Neonatal Abstinence & Rooming-In
Donna Jensen, RNC-NIC, CNS, PHN, MSN
Bakersfield Memorial Hospital, NICU
No disclosures

Sherrie Richardson, MSN, RNC-OB, c-EFM
Bakersfield Memorial Hospital, L&D/Postpartum
No disclosures
Between 2000 and 2009, opioid use during pregnancy tripled in the U.S.

Do you have any friends/family members that have sought opioids or treatment for addiction?

Do your patients request opioids during pregnancy?

Awareness is increasing:

- The National Institute on Drug Abuse claims more than 115 Americans die per day after overdosing on opioids (https://www.drugabuse.gov)

- How many late celebrities can you think of that have been reported as dying from opioid/combination of opioids and other drugs?
Drug-related celebrity deaths: A cross-sectional study

Johannes M. Just, Markus Bleckwenn, Rieke Schnakenberg, Philipp Skatulla, and Klaus Weckbecker

Abstract

Background

Celebrities are at risk for premature mortality as well as drug-related death. Despite being a vulnerable patient group, celebrities influence people’s health behaviours through biological, psychologic processes. Therefore, celebrity endorsement of the topic could be one way to challenge the current shortage in awareness. Our aim was to better understand the factors surrounding drug-related celebrity death, investigating the incidence as well as substances used between 1970 and 2015 using a cross-sectional design.

Method

We searched public databases for drug-related celebrity deaths between 1970 and 2015. They were categorized for sex, profession, age at death, year of death and substances involved. The main finding was that deaths involving prescription opioids and heroin were associated with a significantly lower mean age at death compared to deaths where these substances were not involved.
IN 2016, TWO OUT OF EVERY THREE DEATHS FROM DRUG OVERDOSE DEPENDED ON SOME TYPE OF OPIOID.


80% OF HERON USE WERE PAINKILLER USERS IN 1999.


OVER HALF OF YOUNG ADULTS WHO MISUSED PRESCRIPTION PAINKILLERS GOT THEM FROM A FAMILY MEMBER.

As a Result of the Opioid crisis:

* NAS rates **doubled** between 2009 and 2012
* NICU admissions **increased**
* LOS **increased**
* Cost associated with NAS **increased**
* Pharmacological treatment **increased**
* Separation of mother/baby **increased**
Rates of Neonatal Abstinence Syndrome Over Time

Year


Rate of NAS per 1,000 Hospital Births

1.2 1.4 1.8 3.4 5.8 6.0*

*2013 Data in 28 States from the Center for Disease Control publicly available data in Health Care and Cost Utilization Project (DCUP) in 28 states

Increasing Incidence of the Neonatal Abstinence Syndrome in U.S. Neonatal ICUs

Veerul N. Tolia, M.D., Stephen W. Patrick, M.D., M.P.H.,
Monica M. Bennett, Ph.D., Karna Murthy, M.D., John Sousa, B.S.,
P. Brian Smith, M.D., M.P.H., M.H.S., Reese H. Clark, M.D.,
and Alan R. Spitzer, M.D.

ABSTRACT

BACKGROUND
The incidence of the neonatal abstinence syndrome, a drug-withdrawal syndrome that most commonly occurs after in utero exposure to opioids, is known to have
Substantial number of neonates admitted for treatment of Neonatal Abstinence Syndrome (NAS).

- Neonates with symptoms suggesting NAS or a history of risk were admitted to the NICU for intervention.
- Treatment based upon history, physical assessment, and clinical symptomatology
  - Modified Finnegan Scoring Tool.
- Large number of admissions due to maternal methadone use.
- Number of NAS admissions facilitated Process Improvement initiative late 2015.
In The NICU

* First line of care: Non-Pharmacological Intervention
  * Decrease stimulation by decreasing noise, dimmed lighting, and placing away from busy areas (doorways, nurses station, etc.).
  * Offering non-nutritive sucking, small frequent feedings / breastfeeding (if applicable)
  * Encourage parent presence to facilitate bonding, holding, and skin to skin
  * Swaddling

* Pharmacological interventions initiated based upon algorithm: Morphine sulfate and clonidine (as needed)
NAS Admissions to NICU

*Beginning September 2015

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<tr>
<th>Year</th>
<th>Cases</th>
<th>No Meds</th>
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<tbody>
<tr>
<td>2015*</td>
<td>6</td>
<td>1</td>
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<td>2016</td>
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<td>4</td>
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<td>2017</td>
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<td>2018</td>
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Cases vs No Meds
Days in NICU / Average Length of Stay (LOS)

