to be as effective, if not more effective at managing acute dental pain and produced less side effects than opioids.

For more than 10 years, ADA education efforts on this issue have included free quarterly webinars.

The 2018 offerings included information on providers' role in helping DHA prevent prescription drug abuse, interprofessional approaches to addressing opioid abuse and managing dental pain in adolescents and adults.

Follow all of the opioid-related ADA efforts at ADA.org/opioids. ■

—garvinj@ada.org

'The primary scope of this work is to ensure that all current and future clinical practice guidelines for opioid analgesic prescribing are sufficient…'

'Dr. Gottleib said that…many common, acute indications could be treated with just a day or two of medication rather than a 30-day supply.'

Steps to Optimize Analgesia, Minimize Side Effects and Lower the Risk of Opioid Abuse

1. Target the Inflammatory Etiology of Acute Dental Pain

- ***Nociceptive - transient, protective/prevent further tissue damage***
- ***Inflammatory – to protect the injured tissue***
- ***Neuropathic* – peripheral NS damage**
  - Diabetic neuropathy
  - AIDS
  - Chemotherapy - induced peripheral neuropathy
- ***Functional* – abnormal processing or function of CNS**
  - Fibromyalgia

Inflammatory Pain

Blocked by NSAIDs →

Minimizes →

Resulting in Much Less

Produces Little or No

'Slight' Pain after LA offset, instead of

Tissue Injury

↓

Local release of active factors. (PG, BK, K)

↓

Persistent activation/ sensitization of Aδ/C.

↓

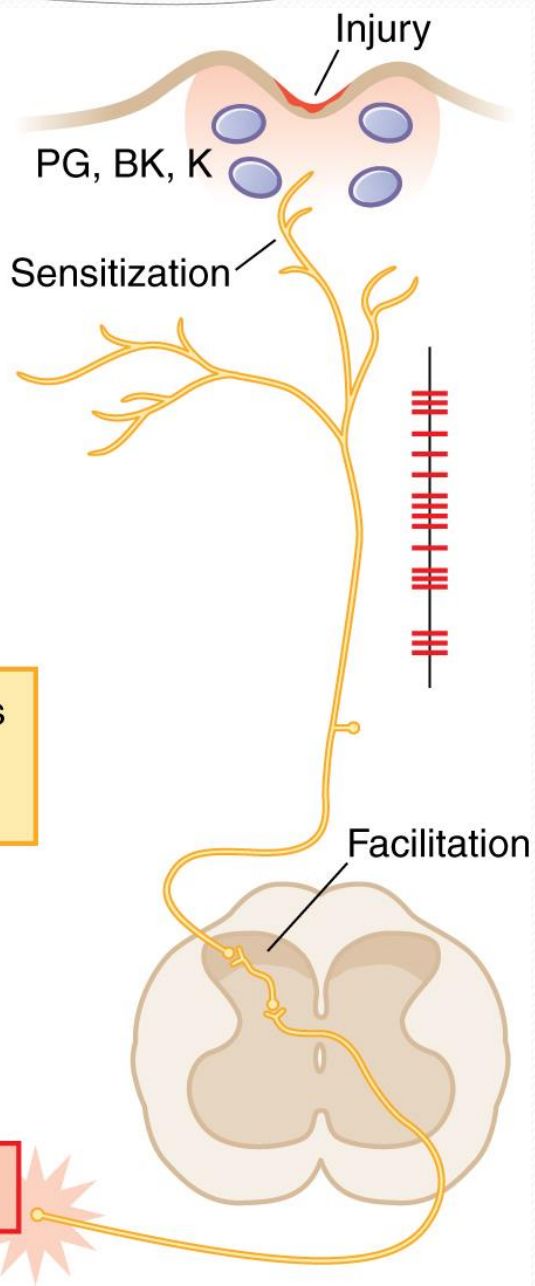
Activity in ascending pathways + spinal facilitation

↓

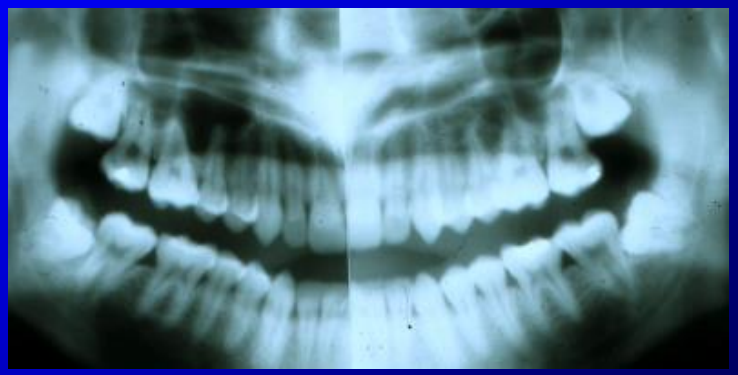
Exaggerated output for given stimulus input

↓

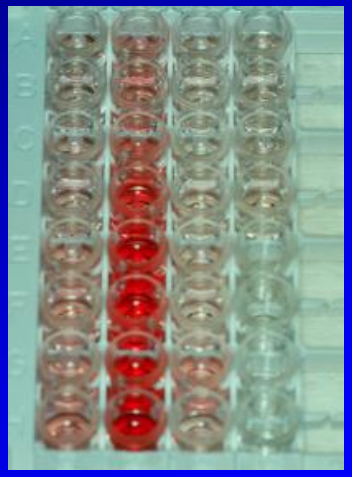
Ongoing pain + Hyperalgesia



Microdialysis Methods to Evaluate Relationship Between Acute Pain and COX-Mediated PGE_2 at the Surgical Site

