Maternal-fetal Opiate Medical Home (MOMH)

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Objectives

1. Discuss the effects of opiate addiction on mothers and infants.

2. Discuss a Medical Home model of care for pregnant patients with addiction complications.
National Epidemic: Opiate Use

• An estimated 22.6 million, or 8.9% of Americans, aged 12 or older, were current or past month illicit drug users

• From 1991 to 2009, prescriptions for opioid analgesics increased almost threefold, to over 200 million

• Emergency room visits for nonmedical use of pharmaceutical opioids has doubled between 2005 and 2009

(2010 National Survey on Drug Use and Health (NSDUH))
Increase in Unintentional Overdose Deaths Involving Opioid Analgesics, 1999–2008

Unintentional Overdose Deaths

- 1999: 2,901
- 2000: 3,140
- 2001: 3,994
- 2002: 5,547
- 2003: 6,524
- 2004: 7,547
- 2005: 8,541
- 2006: 10,986
- 2007: 11,499
- 2008: 11,882

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, accessed through CDC WONDER Online Database, released 2011.
Unduplicated Admissions for Opiate Abuse and Dependence
Ohio MACSIS Data - State Fiscal Year (SFY) 2001

Legend
- ADAMHS Board
- Opiate Addicts (%)
  - 0.0% - 3.0%
  - 3.1% - 6.7%
  - 6.8% - 14.3%

Map Information:
This map represents the percentage of clients in treatment with an opiate-related diagnosis (heroin and prescription opioid). On average, 6.6 percent of client admissions statewide were associated with a primary diagnosis of opiate abuse or dependence in SFY 2001. The highest concentrations of opiate admissions were in Cuyahoga (14.3%), Montgomery (12.5%) and Mahoning (12.2%) counties. Noble, Paulding, Putnam and Wyandot counties did not have residents with any opiate-related admissions in the public behavioral health system.

Note: Alcohol, Drug Addiction and Mental Health Services (ADAMHS) Boards have black borders, and counties have white borders. Borders are black in cases where ADAMHS boards and counties have the same borders.

Data Source:
Data from Multi Agency Community Information Systems (MACSIS)
Map produced March 2014
This map represents the percentage of clients in treatment with an opiate-related diagnosis (heroin and prescription opioid). On average, 25.2 percent of client admissions statewide were associated with a primary diagnosis of opiate abuse or dependence in SFY 2012. The highest concentrations of opiate admissions were in Scioto (69.7%), Lawrence (65.7%) and Jackson (56.7%) counties. The counties with the lowest concentrations of opiate-related admissions were Morgan (4.0%), Coshocton (4.5%) and Tuscarawas (7.9%).

Note: Alcohol, Drug Addiction and Mental Health Services (ADAMHS) Boards have black borders, and counties have white borders. Borders are black in cases where ADAMHS boards and counties have the same borders.

Data Source:
Data from Multi-Agency Community Information Systems (MACSIS)
Map produced March 2014
The Pregnant Opiate Addicted Population
Akron City Hospital
Opiate Addiction Effects on Mom

Pregnancy complicated with addiction is associated with:

- poor nutritional status
- increased tobacco abuse
- increases in sexually transmitted infections
Opiate Addiction Affects Pregnancy Outcomes

Increased

- preterm birth
- stillbirth
- low birth weight
- Sudden Infant Death Syndrome (SIDS)
Opiate Addiction Effects on Baby

- Increased risk of birth defects
- Baby is born physically dependent on opioids
- Infants in opioid withdrawal experience:
  - ✓ tremors
  - ✓ irritability
  - ✓ high pitched crying
  - ✓ seizures
  - ✓ vomiting
  - ✓ diarrhea
  - ✓ temperature instability
  - ✓ Fever

- In Ohio in 2011, NAS cost more than $70 million and 19,000 inpatient days (Ohio Hospital Association).

