


**The Opioid Crisis: Enhancing  
Understanding of its Effects on  
Children and Families**  
WILMINGTON, NC  
JUNE 19 & 20, 2018

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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*



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**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<sup>1</sup>
- ✓ 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

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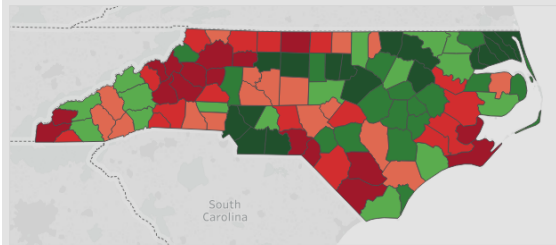
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**OPIOID PRESCRIBING RATES BY COUNTY IN NORTH CAROLINA<sup>2</sup>**



South Carolina

Map courtesy NC Dept. of Health and Human Services 2017

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**CONFESSION**

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### 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

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### OPIOID FACTS

- The United States has **4.6%** of the world's population.
- We use **80%** of the worlds opioids!<sup>3</sup>
- **83%** of the world's population has **no access** to opioids.<sup>4</sup>

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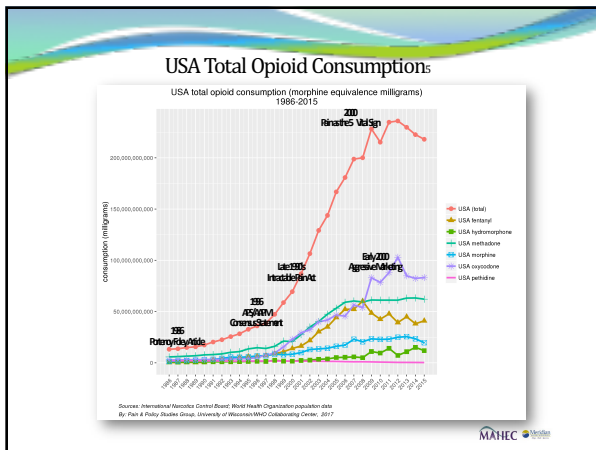
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### WHAT WE KNOW (AND DON'T KNOW)

- Everything that we know has been programmed by the pharmaceutical industry... (my opinion)
- Science rarely guides our current treatment of pain. (Fact)
- The Center for Public Integrity:
- <https://www.publicintegrity.org/2016/09/13/210200/politics-pain-drugmakers-fought-state-opioid-limits-amid-crisis>




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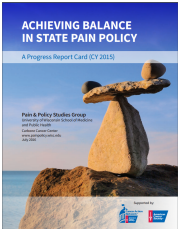

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### ACS-CAN

"Opioid medications in the class of morphine are designated to have a legitimate medical use and are indicated for the medical management of pain, especially if the pain is severe. Although their use for the relief of a variety of chronic non-cancer pain conditions continues to evolve, and evidence of effectiveness for these conditions is derived largely from clinical experience, there seems to be a general agreement that some patients with such pain can be properly treated with opioid therapy" [1],6


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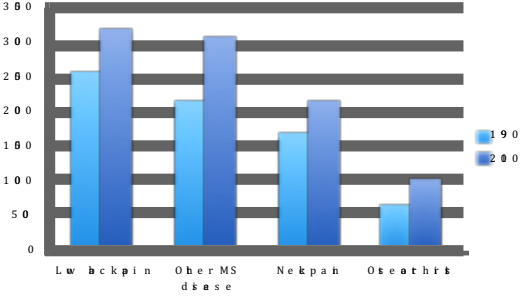
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### THE STATE OF US HEALTH<sup>7</sup>

Years lived with disability (in thousands)



Condition	1900 (thousands)	2000 (thousands)
Low back pain	~210	~320
Other MS disease	~220	~310
Neck pain	~130	~220
Osteoarthritis	~60	~100