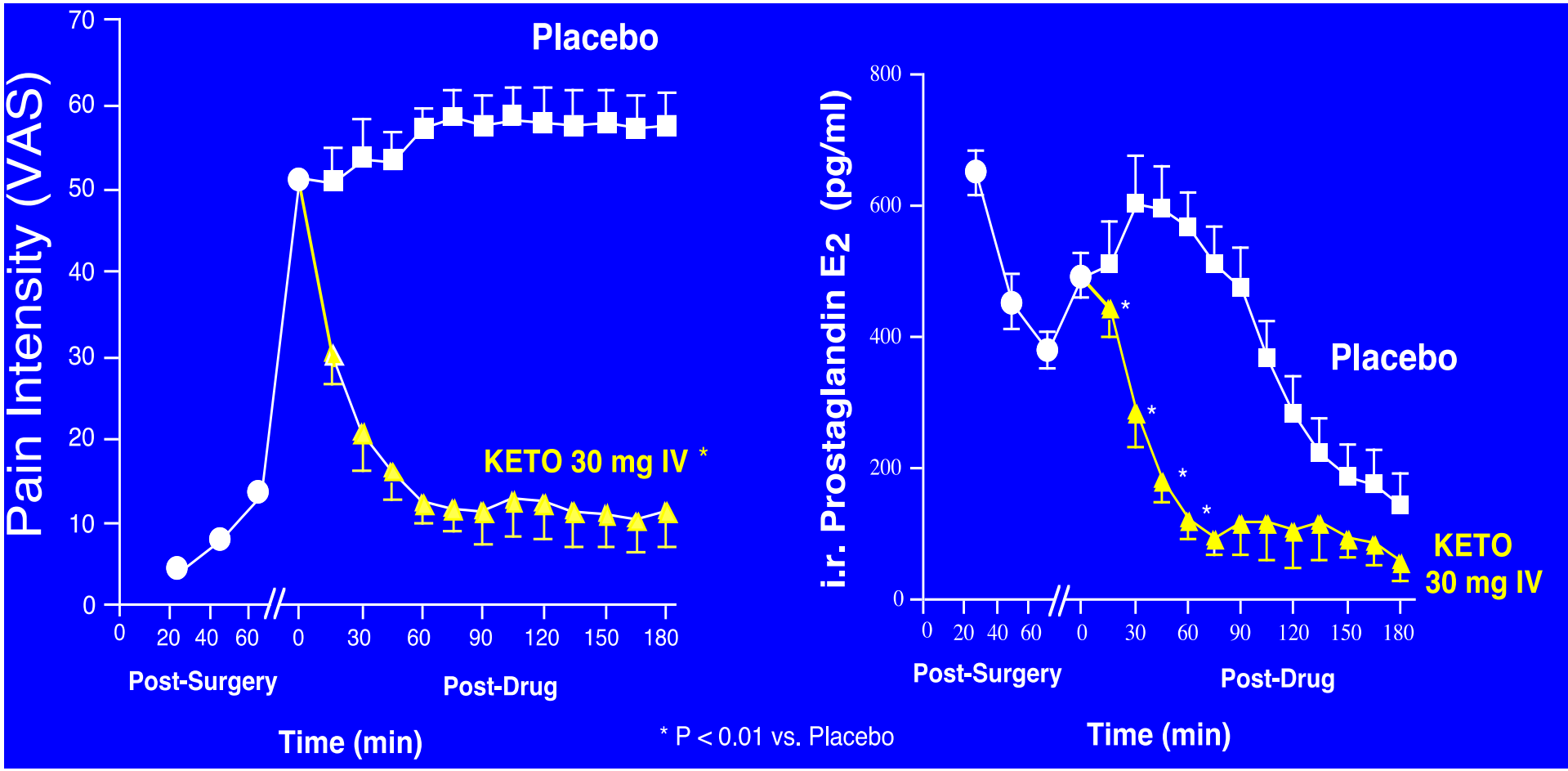


Impacted Third Molars

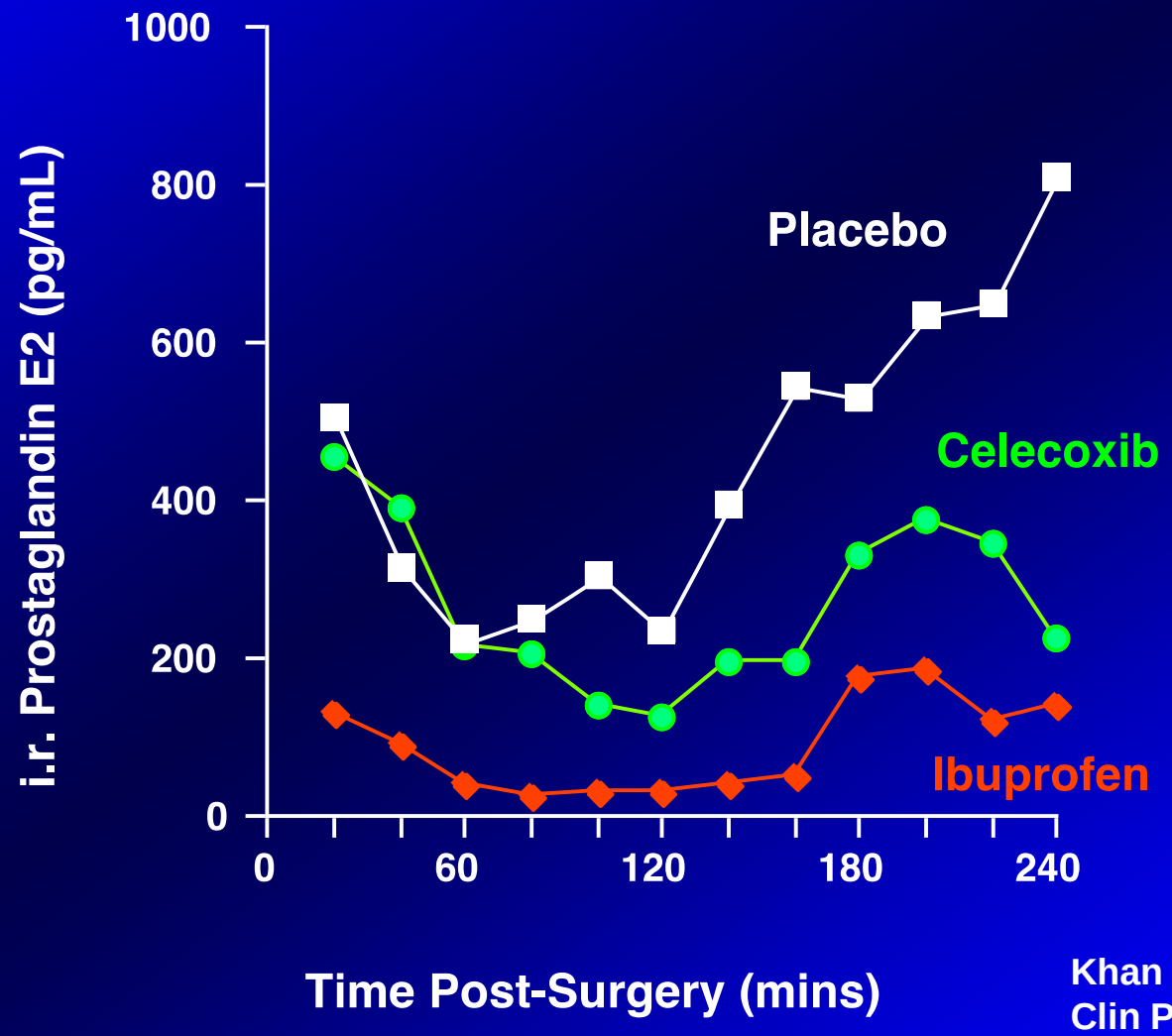


NSAIDs Produce Analgesia by Lowering PGE_2 Levels at the Site of Injury

NSAID administration after onset of inflammation and pain

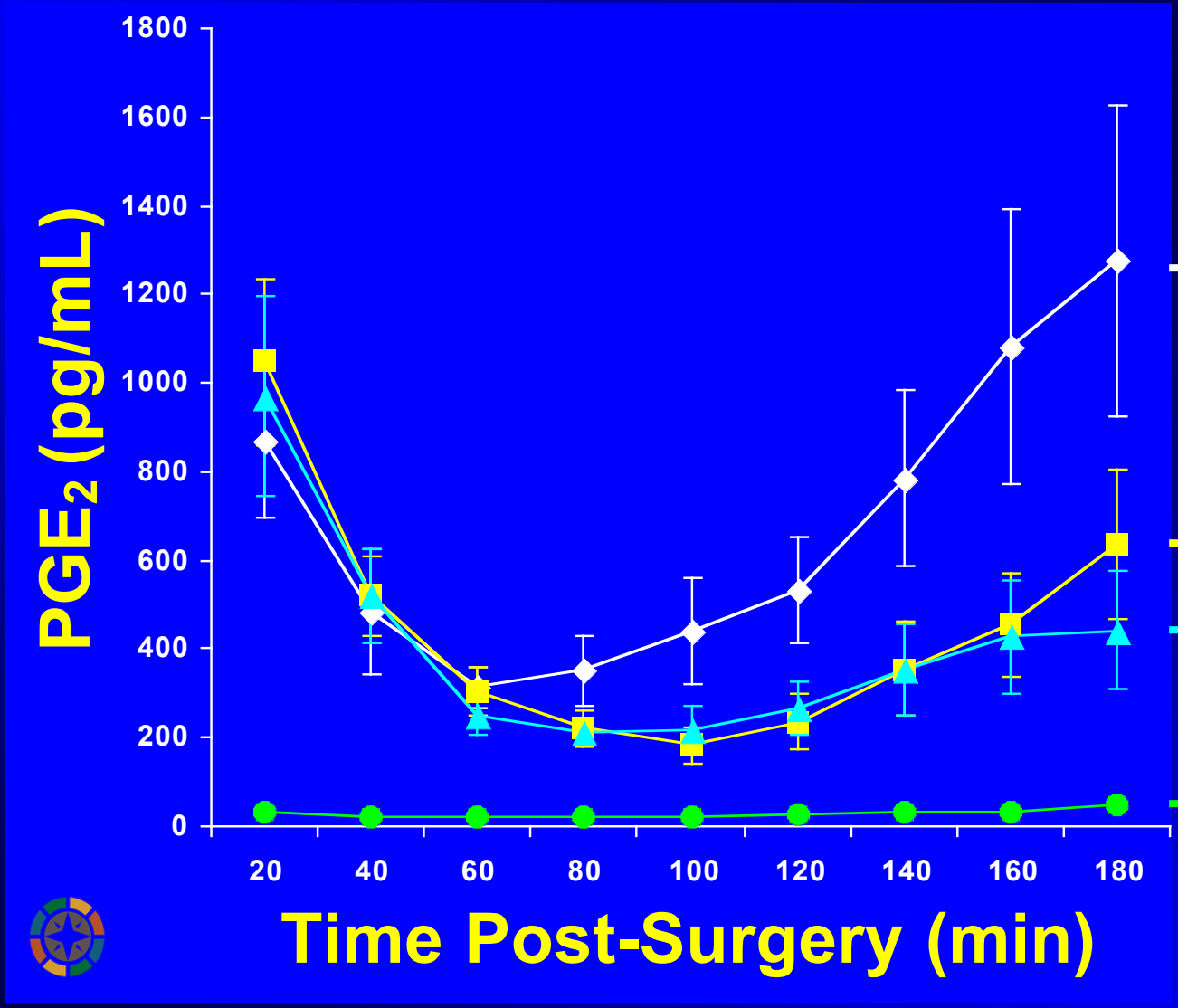


NSAID Prior to Tissue Injury Suppresses COX



Khan AA et al.
Clin Pharmacol Ther. 2002

Acetaminophen COX-2 Inhibition