Neonatal Abstinence Syndrome (NAS). NAS extends 3-4 days more if mother smokes tobacco.
Neonatal Abstinence Syndrome (NAS)

- 55 to 94% of exposed infants exhibiting symptoms
- Medication is required in 2/3 of cases
- Timing of onset is related to characteristics of drug used by mother and time of last dose
- Most opioid exposed babies are exposed to multiple substances
Women Who can Give Birth to Infants with NAS Symptoms

• Actively abusing or dependent on heroin

• In recovery from opioid addiction and maintained on methadone or buprenorphine

• Chronic pain managed with opioids

• Misuse of prescription medication
Effective Drug Addiction Treatment

• Addiction is a brain disease and can be effectively treated
• No single treatment is appropriate for everyone
• Access critical
• Must remain in treatment for an extended period of time
• Medication Assisted treatment (MAT) in combination with behavioral therapies
• Rethink the traditional inpatient/outpatient model of care
Benefits of Treatment

- Improved attendance and engagement at prenatal appointments
- Improved perinatal outcomes and infant outcomes
- Decrease incidence of criminal behavior
- Decrease risks of non pharmaceutical drug use
- Progress in Recovery
- Access to social services to address issues of domestic violence, mental health, etc
Treatment Success

- Success is determined by a commitment to a higher power
- 12 Steps
- “You die or you get better”
Medication Assisted Treatment (MAT)

MAT Goals:

– Keep them out of painful withdrawal syndrome
– Help them to retrieve an ability to control their behavior
– Reduce/Change harmful behaviors

Strict medical observation for an extended period of time

Wean from MAT when appropriate

– After delivery, usually about 6 months
MAT: Methadone

First drug for substitution therapy in non pregnant patients

– Considered safe for the fetus
– Long history of use
– Administered orally
– Withdrawal symptoms from Methadone are much more severe and prolonged than that from heroin
– Patients like it because of the “high” it provides
– Inexpensive
MAT: Buprenorphine (Subutex®)

Buprenorphine- best drug for substitution therapy during pregnancy

• Opioid receptor agonist antagonist

Decreased length of NAS in newborn
  – Reduced withdrawal symptoms in newborn

• No high. Suppresses cravings

• If taken intravenously it may produce expressed euphoric effect (potential for abuse)
Our Story

• In 2008 we addressed our increasing “problem” with maternal drug abuse with nursing education

• In 2010, responsibility for pregnant substance abuse patients was formally transferred from our mental health facility to our maternity hospital

• We “learned as we went”

• Current program utilizes the AHRQ concept of a medical home, and has applied those ideas to care of the patient with addiction complicated pregnancy
Collaborative Approach

• Women with opioid use are identified during pregnancy
• Engaged into prenatal care, medical care, substance use treatment, and other needed services
• A care plan for mother and baby is developed
Care Coordination

Interdisciplinary team

– Perinatology
– Addiction Medicine
– Consult Liaison Psychiatry
– Social Work
– Case Management
– Dietary
– Neonatology
Entry into Care- Prenatal

Patients referred to our program through:

– Emergency Department
– Obstetric Triage
– Women’s Health Center
– Family Medicine
– Addiction Medicine
– Community Drug Treatment Center
• Only hospital providing specialized care in our region for this population

• Admitting patients from a large geographical area:
  – 60% are from Summit County
  – 40% are from other counties in the region (Portage, Medina, Cuyahoga, Stark, Wayne, Richland, Ashland, Trumbull, Lake and Mahoning)

• Other regional hospitals refer their pregnant addicted women to our MOMH program when they become too high-risk for them to manage.
Prenatal Admission: Two pathways

If Patient presents to the ED:
• ED confirms pregnancy
• If U-tox positive:
• Sent to OB triage for further care

If patient presents to OB Triage:
• Obtain U tox results if not previously obtained
• Assess fetal well being
• Confirmation of GA
• Cows Scale
• Seen by case manager
### Clinical Opiate Withdrawal Scale: Assessment tab under Pain

