GREAT MOMS: OPIOID USE DISORDER IN PREGNANCY

CARA POLAND, MD, M.ED
ASSOCIATE PROFESSOR
MICHIGAN STATE UNIVERSITY COLLEGE OF HUMAN MEDICINE

DISCLOSURE FOR CME

I have no relevant financial disclosures

Michigan Opioid Collaborative

DEFINITION OF ADDICTION

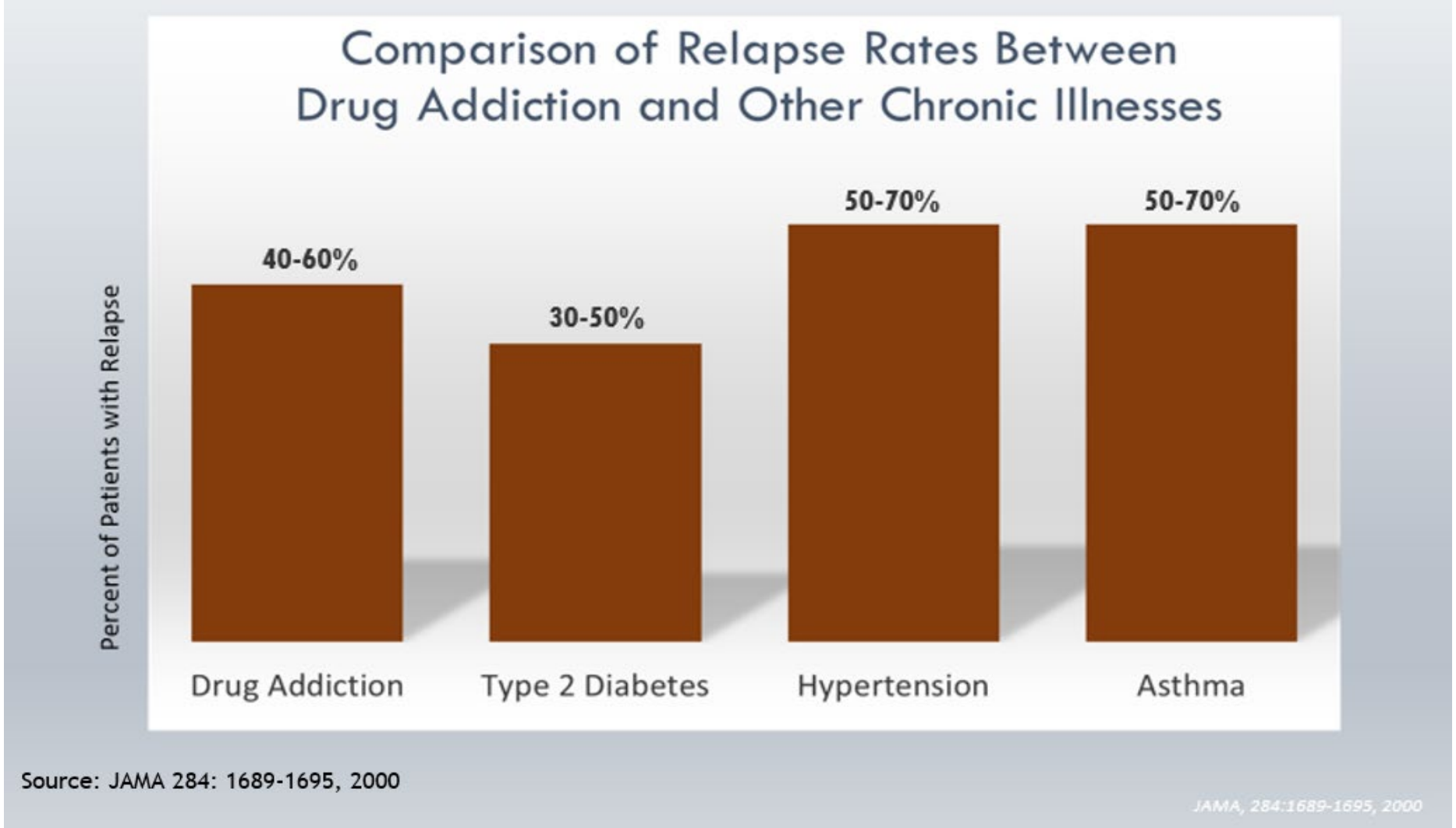
- Addiction is defined as a chronic, relapsing disorder characterized by compulsive drug seeking and use despite adverse consequences.
- It is considered a brain disorder, because it involves functional changes to brain circuits involved in reward, stress, and self-control.
- Addiction is a treatable, chronic medical disease, involving complex interactions neurobiology, genetics, the environment, and an individual's life experiences.
- Prevention efforts and treatment approaches for addiction are generally as successful as those for other chronic diseases.

ADDICTION

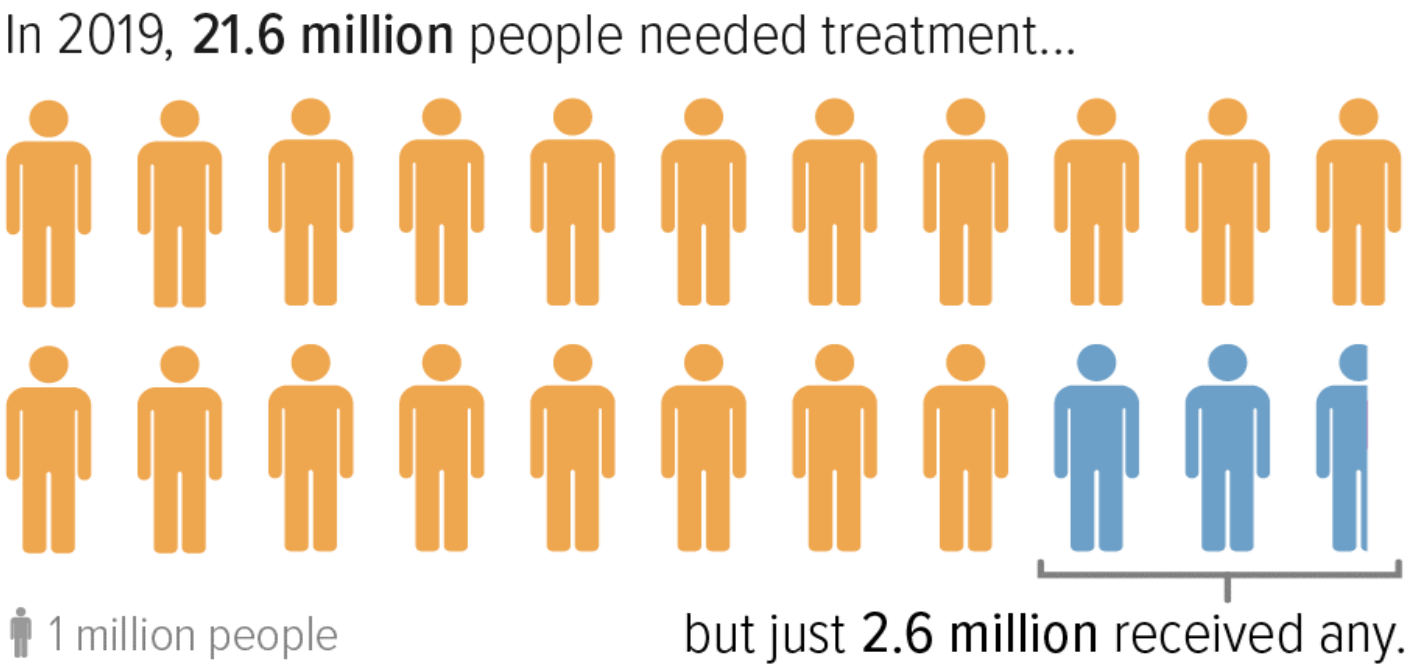
- Primary **chronic disease** of brain reward, motivation, memory and related circuitry
- Dysfunction in these circuits leads to psychological, social and spiritual manifestations
- Reflected in pathologically pursuing reward and/or relief by substance use and other behaviors
- Like other chronic diseases, addiction often involves cycles of relapse and remission/recovery
- Without treatment and self-motivation, addiction is progressive and can result in disability or death