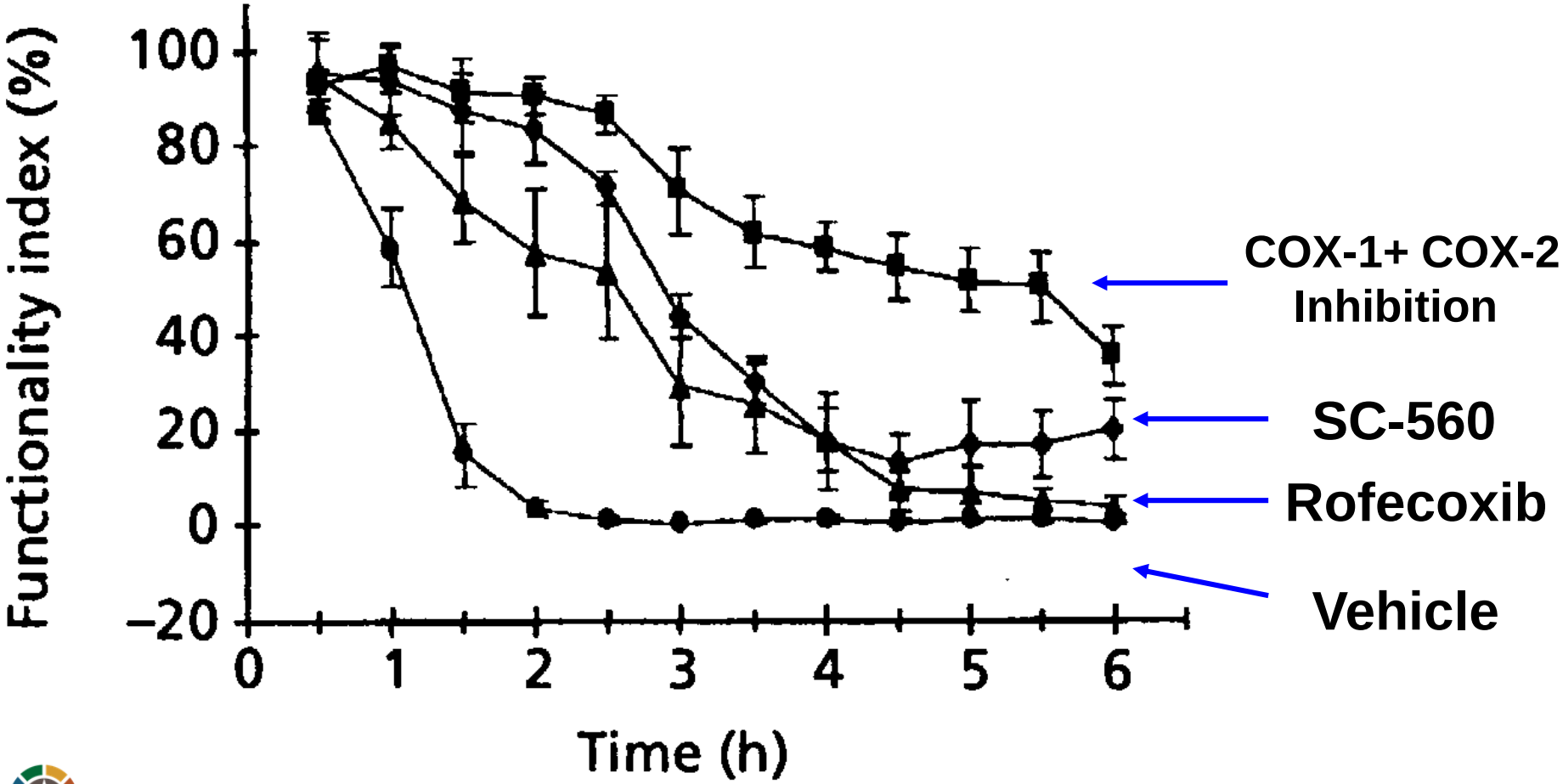
placebo

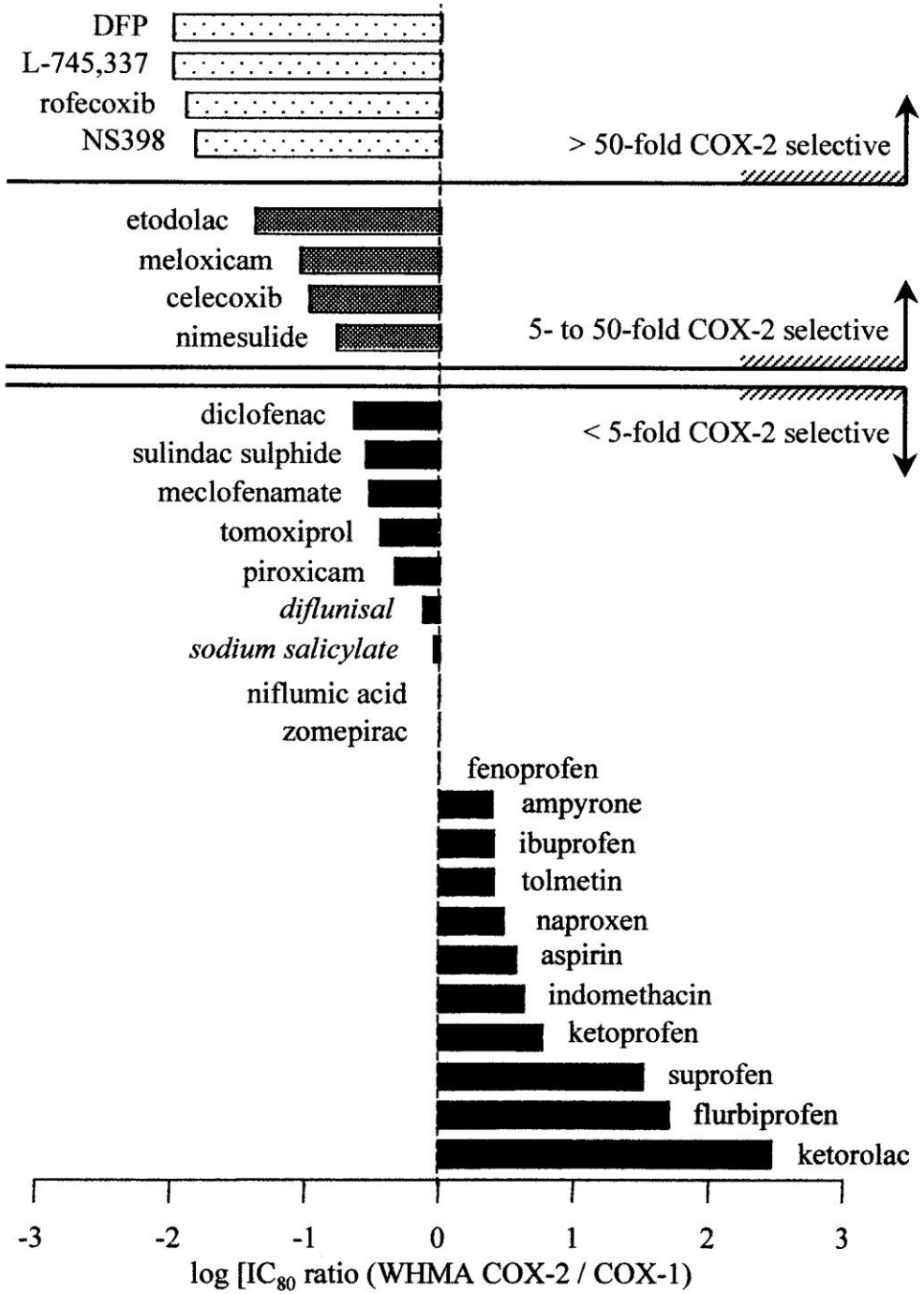
acetaminophen*

rofecoxib*

ketorolac*

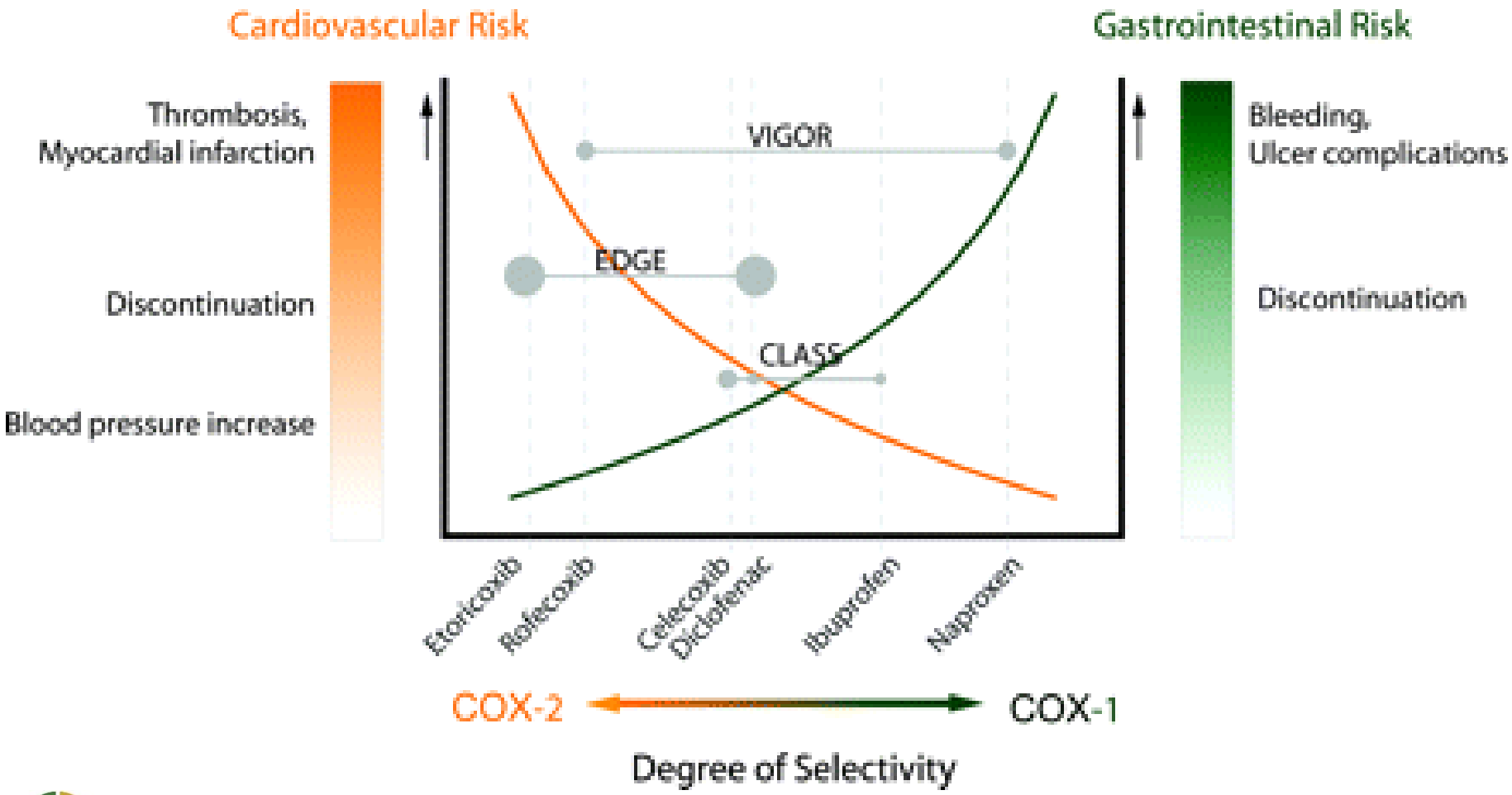
Suppression of Both COX-1 and COX-2 To Optimize Efficacy





Toxicity of NSAIDs are Based on Their Selectivity For COX1 or COX2

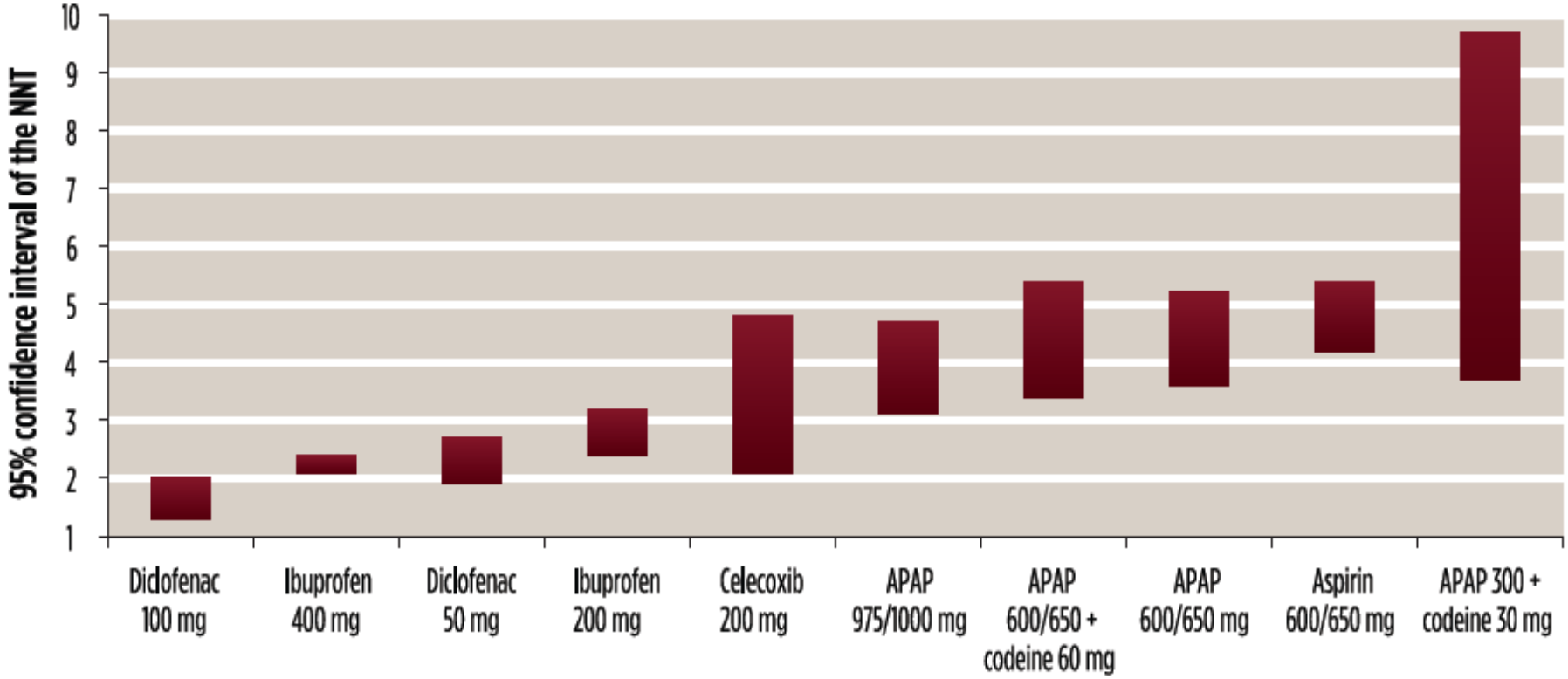
Adverse effects – GI/Cardiovascular Toxicity



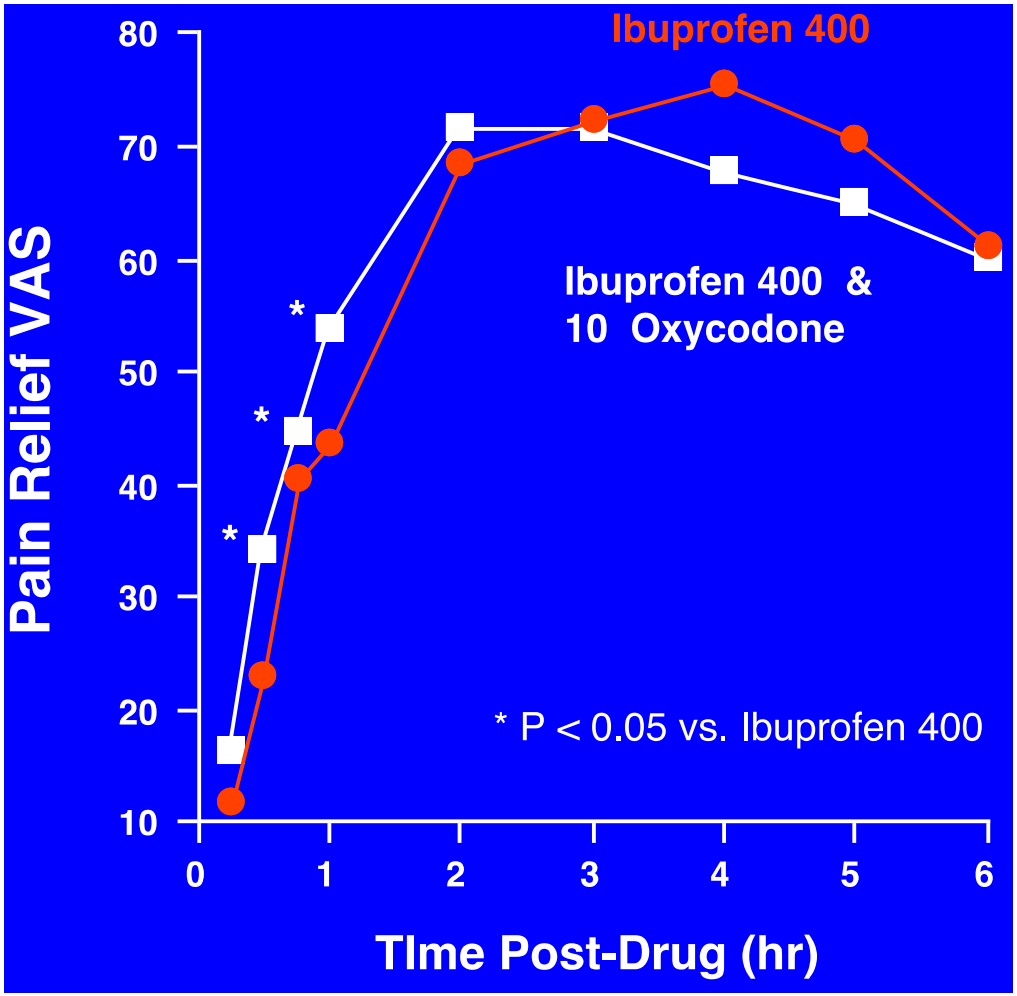
Adapted from:

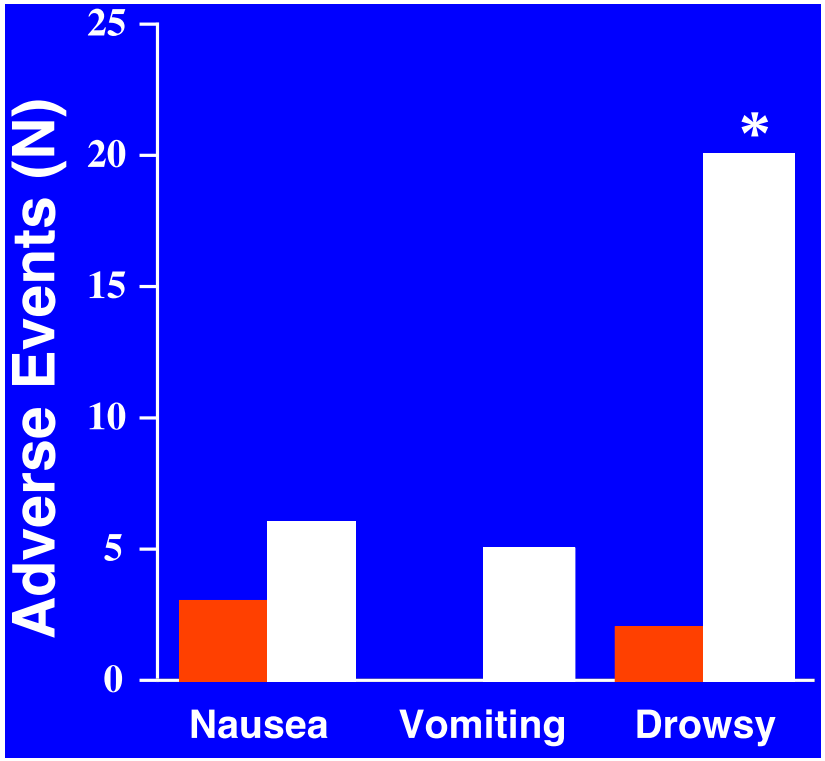
J. Barden,[1] J. E. Edwards,[2] H. J. McQuay,[3] P. J. Wiffen[4] and R. A. Moore[5]

© British Dental Journal 2004; 197: 407–411



Little additive analgesic effect in combination with an NSAID





2. Prescribe Opioids Less Prone to Abuse

Codeine

- **Usually combined with aspirin or acetaminophen due to weak analgesic activity**
- **Codeine converted to morphine by P450 isozyme CYP2D6**
  - About 10% of codeine dose will be converted to morphine

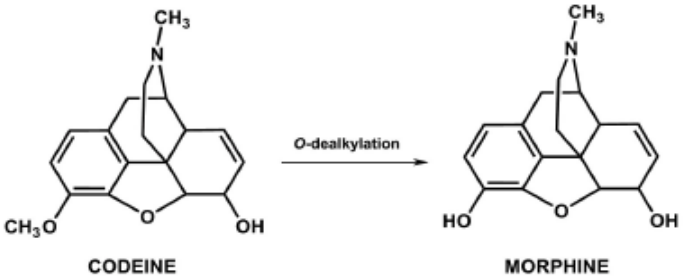


FIGURE 2 - Biotransformation of codeine, with the consequent release of morphine *in vivo*.

Oxycodone (Oxycontin)

Deaths linked to opioid abusers after pills crushed and dissolved for IV administration
Combined with acetaminophen (Percocet)

Hydrocodone

Acetaminophen combination (Vicodin)
Ibuprofen combination (Vicoprofen)

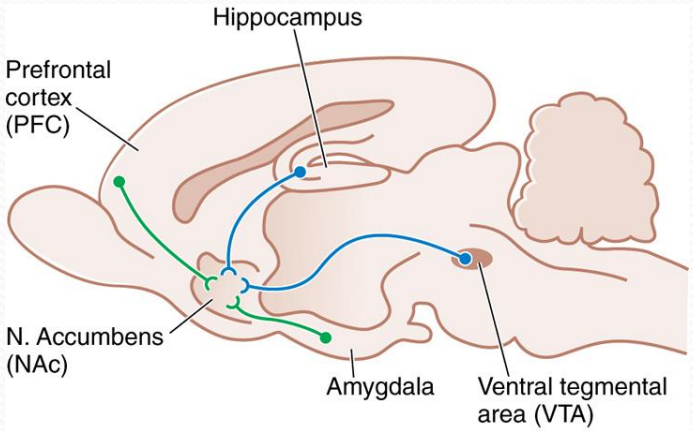
Individual Variability in Drug Abuse is Heritable

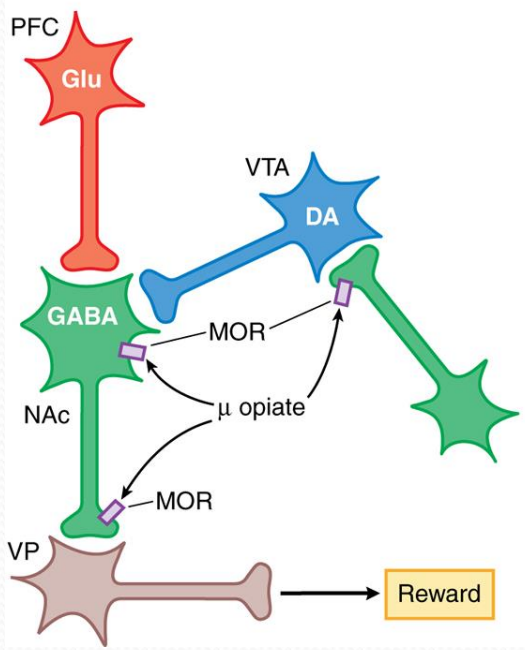
The **addictions are *moderately to highly heritable*,** which is paradoxical because **these disorders require use**; a choice that is itself modulated by both genes and environment. **The addictions are interrelated and related to other psychiatric diseases by common neurobiological pathways,** including those that modulate reward, behavioral control and the anxiety or stress response.

Goldman D et al. Nature Reviews/Genetics 2005

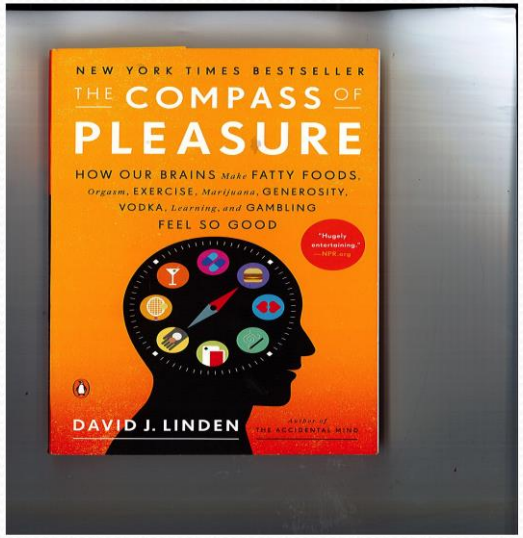
Outcome from Short Course of Opioid Abuse Associated with Heritability

Mood Alteration and Reward Properties of Opioids





- **Overlapping neural systems for analgesia, physical dependence and opioid reinforcement**
- **Increased DA release is powerfully rewarding**
- **Opiates increase DA release in the Nac**
- **MOR are present post-synaptically on GABAergic neurons**
- **Reinforcing properties of opioids mediated through inhibition of local GABAergic neuronal activity**



'the dark side of pleasure is addiction'
'brain imaging shows that heroin, orgasm and fatty foods all activate the same pleasure circuits'

How Can We Minimize Opioid Abuse Related to Analgesics Prescribed for Orofacial Pain?

~ 10 billion dosage units dispensed annually make opioids among the most frequently prescribed medications in US

Opioids prescribed for therapeutic purposes may also result in:

Diversion – excess pills are given (diverted) to family members, friends, or sold on the streets.

Dependence – may be **physical** (body responds negatively when the drug is discontinued following chronic use) or **psychological** (loss of ability to make sound decisions about what is right or wrong related to their drug use)

Addiction – physical and psychological dependence characterized by **neurochemical and molecular changes in the brain**

Death due to overdose

1.Oakley M, O'Donnell J, Moore PA. The Rise in Prescription Drug Abuse: Raising Awareness in the Dental Community. Compendium. 2011;32(6):14-24.
2.National Institute on Drug Abuse. Media Guide. The Basics: The Science of Drug Abuse and Addiction. Available at: http://www.drugabuse.gov/mediaguide/scienceof.html .

3. Minimize Diversion

Most commonly prescribed opioid amount is 20 doses and a 3-day supply.

What Happens to These Drugs?

- Used in totality as prescribed
- Stored "for a rainy day"
- Sold on the street
- Given to friends/family

< Half of opioids prescribed for pain after oral surgery were used, only 5 patients used all of the prescribed pills (N=28)

Maughan BC et al. Drug and Alcohol Dependence 2016

Extrapolates into millions of pills available for diversion after dental procedures

4. Prescribe Analgesics Based on Scientific Evidence not Tradition

Established prescribing behaviors
- Efficacy of APAP-opioids established in 1970's**, before NSAIDs introduced**
- Improved clinical analgesic research (Cooper & Beaver 1976)
- **NSAIDs efficacy and safety >> opioid combinations**

Misperception of DEA Scheduling of Opioids
- Schedule 2 drugs have greater ***abuse potential***, not efficacy

Placebo response contribution to analgesic efficacy
- Placebo response is 30-40% for simple extractions
- **Misperception that Rx analgesics are more potent than OTC analgesics**

Prescribing for Most Severe Outcome
- Often prescribe to manage the worse case scenario
- May benefit 20% with worse pain, but not needed for the other 80%

Unfounded Expectations of APAP Efficacy
- Maximum dose reduced from 1000 mg to 650 mg

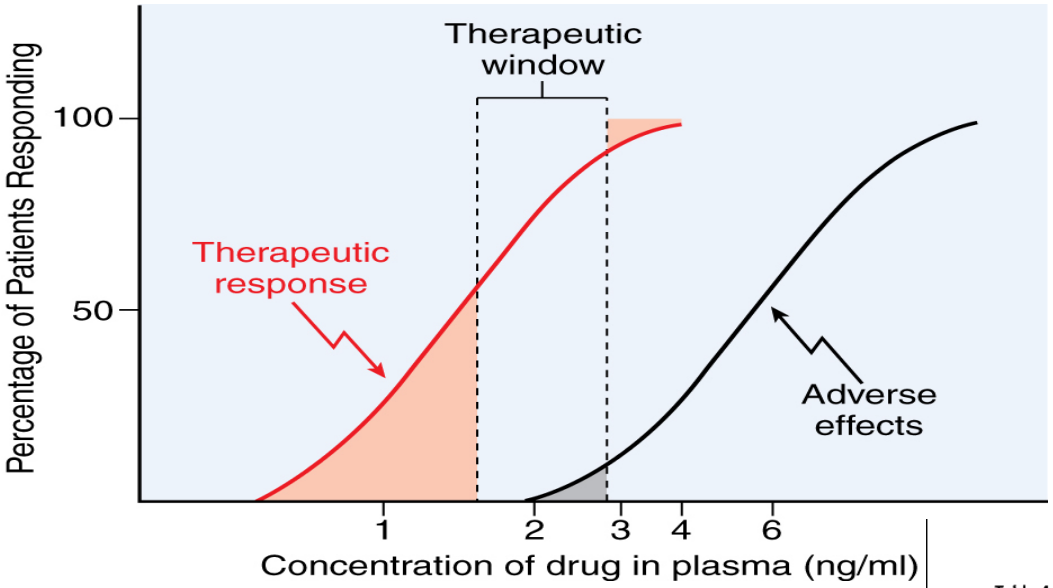
Patient Expectations and Demands
- Not providing an opioid can be perceived as less than optimal treatment
- Need to educate patients that NOT providing an opioid is the best treatment