*Beginning September 2015

Days

Average LOS

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<tr>
<th>Year</th>
<th>Days</th>
<th>Average LOS</th>
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<td>2015*</td>
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<td>2016</td>
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<td>2017</td>
<td>188</td>
<td>19</td>
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<td>2018</td>
<td>39</td>
<td>13</td>
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*Beginning September 2015
Morphine Administered/Average Dosing

*Beginning September 2015

- **2015**: 875
- **2016**: 1435
- **2017**: 576
- **2018**: 149

**Legend:**
- Blue: Medication Doses
- Light Blue: Average Med Dosing
Risks and concerns surfaced:

- Nursing staff in the postpartum unit requested more education
- NICU voiced concerns regarding educational needs for postpartum nurses
  - Education was developed/disseminated in 2014, including risks and assessments (encouraged to call Neonatal Rapid Response (NRRT) if symptomatic baby)
- Increase in neonatal rapid responses
  - Issue: NAS screening is a “snapshot” for that specific time
  - Unit-based councils from both the NICU and the Postpartum unit met to discuss a plan
A Plan Begins to Form:

Collaboration:

* Leaders attended the Shared Governance meeting to hear concerns, provide guidance, and began to develop a plan
* Literature review completed and proposals sent to leaders and the chief neonatologist to provide input
* Proposals were then taken back to the Shared Governance, presented and voted on by the council
* A policy was created to compliment the new screening tool and was vetted
* Education and competency completed in March, and new screening for NAS began in April
Consistent evidence newborns who roomed-in with their mothers are less likely to require pharmacological treatment.

A major benefit of rooming is breastfeeding and bonding.

NAS babies who were breastfed had shorter hospital stays by a mean of 10 days.

Rooming in reduces the use of pharmacological therapy and lowers inpatient costs by $15,000 on average.

According to AAP, first-line therapy for babies with NAS is non-pharmacologic supportive care.
Validation of the Finnegan Neonatal Abstinence Syndrome Tool–Short Form

Dorothy Magazi, PhD, RN, CNE, Caroleene J. Cicca, DNP, APRN, NNP-BC, RN, CNL; Chun-Yi Lin, PhD, RN

OBJECTIVE: The purpose of this study was to reduce the number of items in the Modified Finnegan Neonatal Abstinence Syndrome Tool (FINAST) to the minimum possible while retaining or improving its reliability in a smaller version.

METHOD: Principal axis factor analysis was used to identify factors or dimensions, to establish the number of factors, with the same test and test-retest reliability of the Finnegan instrument, as well as to examine the content of the factors. The factors were then used to develop a shortened version of the FINAST.

RESULTS: The FINAST was shortened from 19 to 9 items with a mean of 5.9 (SD = 3.9). The shortened tool was found to be reliable, with a test-retest reliability of 0.75 (p < 0.05). The validity of the shortened tool was confirmed with a Pearson correlation, with the shortened tool and the original FINAST tool, with a Pearson correlation of 0.93 (p < 0.05).

NURSOC: Dignity Health

NEONATAL ABSENCE SYNDROME SCORING SYSTEM SHORT FORM

Dignity Health, Bakersfield Memorial Hospital

Copyright © 2012 by The National Association of Pediatric Nurse Associates & Affiliates (NAPNA)
## NAS Screening:

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<tr>
<td><strong>Signs and Symptoms</strong></td>
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<tr>
<td>Excessive high-pitched cry</td>
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<tr>
<td>Continuous and high-pitched cry</td>
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<tr>
<td>Sleeps &lt; 1 hour after feeding</td>
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<td>Sleeps &lt; 2 hours after feeding</td>
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<td>Sleeps &lt; 3 hours after feeding</td>
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<tr>
<td>Increased muscle tone</td>
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<td><strong>Mild / Early Symptoms</strong></td>
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<td>Mild tremors when undisturbed</td>
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<td>Moderate-severe tremors when undisturbed</td>
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<tr>
<td>Respiratory rate &gt; 60/min</td>
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<td>Respiratory rate &gt; 60/min with retractions</td>
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<td>Sweating</td>
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<td>Excessive Sucking</td>
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</table>

