The Opioid Crisis: Enhancing Understanding of its Effects on Children and Families

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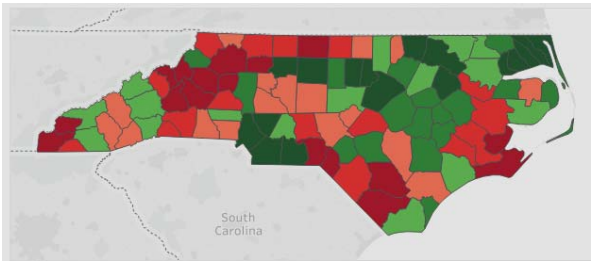
- *I have no disclosures*
- *Everything I present is evidence-based*
- *If I give an opinion, I will note that it is my opinion based on the evidence I have reviewed*

254,000

- ✓ Number of deaths in the last 10 years from opioids.
- ✓ More than 4 times the number of American deaths in the Vietnam war [1]
- ✓ This is an epidemic. And providers are the vector!
- ✓ This epidemic is reversible with a change of prescriber behavior that will result in better pain management

Opioid Prescribing Rates by County in North Carolina [2]



Map courtesy NC Dept. of Health and Human Services 2017

Confession

Goals

1. Describe the impact of the opioid crisis in rural NC
2. Describe Medication Assisted Treatment (MAT)
3. Describe the effect of opioids during pregnancy on the neonate
4. Describe the effects of opioids on the family unit

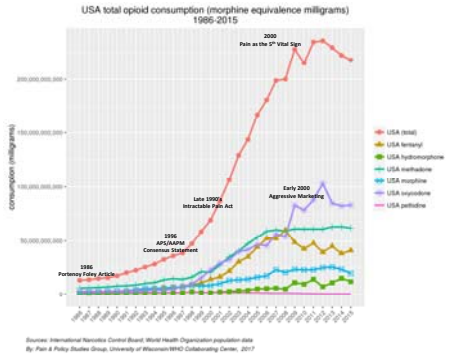
What are opioids (prescription painkillers)? [3,4,5,6,7,8]

Codeine Oxycodone Vicodin Fentanyl Powder Heroin Black Tar Heroin

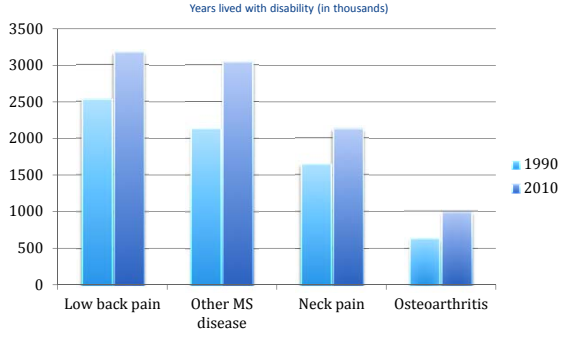
Opioid Facts

- The United States has **4.6%** of the world's population.
- We use **80%** of the worlds opioids![3]
- **83%** of the world's population has no access to any opioids.[4]

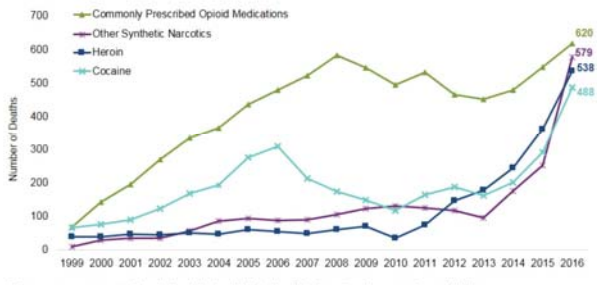
USA Total Opioid Consumption[5]



The State of US Health[7]



Substances* Contributing to Unintentional Medication and Drug Overdose Deaths, North Carolina Residents, 1999-2016[9]



*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 or drug overdose: X40-X44 with any mention of specific T-codes by drug type.
Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

Switching Gears

Primary Purpose:

- Dopamine – Our primary reward system. This is what we live for.
- Endorphins and opioid receptors – These maximize our ability to achieve the reward

Opioid Receptors (when you first start taking them)

Enable us to achieve a goal (short term).[12,13]

- Decrease pain.
- Increase motivation.
- Increase confidence.
- Increase reward.
- Reduce depression and anxiety.
- Increase pleasure in current activity.
- Increase "warmth-liking".[14]
  - Liking warm things.
  - Love.
  - Interpersonal bonding.

