Opioid Addiction and Dependency in Pregnancy
Trends, Identification, and Interventions

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Some of the things we will cover today...

➤ Racial disparities and trends in the opioid epidemic, including those related to pregnant women.

➤ The importance of language around addiction and dependence when treating/working with opioid dependent pregnant women.

➤ The unique challenges in identifying the pregnant opioid user.

➤ The importance of implementing a multi-disciplinary approach to the care of opioid addicted pregnant women.
Drug Overdose Deaths Have Surpassed Other Preventable Deaths at Their Peaks

Centers for Disease Control and Prevention via Vox
Chemical Dependency Treatment Rates of Minnesota Residents

Rate per 1,000 of Population

Source: DAANES, PMQI, MN DHS 2017
Other Opiate Admission by Race 1998-2012

Source: DAANES, PMQI, MN DHS 2013
Other Opiate Admission by Race, Not Counting White, 1998-2012

Source: DAANES, PMQI, MN DHS 2013
Heroin Admission by Race 1998-2012

Number of admissions/yr


0 1000 2000 3000 4000

AI  Black  Hispanic  Asian  Other  White  Unknown

Source: DAANES, PMQI, MN DHS 2013
Heroin Admission by Race, Not Counting White, 1998-2012

Number of admissions/yr

Source: DAANES, PMQI, MN DHS 2013
Minnesota Resident Chemical Dependency Treatment rates for Other Opiates, 2000-2016

- Native American - Other Opiates
- Non Native American - Other Opiates

Source: DAANES, PMQI, MN DHS 2017
Minnesota Resident Chemical Dependency Treatment rates for Heroin, 2000-2016

- Native American - Heroin
- Non Native American - Heroin

Source: DAANES, PMQI, MN DHS 2017
Minnesota Resident Chemical Dependency Treatment Rates

- Native American - Other Opiates
- Native American - Heroin
- Non Native American - Other Opiates
- Non Native American - Heroin
Minnesota Resident Chemical Dependency Treatment Rates

- Non Native American - Other Opiates
- Non Native American - Heroin
Increases by Percent, 2000-2016 for Opioid Admission

“Other Opiates”

All: 566% increase

Native American: 703% increase

(Peak 1,338% in 2012)

Native America: 2,911%

Heroin

All: 612% increase

Native American: 4,415% increase

7.2 x greater incidence in Native Americans

Source: DAANES, PMQI, MN DHS 2017
Minnesota Admissions for American Indians for Heroin

- **Female**
  - 2007: 28
  - 2008: 53
  - 2009: 67
  - 2010: 69
  - 2011: 143
  - 2012: 300
  - 2013: 440

- **Male**
  - 2007: 20
  - 2008: 42
  - 2009: 47
  - 2010: 80
  - 2011: 160
  - 2012: 176

**Increases**
- **Female**: 1,571% increase
- **Male**: 629% increase
American Indian Heroin Admission Rates, per Age

82% are of childbearing years
Pregnant Women Admissions

Percent of MN Population
- Native American: 1%
- Other: 99%

Percent in Treatment
- Native American: 33%
- Other: 67%

Source: DAANES, PMQI, MN DHS 2017
Pregnant Women Entering Treatment 2010-2014

- 24% increase
- 80% increase

2010: Pregnant - 730, All Opioids - 173, Heroin - 52, Other Opiates - 121
2011: Pregnant - 775, All Opioids - 220, Heroin - 59, Other Opiates - 161
2012: Pregnant - 778, All Opioids - 250, Heroin - 90, Other Opiates - 160
2013: Pregnant - 813, All Opioids - 274, Heroin - 122, Other Opiates - 152
2014: Pregnant - 906, All Opioids - 313, Heroin - 172, Other Opiates - 141
Heroin vs. Other Opiate Admission for Pregnant Women, 1998-2016

Source: DAANES, PMQI, MN DHS 2017
Primary Drug of Abuse for Pregnant Women 2010 - 2014
Primary Drug of Abuse for Pregnant Women 2010 - 2014
Primary Drug of Abuse for Pregnant Women 2010 - 2014, less opioids

- Alcohol
- Methamphetamine
- Cocaine
- Crack
- Marijuana
Incarceration Rates

Shakopee Women’s Prison

MN Residents
- Non-Native: 1%
- Native: 99%

Incarcerated
- Non-Native: 22%
- Native: 78%

Convictions
- Total Number: 42%
- Drug Offense Active Sentence: 58%

2017 Minnesota Department of Corrections
Disclaimer and Disclosure

- Information provided today is combination of other's research and my clinical experience.
- I have no financial gains to disclose.
- The information shared in this presentation is a combination of others research and my clinical experience.
Opiate vs Opioid

- opiate - narcotic analgesic derived from a opium poppy (natural)

- opioid - narcotic analgesic that is at least part synthetic, not found in nature
Opioids

All compounds related to opium – originates in the poppy plant.

