308: Mother and Infant - Breaking the Habit Together (Substance Use Mini-Track)

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Stony Brook Children's Hospital
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Stony Brook University School of Nursing

Speaker Introduction

• Dr. Lisa Clark has worked in the area of neonatal abstinence syndrome (NAS) for 25 years. She is an expert in the field and has been integral in implementing a standard of care for mothers and babies affected by opiate use. Dr. Clark has worked in collaboration with MFM in establishing a treatment plan for this population. She has worked to create an evidence-based, standardized approach for the mother baby dyad including nonseparation, nonpharmacological measures to provide comfort care and reduce medication use for the treatment of NAS. She has presented and shared her work at national and at international conferences. Dr. Clark has testified as an expert witness on matters of maternal and infant drug exposure. In 2015, she was recognized for her work with infant withdrawal as a child advocate by the Suffolk County Advisory Board on Child Protection in New York.

Disclosures

No financial conflicts
Requires permission for use of all video or photographs

Off label use of medications
Buprenorphine
Buprenorphine/naloxone

Terms
• Opioid use disorder (OUD)
• Substance use disorder (SUD)
• Neonatal Abstinence Syndrome (NAS)
• Neonatal Opioid Withdrawal Syndrome (NOW)

Learning Objectives

• State the incidence and potential outcomes of substance abuse in pregnancy
• Describe the options for treatment of neonatal abstinence syndrome (NAS)
• Develop a plan of care for infants with NAS and their families

How We Got Here!

• Social changes and over prescribing
• Easy access to prescription drugs and toxic substances like fentanyl
• Illicit drugs are easily available across the country
• Knowledge and attitudes on drug use
• High addiction rates for ages 25-40

The Facts!

• The misuse of opioids is a public health crisis
• 215 million opioid prescriptions dispensed in US (2017)
• ~1.7 million in the US diagnosed with SUD (2017)
• Over 70,000 people died from an opioid overdose (2018)

It Can Happen to Anyone

ACOG OUD Stigma 2.mp4

Cassandra Heiselman MD
Stony Brook Medicine
OB/GYN Fellow
Treatment Guidelines for Pregnancy

- Readiness, Recognition and Prevention
- MAT use
- Opioid Use Disorder in Pregnancy Bundle

Science of Addiction

A chronic, relapsing brain disease, characterized by compulsive drug seeking and use despite harmful consequences

Dopamine "teaches" the brain to repeat pleasurable behaviors (NIDA 2018)
Each drug may have a different mechanism of action
Each drug increases the activity of the reward pathway

A complex disorder
- Psychological
- Biological
- Genetics
- Sociocultural

The Brain

https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain

Addiction, Pregnancy, Newborns & The Law

Federal
- Supreme Court decision 2001 Ferguson v. City of Charleston Decided Mar. 21, 2001, 532 U.S. 67
- CAPTA
  2017 amended CARA – requires plan of safe care for the infant and identified as being affected by *illegal substance abuse or withdrawal symptoms
  - Every state is different - Know your state laws!
  - 25 states require health care professionals to report suspected prenatal drug use
- New York State
  Present under Social Services Law (SSL) section 422(2) Family court NOT criminal.