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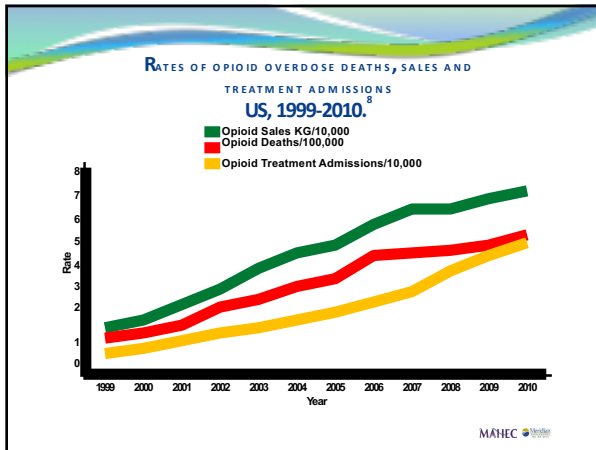
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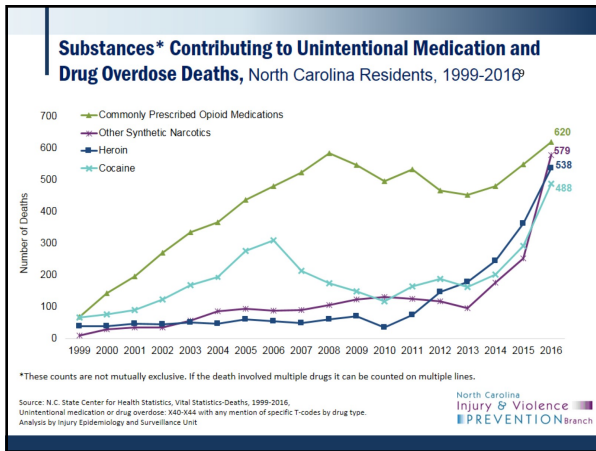
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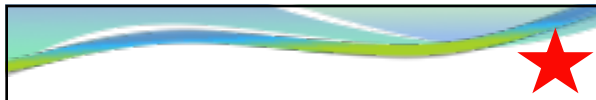
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## SWITCHING GEARS



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## PAIN

"An unpleasant sensory and **emotional** experience associated with actual or potential tissue damage, or described in terms of such damage."<sup>10</sup>



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## ACUTE VS. CHRONIC PAIN


**Acute Pain**



**Chronic Pain**



- Sensory - tissue input
- Affective - emotions
- Cognitive - thoughts



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### A NEW PARADIGM FOR PAIN<sup>11</sup>

- Nociceptive pain
- Neuropathic pain
- "Pain for psychological reasons" (central sensitization)



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### 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



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### OPIOID RECEPTORS (WHEN YOU FIRST START TAKING THEM)

Enable us to achieve a goal (short term).<sup>12,13</sup>

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



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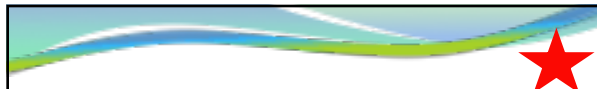
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## SAFE OPIOID PRESCRIBING



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## 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



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### What should you do with unused opioids?

-  1. **LOCK** them up
-  2. Take them to a permanent disposal (**DROP** box)  
[rxdrugdropbox.org](http://rxdrugdropbox.org) to find locations
-  3. Add **COFFEE GROUND**s and water to a pill bottle and then throw it away
-  4. If you are unable to do any of these things, **FLUSH** them

**LOCK OR DROP OR COFFEE OR LASTLY FLUSH GROUND**s



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## NC STOP Act

- Went into effect January 1<sup>st</sup>, 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)

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

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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

The graph plots the probability of continued opioid use (Y-axis, 0% to 60%) against the number of days' supply of the first opioid prescription (X-axis, 0 to 45). Two lines are shown: a solid line for 1-year probability and a dashed line for 3-year probability. Both lines show an upward trend, with the 1-year probability consistently higher than the 3-year probability. The 1-year probability starts at approximately 10% for 1-day supply and reaches about 55% for 45-day supply. The 3-year probability starts at approximately 5% for 1-day supply and reaches about 35% for 45-day supply.