➤ Natural

➤ Morphine and opium

➤ Semi-synthetic

➤ Hydrocodone (Vicodin), oxycodone (Percocet) and heroin

➤ Fully Synthetic

➤ Methadone, fentanyl, and buprenorphine (Subutex)
Things Known to be True

- Opioids are a highly effective pain medication.
- Clinical use of opioids is considered to pose minimal risk to mother or fetus.
- Pregnancy “Class B”
Why are we talking about this today?

- Opioid abuse and dependence is on the rise both locally and nationally.
- The new “Gateway.”
- Abuse and addiction of these drugs are a major threat to the well-being of pregnant women and children - both unborn and born.
Why are we talking about this today?

- The care and treatment of pregnant opioid addicted patients is counter-intuitive to most patients and clinicians.

- This epidemic is growing at a rate that medical and societal systems can not match pace to.
Definitions

Fetus

Placenta
Language

- DSM-IV vs DSM-5
- Addiction vs Substance Use Disorder
## Dependence vs Addiction

<table>
<thead>
<tr>
<th>Dependence</th>
<th>Addiction</th>
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<tbody>
<tr>
<td>✗ Physical withdrawal symptoms</td>
<td>✗ Physical withdrawal symptoms</td>
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<tr>
<td>✗ Tolerance</td>
<td>✗ Tolerance</td>
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<tr>
<td>✗ Used larger amounts/longer</td>
<td>✗ Used larger amounts/longer</td>
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<tr>
<td>✗ Repeated Attempts to Quit/Control Use</td>
<td>✗ Repeated Attempts to Quit/Control Use</td>
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<tr>
<td>✗ Much Time Spent Using</td>
<td>✗ Much Time Spent Using</td>
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<tr>
<td>✗ Physical/Psychological problems related to use</td>
<td>✗ Physical/Psychological problems related to use</td>
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<tr>
<td>✗ Activities given up to use</td>
<td>✗ Activities given up to use</td>
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<tr>
<td></td>
<td>✗ <strong>Hazardous use</strong></td>
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<td></td>
<td>✗ <strong>Social/Interpersonal problems related to use</strong></td>
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<tr>
<td></td>
<td>✗ <strong>Neglected major roles to use</strong></td>
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Definition of Addiction Medicine

Addiction is a primary, chronic disease of brain reward, motivation, memory, and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social, and spiritual manifestations.

This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

Addiction is characterized by inability to consistently abstain, impairment in behavior control, craving, diminished recognition of significant problems with one’s behaviors and interpersonal relationships, and a dysfunctional emotional response.

Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.
Risk Factors Lending to Opioid Abuse

- 50-50 environment and genetics
- Environmental
  - Availability and peer use
  - Sexual partner use
  - History of victimization
  - Physical and sexual abuse/trauma
Pain Management

At the most basic and fundamental aspect of the brain, physical and emotional pain cannot be differentiated.
Characteristics of the Pregnant Addict

- Avoidance of discomfort is primary.
- The addiction chooses.
- Risk to fetus often minimized.
- Fear of becoming more powerless.
- Threat of being “discovered” is real.
- Threat of Child Protection is real.
Rates of Opioid Abuse in Pregnancy

- 2005 study
  - 15 – 44 years old
  - Community dwelling (not in hospital, incarcerated, homeless)
  - Primary opioid of choice – pills

- Women self reported opioid abuse in 1% of pregnancies

- Newborn stool (meconium) studies found opioids in 8.7% of newborns
Heroin vs. Other Opiate Admission for Pregnant Women, 1998-2016

Number of admissions/yr

Source: DAANES, PMQI, MN DHS 2013
Imagine the Likely Rates…

- Consider the women who are homeless…
- Consider the women who don’t get prenatal care…

What I’m seeing in clinic…

…roughly 20% of pregnant patients admit to illicit use of opioids.
Screening and Identification