Maternal OB Case Review

Maternal urine toxicology

Non-opioid Adjunctive Meds for Withdrawal

<table>
<thead>
<tr>
<th>Medication</th>
<th>Initial dose</th>
<th>Indication</th>
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</thead>
<tbody>
<tr>
<td>Clonidine</td>
<td>0.1 to 0.3 mg orally every hour with monitoring of BP and HR</td>
<td>Anxiety, restlessness, sleep disturbance, severe hypertension, tachycardia</td>
</tr>
<tr>
<td>Diazepam</td>
<td>1 to 3 mg orally, 1 mg intramuscularly</td>
<td>Anxiety, restlessness, insomnia, muscle cramping</td>
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<tr>
<td>Promethazine</td>
<td>25 to 75 mg intramuscularly, 25 mg subcutaneously</td>
<td>Nausea, vomiting, restlessness, insomnia</td>
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<td>Diphenhydramine</td>
<td>25 to 100 mg intramuscularly or IV</td>
<td>Nausea, vomiting, restlessness, insomnia</td>
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<tr>
<td>Hydroxyzine</td>
<td>50 to 100 mg intramuscularly or IV</td>
<td>Nausea, vomiting, restlessness, insomnia</td>
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<tr>
<td>Loperamide</td>
<td>4 mg orally, followed by 2 mg every loose stool</td>
<td>Diarrhea, abdominal cramps</td>
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<tr>
<td>Octreotide</td>
<td>50 micrograms subcutaneously every 6 hours</td>
<td>Cholestasis, abdominal cramps</td>
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<tr>
<td>Bismuth subsalicylate</td>
<td>524 mg orally</td>
<td>Nausea, abdominal cramps</td>
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<tr>
<td>Acetaminophen</td>
<td>650 mg orally</td>
<td>Pain, myalgia</td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>600 mg orally</td>
<td>Pain, myalgia</td>
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<tr>
<td>Baclofen</td>
<td>5 to 10 mg orally</td>
<td>Muscle cramping</td>
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</tbody>
</table>

What's Next

- Pregnancy confirmation gestational age
- Assessment substance use & withdrawal
- SBIRT CDWS 5Ps
- Labs
  - Toxicology
  - Hepatitis panel A, B, C
  - HIV
  - VDRL
- Treatment
  - Detox opioid replacement
  - MAT Buprenorphine or Methadone
  - Inpatient management
  - Rehab in-patient vs out-patient
Precautions:
- Initiation office setting, abstinent from opioids for 24h.
- Synthetic opioid - partial μ-receptor agonist
- Long acting: t 1/2 is 24-60 hours, complex metabolism
- Average Dosing: 2-24mg/day
- Discontinuation symptoms 2 phases day 3 & 6 due to metabolites
- St. Gel strip / pill under tongue

- Must be dispensed at a federally certified opioid treatment program
- Synthetic opioid - μ receptor agonist
- Long acting: t 1/2 is over 24 hours (15-60 hrs)
- Average dosing 120-300 mg
- Discontinuation symptoms
- Usually liquid dosing and can be spit in pregnancy
- Discontinuation symptoms
- Average dosing 120-300 mg
- Long acting: t 1/2 is over 24 hours (15-60 hrs)
- Synthetic opioid - μ receptor agonist

Pregnant or Post-Partum Women
- HCP can help create positive outcomes for women
- Pregnancy is a time of increased opportunity, change and treatment (ACOG)
- Opiate medication including MAT can cause withdrawal symptoms like other medications that can cause a physical dependence
- Always keep all medications secure and away from children
- Be aware: Preventing pediatric exposure to buprenorphine /methadone
  - Mouth to mouth exposures have been reported by kissing or placing objects like a pacifier from mother to baby, mouth
  - Buprenorphine may last in the mouth up to 90 min after taking

Opioid Neonatals:
<table>
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<tr>
<th>Opioid</th>
<th>CNS Stimulants</th>
<th>CNS Depressants</th>
<th>Hallucinogens</th>
<th>Psychotropics / Other</th>
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<td>Alprazolam</td>
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The Baby Exposed

Time of onset
DRUGS: Symptoms vary
- Opiates and other drugs
- Poly substance use.

NAS:
Neonatal Abstinence Syndrome vs Newborn Adjustment & Support

- The changing picture of NAS
  - Opioid, benzodiazepine, amphetamine and fentanyl
  - Discuss exposure and the discontinuation process not withdrawal

- Timing of NAS varies
  - Maternal metabolism, placental metabolism, gestational age
  - Mother’s last intake of substances, types of opioid use, differences between MAT, or other medications- Benzodiazepines, SSRI...
  - Smoking use tobacco, vaping, cannabis

- Coordination of care between NICU and NBN
- Identify new developmental therapy and non-pharmacologic strategies
- Ongoing parental/family preparation for earlier discharge & care at home for infant with cycling NAS symptoms
Modified Finnegan MOTHER score