Safe Opioid Prescribing

CDC Guideline for Acute Pain

IF you prescribe (opioids)…

- Prescribe < 3 day supply
- More than 7 days will rarely be required
- Counsel patients about safe storage and disposal of unused opioids

NC STOP Act

- Went into effect January 1st, 2018
- If you prescribe opioids for acute pain, initial prescription must be 5 days or less
- For post-op pain 7 days or less
- Must look patient up in the NC CSRS and document in your chart that you did look them up (Delayed)

Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015

FIGURE 1. One- and 3-year probabilities of continued opioid use among opioid-naïve patients, by number of days' supply* of the first opioid prescription — United States, 2006–2015 [15]

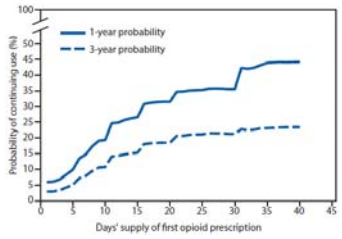
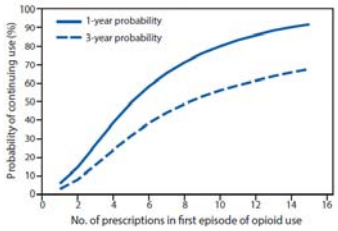


FIGURE 2. One- and 3-year probabilities of continued opioid use among opioid-naïve patients, by number of prescriptions* in the first episode of opioid use — United States, 2006–2015 [15]



Chronic Opioid Consumption

- Dopamine Production
- Normal Reward
- Opioid Receptors
- Endorphin
- Motivation

- Depression

CDC Guideline for Chronic Pain

In general, DO NOT prescribe opioids as the first-line treatment for chronic pain

- ✓Assess pain and function
- ✓Consider if non-opioid therapies are appropriate
- ✓Talk to patients about treatment plan
- ✓Evaluate risk of harm or misuse

Chronic pain

- Epidemiologic studies have shown that those on chronic opioid therapy have worse quality of life than those with chronic pain who are not.[70]
- The AAN recommends against using opioids for back pain, headaches, or fibromyalgia.[71]
- A Cochrane review recommends against using opioids for OA of the hip or knee.[72]

Efficacy of Opioids for Chronic Pain[43]

Annals of Internal Medicine

Martell et al. (2007): Systemic Review: Opioid treatment for chronic back pain: prevalence efficacy and association with addiction

- 4 studies indicated that opioids did not show reduced chronic back pain when compared with placebo or non-opioid control
- Prevalence of life time substance use disorders ranged from 36% to 56%
- Prevalence of current substance use disorders were estimated to be as high as 43%

Multimodal tx in chronic pain: What Works?

- Counseling[74]
  - CBT
  - Mindfulness
- Treat Mood Disorders
- PT, Yoga
- Exercise, Tai Chi
- Acupuncture, Massage
- Amitriptyline
- Duloxetine (and other antidepressants)
- Gabapentin (and other anticonvulsants)

Prescription Opioids in Adolescence[17]

According to Miech et al. (2015)

- Teens who received a prescription for opioid pain medication by Grade 12 were at 33 percent increased risk of misusing an opioid between ages 19 and 25.
- Among those with low predicted risk of future opioid use in 12th grade, having an opioid prescription increased their risk of post-high-school opioid misuse three-fold

DID YOU KNOW drug abuse starts early?

More than 90% of adults with substance use disorders started using before age 18[18]

Encourage Caregivers to talk to their children

Children who learn about the dangers of drugs at home are up to 50 percent **less likely** to use drugs[19]

Attention Parents of Students:

We need your help to fight prescription painkiller addiction and overdose. It only takes a little to lose a lot.

The danger of addiction is closer than you think...

A growing number of students are becoming addicted to painkillers after being prescribed painkillers for an injury. Commonly prescribed opioids are: Vicodin, Oxycodone or Percocet. Heroin is also an opioid.

Opioids can be addictive and dangerous. People aged 12 - 49 who became dependent on prescription painkillers were 19 times more likely to have used heroin.[1]

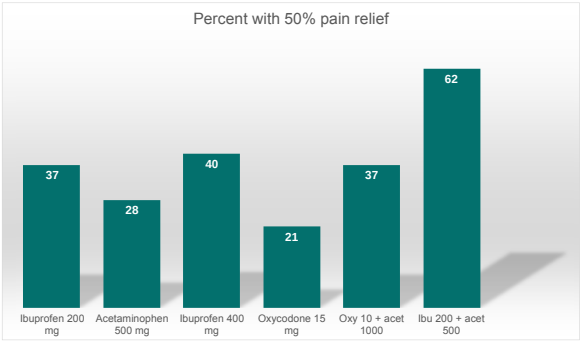
TALK BEFORE YOU TAKE.
While your child may have a real need for pain medication, new research shows that often times the

500 MG TYLENOL & 200 MG IBUPROFEN
taken together up to 4x per day with food and water reduces

AS A PARENT OR STUDENT, ASK QUESTIONS.
"What are the side effects of this medication?"
"Do I have to finish taking all of

OPIOID ALTERNATIVES

EFFICACY OF PAIN MEDIATIONS ACUTE PAIN[34,35]



WHY DO PEOPLE START ABUSING OPIOIDS?

