Opioid Addiction and Dependence in Pregnancy

Amy Langenfeld
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Some of the things we will cover today...

- Discuss opioid addiction trends in Minnesota.
- Discuss the identification of opioid addicted pregnant patients.
- Discuss co-morbidities associated with opioid addiction.
- Discuss safe care of the pregnant opioid addict.
Minnesota Department of Human Services

DAANES Report
(Drug and Alcohol Abuse Normative Evaluation System)

Data Refers to Treatment ADMISSIONS

Information Supplied by
Rick Moldenhauer, MS, LADC, ICADC, LPPS
Planner Principle State
State Opioid Treatment Authority
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

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

Source: DAANES, PMQI, MN DHS 2013
Chemical Dependency Treatment Rates, Heroin, for Minnesota Residents

Rate per 1,000 Population

Source: DAANES, PMQI, MN DHS 2015
Minnesota Resident Chemical Dependency Treatment Rates, per 1,000

- NA Other Opiates
- Non NA Other Opiates
- NA Heroin
- Non NA Heroin

Graph showing trends from 2000 to 2015.
<table>
<thead>
<tr>
<th></th>
<th>Increases by Percent, 2000-2014 for Opioid Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Other Opiates&quot;</td>
<td></td>
</tr>
<tr>
<td>All: 633% increase</td>
<td></td>
</tr>
<tr>
<td>Native American: 1,016%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Peak 1,338% in 2012)</td>
</tr>
<tr>
<td>Heroin</td>
<td></td>
</tr>
<tr>
<td>All: 506% increase</td>
<td></td>
</tr>
<tr>
<td>Native American: 3,729%</td>
<td></td>
</tr>
</tbody>
</table>

**All: 506%**

**Native America: 2,632%**

Source: DAANES, PMQI, MN DHS 2014-2013
Minnesota Admissions for American Indians for Heroin

- Male
- Female

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
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<td>2012</td>
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<tr>
<td>2013</td>
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</tbody>
</table>
American Indian Heroin Admission Rates, per Age

- Under 17
- 18-24
- 25-34
- 35-44
- 45-54

Year:
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
Heroin vs. Other Opiate Admission for Pregnant Women, 1998-2012/2013

Source: DAANES, PMQI, MN DHS 2013
Opioid Addiction and Dependence in Pregnancy

Amy Langenfeld

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Disclaimer and Disclosure

- I am not an addiction specialist.
- Information provided today is combination of other’s research and my clinical experience.
- I have no financial gains to disclose.
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)
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.
Language

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

<table>
<thead>
<tr>
<th>Dependence</th>
<th>Addiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical withdrawal symptoms</td>
<td>Physical withdrawal symptoms</td>
</tr>
<tr>
<td>Larger amounts needed to obtain same result</td>
<td>Larger amounts needed to obtain same result</td>
</tr>
<tr>
<td>Physiological adaptation</td>
<td>Drug may be obtained legally or illegally</td>
</tr>
<tr>
<td></td>
<td>(Often combination)</td>
</tr>
<tr>
<td></td>
<td>Inability to cut-down</td>
</tr>
<tr>
<td></td>
<td>Increase time used to obtain drug</td>
</tr>
<tr>
<td></td>
<td>Risk taking behavior to obtain drug</td>
</tr>
<tr>
<td></td>
<td>Use despite negative impact on own well-being</td>
</tr>
<tr>
<td></td>
<td>Give up other important activities</td>
</tr>
</tbody>
</table>
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, 1998-2012

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 25%-50% of pregnant patients admit to illicit use of opioids.
Universal Screening

- Restrospective 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
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
Know Your Drug Screens

hões 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

- 90% smoke cigarettes
- 10% use cocaine
- 10-25% have 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.*
Withdrawal Symptoms or Discomforts of Pregnancy?

<table>
<thead>
<tr>
<th>Withdrawal</th>
<th>Pregnancy</th>
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<td>Irritability</td>
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Withdrawal Symptoms or Discomforts of Pregnancy?

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

**Pregnancy**
- Irritability
- Nausea and/or Vomiting
- Low back pain
- Stuffy nose
- Bowel changes
- Fatigue/Tired
- Insomnia
- Flushing/Hot Flashes
- Breast Pain
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)

- CONTRAINDIATED 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.
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 DEFECIT

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.
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.
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

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MOTHER Study: Smoking and NAS

**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 days
- Below Average Smoking: 10.5 days
- Average Smoking: 13 days
- Above-average Smoking: 16.2 days

**Number of Days Medicated for NAS**
- Non-Smoking: 3.7
- Below Average Smoking: 4.5
- Average Smoking: 6.3
- Above-average Smoking: 8.4

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

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

Jones et al., N Engl J Med. 2010
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.

Citations

- Jones et al., Am J Obstet Gynecol, 2014
- Stewart et al., AJOG, 2013
- Bell, AJOG, 2016
- Dashe, OB GYN, 1998
- Jones, Am J Addict, 2008
- Lund, Subst Abuse and Rehab, 2012
- Stewart et al., AJOG, 2013
Citations

Bell, AJOG, 2016
Meyer, M. Detoxification and Pregnancy presentation NIH 2016
Jones et al, N Engl J Med 2010
Jones et al. DAD, 2013
Substance use in pregnancy; UpToDate; 2012.
Opioid Abuse, Dependence and Addiction in Pregnancy, Committee Opinion; ACOG; 2012.
Methadone maintenance therapy during pregnancy; UpToDate; 2012.
Heroin; Drugs in Pregnancy and Lactation; 2010, 683-684.
Methadone; Drugs in Pregnancy and Lactation; 2010; 915-916.
Oxycodone; Drugs in Pregnancy and Lactation; 2010; 1092.
Cocaine; Drugs in Pregnancy and Lactation; 2010; 319-327.
Buprenorphine; Drugs in Pregnancy and Lactation; 2010; 168-170.
Lowfall, M; Opioid Dependence During Pregnancy; AMSP 2009.