- 19 assessment items
- Removing overlapping items
- Removing items that were nonresponsive to meds
- Added two items: irritability

Assessments & Score

A score is only as good as the scorer

High pitched cry
Feeding difficulties
Rapid withdrawal
Sleeping

High risk criteria

- Score O 3-4 or more as needed
- Score all symptoms that occur within the time interval
- Score baby when awake to elicit reflexes & behaviors
- Do not awaken unless asleep for > 3 hr
- Calm infant prior to assessing muscle tone, RR
- When baby’s scores are increasing, consider other etiologies for symptoms
- Talk to parents in terms of symptoms not score

TIPS on NAS Scoring

- Feed infant then total score
- Consider other etiologies for symptoms & behaviors
- Do not awaken unless asleep for > 3 hr
- Calm infant prior to assessing muscle tone, RR
- When baby’s scores are increasing, consider other etiologies for symptoms
- Talk to parents in terms of symptoms not score

Signs / Symptoms

- Feeding difficulties
- Decreased sleeping intervals
- High pitch crying

Plan

- Urine tox sent
- Meconium toxicity sent

Newborn Case Opiate Exposure

BG Oh FT AGA with fetal exposure to opiates exhibiting signs of NAS @ 18 hr of age
- Delivered C/S for fetal distress to a 39 y/o G4P2 Agar’s B/H. BW 3.4 Kg, PNC @ 10 wks.
- HX of back pain X 4 yrs, Maternal report of “OxyContin 10mg 4 or 5 x day
- Now reports taking 80 mg daily”?
- Maternal toxicity: Oxycodeone positive

NAS signs develop in 55-94% of neonates exposed to opioids in utero.

Screening and Toxicology

- Not all drug screenings are the same
- Confirmation vs GCMS (drug fingerprint)
- Urine toxicology’s are only good as what you test for!
- Every lab screen is different
- Not all opiates are the same
- State regulations and chain of custody

Baby’s Urine Toxicology

DRUG Screen Results
- Ur Amphetamine Screen Negative
- Ur Benzozeprine Screen Negative
- Ur Barbiturate Screen Negative
- Ur Opiate Screen Negative
- Ur Methadone Screen Negative
- Ur Buprenorphine Screen Negative

Treatment Guideline For The Newborn

- Non-pharmacologic
- Shown to be effective
- Should be used at every stage of therapy

Protocols-Varies by institution

- Weight Based
- Symptom Based
- Staff understanding
- Consistency
- Simple
- Evidence Based


Maternal urine toxicology

UGS Results
- Ur Amphetamine Screen Negative
- Ur Barbiturate Screen Negative
- Ur Benzozeprine Screen Negative
- Ur Cannabinoid Screen Negative
- Ur Cocaine Screen Negative
- Ur Opiate Screen Negative
- Ur Methadone Screen Negative
- Ur Buprenorphine Screen Negative

Maternal Chart review

- Reveals sporadic PNC
- ISTOP prescription review
- Results Oxycodeone Rx - 4 months ago none the later part of pregnancy.

Maternal Interview

- States “I was taking more than prescribed and unable to get more”
- A “friend told her withdrawing would be bad so she started taking “SUBS”
- No Buprenorphine Rx
- Disclosed History of Hepatitis C

Exhibit Reports

- Consistency is key!
Current Standard of Care
- Admitted to the Newborn Nursery (if clinically stable)
- Evaluation of onset and symptoms Q3-4 hours, NAS Score, VSS
- BID weights
- Feeding - 24 cal/oz formula or fortified EBM
- Comfort care plan
  - Holding, vertical rocking, decreased stimulation, swaddling, sounds
- Skin care Dura-derm, protective moisture barriers
- Sucrose - agitation frantic rooting pc (max 1mL Q8h)
- Urine and meconium toxicology's
- Consults
  - Social work required, PT, Speech Therapy
- Involvement of mother / family in the care