**Total Score 0 - 16**

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<th><strong>Total Score</strong></th>
<th><strong>Time</strong></th>
<th><strong>Comment Key Code</strong></th>
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**NEONATAL ABSTINENCE SCORING SYSTEM SHORT FORM**

*Dignity Health*

Bakersfield Memorial Hospital

*NURDOC*
Modified Finnegan (in comparison)

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<th>SIGNS AND SYMPTOMS</th>
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<th>12</th>
<th>PM</th>
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<td>Continuous High Pitched Cry</td>
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<td>Respiration Rate &gt; 60/min with Retractions</td>
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<td>Gastrointestinal Disturbances</td>
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<td>Poor Feeding</td>
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<td>Projectile Vomiting</td>
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<td>Watery Stools</td>
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**TOTAL SCORE**

**SCORER'S INITIALS**

**STATUS OF THERAPY**

Problems with the Finnegan

- Long lengths of stay and lots of meds
- Purpose of treatment is to get the scores below threshold
- Must disturb the infant and exacerbate signs of withdrawal
- Can be slow to respond
- Powerful and potentially harmful meds to give to treat a sneeze or a yawn

More from Yale-New Haven study later…..
Withdrawal Symptom Examples

Quick Review:

- Irritable/hard to console/high-pitched cry
- Tremors/seizures/hypertonia
- Sleep disturbances
- Excessive sucking/but poor feeding
- Loose stools
- Spitting up frequently
- Sneezing, frequent yawning
- Tachypnea
An audit tool was created to validate compliance

Prepared to coach staff

NAS will now be an annual competency in the postpartum unit-specific competencies and is now a part of onboarding for new hires

NAS scenarios also have been presented during unit simulations for obstetrical emergencies
Although early in data collection, cases of NICU admissions (for NAS) have decreased and rooming-in has been promoted:
A larger focus now on the “ESC” signs & symptoms (Eat, Sleep, Console) (Yale-New Haven)

Other issues have been found with newborns due to NAS screenings

“Spitty baby” now looked at for maternal history (poor feedings, etc.)

No lavage

More knowledge in general regarding NAS s/s

Nursing staff are better equipped to educate parents

(education is NOT a one-time process!)
Case Study:

* 36 week newborn delivered with Apgar's of 9/9
* Maternal drug screen positive for amphetamines (she admitted using methamphetamines the night before delivery)
  * Newborn also tested positive for amphetamines
* Per policy, NAS “short” Finnegan scoring started on postpartum unit
  * Every 3-4 hours screened (scored 0-1 the first 7 times)
  * At around 20 hours of age, scored 9 and non-pharmacological interventions were implemented
  * Continued to score high (9, 10, 10….) and was admitted to NICU (no pharmacological intervention for NAS needed)
* Discharged home after 5 days
Pathophysiology:

- Opiate drugs have low molecular weights, are water soluble and are easily transferable across the placenta to the fetus.

- The transmission of opioids across the placenta increases as gestation increases.

- The combination of illicit drug use and/or prescription drugs increases permeability; and they cross the blood-brain barrier of the fetus easily—which may cause worsening withdrawal in infants (AAP, 2014).
Pathophysiology:

- The sudden lack of opioid exposure (after the baby is born) results in the increased production of various neurotransmitters.

- The lack of opioids causes an increased production of norepinephrine, which is responsible for most of the signs of NAS.

- Decreased release of dopamine (causes hyperirritability/anxiety).

- Decreased serotonin expression (sleep disturbances).
Non-Pharmacological Therapies:

- Swaddling
- Decrease lighting/stimuli/noise levels
- Hold baby/position change
- Skin to skin care
- Non-nutritive sucking
Once the tool was voted in and the policy completed, education began (continued and is ongoing)

Staff had a practice scenario, and utilized the tool

* Only 2 RN’s out of approx. 100 needed remediation on the tool (they scored 7 instead of 9)

Policy was reviewed in staff meetings and in NAS presentation

Audits began just after the “go-live” date, on a weekly basis

So far, all cases have been within policy and there have been less NRRT’s
Parent Education:

* Provide parents with information regarding s/s and non-pharmacological interventions
  * S/S may persist for up to 6 months
  * Keep f/u appointments
  * Avoid over-stimulation & intervene early with crying

* Encourage parent participation in care

* Back to sleep position
Neonatal Abstinence Syndrome (NAS)

When I am going through withdrawal, some of my signs and symptoms might be:

- I might be very irritable and cry a lot.
- I might have difficulty falling asleep and staying asleep.
- I might yawn, sweat, sneeze and/or have a fever.
- I might be shaky or jittery when I am resting and/or when I am awake.
- I might have trouble breathing correctly.
- I might have trouble eating and I may throw up.
- I might need a special formula.
- I may have diarrhea, which can make my bottom red, raw, and hurt.
- I might be very stiff and have splotchy skin.
- I will probably need medicine around the clock to keep me comfortable for a while.