***Why Do We Prescribe Vicodin?* Moore, Dionne, Cooper, Hersh: JADA July 2016**

5. Recognize that Pain Relief ~ Abuse Potential for Most Opioids

Drugs	Response	
	Abuse Liability	**Maximal Pain Relief**
Strong Opioid Agonists Morphine, meperidine, fentanyl, alfentanil, hydromorphone, levorphanol, methadone, oxymorphone, remifentanil, sufentanil	**High**	High
Moderate to Strong Agonists Codeine, hydrocodone, oxycodone	Moderate	Low to Moderate
Agonist/ Antagonists Buprenorphine, butorphanol, nalbuphine, pentazocine	Low	Moderate to High

Mu Opioid Receptors: Combined Analgesia and Toxicity



Respiratory depression

Sedation

Physical dependence

Constipation

Miosis

Table 4. Acute adverse events observed in children for medications or medication combinations.[18]

MEDICATION OR MEDICATION COMBINATION, DOSE	STUDIES, NO.	ACUTE ADVERSE EVENTS REPORTED, NO.	STUDY PARTICIPANTS, NO.	ACUTE ADVERSE EVENTS, %
Codeine, 2 milligrams/kilograms	1	74	56	132
Oxycodone, 0.2 mg/kg	2	69	73	95
Morphine, 0.5 mg/kg	2	84	140	60
Ibuprofen, 10 mg/kg, and Oxycodone, 0.1 mg/kg	1	8	22	36
Acetaminophen Plus Codeine, 1 mg/kg	3	94	368	26
Ibuprofen, 10 mg/kg, and Codeine, 1 mg/kg	2	52	209	25
Ibuprofen, 10 mg/kg	9	74	510	15
Naproxen, 20 mg/kg	1	4	41	10
Ketoprofen, 40 mg	1	2	33	6
Tramadol, 2 mg/kg	1	3	67	4
Acetaminophen, 15 mg/kg	6	10	260	4

6. Consider Atypical Centrally-Acting Analgesics if an Opioid in Indicated

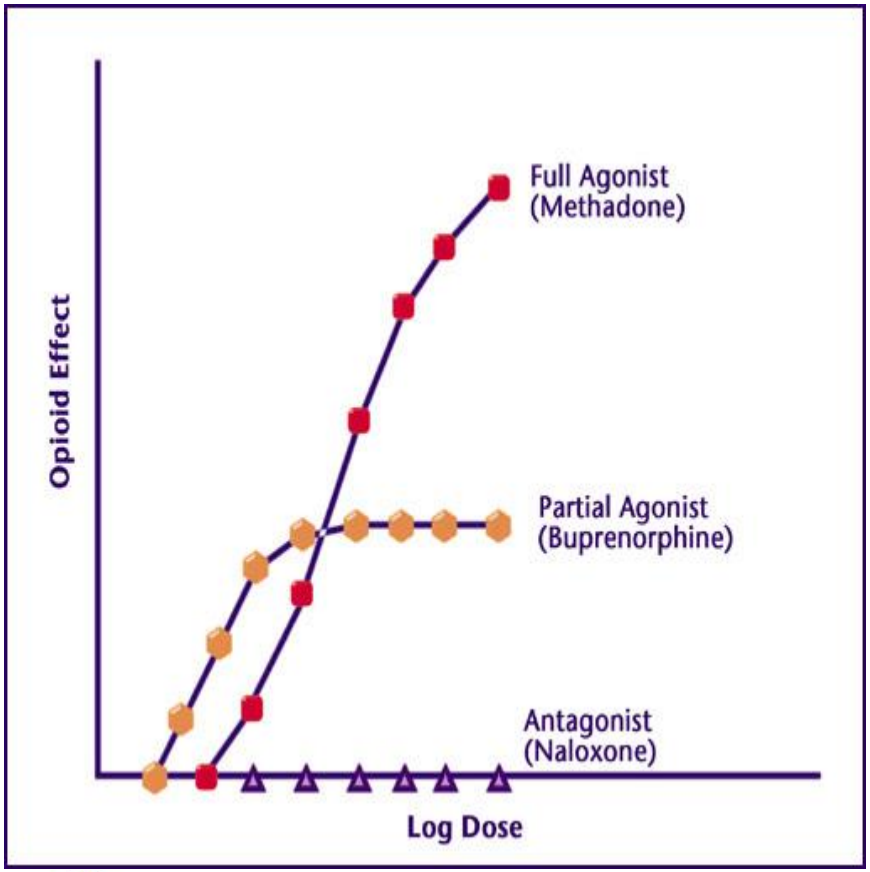
Tramadol (Ultram®)

- Moderate-strong analgesic
- Agonist at mu receptors and blocks uptake of NE and 5-HT so spinal pain processing is less efficient
- **Minimal potential for dependence or abuse**
- **Minimal potential for respiratory depression**
- Effects partially blocked by naloxone
- Metabolized by CYPs (CYP2D6 and others) to 5 different metabolites
  - Desmethyltramadol is 200 times more potent
  - Depending on genetics analgesic effects can either increase or decrease

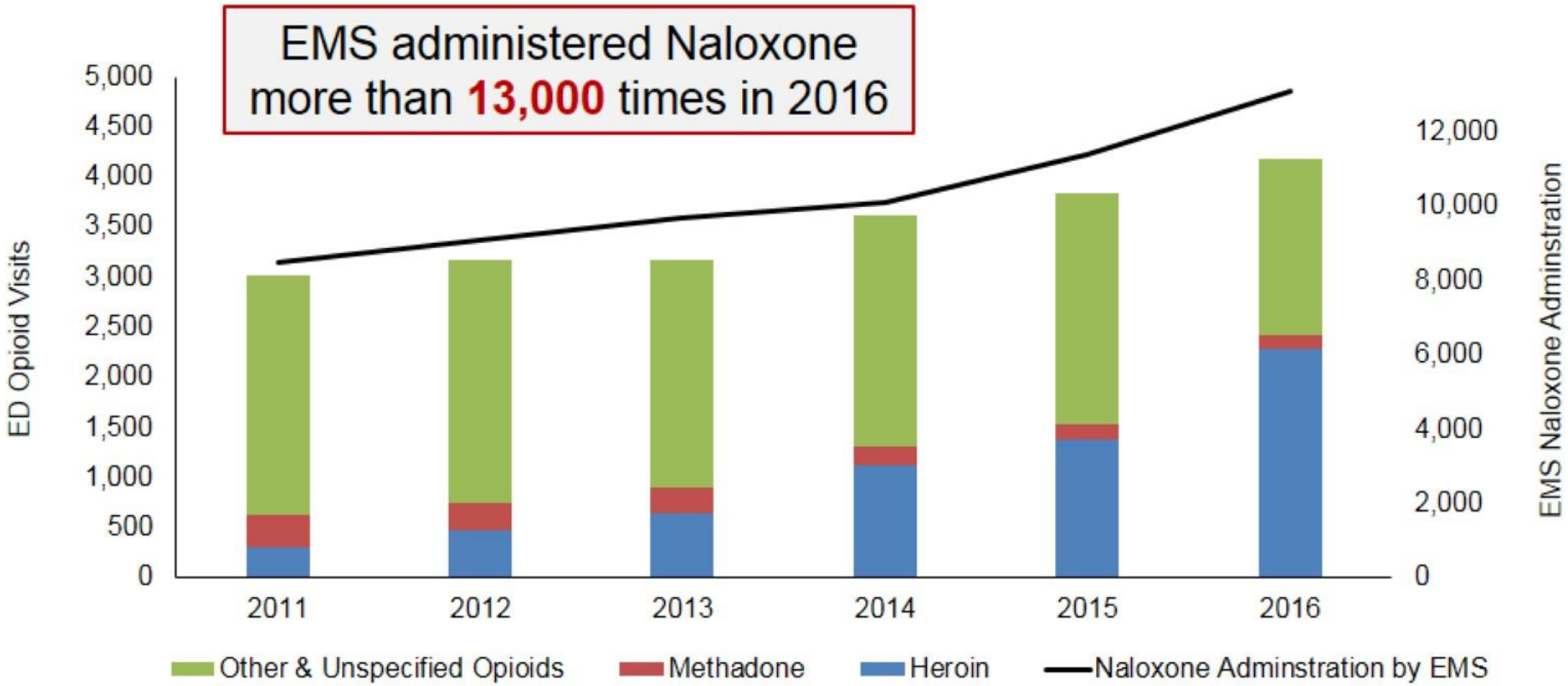
FDA states that tramadol is contraindicated < 12 years of age for pain
Can be prescribed over the phone or electronically per CVS
Not listed in STOP Act provisions to limit opioids misuse

7. Recognize that Naloxone (Narcan) for Opioid Reversal Does not Treat Substance Abuse

Antagonist at mu and kappa receptors



Emergency Department Opioid Overdose Visits & EMS Naloxone Administration, 2011-2016†



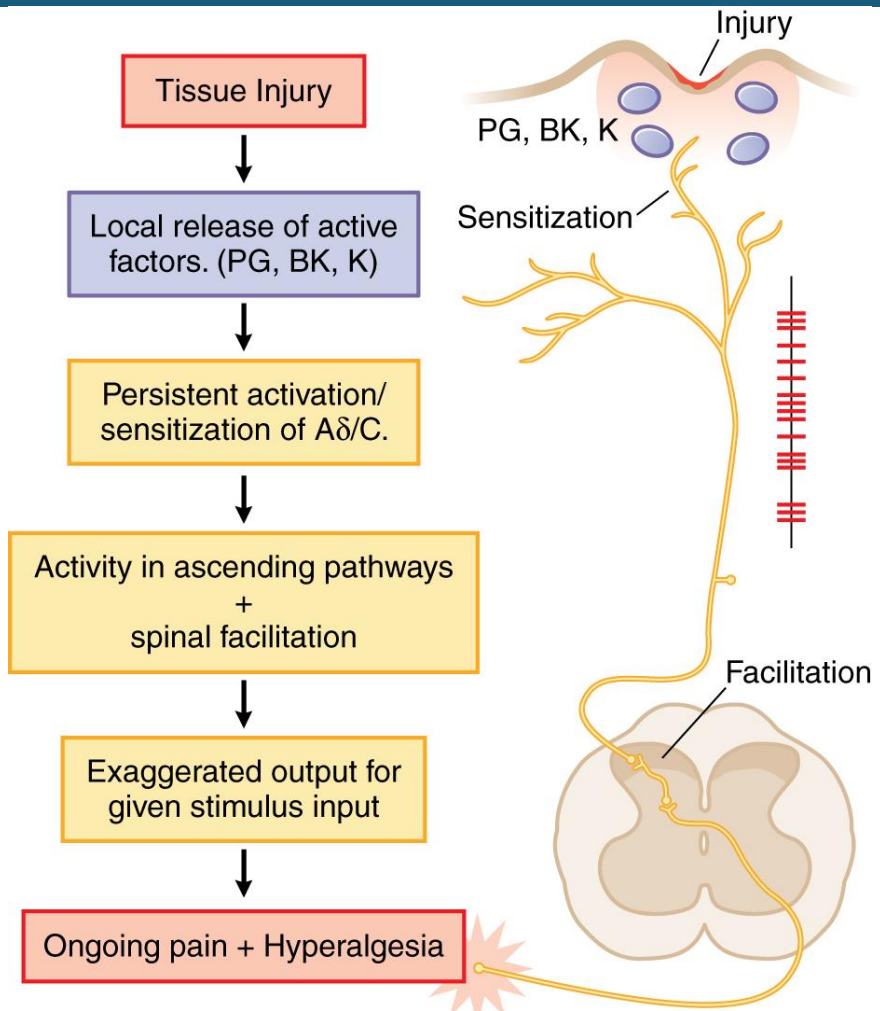
†ICD9 to ICD10 coding changed in October 2015. Impact on surveillance is unclear.
Naloxone administration alone by EMS does not necessarily equate to an opioid overdose.