- 30% - 50% of general population have unintended pregnancies
- 86% of pregnancies in opioid dependent women are unintended
- Not the usual presentation/stereotype of addiction
- Few validated screening tools for anything other than alcohol
- Urine Toxicology (UTOX)
- Most effective…
  - Combination of Screening Questions, Education, and UTOX
Universal Screening

  - Retrospective cohort study of 2956 women between May 2012 and November 2013

- Previous Screening Triggers
  - Positive UTOX in pregnancy, suspicion of drug use, insufficient prenatal care, placental abruption, STI’s, admission from “justice center”

- Universal Screening
  - 60% (96 of 159) drug screens were positive for opioids
  - 20% (19 of 96) opioid positive tests were recorded in mothers WITHOUT screening risk factors
Know Your Drug Screens

- **Opiate Assay will screen for:**
  - heroin
  - morphine
  - hydrocodone
  - hydromorphone
  - codeine

- **It will miss:**
  - oxycodone
  - methadone
  - buprenorphine
  - other synthetic and semi-synthetic opioids
Risk of Opioid Addiction in Pregnancy

What is the actual risk of opioid addiction in pregnancy?

Not an easy answer...
Comorbidities and Confounding Factors

- 95% smoke cigarettes
- High rates of illicit amphetamine/stimulant use
- High rates psychiatric disorders
- High rates of poor nutrition
- High rates of Complex Social problems
Effects of Comorbidities

- Increased risk of spontaneous abortion
  - cigarette smoking and complex social issues
- Increased risk of still birth
  - cigarette smoking, cocaine and complex social issues
- Increased risk of preterm birth
  - cigarette smoking, cocaine, poor nutrition and complex social issues
- Increased risk of low birth weight
  - cigarette smoking, psychiatric disorders, poor nutrition and complex social issues
- Increased risk of “Sudden Infant Death Syndrome”
  - cigarette smoking
Moral of the story

It is extremely difficult to identify true risks of opioid abuse in pregnancy and the majority of negative outcomes may be from use of other drugs and social impacts.

*More comorbidities means higher risk of negative outcomes.*
True Danger of Opioids in Pregnancy?
True Danger of Opioids in Pregnancy?

Withdrawal
The Realization

What I’m seeing in clinic…

Most women don’t know the extent of their addiction they until they become pregnant…
Symptoms of Pregnancy

- Irritability
- Nausea and/or Vomiting
- Low back pain
- Stuffy nose
- Bowel changes
- Fatigue/Tired
- Insomnia
- Breast Pain
Symptoms of Withdrawal

Irritability
Nausea and/or Vomiting
Muscle aches
Watery Eyes and/or Runny nose
Diarrhea
Yawning
Insomnia
Fever
Goosebumps
Sweating

*Miserable, but rarely life threatening to an adult.*
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Withdrawal Symptoms or Discomforts of Pregnancy?

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Dangers of Continued Abuse

Maternal risk taking and dangerous behavior patterns

Usual use pattern

- Use a lot, stop, withdrawal, use again, etc...

Intra-Uterine...

- Causes repeated cycles of fetal intoxication and withdrawal
- Creates unstable environment for fetus and effects efficacy of placental function

*Micro-Withdrawals*
Dangers of Withdrawal to the Fetus

Fetal hypoxia leading to increased rates of...

- Spontaneous abortion
- Placental insufficiency
- Hypertensive emergencies
- Pre-term labor and birth
- Poor fetal growth
- **Fetal death**
Goal of Medical Intervention

Maternal Stabilization and Safety

Stable intrauterine environment

Decrease Co-morbidities
Interventions

- Narcan
- Methadone Assisted Withdrawal
- Methadone Maintenance
- Subutex/Suboxone
- Psychosocial Support
Narcan

(naloxone)

- CONTRAINDICATED in opioid dependent pregnant women.
  - Unless maternal overdose/lifesaving measure.
- Reverses/blocks opioids.
- Puts someone into immediate withdrawal state.
- Can be dangerous for the newborn if maternal use not identified.
Methadone

- FDA approved in 1972 for treatment of opioid dependence
- Goal: replaces illicit drug use, avoids withdrawal, and eliminates drug craving
- Methadone lasts 27 hours in system, allowing for once a day treatment
  - Avoids the micro-withdrawal
- Steady and known supply of drug/medication decreases risk-taking behavior to obtain drug
  - Increases maternal safety
Methadone Assisted Detox

Intent

- Goal is to get women off of opioids.
- Transition from illicit opioids to methadone and slowly wean off.
- No opioids means no Neonatal Abstinence Syndrome.
Methadone Assisted Detox