Days' Supply	1-year Probability (%)	3-year Probability (%)
1	10	5
5	20	10
10	30	15
15	35	18
20	40	20
25	45	22
30	48	23
35	50	24
40	52	25
45	55	25

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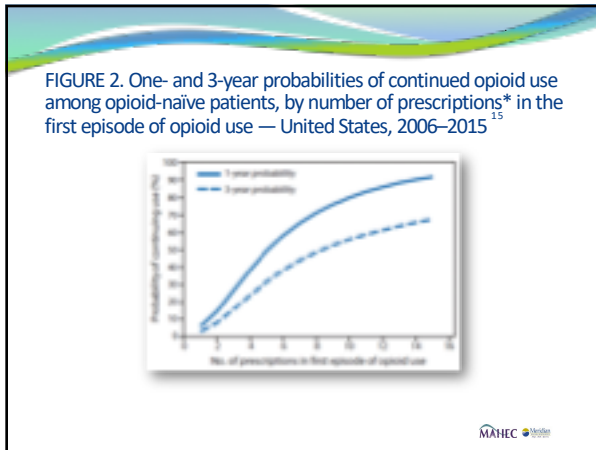
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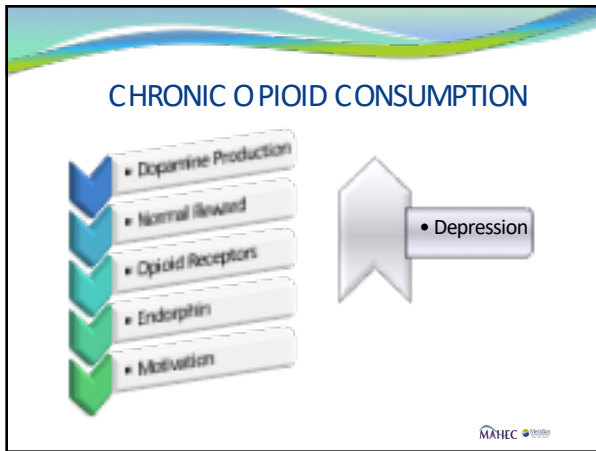
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### CDC GUIDELINE FOR CHRONIC PAIN

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

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### CDC GUIDELINE FOR CHRONIC PAIN

- If going to prescribe opioids for chronic pain
- Start with immediate-release
- Avoid  $\geq 90$  MME/day
- If prescribing  $\geq 50$  MME/day, increase follow up frequency.
  
- Prescribe naloxone
- Assess, Tailor & Taper



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### Talking with patients about naloxone

- Encourage patients to fill their naloxone
- Good Samaritan law
- No prescription needed
  - Most pharmacies have over the counter naloxone
  - If uninsured, contact the North Carolina Harm Reduction Coalition
    - <http://www.nchrc.org/>



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### 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.<sup>70</sup>
- The AAN recommends against using opioids for back pain, headaches, or fibromyalgia.<sup>71</sup>
- A Cochrane review recommends against using opioids for OA of the hip or knee.<sup>72</sup>



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### Efficacy of Opioids for Chronic Pain<sup>43</sup>

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%




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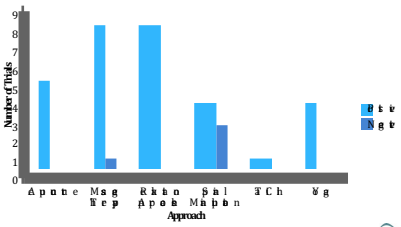
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### Evidence-Based Evaluation of Complementary Health Approaches for Pain Management in the United States<sup>74</sup>

Nahin et al.'s (2016) summarized evidence:



Approach	Total	Rigorous
Acupuncture	6	1
Meditation	8	1
Yoga	8	1
Herbal	5	3
Chiropractic	1	0
Other	4	0




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### Prescription Opioids in Adolescence<sup>17</sup>

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




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**DID YOU KNOW**  
drug abuse starts early?