- A person may:
- Begin to misuse meds by increasing the dose on their own
- Use to cope with emotional stress or pain or trauma
- Experiment with opioids as a way to get high- take other people's medication

Pain-Addiction-Mental Health

- These three conditions are all closely related and affect the same areas of the brain.
- These conditions often co-occur and should be considered during treatment of the patient with pain.

WHY DO THEY CONTINUE?

- Fear of withdrawal
  - Withdrawal undoes everything that opioid intoxication does – and when the pendulum swings back it can be very painful.
- What does withdrawal feeling like?
- The flu X 10
- Cravings
- If a user gets through physical withdrawal they may then experience emotional withdrawal: missing the feeling of being high. This can result in relapse, which means that a user starts using again.

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RELAPSE

- Relapse is dangerous. Why?
- Loss of tolerance
- Because a user may go back to using the same dosage they did prior to stop using, but their body is not ready for it.
- Which leads to?
- Overdose and death

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Treatment of Opioid Use Disorder in Adults

- Detox and abstinence
- Methadone
- Buprenorphine
- Naltrexone injection

Treatment of Opioid Use Disorder[68]

- Detox and abstinence: Success rate ≈ 10%
- Methadone: Success rate ≈ 60%
- Buprenorphine: Success rate ≈ 60%
- Naltrexone injection: Success rate ≈ 10-50%

Switching Gears

Questions?

NAS is Not Addiction

- **Newborns can't be "born addicted"**
- **NAS is withdrawal – due to physical dependence**
- **Physical dependence is not addiction**
- **Addiction is brain illness whose visible signs are behaviors**
- **Newborn do not have the life duration or experience to meet the addiction definition**
- **Addiction is chronic disease – chronic illness can't be present at birth**

See https://tonic.vice.com/en_us/article/bj75n5/baby-opioid-addicts-dont-exist

Courtesy of HE Jones

Jones & Fielder, *Preventive Medicine*, 2015.

Neonatal Abstinence Syndrome

- What % of infants exposed to opiates withdrawal?
- Not all of them
- Earlier Studies:
- 48% to 94%[62]
- 30% to 80%[63]

Methadone

- At what methadone dose (in the mom) are clinically significant withdrawal symptoms uncommon?
- 20mg/day[63]

True or False

- The higher the maternal methadone dose, the more likely the neonate will have NAS.
- No correlation was found between maternal methadone dose and rate of NAS[64]

Retrospective Cohort Study of Methadone *v.* Buprenorphine: Newborn Outcomes

	Methadone (n=248)		Buprenorphine (n=361)		
Infant Characteristics	*n*	*M* (*SD*) or *n* (%)	*n*	*M* (*SD*) or *n* (%)	*p*-Value
Male	248	111 (45%)	361	177 (49%)	0.299
EGA at delivery (weeks)	248	38.2 (2.5)	361	39.2 (2.2)	<0.001
Preterm (EGA < 37 weeks)	248	43 (17%)	361	36 (10%)	<0.001
Birth weight (grams)	248	2899.7 (583.1)	361	3143.3 (578.9)	<0.001
Standardized, z score	248	-0.59 (.93)	361	-0.46 (.98)	0.089
< 5th percentile	248	32 (13%)	361	40 (11%)	0.494
Head circumference (cm)	209	33.0 (2.0)	279	33.6 (2.1)	<0.001
Standardized, z score	209	-.50 (.80)	279	-0.46 (.98)	0.669
Treated for NAS	245	106 (42%)	358	82 (23%)	<0.001
Days of NAS treatment	106	133 ± 83	79	83 ± 60	<0.001
Length of stay, days (EGA ≥ 37 weeks)	205	5.6 (2.8)	325	4.2 (12.6)	0.107
Breast milk at discharge	247	156 (63%)	358	267 (75%)	0.003
Discharged to mother/family	248	237 (96%)	360	351 (98%)	0.189

Courtesy of HE Jones

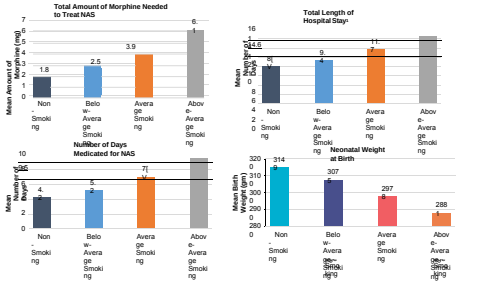
EGA, estimated gestational age
Meyer RE, et al... *J Addict Med.* 2015;9(2):81-88.