Source: ASAM Public Policy Statement on **Treatment for Alcohol and Other Drug Addiction**, Adopted: May 01, 1980, Revised: January 01, 2010 https://www.asam.org/resources/definition-of-addiction

ADDICTION AND OTHER CHRONIC CONDITIONS



Most Who Need Treatment for Substance Use Disorders Don't Receive Any



Note: Survey responses were limited to U.S. civilians over the age of 12 not residing in an institution (e.g. prison or nursing home). The survey also excludes people with no fixed address, such as people experiencing unsheltered homelessness. "Receiving treatment" was defined as substance use treatment received within the past year at a hospital, rehabilitation facility, mental health center, emergency room, private doctor's office, prison or jail, or self-help group.

Source: 2019 National Survey on Drug Use and Health

12 percent of people who need treatment for a substance use disorder receive treatment for a substance use disorder

ATTACHMENT TO SUBSTANCE OF USE

- Predictable
- Secure attachment (Despite the consequences)
- Inability to "let go"
- Emotional bond
  - Can't live without
  - Strong love affair
  - Strong desire to use
  - Inability to function (ADL skills)

BARRIERS TO CARE

-Internalize or self-stigma

-Gender-based discrimination

-Lack of provider training and awareness

-Pregnant persons do not know that they can be treated in pregnancy

-Social issues: transportation, unstable housing

-Fear of losing their baby

STIGMA

Stigma is defined as the dehumanization of an individual based on their social identity or participation in a negative or undesirable social category.

Michigan Opioid Collaborative

STIGMA

Words matter. They determine how we understand and perceive our world. They carry power, for good and for ill.

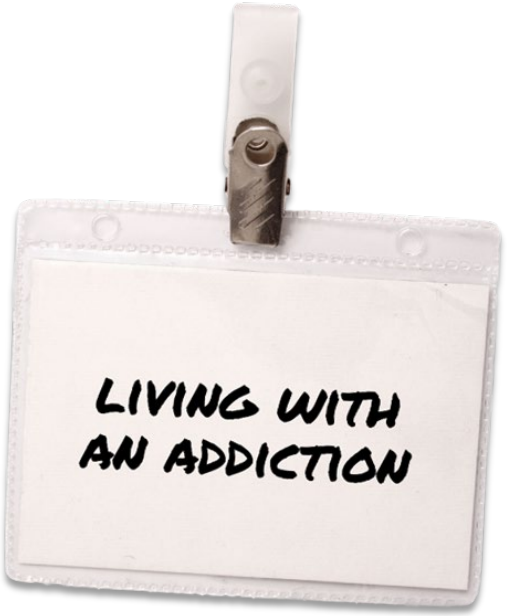
Stigma is driven by pejorative words, the labels that are used to describe us. This is not a matter of political correctness.

Source: http://broken-no-more.org/power-words/

STIGMA

Until we are provided the same respect and dignity as everyone else, we will continue to die.

We must change the cultural perception of those with an opioid use disorder. To do that, we must first change the language of opioid addiction.



The Real Stigma of Substance Use Disorders

In a study by the Recovery Research Institute, participants were asked how they felt about two people *"actively using drugs and alcohol."*

One person was referred to as a "substance abuser"

The other person as "having a substance use disorder"

No further information was given about these hypothetical individuals.

THE STUDY DISCOVERED THAT PARTICIPANTS FELT THE "SUBSTANCE ABUSER" WAS:

- less likely to benefit from treatment
- more likely to benefit from punishment
- more likely to be socially threatening
- more likely to be blamed for their substance related difficulties and less likely that their problem was the result of an innate dysfunction over which they had no control
- they were more able to control their substance use without help

"IN THEIR OWN WORDS"

263 participants interviewed at inpatient medically managed withdrawal program in MA.

More than 70% of participants used the term 'addict' to describe themselves and when speaking with others.

- Most commonly used at 12-step meetings.

The most-preferred label for others to call them was '**person who uses drugs**.'

The most common label that participants never wanted to be called was 'heroin misuser' or 'heroin-dependent.'

LANGUAGE MATTERS

Terms to avoid using	Terms to use
Addict, junkie, drug abuser	Person who uses drugs or Person with substance use disorder
Substance misuse Substance abuse	Substance use (low-risk, unhealthy use, harmful use) Substance use disorder (clinical diagnosis)
Clean (drug test) Dirty (urine drug test)	Negative drug test; drug not detected Positive drug test; drug detected
Drug habit	Substance use (low-risk, unhealthy use, harmful use) Substance use disorder (clinical diagnosis)
Staying clean	Person in recovery/in remission from addiction
Substitution, replacement, Medication Assisted Treatment (MAT)	Medication for Opioid Use Disorder (MOUD) Medication for Addiction Treatment (MAT)
Relapse	Return to use, recurrence of symptoms
Felon, Ex-con	Person who is (has been) incarcerated

SCREENING AND ASSESSMENT

During prenatal care, all pregnant women should be screened for substance use and SUD using a validated instrument.