Source: NC DETECT (statewide ED data), N.C. Division of Public Health and UNC Carolina Center for Health Informatics (CCHI); EMSpic- UNC Emergency Medicine Department, N.C. Office of Emergency Medical Services (OEMS), 2011-2016

North Carolina Injury & Violence PREVENTION Branch

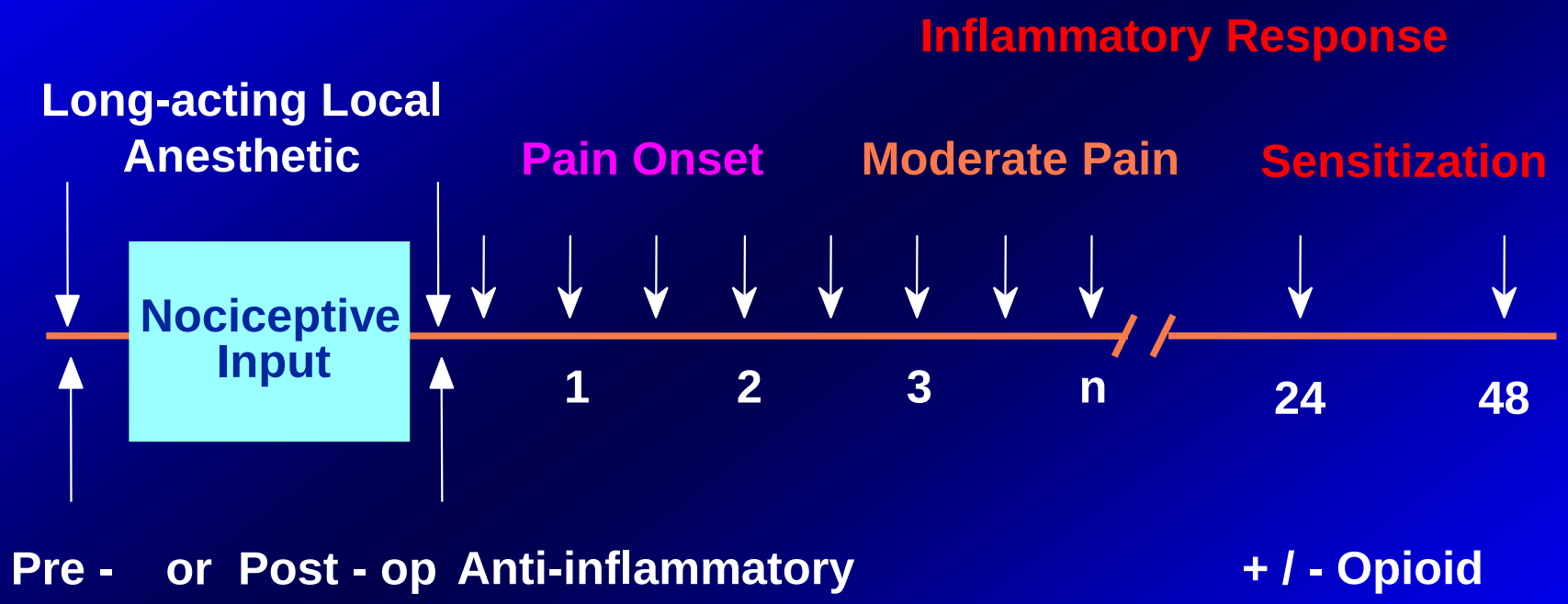
8. Use the PAIN Management Paradigm

- P = **Prevention**
- A = **Anti-inflammatory**
  Acetaminophen
  Anesthetics
- I = **Individualize**
- N = **Narcotics (opioids)**



A milligram of prevention is better than a pound of rehabilitation

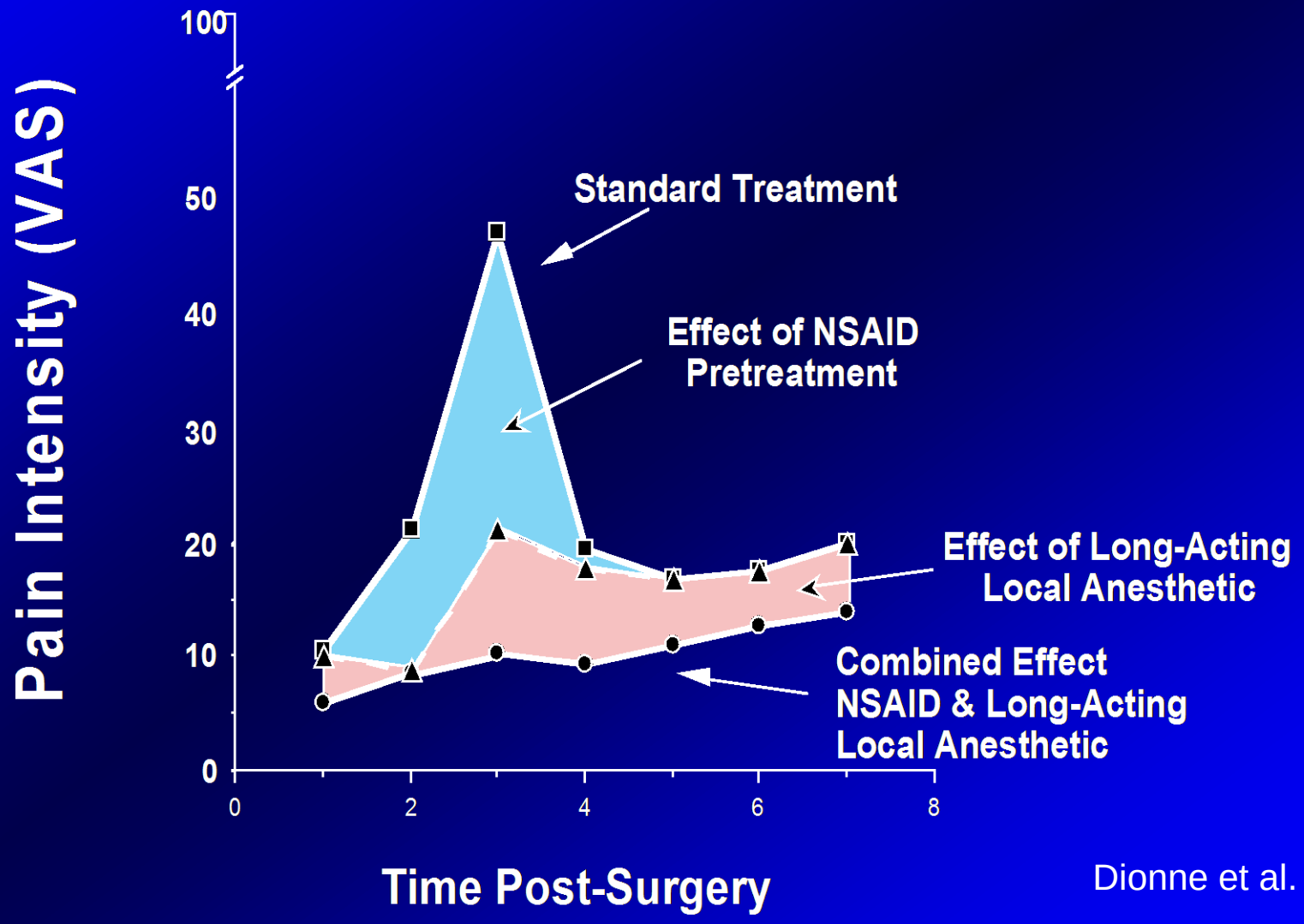
Therapeutic Strategies



9. Use Acetaminophen for Additive Analgesia

- Inhibits Prostaglandin Hydroperoxidase
- Metabolites of acetaminophen act on TRPA1-receptors in the spinal cord to suppress the signal transduction from the superficial layers of the dorsal horn, to alleviate pain.
- One metabolite (AM-404) inhibits Na channels and the reuptake of endogenous cannabinoids

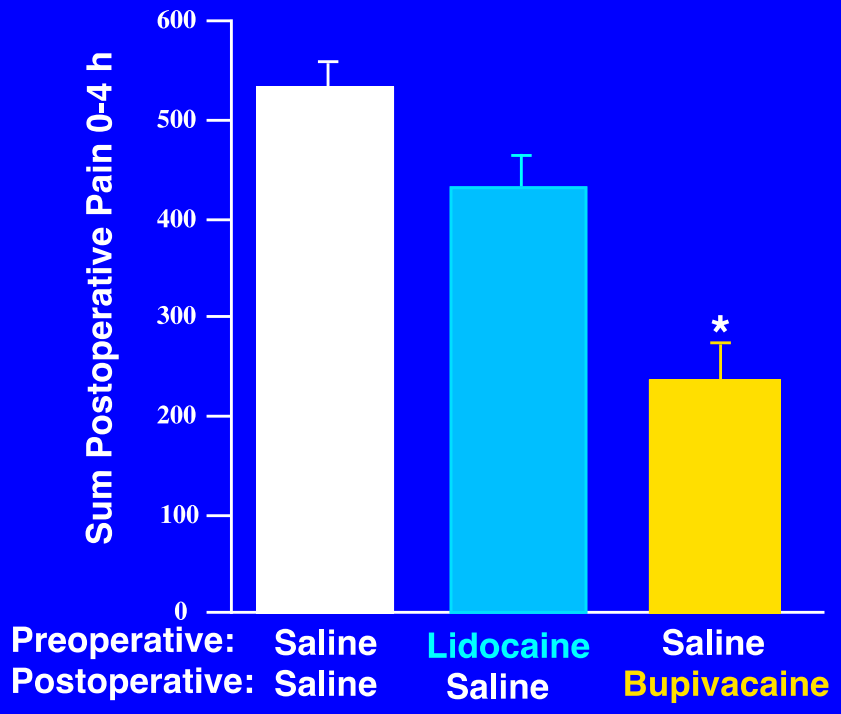
Additive Preemptive Analgesia for NSAID and Long-Acting Local Anesthetic



Dionne et al. 1984

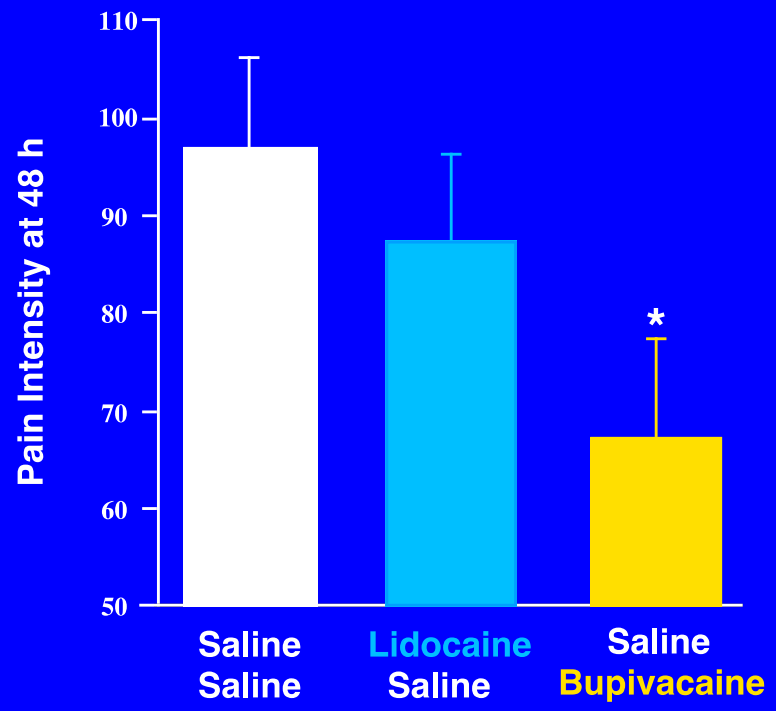
Preventive Effects of Postop Pain Control