Reality

- Increase in fetal deaths
- 40%-100% relapse rate
- Twice the rate of + drug screens at time of delivery*
- Six fewer prenatal care appointments*
- NO difference in Neonatal Abstinence Syndrome* than recommended model
Early Methadone and Pregnancy Literature

- 1973 FDA said all pregnant women on methadone must undergo 21 day detox
- The Zuspan et 1973 data showing adverse effects and fetal death helped to reverse FDA decision
- Reduces maternal craving and fetal exposure to illicit drugs
- Produces drug abstinence, that in turn allows other behavior changes which decrease health risks to both mother and fetus
- Reduces the likelihood of complications with fetal development, labor and delivery

Methadone Maintenance

- Current Medically Recommended Option
- Should be considered medical management to avoid fetal and maternal injury
- These women ARE following the best treatment modality available and following ACOG recommended treatment recommendations.
Methadone Maintenance

- Daily dose at licensed facility
- 30% dose increase often needed in 3rd trimester
- Often coordinated with addiction treatment or, at the least, support services by trained staff
Subutex/Suboxone

(buprenorphine/buprenorphine plus naloxone)

- Mixed agonist-antagonist opioid receptor modulator
- 30% dose increase often needed in 3rd trimester
- Can decrease in Neonatal Abstinence Syndrome (NAS)
- Fairly good results with non-pregnant patients
- Current “mainstream” modality of Medication Assisted Treatment only model is good at curbing withdrawal, but does little to curb addiction behavior
  - Leading us back to NAS and the co-morbidities.
- Very promising initial studies, but additional work needed around this treatment in pregnant patients.
Buprenorphine: Misuse/Diversion Risks

- Encourage understanding of diversion and misuse while in treatment as *indicators of medication non-adherence* and evaluate and treat therapeutically.

- Need careful public policy understanding the cutting off treatment access or greatly reducing it will not eliminate or guarantee less diversion and misuse.

- Restricting treatment may adversely affect mortality rates.

Buprenorphine: Is Misuse/Diversion a Risk?

Each illicit use of buprenorphine avoids 3-5 opioid injections per day

500 diverted doses = 1500 avoided injections

1500 avoided potential overdoses

1500 avoided potential deaths

1500 potential HIV exposures

1500 potential Hep C exposures
Overview of MAT

 Pregnant women with opioid use disorders can be effectively treated with methadone or buprenorphine. Both these medications should not be considered “off-label” use in the treatment of pregnant patients with opioid use disorder.

 Biggest concern with opioid agonist medication during pregnancy is the potential for occurrence of neonatal abstinence syndrome - an entirely treatable condition.

Medication for Opioid Use Disorders

- Prevents erratic maternal opioid levels that occurs with use of illicit opioids, and so lessens fetal exposure to repeated withdrawal episodes
- Reduces maternal craving and fetal exposure to illicit drugs
- Produces abstinence, that in turn allows other behavior changes which decrease health risks to both mother and fetus (for example: HIV, hepatitis, and sexually transmitted infections)
- Reduces the likelihood of complications with fetal development, labor delivery

WHO 2014 Guidelines:

Pregnancy women dependent of 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.
Psychosocial Support

- Intervention on all illicit drug use
- Assistance with social problems and connection to community support
- Assistance with medical and psychological problems
- Connection to supportive abstinence network
- Encouragement to seek and connection with prenatal care
- Culturally appropriate support
Benefits of Methadone Maintenance and Psychosocial Support

- Up to three times less mother’s illicit opioid use
- Decreasing those co-morbidities
- One- to two-thirds of women do continue to abuse drugs or alcohol
- Increases prenatal care
- Better newborn outcomes
- Up to three times less risk of low birth weight
- Mother more likely to maintain custody of child
Successful Methadone Maintenance

Multi-Disciplinary Team…

- Methadone Clinic Team
- Social Workers and Counselors
- Community Support Networks and Services
- Obstetrics Providers
A Metro Collaboration

- Multi-Discipline and Front-Line Staff collaborative work
  - Community Clinic based Certified Nurse Midwife
  - Addiction Medicine
  - Social Services/Support
  - In-Patient support

- Only 6% (5 of 77) of newborns placed out of home because of maternal illicit opioid use

- Minnesota Department of Human Services Commissioners Circle of Excellence Award Recipients
M.O.M.S.
Maternal Outreach and Mitigation Services