Brief interventions should be delivered for those who continue to use substances and referrals to treatment provided for those who meet the criteria for SUDs.

www.asam.org

OPIOIDS

OPIOIDS

Antenatal opioid use increase from 1.19/1,000 to 5.63/1,000 hospital births from 2000 to 2009[48]

- Number of women with opioid related diagnoses at delivery increased by 131% from 2010-2017
- About 7% of women reported use of prescription opioid pain relivers during pregnancy
- 1 in 5 reported misuse

Concurrent rise in Neonatal Abstinence Syndrome (NAS)/Neonatal Opioid Withdrawal Syndrome (NOWS)

- 3.4/1,000 to 5.8/1,000 hospital births from 2009 to 2012[49]
- Increased 82% from 2010 to 2018[2]

NIDA, 2018
ASAM

Michigan Opioid Collaborative

PREGNANCY COMPLICATIONS WITH OPIOIDS USE

During pregnancy, chronic untreated addiction to heroin is associated with:

- Lack of prenatal care
- Increased risk of fetal growth restriction
- Abruptio placentae
- Fetal death
- Preterm labor

Pregnant people with opioid use disorder often suffer from co-occurring mental health conditions, particularly depression, history of trauma, posttraumatic stress disorder, and anxiety.

In addition, they are at increased risk of use of other substances, including tobacco, marijuana, and cocaine.

NEONATAL OUTCOME FROM OPIOIDS USE DURING PREGNANCY

Maternal opioid use has also been shown to be neurotoxic to the embryo

Exogenous opioids negatively affect the somatosensory cortex, hippocampus, and cholinergic system in the developing embryo, leading to consequences ranging from poor memory function to learning disabilities

Opioid use has been shown to slow down the growth of cardiac tissue, decrease fetal heart rate, and increase the incidence of congenital heart defects

After the birth:

Babies may go through withdrawal - NOWS

- Symptoms include excessive crying, fever, irritability, seizures, slow weight gain, tremors, diarrhea, vomiting, and possibly death.

NEONATAL ABSINENCE SYNDROME (NAS)

An estimated **32,000** babies were born with NAS in the United States in 2014.