Immediate Postop. Pain



* P < 0.001 Bupivacaine drug effect, 2-ANOVA

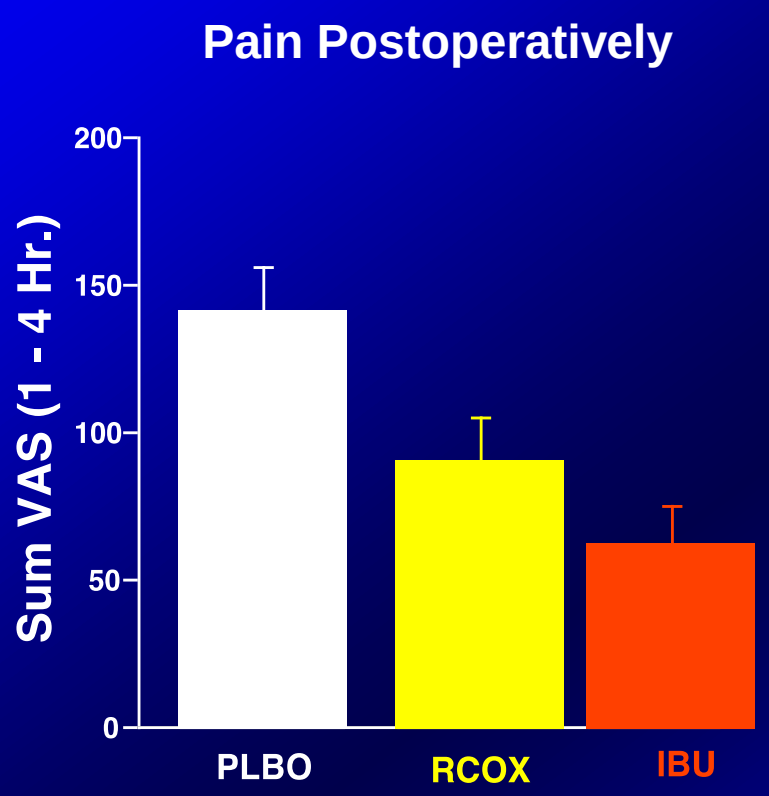
Pain at 48 Hours

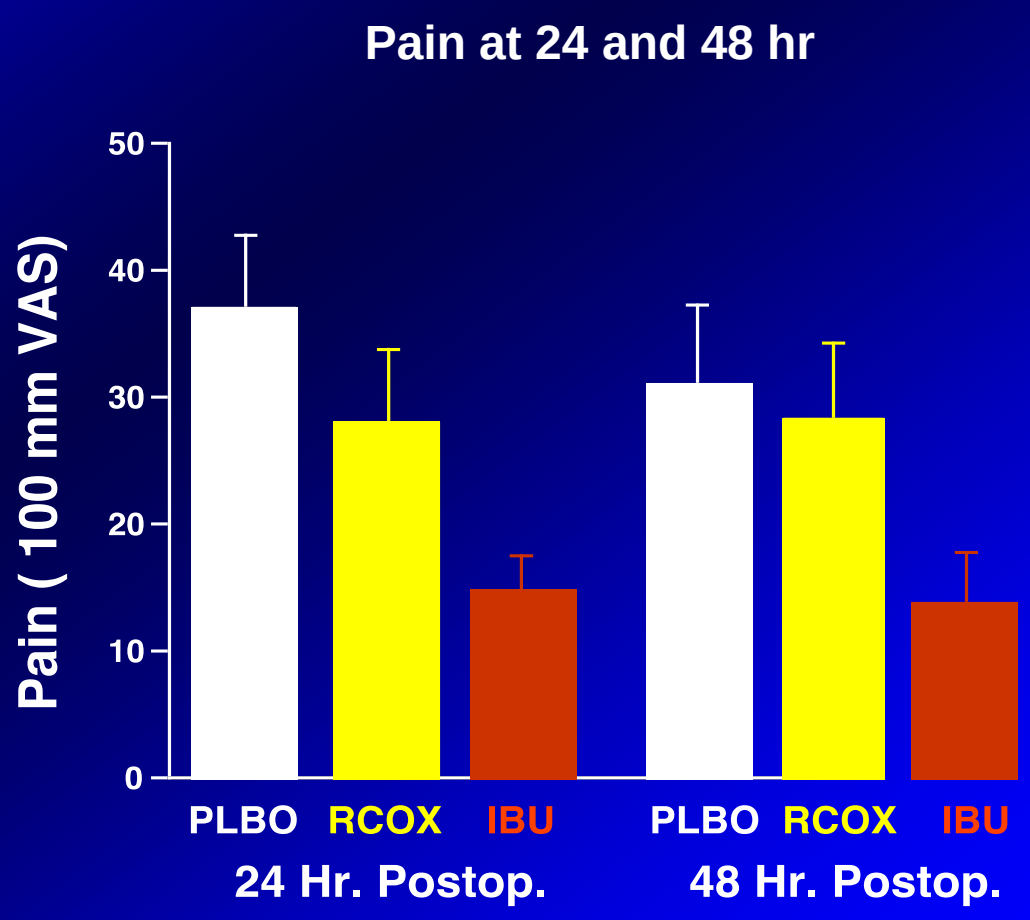


* P < 0.05 Bupivacaine drug effect, 2-ANOVA

Gordon SM et al. 2002

Dual COX-1/COX-2 Suppression Prevents Central Sensitization





10. Individualize Prescribing for Acute Pain to Minimize Opioid Misuse or Abuse Based on Procedure, Pain Level and Validated Drugs and Combos

Mild Pain

OTC ibuprofen, naproxen or ketoprofen as needed

Moderate Pain

Ibuprofen 400-600 mg every 4-6 hours by the clock for first 48-72 hours, not to exceed maximum recommended daily dose. As needed until pain subsides

Dionne, Gordon, Moore: Compendium 2016; 37:372-378

Individualize Prescribing

Moderately Severe Pain
Prescription dose of NSAID administered prior to the procedure or immediately afterwards

Administration of long-acting local anesthetic 0.5% bupivacaine with epinephrine for procedural anesthesia and postoperative analgesia

Postoperative administration of prescription dose of NSAID administered by the clock for 48-72 hours combined with administration of acetaminophen 600/650 mg by the clock; the two medications can be given concurrently or alternated to maintain blood levels of both medications

Severe Pain
Provide a prescription of an opioid drug in combination with acetaminophen to be filled and administered only if needed for pain not relieved by regimen for Moderately Severe pain.

Example: 2 tablets of 325 mg acetaminophen plus 37.5 mg tramadol (Ultracet) every 4-6 hours for pain, not to exceed 8 tablets every 24 hours

NB: Separate dosing of 600/650 mg acetaminophen needs to be discontinued

Dionne, Gordon, Moore: Compendium 2016; 37:372-378

Comparison of Conventional Approach to Targeted Strategies

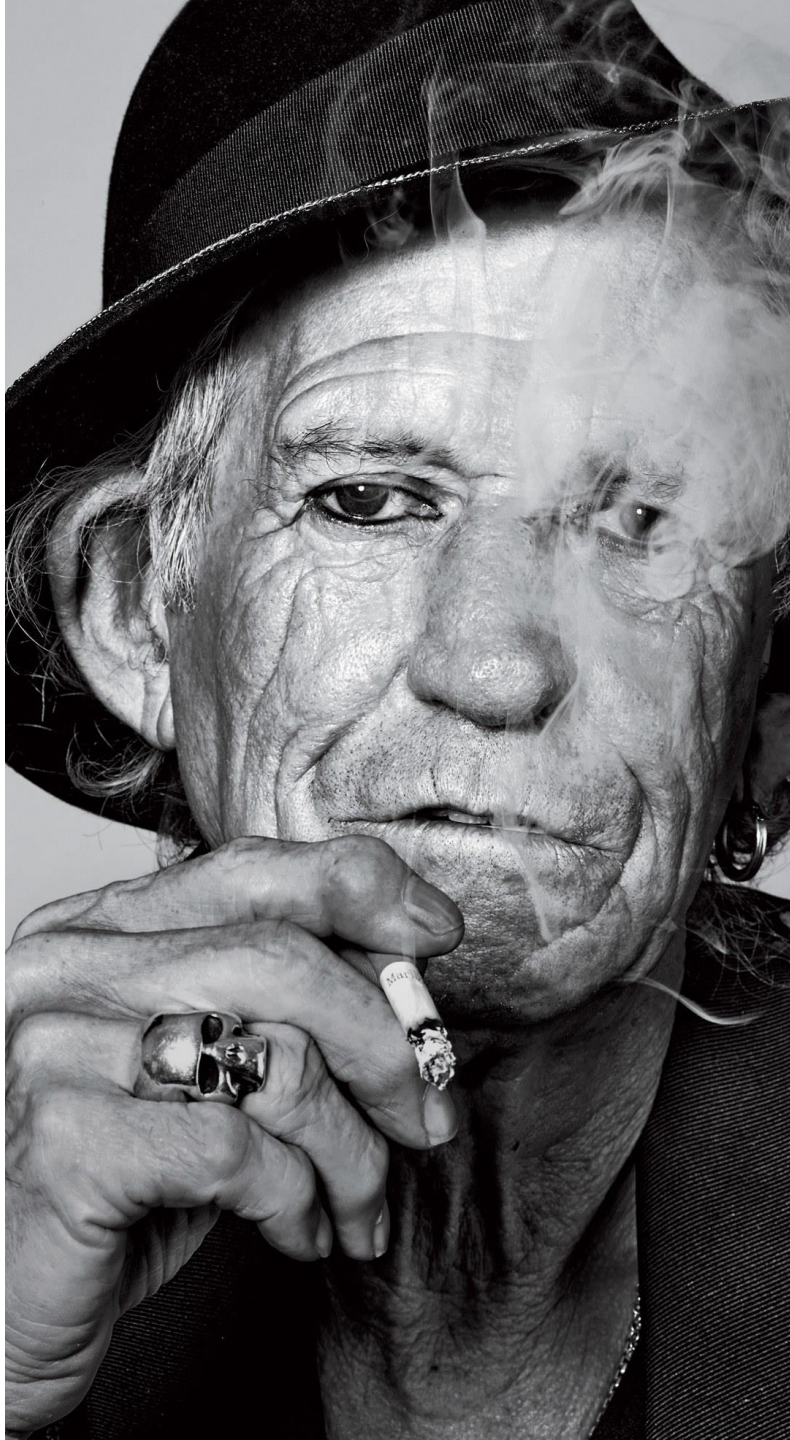
	Opioid Combinations	Preventive/Additive/Adaptive
Analgesia	++	+++
Adverse Effects	+++	+
Abuse Potential	+++	0 (without opioid) + (with tramadol) ++ (with oxycodone or hydrocodone)
Overdose Risk	++	0 (without opioid) + (with tramadol) ++ (with oxycodone or hydrocodone)

Relative effects based on well-established pharmacology of drug classes and specific agents in Table 1

Dionne, Gordon, Moore: Compendium 2016; 37:372-378

How to identify drug seeking behavior?

- Drug being requested: opioids, benzodiazepines, methylphenidate, dexamphetamine, anabolic steroids, anti-psychotic drugs
- Asking for a specific drug by name or brand name
- Claiming allergy to alternative drugs
- Doctor shopping
- Anger when questioned about symptoms such as pain
- Unscheduled clinic visits for refills
- Unauthorized dose escalation
- Claiming to be unable to afford dental work needed to manage dental pain
- Multiple visits for the same complaint
- More concerned about the drug than medical/dental problem



Example of Successful Intervention Effort to Minimize Problematic Clinical Practice

Original Contributions

Cover Story

Opioid prescribing practices from 2010 through 2015 among dentists in the United States

What do claims data tell us?

Check for updates

ADA CE Program

Supplemental material is available online.