<table>
<thead>
<tr>
<th>CLINICAL OPIATE WITHDRAWAL SCALE</th>
<th>Bone or joint aches</th>
<th>Yawning</th>
<th>Anxiety and irritability</th>
<th>Gooseflesh skin</th>
<th>COWS scoring (Enter total score in code)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resting Pulse Rate</strong></td>
<td>not present = 0</td>
<td>no yawning = 0</td>
<td>none = 0</td>
<td>skin is smooth = 0</td>
<td>5-12 = mild</td>
</tr>
<tr>
<td>80 or below = 0</td>
<td>mild/diffuse discomfort = 1</td>
<td>1-2 times during assessment = 1</td>
<td>reports an increase = 1</td>
<td>bumps felt/arm hair raised = 3</td>
<td>13-24 = moderate</td>
</tr>
<tr>
<td>81-100 = 1</td>
<td>reports severe aching = 2</td>
<td>3 or &gt; during assessment = 2</td>
<td>obviously irritable/anxious = 2</td>
<td>prominent piloerection = 5</td>
<td>25-36 = moderately severe</td>
</tr>
<tr>
<td>101-120 = 2</td>
<td>rubbing joints/muscles = 4</td>
<td>several times/minute = 4</td>
<td>asmt diff d/t anxiety/irrit = 4</td>
<td></td>
<td>&gt; 36 = severe withdrawal</td>
</tr>
<tr>
<td>&gt;120 = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sweating</strong></td>
<td>none present = 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no report of chills/flushing = 0</td>
<td>stuffiness or moist eyes = 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>subj report of chills/flush = 1</td>
<td>nose running or tearing = 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>flushed or moisture on face = 2</td>
<td>constant nasal running/tears = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sweat on brow or face = 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sweat streaming off face = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Runny nose or tearing</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Gl upset</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no Gl symptoms = 0</td>
<td>stomach cramps = 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stomach cramps = 1</td>
<td>nausea of loose stool = 2</td>
<td></td>
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</tr>
<tr>
<td>nausea of loose stool = 2</td>
<td>vomiting/diarrhea = 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vomiting/diarrhea = 3</td>
<td>multiple vomiting/diarrhea = 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>multiple vomiting/diarrhea = 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tremor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no tremor = 0</td>
<td>tremor felt not observed = 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tremor felt not observed = 1</td>
<td>slight tremor observed = 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>slight tremor observed = 2</td>
<td>gross tremor/muscle twitches = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gross tremor/muscle twitches = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Prenatal Admissions

• Unstable, or pregnancy complications are admitted to L&D
• <23 weeks stable, med/surg women's floor
• >23 weeks, perinatal floor for fetal monitoring
MOMH Case Manager

Coordinates inpatient and outpatient treatment with:

• MAT
• Engage women and partners in substance abuse counseling
• Coordinate transition to an inpatient or outpatient treatment center
Inpatient care- Prenatal

• 24-48 hours of inpatient stabilization
• Fetal evaluation and labs “caught up”
• Transitioned to buprenorphine
• Assessment tools, algorithms and order sets are used
• The mother is educated about her baby and how to keep him/her in their custody after birth
Prenatal Outpatient Care-Addiction

• Mothers discharged to outpatient
  – Residential treatment vs. non residential treatment
  – Ongoing prenatal care is provided with a Perinatologist and Addiction medicine
  – Weekly therapy sessions and a therapy group
  – Ongoing education
    • Recovery
    • Understanding effects of opiates on maternal and fetal health
    • Stress reduction and coping strategies
Prenatal Outpatient -OB Care

• Enrolled in prenatal care supervised by high risk perinatologist

• Routine visits utilize “centering” in Women's Health Center
“Centering” Group Care Model

Increased patient opportunities for socialization, empowerment and education
Labor and delivery

• Standardized admission order set
• Opiate tolerant order sets for pain management
• Epidural for labor
• Managing post operative pain for Cesarean is challenging
Dosing buprenorphine for labor and delivery