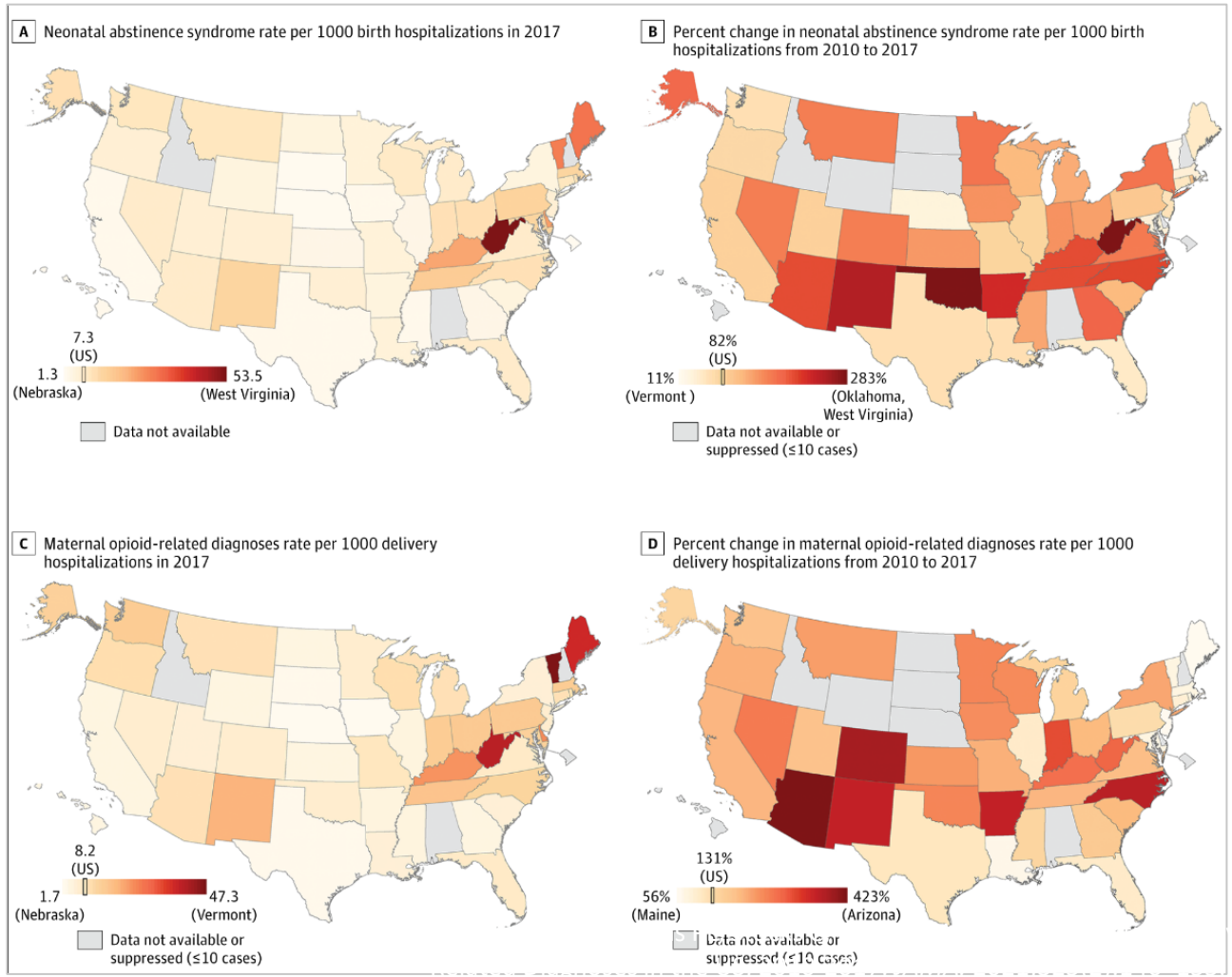
A **5-fold** increase since 2004

Every 15 minutes,

a baby is born suffering from opioid withdrawal

Michigan Opioid Collaborative

CHANGE IN RATES



Michigan Opioid Collaborative

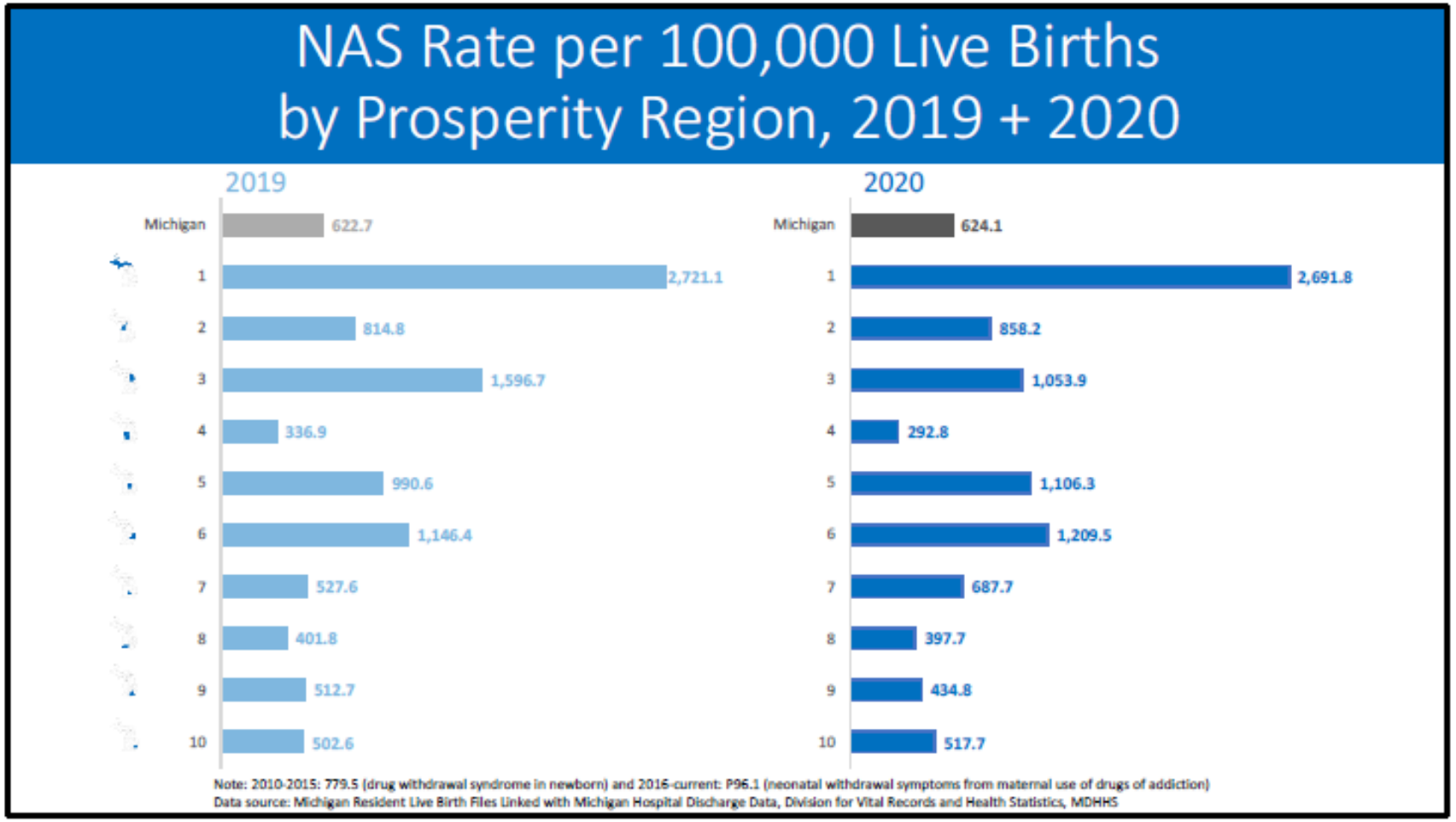
NAS BY PROSPERITY REGION

Neonatal Abstinence Syndrome by Prosperity Region, 2019

Region	# Cases	# Births	Rate per 100,000 Live Births
Michigan	672	107,917	622.7
1	68	2,499	2,721.1
2	22	2,700	814.8
3	27	1,691	1,596.7
4	62	18,404	336.9
5	56	5,653	990.6
6	101	8,810	1,146.4
7	26	4,928	527.6
8	35	8,711	401.8
9	51	9,947	512.7
10	224	44,570	502.6

Note: 2010-2015: 779.5 (drug withdrawal syndrome in newborn) and 2016-current: P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction)
Data source: Michigan Resident Live Birth Files Linked with Michigan Hospital Discharge Data, Division for Vital Records and Health Statistics, MDHHS

CHANGE IN NAS 2019-2020



REGION 4

Neonatal Abstinence Syndrome, Prosperity Region 4, 2010-2020

Year	# Cases	# Births	Rate
2010	54	19,665	274.6
2011	66	19,681	335.3
2012	98	19,811	494.7
2013	108	19,591	551.3
2014	108	19,802	545.4
2015	86	19,625	438.2
2016	115	19,709	583.5
2017	110	19,387	567.4
2018	87	19,218	452.7
2019	62	18,404	336.9
2020	53	18,104	292.8

Note: 2010-2015: 779.5 (drug withdrawal syndrome in newborn) and 2016-current: P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction)
Data source: Michigan Resident Live Birth Files Linked with Michigan Hospital Discharge Data, Division for Vital Records and Health Statistics, MDHHS

OPIOIDS – NEONATAL OPIOID WITHDRAWAL SYNDROME (NOWS) NEONATAL ABSTINENCE SYNDROME (NAS)

Neonatal Opioid Withdrawal Syndrome is specific to opioid use

- Neonatal Abstinence Syndrome can be from multiple substances/medications

Neonatal Opioid Withdrawal Syndrome:

- 55-94% of child of opioid dependent mothers[52]
- Not related in most studies to maintenance dose
- Generalized disorder with autonomic, CNS, GI, and respiratory dysfunction
- Onset within 72 hours of delivery, lasts up to 4 weeks
- In 2012, non-NOWS vs NOWS length of stay and cost[52]
  - 2.1 days vs 23 days
  - $93,400 vs $3,500
  - Total cost around $1.5 billion/year

Table 2. Clinical Manifestations and Outcomes of the Neonatal Abstinence Syndrome.*

Metabolic, vasomotor, and respiratory manifestations
Fever
Frequent yawning
Sneezing
Sweating
Nasal stuffiness
Respiratory rate >60 breaths per minute, with or without retractions
Mottling
Tachypnea
Gastrointestinal manifestations
Projectile vomiting
Regurgitation
Loose or watery stools
Weight loss
Poor feeding
Excessive sucking
Central nervous system manifestations
Tremors
High-pitched crying
Sleep disturbances
Increased muscle tone
Excoriation
Myoclonic jerks
Irritability
Seizures

OPIOIDS – (NOWS)(NAS)

Neonatal Opioid Withdrawal - Treatment:

1) Prevention

- Detoxification from treatment opioids does NOT decrease neonatal withdrawal[56]
- Limit polysubstance use
  - Heavy smoking is associated with more severe neonatal withdrawal[57]
  - Quitting smoking may improve neonatal withdrawal outcomes[58]

2) Non-Pharmacological[59]:

- Mild cases of neonatal withdrawal should only be treated with these
- ALWAYS ENCOURAGE BREASTFEEDING (unless contraindicated – untreated HIV or SUD)
  - Nearly 30% less development of NAS/NOWS[60]
  - Decrease in neonatal hospital stay
  - Improved dyad bonding
  - Positive reinforcement for parental recovery