Niodita Gupta, MD, MPH, PhD; Marko Vujicic, PhD; Andrew Blatz, MS

ABSTRACT

Background. Dentists wrote 6.4% of all opioid prescriptions in the United States in 2012. The purpose of this study was to examine opioid prescription rates, dosage of opioids prescribed, type of opioid drug prescribed, and type of dental visit at which dentists prescribe opioids.

Methods. The authors used the 2010 through 2015 Truven Health Marketscan Research databases and the Prescription Drug Monitoring Program (PDMP) Training and Technical Assistance Center conversion data set. The authors conducted descriptive analyses for days' supply, quantity prescribed, and daily morphine milligram equivalent dose.

Results. The opioid prescription rate per 1,000 dental patients increased from 130.58 in 2010 to 147.44 in 2015. Approximately 68.41% of all opioids prescribed were during surgical dental visits and approximately 31.10% during nonsurgical dental visits. During nonsurgical dental visits at which dentists prescribed an opioid, most of the procedures were restorative.

Conclusions. Among a population of dental patients with private insurance, opioid prescribing rates in the United States increased slightly from 2010 to 2015. The largest increase was among 11- through 18-year-olds. Almost one-third of opioid prescriptions written by dentists were associated with nonsurgical dental visits.

Practical Implications. Use of PDMP resources and use of nonopioid analgesics could help reduce the number of opioid prescriptions in dentistry.

Key Words. Opioids; prescriptions; dentists.

JADA 2018:149(4):237-245
https://doi.org/10.1016/j.adaj.2018.01.005

The United States is facing a severe opioid addiction epidemic. In 2015, approximately 12.5 million people misused prescription opioids.[1] Approximately 2.1 million people misused prescription opioids for the first time, and an estimated 2 million had a prescription opioid use disorder.[1] Opioid overdoses caused 33,091 deaths in 2015 alone.[1] The amount of opioids prescribed in 2010 was 782 morphine milligram equivalents (MMEs) per capita, which decreased to 640 MME per capita in 2015.[2] Investigators estimated the economic burden of opioid overdose, abuse, and dependence in 2013 to be $78.5 billion from a societal perspective.[3]

In 1998, dentists were the top specialty prescribers of immediate-release opioids, accounting for 15.5% of all immediate-release opioid prescriptions.[4] However, by 2009, the amount of opioid prescriptions written by dentists decreased to 8% of all opioid prescriptions in the United States,[5] and by 2012, this amount further decreased to 6.4%.[6] More recent and detailed data are available in some states. For example, in South Carolina during 2012 and 2013, dentists accounted for only 8.9% of all opioid prescribers but prescribed 44.9% of the initial opioids dispensed to patients.[7] Patients younger than 21 years received 11.2% of the total amount of opioids that dentists prescribed.[7] Investigators conducted a study in Indiana and used 2011 data, and their results showed that access to dentists and pharmacists increased the availability of prescription opioids and that this

This article has an accompanying online continuing education activity available at: http://jada.ada.org/ce/home.

Copyright © 2018 American Dental Association. All rights reserved.

'Approximately 31% of the opioids prescribed for all age groups were associated with nonsurgical dental visits… suggests there might be opportunities to reduce opioid prescribing by targeting nonsurgical dental visit prescribing practices.'

Opioid Analgesic Rx Table

Raymond A. Dionne, DDS, PhD

TABLE 1:

Prescribing Options for Acute Pain to Minimize Opioid Misuse or Abuse

Mild Pain
OTC ibuprofen, naproxen or ketoprofen as needed.

Mild to Moderate Pain
Ibuprofen 400-600 mg every 4-6 hours by the clock for first 48-72 hours, not to exceed maximum recommended daily dose. As needed until pain subsides.

Moderately Severe Pain
Prescription dose of NSAID administered prior to the procedure or immediately afterwards. Administration of long-acting local anesthetic 0.5% bupivacaine with epinephrine for procedural anesthesia and postoperative analgesia.

Alternative, if the above recommendation does not relieve pain sufficiently.
Postoperative administration of prescription dose of NSAID administered by the clock for 48-72 hours combined with administration of acetaminophen 600/650 mg by the clock; the two medications can be given concurrently or alternated to maintain blood levels of both medications.

Severe Pain
Provide a prescription of an opioid drug in combination with acetaminophen to be filled and administered only if needed for pain not relieved by regimen for moderately severe pain.

Example: 2 tablets of 325 mg acetaminophen plus 37.5 mg tramadol (Ultracet) every 4-6 hours for pain, not to exceed 8 tablets every 24 hours.

NB: Separate dosing of 600/650 mg acetaminophen needs to be discontinued.

Dionne, Gordon, Moore: Compendium 2016; 37:372-378

TABLE 2:

Comparison of Conventional Approach to Targeted Strategies

	Opioid Combinations	Preventive/Additive/Adaptive
Analgesia	++	+++
Adverse Effects	+++	+
Abuse Potential	+++	0 (without opioid) + (with tramadol) ++ (with oxycodone or hydrocodone)
Overdose Risk	++	0 (without opioid) + (with tramadol) ++ (with oxycodone or hydrocodone)

Relative effects based on well-established pharmacology of drug classes and specific agents in Table 1 ranked on a 0 to ++++ ranking.

Provided by Eastern Dentists Insurance Company (EDIC), April 2018.
The information contained is only accurate to the day of publication and could change in the future.

EASTERN DENTISTS INSURANCE COMPANY
MALPRACTICE INSURANCE | BY DENTISTS, FOR DENTISTS® | WWW.EDIC.COM

Checklist for Prescribing Opioids for Acute Dental Pain

When Considering Opioids for Short-Term Management of Acute Pain

- ✔ Estimate pain intensity and duration associated with procedure
- ✔ If the pain is due to acute inflammation, can it be suppressed with anti-inflammatory drugs; opioids do not have any acute anti-inflammatory actions
- ✔ Inform the patient and family members of the risks of opioids: increased incidence of nausea, vomiting and drowsiness, possible risk of misuse leading to dependence, risk of death due to opioid overdose
- ✔ Evaluate the risk of harm or misuse:
  - History of substance use disorder including marijuana, alcohol, cocaine, and stimulants
  - History of mental health conditions such as depression or anxiety
  - Concurrent benzodiazepine use
  - Check the Prescription Drug Monitoring Program (PDMP) data
- ✔ Set criteria for using opioids for therapeutic intent:
  - Follow instructions for dose and dosing interval
  - No replacement for lost medications
  - Only provide a 2-3 day supply
  - No refills provided without a clinical exam
  - Discuss the greater safety of tramadol in comparison to oxycodone and hydrocodone
  - Requests for specific opioid drugs will be considered as drug seeking
  - Do not expect total pain relief, e.g., meaningful pain relief is a 50% reduction
  - Instruct the patient and family member on safe storage and disposal of opioid drugs
- ✔ Educate the patient that non-opioid drugs such as ibuprofen, naproxen and ketoprofen are more effective for post-surgical pain than opioid combination drug formulations.

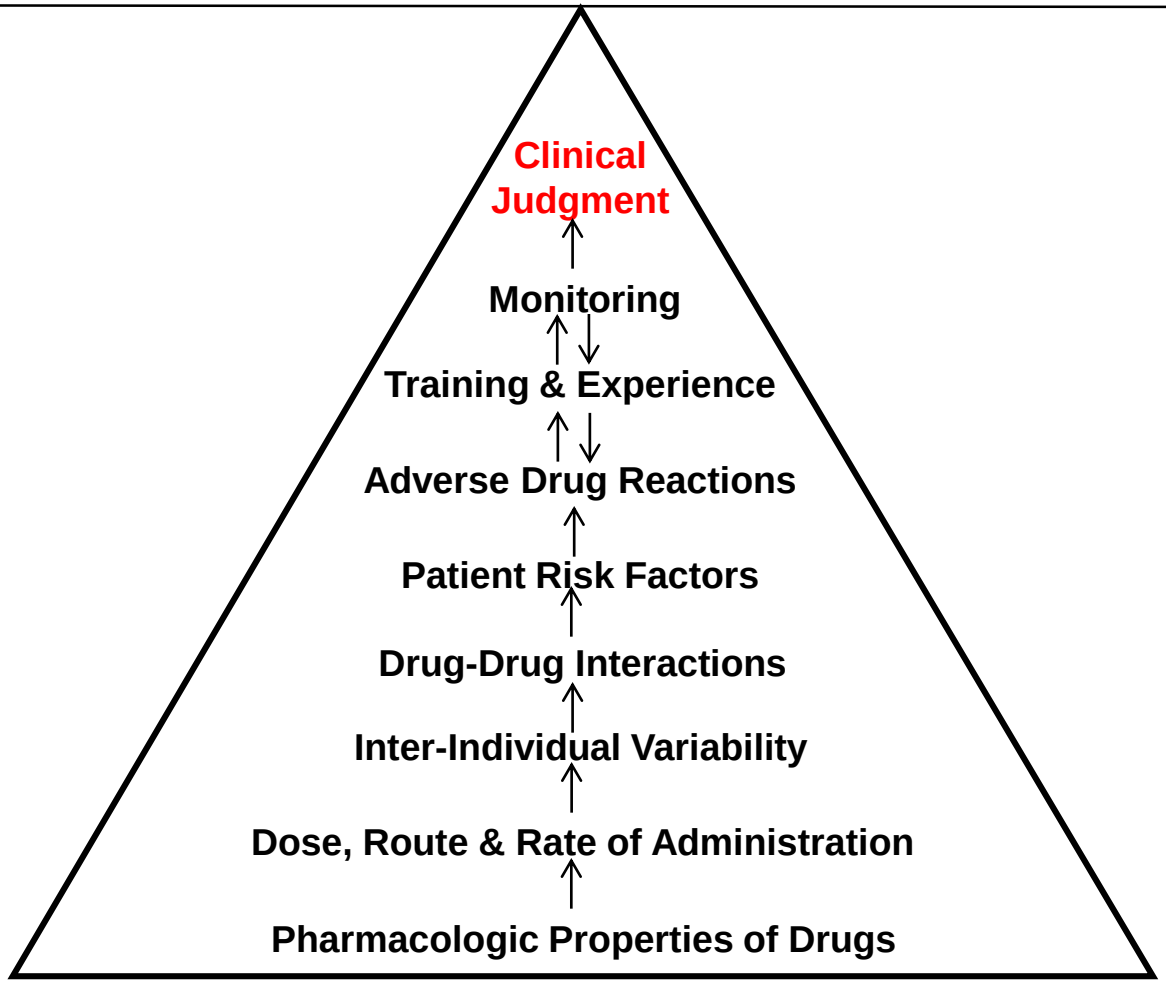
When reassessing the need for additional opioids

- ✔ Assess the need for additional opioids based on clinical exam and the usual 2-3 day time course of acute inflammatory pain
- ✔ Evaluate the risk of harm or misuse due to drug-seeking
- ✔ Check the PMDP for any other opioid prescriptions since initial visit
- ✔ Check that nonopioid medications are optimized and taken as prescribed
- ✔ Evaluate other possible causes of pain report: infection, nerve damage, alveolitis

Modified from Checklist for Prescribing Opioids for Chronic Pain, Centers for Disease Control, US Department of Health and Human Services, www.cdc.gov/drugoverdose/prescribing/guidelines

Determinants of Safe, Effective, and Patient-Centered Therapeutics

Therapeutic Efficacy | **Patient Safety & Needs**



Additional Information

Dionne RA, Gordon SM, Moore PA. Prescribing opioid analgesics for acute dental pain: **Time to change clinical practices in response to evidence and misperceptions**. Compendium 2016; 37:372-378.

Dionne RA, Gordon SM. Changing paradigms for acute dental pain: **Prevention is better than PRN.** California Dental Journal 2015; 43:655-662.

Dionne RA, Sanders K, Foreman R. **Analgesic prescribing in the opioid overdose epidemic.** NC Dental Gazette Spring 2018: 25-28.

Dionne RA, Warburton G, Khan A. **When are opioids indicated for postoperative analgesia in dental practice?** Compendium 2018; 39:142-143.

Questions