NON-PHARMACOLOGIC MANAGEMENT
- Decrease Environmental Stimulation
  - Quiet environment
  - Music
- Dim lighting
- Massage and physical therapy
- Speech therapy for feeding
- Skin to skin
- Breast Feeding Benefits
- Coordinated Handling
- Occupational therapy
- Pacifier
- Movement – figure 8, use of mama-roo or swing
- Sucrose
- Swaddling
- Cuddlers

Parenting
- Bonding and Attachment - Rooming in
  - Positive reinforcement
    - Baby really responds to you...
    - It’s really important for your baby to hear your voice, touch and smells.
    - Great job...
  - Infant care participation
    - Sleep pattern
    - Comfort care
    - “There will be times when your baby will be fussy.”
    - Teach empowerment
    - Infants cues, eye to eye contact

NAS Education
- Their infant needs them!

Daily Assessments
- How is the baby eating?
- How is the baby sleeping?
- Is the baby consolable?
- Is the baby gaining weigh? (acceptable wt loss)
- Team rounding = nursing, medicine, PT, speech therapist, nutritionist
- Require parent input on the ability to provide comfort care and impressions

DOL 5-7 Myoclonic Jerking
- Involuntary rapid muscle contractions, jerking of arms or legs or twitching of muscle in face or extremities are observed

Pharmacotherapy
- What do healthy full-term infants score?
- New NAS scoring yields higher or lower numbers
- Institutional scoring consistency
- Allow for varied scores in a 24 hour period
- ~ 40% of infants who have NAS can be treated successfully without medication
- Medication may prolong hospitalization
- Babies are opiate resistant!
Medications and NAS

<table>
<thead>
<tr>
<th>Medication</th>
<th>Action</th>
<th>Half-Life</th>
<th>Titration</th>
<th>Commercially Prepared</th>
<th>Potential Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methadone</td>
<td>Longer duration of action</td>
<td>Variable half-life can be difficult to titrate</td>
<td>Contains alcohol 8%</td>
<td>Commercially prepared and does not require dilution</td>
<td>Potential S/E Prolongation of QT interval</td>
</tr>
<tr>
<td>Morphine</td>
<td>Short half life</td>
<td>Frequent administration</td>
<td>Contains alcohol</td>
<td>Monitored for signs of respiratory depression &amp; sedation</td>
<td>Decreases GI motility = decreasing stools and feeding</td>
</tr>
</tbody>
</table>
| Opiate Medications For Opiate Exposures

<table>
<thead>
<tr>
<th>Medication</th>
<th>Medication</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methadone</td>
<td>0.1 mg/kg/day</td>
<td></td>
</tr>
<tr>
<td>Morphine</td>
<td>0.8 mg/kg/day</td>
<td></td>
</tr>
<tr>
<td>Clonidine</td>
<td>0.1 mg/kg/day</td>
<td></td>
</tr>
<tr>
<td>Phenytoin</td>
<td>0.1 mg/kg/day</td>
<td></td>
</tr>
<tr>
<td>Phenobarbital</td>
<td>0.1 mg/kg/day</td>
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</tr>
</tbody>
</table>

NEW Buprenorphine

- Limited data (3 RCT) small population controlled. LOT (28-30 days)
- Preparation 30% alcohol
- Sublingual administration
- Respiratory depression
- Adjuvant medications may be required

Choice of Medication: Buprenorphine 0.1 mg/kg

- Adjusted therapy: Clonidine
- Adjuvant therapy: monitored for signs of respiratory depression

Wean: If NAS daily average < 8, wean per drug specific protocol.