More than 90% of adults with substance use disorders started using before age 18<sup>18</sup>

**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<sup>19</sup>



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**OPIOID ALTERNATIVES**

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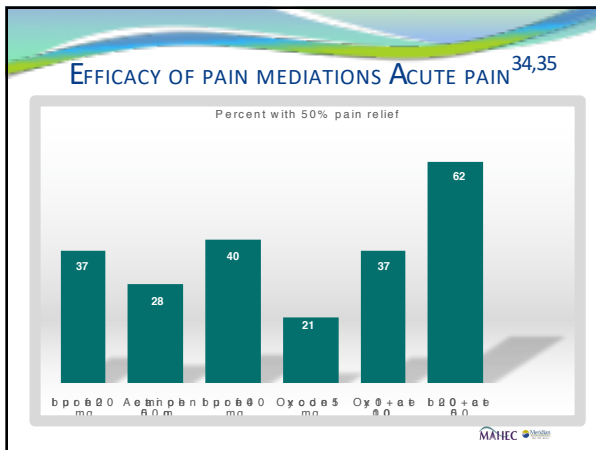
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### WHEN ARE OPIOIDS USEFUL?

- End of life care. – Not necessarily cancer dx.
- Acute (severe) trauma – for a short period.



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### 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



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### 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 w/ pain.



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## Opioids are powerful (temporary) mental health medications

Opioids have very powerful calming and antidepressant properties.

- That effect decreases with continued exposure to opioids
- Ultimately, opioids may cause an increase in anxiety and depression
- For that reason, you should be very cautious using opioids in those with:
  - Mood disorders (depression or bipolar)
  - Anxiety disorders
  - PTSD

A recent study concluded that: "the 16% of Americans who have mental health disorders receive over half of all opioids prescribed in the United States."<sup>48</sup>



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## 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



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TREATMENT OF OPIOID USE DISORDER<sup>68</sup>

- Detox and abstinence: Success rate  $\approx$  10%
- Methadone: Success rate  $\approx$  60%
- Buprenorphine: Success rate  $\approx$  60%
- Naltrexone injection: Success rate  $\approx$  10-50%



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Switching Gears

Questions?



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## 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

Courtesy of HE Jones    
 Jones & Felder, Preventive Medicine, 2015    
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## NEONATAL ABSTINENCE SYNDROME

- What % of infants exposed to opiates withdrawal?
- Not all of them
- Earlier Studies:
- 48% to 94%<sup>62</sup>
- 30% to 80%<sup>63</sup>

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STATE-OF-THE-ART REVIEW ARTICLE

### Neonatal Abstinence Syndrome

© 2016 Springer Nature Switzerland AG. Published online 2016. 15(4):641-651

**TABLE 1** Onset, Duration, and Frequency of NAS Caused by Various Substances

Drug	Onset, h	Frequency, %	Duration, d
<b>Opioids</b>			
Heroin	24–48	40–80 <sup>57</sup>	8–10
Methadone	48–72	13–84 <sup>57</sup>	Up to 30 or more
Buprenorphine	36–60	22–67 <sup>46,48</sup>	Up to 28 or more
Prescription opioid medications	36–72	5–20 <sup>56,60</sup>	10–30
<b>Nonopioids</b>			
SSRIs	24–48	20–30 <sup>64</sup>	2–6
TCA's	24–48	20–50 <sup>64</sup>	2–6
Methamphetamines	24	2–49 <sup>61</sup>	7–10
Inhalants	24–48	48 <sup>70</sup>	2–7

Courtesy of HE Jones    
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### METHADONE

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



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### 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<sup>64</sup>



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### CLINICAL FEATURES OF NAS

- Neurological excitability
  - Jittery
  - Abnormal crying
  - Hyperactive Moro reflex
- Gastrointestinal dysfunction
  - Vomiting
  - Loose stools



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## CLINICAL FEATURES OF NAS

- Autonomic signs
  - Fever unrelated to infection
- Stuffy nose and Sneezing
- Poor feeding
- Poor weight gain (failure to thrive)
- Sleep-wake abnormalities
- Seizures (2% to 11%)