**Labor and Delivery**

**Birth Plan:**
- Spontaneous labor
- Scheduled induction
- Scheduled cesarean

**Maintenance dose Subutex**
- Verify Dose
- Consult Addiction Medicine for order and continue as scheduled
- Last dose noon, day prior to induction
- Last dose 24 hours prior to cesarean

**Labor pain management**
- Epidural prn
Substitute orders will be:
- Hydromorphone 0.5 - 1mg IV push or subcutaneous every 15 minutes prn x 4 doses (maximum of 4 mg) to reach acceptable pain goal

And
- Hydromorphone 0.5 - 1 mg IV push or subcutaneous every 3 hours prn while in PACU (maximum 4 mg)

Additional orders include:
- Continuous pulse ox and cardiac monitoring in PACU
- Physician will be contacted for respiratory rate less than 10 per minute, pulse ox less than 92%, or if the orders fail to control pain
Post PACU orders

• The total administered amount of injectable hydromorphone in PACU is converted to oral hydromorphone equivalents for postpartum oral administration (remember, oral and IV are not equivalent doses).

• To calculate the oral dose, you multiply the IV dose by 3; so 3 mg of IV hydromorphone is equal to 9 mg of hydromorphone po.

• The amount of oral hydromorphone equivalent is then divided in half – this is ordered every 3 hours on a scheduled basis.

• An additional prn dose for breakthrough pain is also ordered as 50 to 100% of the scheduled dose, every 3 hours prn.
Postpartum

• The baby stays with the mother with neonatal intensive care available onsite

• Women are seen 2 weeks after birth in our prenatal office with a follow-up referral to a Family Medicine provider

• Centering at 2-4 and 6 weeks postpartum

• The goal is for the baby to go home with their mother, if their mother can maintain compliance with their comprehensive treatment program
Case Management

• Continued engagement in substance treatment
• Continued access to MAT after delivery
• Social Service- Children’s Services-Safety Concerns
• Engagement in follow-up services
• Early Intervention for child
• Family Support
• Health Concerns
Patient Education

Baby withdrawal: 5 days if oral opiates, 7 days if Buprenorphine, Methadone longer r/t half life

- Babies can stay with the mother in a normal newborn nursery with Neonatal Abstinence scoring

- If baby goes into withdrawal (after 2 Finnegan scores $\geq 8$) baby must go to the NICU

- NAS is treated w/ Morphine and Phenobarbital

- Baby cannot go home on Morphine (Morphine-free X2 days)
The number of MOMH mother-baby dyads have increased nearly 400%.
MOMH mothers are seen earlier in gestation and prenatal care is initiated sooner.
More MOMH mothers now deliver full-term, from an average of 36.2 gestation in 2013 with an increase in birth weights to 37.9 weeks gestation in 2011 to 37.9 weeks.
Early access to prenatal care is crucial in achieving optimal outcomes. It needs to address a continuum that addresses physical, emotional, psychological and social issues. Those diverse issues can only be met by a multidisciplinary team of experts who work in collaboration with each other. The concept of a medical home, in this case, a maternity home model is utilized.

### Table 1: Neonatal Abstinence Syndrome (Withdrawal) Babies

<table>
<thead>
<tr>
<th>Unit</th>
<th># patients</th>
<th>Total patient days</th>
<th>Average days per patient</th>
<th>Total charges</th>
<th>Average charges per patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus 1</td>
<td>27</td>
<td>493</td>
<td>18.3</td>
<td>$1,699,945</td>
<td>62,960.</td>
</tr>
<tr>
<td>Campus 2</td>
<td>27</td>
<td>646</td>
<td>23.9</td>
<td>2,727,251</td>
<td>101,109.</td>
</tr>
<tr>
<td>Campus 3</td>
<td>53</td>
<td>934</td>
<td>17.6</td>
<td>2,786,408</td>
<td>52,273.</td>
</tr>
</tbody>
</table>

**Summa Akron City**
Questions?