3) Pharmacological

- Opioids
- Non-opioids

Non Pharmacological Adjunct Treatments
Environmental control • Room lighting • Swaddling • Positioning • Bed types
Feeding methods • ~~Breastfeeding~~ • Formula feeding
Social Integration • Parental rooming in • Skin to Skin contact
Treatment Location • Inpatient vs Outpatient
Acupuncture

Michigan Opioid Collaborative

OPIOIDS – (NOWS)(NAS)

<u>Neonatal Opioid Withdrawal</u>:

- Traditionally monitored with a Finnegan's Score
- Now Eat, Sleep, Console (ESC)
- Less severe with buprenorphine than methadone[53-55]
  - Similar incidence
  - Less intense
  - Shorter duration

Signs and Symptoms	*Severity*	*Score*
Crying	Excessive high pitched	2
	Continuous high pitched	3
Sleeps	< 1 hours after feeding	3
	< 2 hours after feeding	2
	< 3 hours after feeding	1
Moro Reflex	Hyperactive	1
	Markedly Hyperactive	2
Tremors: Disturbed	Hands or feet only, up to 3 seconds	1
	Arms or legs, over 3 seconds	2
Tremors: Undisturbed	Hands or feet only, up to 3 seconds	1
	Arms or legs, over 3 seconds	2
Increased Muscle Tone	Difficult but possible to straighten arm and head lag present	1
	Unable to straighten arm and head lag absent	2
Excoriation	Skin is red but intact or healing	1
	Skin not intact	2
Generalized Seizure		8
Fever > 37.3 C (99.2 F)		1
Frequent Yawning	>4 or more successive times	1
Sweating		1
Nasal Stuffiness		1
Sneezing (4 or more successive times)	>4 or more successive times	1
Tachypnea	Respiratory Rate >60/mm	2
Poor feeding		2
Vomiting (or regurgitation)		2
Loose Stools	Diaper is > half liquid/half solid	2
Failure to thrive	Current weight > 10% below birth weight	2
Excessive Irritability	Consoling calms infant in <5 min	1
	Consoling calms infant in 6-15 min	2
	Inconsolable	3
	Summed Score	
Recorded, unscored elements		
Convulsions Fever > 38.4 C (101.2 F) Mottling Excessive sucking Watery Stools Projectile vomiting Retractions Nasal flaring Myoclonic jerks		

OPIOIDS – (NOWS)(NAS)

Neonatal Opioid Withdrawal – Long Term Outcomes:

- No known long-term negative outcomes
- Potential cognitive deficits associated with opioid exposure
  - Was not statistically significant after controlling for tobacco use[61]

LONG TERM EFFECTS OF PRENATAL OPIOID EXPOSURE

Prenatal Opioid Exposure (POE) is a fast-growing health problem

1 in 5 women* have used a form of opioid during their pregnancy

POE can lead to long term neurocognitive and motor developmental delays into adolescents

However, the metanalysis did not separate medication to treat an addiction from other opioids – licit or illicitly taken

* We use inclusive language in our materials, however when citing research or data we are unable to edit wording.

TREATING OPIOID USE DISORDERS (OUD) IN PREGNANCY

Treating OUD in Pregnancy is crucial because:

1. There is a rise in opioid addiction, including in pregnant people
2. Active and uncontrolled opioid addiction poses a serious threat to expectant parents and their pregnancy
3. Treatment of OUD's in pregnancy benefits the parent, baby, family and community they live in
4. Methadone is not a treatment option available in many area of Michigan so buprenorphine may be the only option
5. Buprenorphine can be prescribed out of an office
6. There are pregnant people who are desperately seeking treatment and cannot find a provider

MEDICATION FOR ADDICTION TREATMENT IN PREGNANCY

MAT during pregnancy is recommended best practice for the care of pregnant people with opioid use disorder.

OPIOIDS

- ACOG = American College of Obstetrics and Gynecology
- ASAM = American Society of Addiction Medicine
- WHO = World Health Organization
- AAAP = American Academy of Addiction Psychiatry
- AAP = American Academy of Pediatrics

Treatment:

- Opioid agonist therapy recommended by ACOG, ASAM, WHO, AAAP, AAP*
  - Naltrexone should be studied in pregnancy and postpartum; at this point, naltrexone has not been well-studied during pregnancy and further research is needed before recommendations can be made.
  - As part of informed consent for SUD treatment with an opioid agonist, all pregnant people with opioid use disorder should be made aware of the possibility that their infants may develop neonatal abstinence syndrome (NAS) and they should be offered education regarding the manifestations and reassurance that NAS is not associated with documented functional impairments in the short term or developmentally.
  - Pregnant people diagnosed with addiction involving opioids and pregnant people prescribed methadone or buprenorphine for a diagnosed case of addiction should receive overdose training and co-prescribing of naloxone as the standard of care.

OPIOIDS

Treatment:

- Why not detoxification?[56]
  - Potential risk to pregnancy from the physiological stress of detoxification
  - High risk of relapse with associated morbidity and mortality (RR=1.91) and treatment drop-out
  - Does not decrease risk of neonatal withdrawal
- What about naltrexone?
  - Not a first line treatment
    - Need detoxification/period of abstinence to get onto it
    - Not associated with decreased risk of overdose[62]
    - Weigh the risks-benefits of staying on if already stable and become pregnant
    - Pain control in labor and delivery (if on XR NTX, should be switched to oral at 36 weeks)
- Opioid Agonist Therapy
  - Methadone vs Buprenorphine

OPIOIDS – OPIOID AGONIST THERAPY

Maternal Benefits

- Reduction in maternal mortality
- Decrease in risk of HIV, HBV, HCV
- Increased engagement in treatment

Fetal Benefits

- Decreased fluctuations in maternal opioid levels - reducing fetal stress
- Decrease in intrauterine fetal demise
- Decrease in intrauterine growth restriction
- Decrease in preterm delivery

OPIOIDS – OPIOID AGONIST THERAPY

Methadone vs Buprenorphine:

- Methadone and buprenorphine are both equally acceptable
- Safety – buprenorphine associated with[54,55, 64]:
  - Lower risk of preterm birth
  - Greater birth weight
  - Larger head circumference
  - Lower risk of NOWS/NAS
- Caveats:
  - Retention +/-[65, 66]
  - Higher level service/of care with methadone
  - Limitation of a partial agonists with high dose opioid dependence
    - (especially with fentanyl and other contaminants)
  - Precipitated withdrawal

AVAILABILITY

OPIOIDS – OPIOID AGONIST THERAPY

Buprenorphine/Naloxone vs Buprenorphine:

- Naloxone is co-formulated with buprenorphine to reduce misuse potential
- Buprenorphine mono-product (without co-formulated naloxone) is typically recommended in pregnancy
  - Limited studies showing decreased APGAR scores with naloxone[67]
  - Shorter stature with naloxone, though still within normal range[67]

> buprenorphine, methadone, or methadone-assisted withdrawal. Preliminary findings suggest no significant adverse maternal or neonatal outcomes related to the use of buprenorphine + naloxone for the treatment of opioid dependence during pregnancy. However, further research should examine possible differences

- Some have questioned if buprenorphine + naloxone should be preferred[68]:
  - Misuse deterrence
  - Availability

OPIOIDS – OPIOID AGONIST THERAPY

In Labor & Delivery:

- Patients with any opioid use:
  - May have a higher opioid tolerance/lower pain tolerance
- Patients with an Opioid Use Disorder on Opioid Agonist Therapy*
  - Will have an opioid tolerance
  - May have a lower pain tolerance
  - Opioid agonist medication (particularly buprenorphine) partially block the effects of opioid analgesia
- Patients on naltrexone
  - Opioid antagonist medications block the effects of opioid analgesia

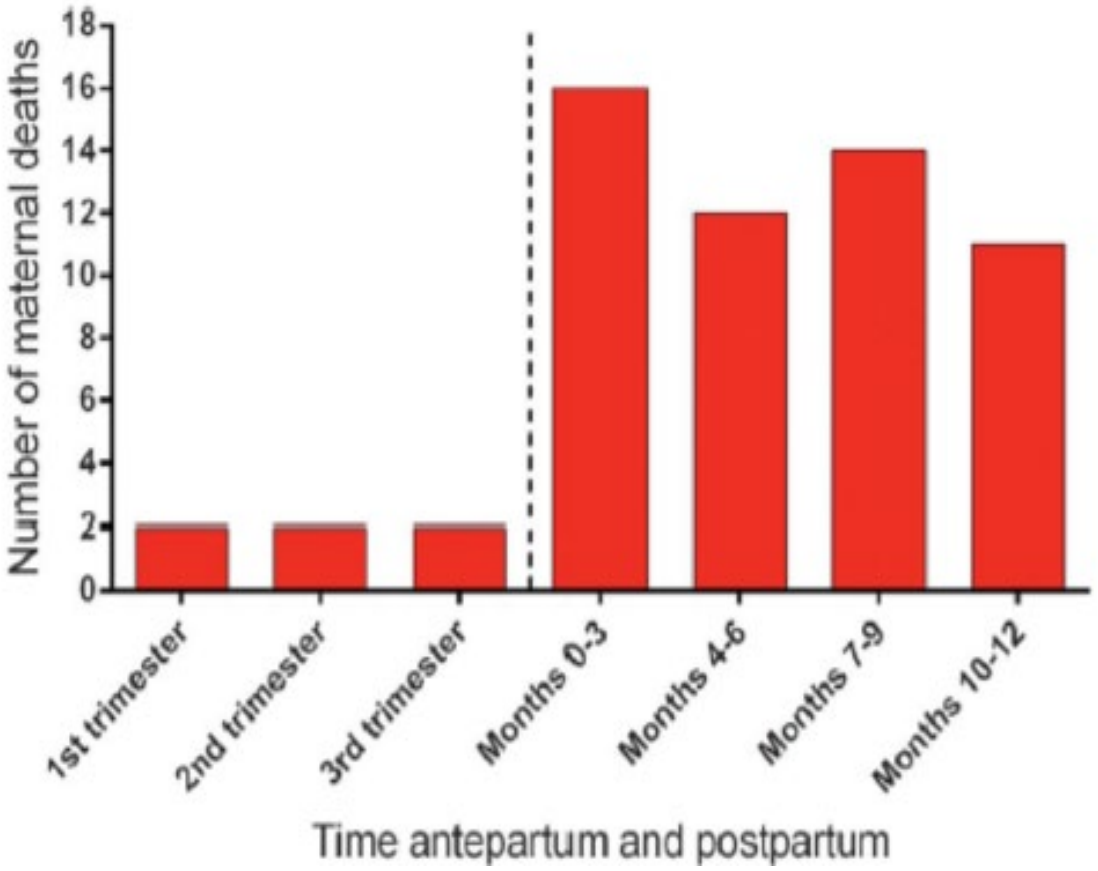
May require higher dosing to provide adequate analgesia

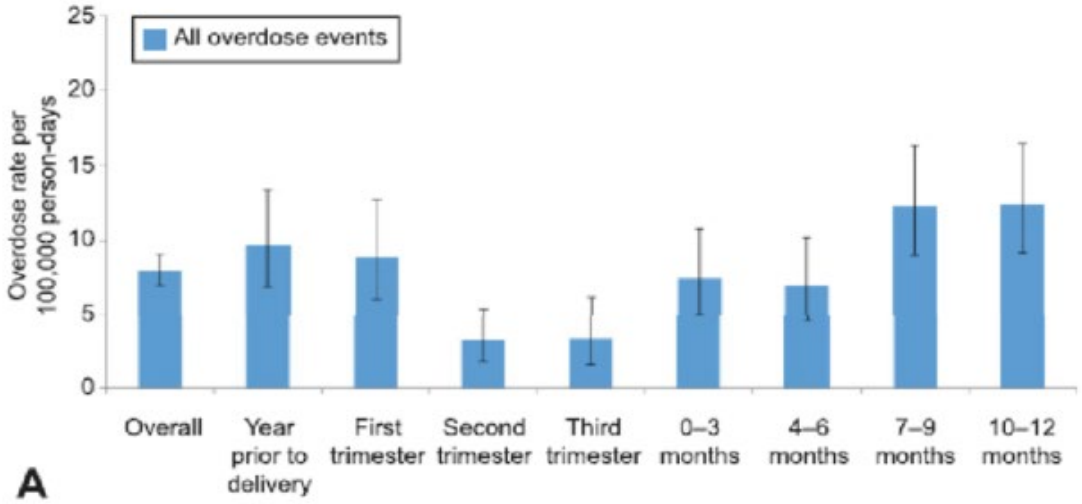
Strategies:

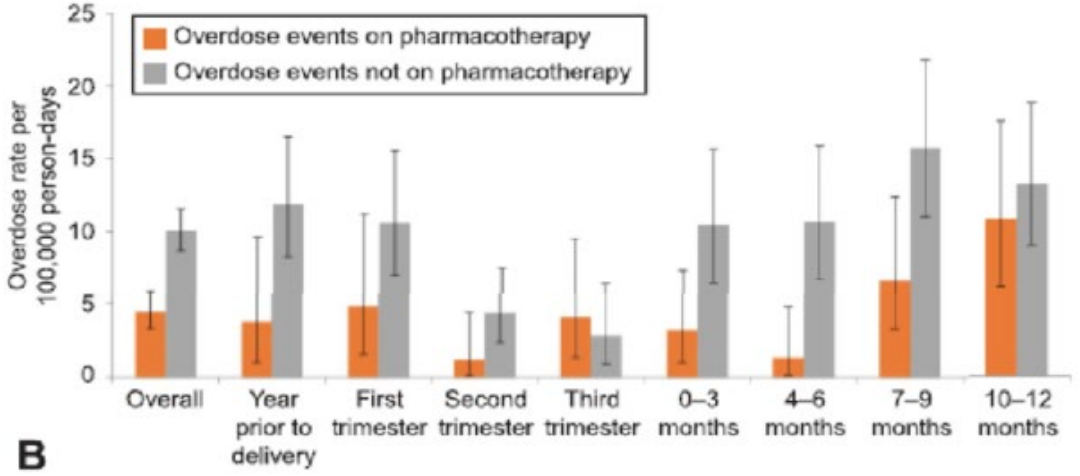
- No generally agreed upon course
- Expectation management
- **Continue opioid agonist therapy**
- Maximize acceptable non-opioid pain control
  - Epidurals/regional blocks
- Careful use of higher doses of full opioid agonists
- **Avoid partial agonists** (nalbuphine or butorphanol)
  - Will precipitate withdrawal

* Chronic opioid agonist therapy provides a baseline fulfillment of the "opioid debt" and does not give significant analgesic effect

OPIOIDS – OPIOID AGONIST THERAPY



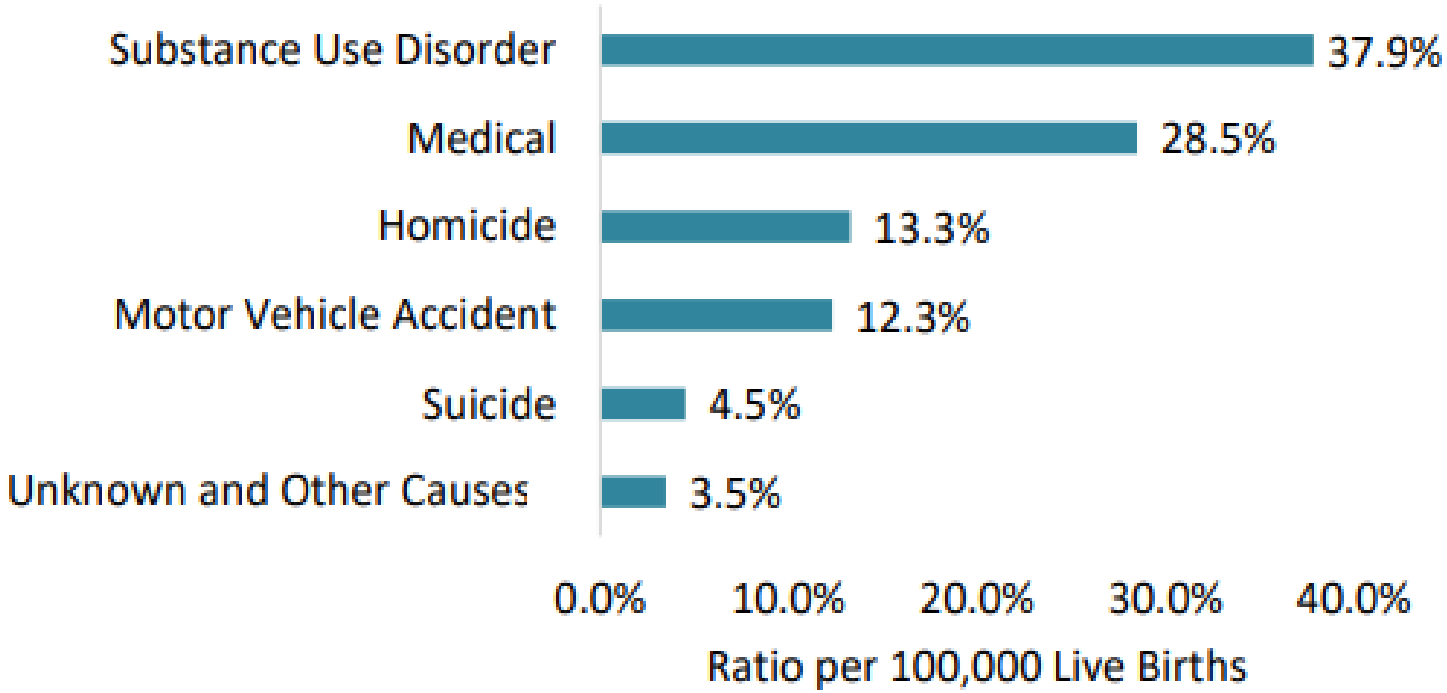




PREGNANCY-ASSOCIATED DEATHS IN MI

- Between 2015 and 2019, there were 309 pregnancy-associated, not related maternal deaths in Michigan. This is a ratio of 55.6 pregnancy-associated, not related deaths per 100,000 live births.
- Substance use disorder and medical conditions unrelated to or aggravated by the pregnancy were the leading causes of pregnancy-associated, not related medical deaths.