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

Newborn Outcomes	Methadone (n=122)		Buprenorphine (n=112)		p Value
	n	(95% CI)	n	(95% CI)	
Sex	58	(51.6-58.4%)	54	(47.8-54.2%)	0.08
Risk of delivery issues	24	(18.0-30.0%)	24	(18.0-30.0%)	<0.001
Mean (SD) Apgar 1 (n=117)	7.8	(7.7-7.9)	7.9	(7.8-8.0)	<0.001
Mean weight (grams)	3428	(3408-3448 g)	3421	(3408-3434 g)	<0.001
Standardized z score	0.0	(-0.05-0.05)	0.0	(-0.05-0.05)	0.999
< 1SD percentile	1	(0.0-1.0%)	1	(0.0-1.0%)	0.484
Mean (SD) length (cm)	50.2	(50.1-50.3)	50.2	(50.1-50.3)	<0.001
Standardized z score	0.0	(-0.05-0.05)	0.0	(-0.05-0.05)	0.999
Failed to feed	14	(10.6-17.4%)	14	(10.6-17.4%)	<0.001
Days of full breastmilk	12	(11.0-13.0)	7	(6.0-8.0)	<0.001
Length of stay (days) (n=117)	3.0	(2.8-3.2)	3.0	(2.8-3.2)	0.001
Mean risk at discharge	107	(104-110%)	108	(107-109%)	0.003
Discharged to mother/family	118	(117-119%)	110	(109-111%)	0.008

Courtesy of HE Jones  
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## NON-PHARMACOLOGICAL TREATMENTS FOR NAS

- Having the mom and baby room in together
  - the most effective
- Swaddling
- Settling
- Massage
- Relaxation baths
- Pacifiers
- Waterbeds<sup>66</sup>
- Do you know about The Happiest Baby on the Block?

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## OPIATES USED FOR NAS

- Morphine
- Methadone
- Tincture of opium
  
- Paregoric (contains anhydrous morphine with antispasmodics, camphor, 45% ethanol and benzoic acid)
  - Paregoric no longer recommended

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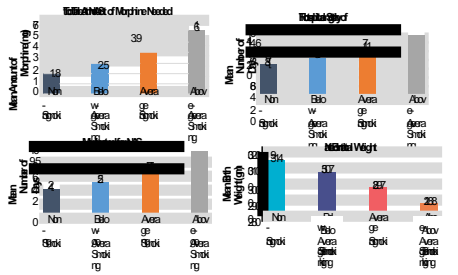
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## MOTHER Study: Smoking and NAS



*Courtesy of HE Jones* 2015-18 | 2017 | Alcohol Depend. MAHEC 

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## MOTHER Study: 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* Kellerbach, K. The MOTHER study: what about the children? Presented AAPP2015 (manuscript under review) MAHEC 

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## 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; Reeco-Strentan, Marinelli and The Academy of Breastfeeding Medicine. Breastfeeding Medicine, 2015.

Courtesy of HE Jones



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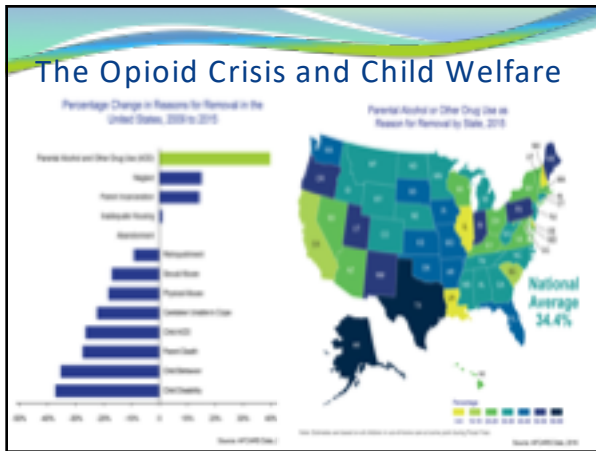
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## SWITCHING GEARS



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## Pregnancy: A Unique Treatment Opportunity