Dr. Ward Rice and NAS Task Force
Kentucky and Ohio Perinatal Improvement groups on NAS

Phenobarbital

- Drug of choice for non-opiate (changing views)
- Adjunct therapy use for treatment failure
- Poly substance use
- Solution alcohol 15%
- Does not prevent seizures at the dosage administered for withdrawal
- Long Half-life (114 hrs) & levels can be monitored
- Drug–drug interactions
- Sedation
- No impact opioid specific withdrawal symptoms like diarrhea and poor feeding

Infant Monitoring

- Monitor the infant closely for signs of over-sedation, decreased arousal or respiratory depression.
- CardioResp Monitor is recommended
- Clonidine-hypotension & bradycardia

Weaning

- Once NAS has been controlled on dose:
- Maintain control for 24 hours
- Initiate by decreasing the total daily dose by 10-20% every 24-48 hours
- DC morphine and continue NAS assessment for 24-48 hours
- Adjunctive therapy controls for severity of NAS but may increase LOS

Remember

Opiate reverse: Administer Naloxone (Narcan) 0.1mg/kg/dose IM, or IV. If there is no response at this dose, a subsequent dose can be given in 3 to 5
Goal of Therapy for NAS

Is NOT to eliminate every symptom, it is to PROMOTE COMFORT!
- Alleviate the symptoms and complications
- Attain sufficient sleep and nutrition
- Establish pattern of weight gain
- Establish family integrated care
- Prepare for a safe discharge

Breastfeeding?

YES!
Evaluate risk vs. benefit
Ask:
- Prescribed for you or not
- Treatment, Program, Counseling?
  - Abstinence from drug use for 90 days prior to delivery
  - Demonstrated sobriety in an outpatient setting
  - Negative for other substance use at delivery
- Methadone and Buprenorphine?
  - Dose does not matter!
  - Minimal transfer to breast milk
  - Breastfeeding or expressed milk reported association with shorter stay and symptoms

Nutritional Management

- Breast milk if in recovery
- 24 cal/oz low lactose formula/fortified
- Preterm formula for ≤36 weeks
- 80 cc/kg/day and increase 10 cc/kg/day Infants
- May require 150 to 250 calories/kg/day
- Weigh daily, if significant weight loss then BID wts
- Do not hold off a feeding - Feed on early hunger cues
- Some may require feedings Q 2H.
- GOAL weight gain 30 grams a day

Poor Feeding Defined

- Excessive sucking prior to feeds, yet sucks infrequently nipping
- Reduced feeding volume formula/breast milk
- Uncoordinated sucking reflex
- Continuously gulps while eating
- Stops frequently to breathe
- Inability to close mouth around bottle/breast
- Frantic rooting
- Feeding duration over 30 min

Concerns

No breast feeding for illicit drugs
- Cocaine
- Marijuana
- Amphetamine
- Phencyclidine
- Heroin......
HIV — no
Hepatitis C positive – not a contraindicated.
Counsel, risk and benefits.

Speech and Feeding Therapy

- Assess suck/swallow breathe coordination
- Hyper reflexes and rooting responses
- Hyperphagic
- Hypertonic
- Required increased calories and volume
- Cues and paced feeding

Skin assessments

- Skin assessments often
- Abrasion
- Scratches
- Rubbing & Friction
- Using barriers
- Move tagging devices
- Move bands to see what’s under

- Adhesive hydrocolloid knees, chin
- No sting barrier applied to red areas
- Calmoseptine paste-frosting thickness
- Ointment based
- Diapers should have a smooth lining
- Entero-stomal therapy consult
- Mineral oil peri-wash

Watch for increased stooling and consistency changes. Water rings. More than 10 a day.
Always Consider Other Causes

- GERD
- Colic dependent on age
- Formula “water rings”
- Antibiotics “my gut hurts”
- Calcium-Hypocalcemia
- Glucose – tremors all get a sugar check
- Fever- CBC infection
- Metabolic ?? Neuro?? PVL
- Age of newborn- wake sleep cycles based on age

References


Kratom, an Addict’s Alternative

- Mitragyna speciosa, a naturally growing botanical found in Thailand, Malaysia, Indonesia and Papua New Guinea
- Used as a tea in these countries for pain.
- No way to test a person.
- Now in the USA classified as a herbal supplement not nutritional.
- Dose dependent sedative effects, also acts like a stimulant. It’s believed to work on the brain similarly to heroin.
- Still legal in some states. The FDA did ban imports of the herb in 2014 over concerns that it was unsafe and possibly toxic.