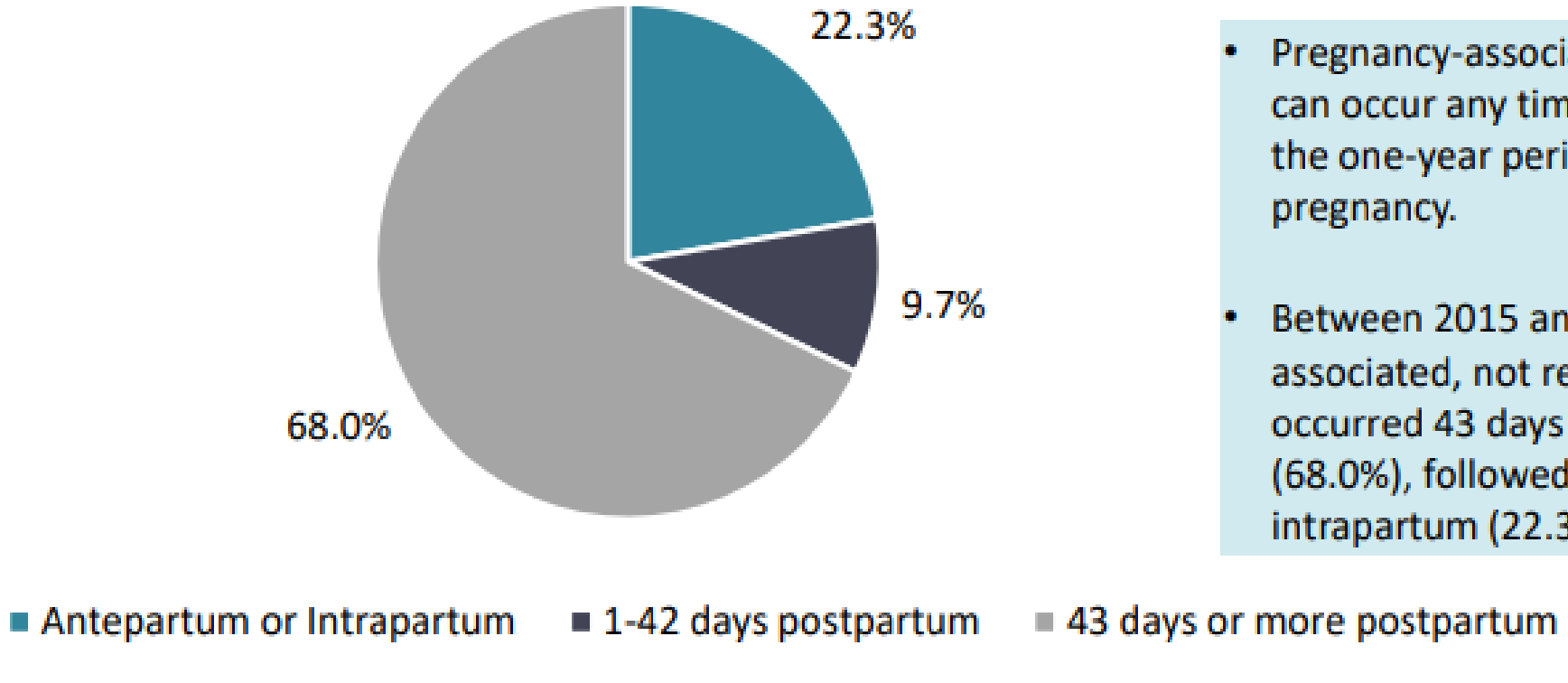
Figure 7. Leading Causes of Pregnancy-Associated, not Related Maternal Mortality, 2015-2019



WHEN DO THESE DEATHS HAPPEN?

Pregnancy Period

Figure 8. Pregnancy-Associated, not Related Maternal Mortality by Pregnancy Period, 2015-2019



- Pregnancy-associated, not related mortality can occur any time during the pregnancy or the one-year period following the pregnancy.
- Between 2015 and 2019, most pregnancy-associated, not related maternal deaths occurred 43 days or more postpartum (68.0%), followed by antepartum or intrapartum (22.3%).

OPIOIDS – OPIOID AGONIST THERAPY

Post-Partum:

- THE MAJORITY OF MATERNAL OVERDOSE DEATHS HAPPEN POST-PARTUM
  - Pregnant women who are stable on either methadone or buprenorphine during pregnancy and postpartum should be maintained on that medication and not changed to the other without clear clinical rationale.
- Medication should be continued through the postpartum period.

GREAT MOMS CLINIC

Michigan Opioid Collaborative

UNINTEGRATED ANTEPARTUM CARE

Patients often had 3-4 visits in a week at different locations

- OB Visit
- Medication for Opioid Use Disorder (MOUD) visit
- Ultrasound visit
- Lab work visit

What order do you think patients prioritized these visits?

- MOUD and ultrasound visit
- This led to decreased prenatal care

THE *BIRTH* OF THE GREAT MOMS PROGRAM

- In 2017 Addiction Medicine and MFM at Corewell Health came together to:
- Start a program that would treat pregnant patients with OUD, an outpatient setting with Buprenorphine
- Integrate care for MOUD and prenatal care

Why was GREAT MOM's created?

- To create a system that was patient friendly
- To provide all services located in one location
- To provide follow-up and linkage to care after the pregnancy

POSTPARTUM BEFORE AND AFTER GREAT MOMS

Before GREAT MOMs

Birth parents postpartum would be seen at 6-week PP visit and discharged back to PCP. Sometimes, the patient would get lost in the transition

After GREAT MOMs

In the GREAT MOMs program, the patient is seen up to a year after the birth. Then a plan is made for a friendly hand off to another provider to manage OUD

GREAT MOMS – HOW ARE WE DOING?

In 2022:

- 42 patients enrolled in GREAT MOMs
- 43 babies (one set of twins!)
- Average birth weight was 2.7 kg
- Average gestational age was 37 weeks

Since our program started

- 18 babies were admitted to NICU, five for primary NAS (12%)
- 6 week postpartum follow up
  - Traditional OB offices is 40%
  - GREAT MOM's is 75.9%

WHAT HAS CHANGED SINCE 2017

-A multi-disciplined group of professionals met from in-patient and Out-patient met to coordinate care for pregnant persons with a OUD

-Instituted the new Eat, Sleep, Console program to keep parents and newborns together

-Patients from the Great Moms program meet with the NICU team so there are no surprises after the birth

-Anesthesia created a “Birth Plan” for labor and delivery

REGARDLESS OF THEIR PAST ALL PATIENTS HAVE A RIGHT TO:

- **Help and treatment**
- **Caring conversations and relationship building**
- **Appropriate and safe treatment**
- **A feeling of mutual trust and non-judgment**

Michigan Opioid Collaborative

EXPANDING THE GREAT MOMS MODEL

Our program inspires wellness, hope and recovery by:

- Providing MOUD to decrease illicit drug use during pregnancy
- Minimizing fetal exposure to illicit substances
- Creating support systems to assist with any barriers to care
- Engaging the birth parent as a leader in their recovery

WRAP UP

We have been providing our service to individuals for 6 years

In those 6 years we have worked to improve the antepartum experience

We also changed our program in GREAT MOMs so our patients are seen for up to a year post-partum

Our hope is that by keeping the parent engaged in treatment and providing support through this first year then ensuring they have continued access to care, including behavioral health support, patients remain in treatment long term

HOW CAN YOU HELP?

- Encourage the OB providers to care for patients with an OUD
- Create a group of professionals in your hospital, both in-patient and out-patient to work on ways to improve care
- Train your staff on
  - Harm Reduction
  - Trauma informed care
  - Stigma
  - Eat, Sleep, Console

CONCLUSION

Screening for substance use and substance use disorders is universally recommended in pregnancy

Pregnant people with high risk should be referred to treatment

First line treatment for opioid use disorder is opioid agonist therapy and detoxification is not recommended.

Post-partum is a high-risk time for maternal opioid overdose, and treatment should be continued in this time period


To all the people who have lost their lives to addiction
and those that try to prevent further losses.
Cara Poland, MD, MEd
Connect with me!
www.carapoland.com
polandc2@msu.edu
cara_poland
linkedin.com/in/cara-poland