- Mothers with substance use disorders have a mortality rate 8.4 times that of U.S. 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



Her, Koghara, Hung, Esare, & Messina, 2012; Fanni et al., 2013; Staton et al., 2013; Wagner et al., 1998; B-Mrhands et al., 2013; Roberts and Ples, 2011; Schamp and Stetino, 2018; Chabaji and Melkowitz, 2011; Clark et al., 2014; Conner et al., 2014; Hanson et al., 2015; and Linares et al., 2016

Courtesy of HE Jones




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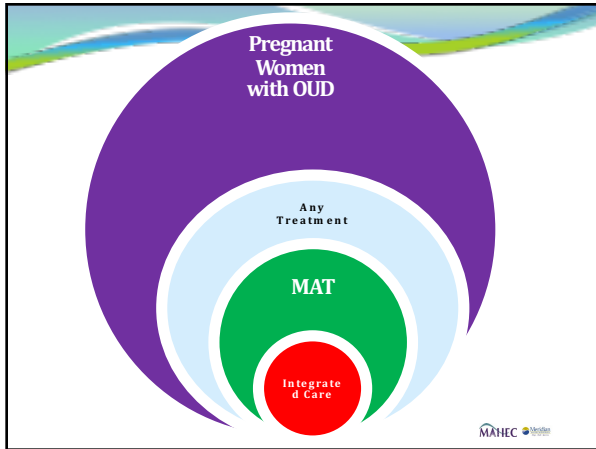
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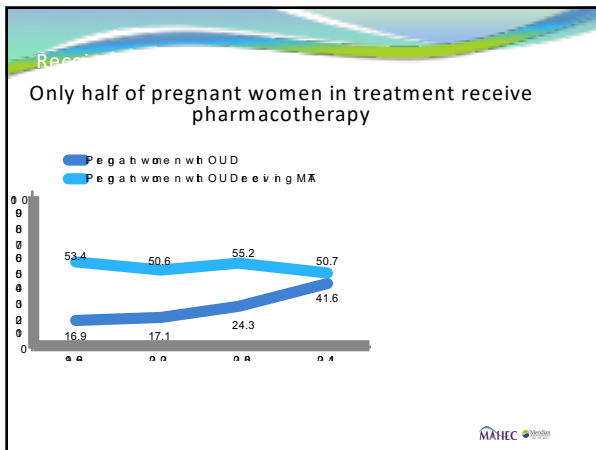
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## Pregnancy: A Unique Treatment Opportunity

- 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
- 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



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## 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."
- 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



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## 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:
  - the potential for occurrence of neonatal abstinence syndrome (NAS) – a treatable condition

Courtesy of HE Jones



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## 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




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## MOTHER'S MENTAL STATE<sup>67</sup>

- 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.




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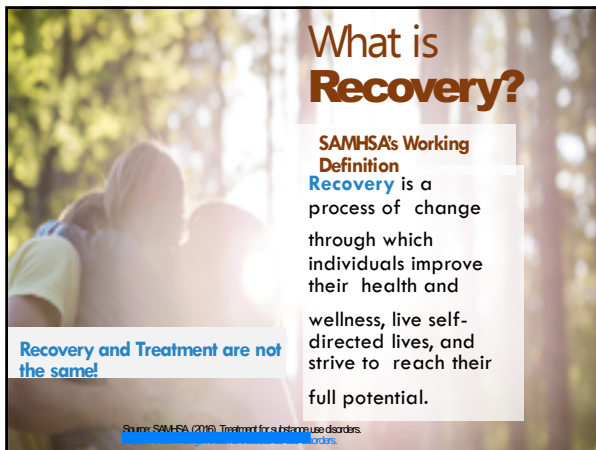
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## What is Recovery?

**SAMHSA's Working Definition**  
**Recovery** is a process of change through which individuals improve their health and wellness, live self-directed lives, and strive to reach their full potential.

**Recovery and Treatment are not the same!**

Source: SAMHSA (2016). Treatment for substance use disorders. HHS.gov

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**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

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**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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