NON-PHARMACOLOGICAL TREATMENTS FOR NAS

- Having the mom and baby room in together
  - the most effective
- Swaddling
- Settling
- Massage
- Relaxation baths
- Pacificers
- Waterbeds[66]

- Do you know about The Happiest Baby on the Block?

MOTHER: Smoking and NAS



Courtesy of HE Jones

Jones HE, et al. *Drug Alcohol Depend.* 2013;131(3):271-277.

MOTHER Child Outcomes up to 36 months

***N*=96 children**

- **No pattern of differences in physical or behavioral development to support medication superiority**
- **No pattern of differences for infants treated for NAS v. infants who did not receive treatment for NAS**
- **Results indicate children born in the MOTHER study are following a path of normal development in terms of growth, cognitive and psychological development**

Courtesy of HE Jones

Kaltenbach, K. The MOTHER study: what about the children? *Presented AAAP* 2015 (manuscript under review)

Breastfeeding

- **Both methadone and buprenorphine are compatible with breastfeeding**
- **Concentration of either medication in breast milk is low**
- **Most recent guidelines: "the amounts of buprenorphine in human milk are small and unlikely to have negative effects on the developing infant"**

Akinson et al., 1990; Marquet et al., 1997; Johnson, et al., 2001; Grimm et al., 2005; Lindemalm et al., 2009; Jansson et al., 2009; Müller et al., 2011; Reece-Stremtan, Marinelli and The Academy of Breastfeeding Medicine. Breastfeeding Medicine, 2015.

Courtesy of HE Jones

SWITCHING GEARS

Pregnancy: A Unique Treatment Opportunity

- Mothers with substance use disorders have a mortality rate 8.4 times that of US women of similar age
- Pregnant women who use illicit substances may delay prenatal care and miss more healthcare visits than women who do not use substances
- Prenatal care may help to reduce the negative impact of illicit drug use on birth outcomes

Hser, Kaghara, Huang, Evans, & Messina, 2012; Funai et al., 2003 Staton et al., 2003 and Wagner et al., 1998; El-Mohandes et al., 2003; Roberts and Pies, 2011 and Schempf and Strobino, 2009; Chatterji and Markowitz, 2001, Clark et al., 2004, Conners et al., 2004 Hanson et al., 2006 and Linares et al., 2006

Courtesy of HE Jones

Pregnancy: A Unique Treatment Opportunity

- Lower prenatal care utilization may be due to a diverse set of barriers to seeking and obtaining care, including fear of child custody issues
- After childbirth, ongoing substance use disorders by caregivers

  and the dysfunctional home environment may create detrimental effects on children's psychological growth and development
- Maternal well-being has been recognized as a key determinant of the health of the next generation

Courtesy of HE Jones

Medication Assisted Treatment *v.* Medication-Assisted Withdrawal

- WHO 2014 Guidelines: "Pregnant women dependent on opioids should be encouraged to use opioid maintenance treatment whenever available rather than to attempt opioid detoxification. Opioid maintenance treatment in this context refers to either methadone maintenance treatment or buprenorphine maintenance treatment."
- Guidance regarding maintenance versus medication-assisted withdrawal has traditionally been based largely on good clinical judgment
- Medication followed by no medication treatment has frequently been found to be unsuccessful, with relatively high attrition and a rapid return to illicit opioid use

Courtesy of HE Jones

Medication Assisted Treatment *v.* Medication-Assisted Withdrawal

- Maintenance medication facilitates retention of patients and reduces substance use compared to no medication
- Biggest concern with opioid agonist medication during pregnancy is the potential for occurrence of neonatal abstinence syndrome (NAS) – a treatable condition

Courtesy of HE Jones

FAMILY DYNAMIC

- May be a family that has limited emotional resources, financial resources, support
- Mom may have feelings of guilt, shame
- She is dealing with her chronic relapsing disease
- May have post-partum depression

MOTHER'S MENTAL STATE[67]

- Maternal guilt and anxiety, insecurity about her ability to parent due to poor parental role modeling, the loss of other children and a lack of self-esteem are common among this population of women.
- If in addition she lacks the ability to recognize these feelings, modulate them, and take the appropriate actions on behalf of herself and her child, maladaptive behaviors such as relapse, aggressive behaviors with relatives or health care providers, and/or neglect of the baby may be the outcome.

Summary
So I Hope You Can…

- ✓Describe the impact of the opioid crisis
- ✓Describe Medication Assisted Treatment (MAT)
- ✓Describe the effect of opioids during pregnancy on the neonate
- ✓Describe the effects of opioids on the family unit

Secondary Goals

- ✓You now know to avoid opioids in kids if at all possible
- ✓You know 1 acetaminophen (500mg) and 1 Ibuprofen (200mg) is more effective pain control than 15mg of oxycodone

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Questions?

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