❖ White Earth Nation
❖ Daily dosing of Subutex via telemedicine
❖ Daily support services
❖ 86% (13 of 15) newborns home with mother
❖ Expanded to treat fathers
Motivating Women to Seek Help

- Be respectful of their courage.
- Offer them tools to make the decisions they need to vs. telling them what they need to do.
- Give them accurate information. Or get them to someone who can.
- Engage their family - the power of the ultrasound.
- Establish connection with/refer them to services that specialize in addiction in pregnancy.
- Reframe perceptions of social support systems.
- Project Child
Other Thoughts…

- MAT should not be considered pain management
  - MAT deals with opioid DEFICIT

- Criminal prosecution has NOT decreased drug use in pregnant women.
Where We Fall Down

Post Partum support and care

Access and support to outlying/non-metro areas

The non-addicted opioid dependent patient.
Having Our Own Courage

- Prepare yourself to ask the difficult questions.
- Prepare yourself for the difficult answers.
- Check your own biases and agendas.
- Understand an addicted woman may have different motivators than you.
- Know the resources available in your community.
- 911 - 211
- Know your limits.
Summary

❖ Opioid abuse and dependence pose multi-faceted threat to pregnant women and unborn children.

❖ The greatest opioid-linked risk to fetal well-being is withdrawal.

❖ Methadone maintenance is the preferred method of increase maternal and fetal safety and well-being.

❖ A multidisciplinary approach to intervention is best method of supporting pregnant women’s abstinence from illicit drugs and decreasing co-morbidities.
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Effects on the Newborn

Neonatal Abstinence Syndrome

- Effects 70% of these babies
- Not dose dependent (below 100mg or so)
- Treated with comfort measures and medication
- Up to 60% of these babies require medication
- Onset at 24-72 hours of life and can last 6 days to 8 weeks
- Supportive cares for baby and parent(s)
- Mixed reports if breastfeeding can reduce these symptoms.
- Important in maternal-child bonding. Minute amounts of methadone found in breast milk. (Approx 1 ml per L)
Neonatal Abstinence Syndrome (NAS)

Neonatal Opioid Withdrawal Syndrome (NOWS)

- Nervous System Excitability
  - Seizures, tremors, hypertonia, poor sleep, high pitched cry

- Autonomic Nervous System
  - Sweating, sneezing, tearing, hyperthermia

- GI System
  - Feeding difficulty/uncoordinated, vomiting, diarrhea

- Respiratory Distress
  - Increased secretions, increased respiratory rate, apnea

*Can be deadly if not recognized and treated*
Child Development After Methadone Maintenance

- Mental and motor function within normal range
- Possible fine motor skills problems
  - Same rates as seen in un-treated mothers

*Child development highly effected by environment.*

*Social support critical.*
MOTHER Study: Child Outcomes up to 36 months

- N=97

- No pattern of differences in physical or behavioral development to support medication superiority

- No pattern of differences for infants treated for NAS vs 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

MOTHER Study: Smoking and NAS

Bar charts showing:
- Total Amount of Morphine Needed to Treat NAS:
  - Non-Smoking: 1.5
  - Below Average Smoking: 2
  - Average Smoking: 3.2
  - Above-average Smoking: 5

- Total Length of Hospital Stay:
  - Non-Smoking: 8.9
  - Below Average Smoking: 10.5
  - Average Smoking: 13
  - Above-average Smoking: 16.2

- Number of Days Medicated for NAS:
  - Non-Smoking: 3.7
  - Below Average Smoking: 4.1
  - Average Smoking: 6.3
  - Above-average Smoking: 8.4

- Neonatal Weight at Birth:
  - Non-Smoking: 3149
  - Below Average Smoking: 3075
  - Average Smoking: 2978
  - Above-average Smoking: 2881

*OLS and Poisson regression analyses were used to test average daily number of cigarettes smoked in the past 30 days at α = .05, adjusting for both Medication Condition and Site. Below-average cigarette smoking was defined as 6 cigarettes/day (-1 SD), average cigarette smoking as 14 cigarettes/day (Mean), and above-average cigarette smoking as 21 cigarettes/day (+1 SD).*  
*Jones et al. DAD, 2013*
MOTHER Study: Buprenorphine v. Methadone

- Compared with methadone-exposed neonates, buprenorphine-exposed neonates
  - Required 89% less morphine to treat NAS
  - Spent 43% less times in the hospital
  - Spent 58% less time in the hospital being medicated for NAS
- Both medications in the context of comprehensive care produces similar maternal treatment and delivery outcomes

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