This is how you can help me...

- Let me rest and don’t wake me up if I’m sleeping.
- Please be very calm and quiet when you are with me.
- When you are upset, so am I.
- When you touch me, please use gentle pressure, do not rub or pet me and do not forcefully bounce or rock me. This might be painful or make me feel worse.
- Use soft, calm words instead of “shushing” me.
- Keep me swaddled in my blanket. This will help me to feel safe and keep me from rubbing or scratching my face.
- Sucking frantically on my pacifier does not mean I’m hungry.
- Please do not over feed me. It could make my tummy hurt. Just hold me close and comfort me.
- Play soft music or sing to me softly when you are with me.
- Keep a diaper cream on my bottom to keep me from getting a rash.
- Please be patient with me when I cry. I don’t feel good and I don’t know why.

Please know that my entire care team wants me to be as pain free and comfortable as possible. They want you to learn how to keep me healthy and comfortable too. I can’t wait to feel better and be healthy and comfortable enough to come home. It’s not easy, for either of us, but we’ll get through this together.

I love you,
Your sweet baby
In-House Education
for Mothers of Newborns
taking Opioid Medications

Should I breastfeed?
Yes. It will help with withdrawal symptoms. A small amount of the medication is transferred through breastmilk. The pediatrician needs to know a mom is breastfeeding, and assist all moms with a weaning plan which includes a follow up visit within 1-3 days.

What common symptoms should I watch for and tell my doctor and nurse?
Diarrhea, tremors, excessive crying, not feeding well, not sleeping more than an hour at a time

What can I do to help my baby?
1. Stay calm, dim the lights, quiet the environment
2. Offer the baby milk (a baby exposed to opioids will burn a lot of energy and may want to feed often.
   A feeding schedule will not work. Breastfeeding really helps comfort the baby and gives the baby small amounts of opioids to help with withdrawal)
3. Swaddle baby or place baby skin to skin on the chest, offer a pacifier
4. Place baby in a bouncer, swing, carry baby, or take baby on a car ride
5. Sing “Shhhhh” or play “50 minutes of womb sounds” on YouTube

How long will my baby stay in the hospital?
If your baby was exposed to opioids and no other drugs including nicotine/alcohol, the average hospital stay is 3-4 days but can exceed this depending on your opioid dosage and your baby’s symptoms.
If your baby is having problems feeding, sleeping, or crying for long periods when comforted, your baby may require medication to help him/her withdraw. If your baby needs a medication, he/she is moved to 1st floor at Bakersfield Memorial Hospital for the remainder of their admission. You will be involved in this process.

Remember:
✓ The key to treatment is keeping mom and baby together in the same room
✓ Feed your baby on his/her cue
✓ Hold and swaddle your baby
✓ Speak up if you need help – WE ARE HERE FOR YOU and YOUR BABY!
✓ Keep all of your baby’s doctor appointments

Dignity Health
Bakersfield Memorial Hospital
NAS Acuity:

* Acuity levels did not change on the Postpartum unit
  * Staff report while the screening takes very little time; educating parents takes more time
* Newborns that are **symptomatic of distress should have an NRRT** called (per our NRRT policy)
* Most babies that have NAS are only required to have NON-pharmacological therapy (including NICU admissions)
Do:

* Remind parents that THEY are the treatment for their baby (non-pharmacological/supportive care)
* Partner with the Mom
* Use a cuddler program (volunteers) as needed for the cases where parents/family not involved
* Educate parents/redirect them as often as needed
* Promote breastfeeding when possible/indicated
* Collaborate with your teams!
Yale-New Haven (ESC):

Provide support and cheer on the parents!

https://www.youtube.com/watch?v=Ak-kfFwlyVM
Eat, Sleep, Console (ESC) Study

- Analyzed 50 consecutive NAS babies admitted to our general inpatient unit from March 2014 to August 2015
- Assessed every 2-6 hours using the FNASS, but did not guide management
- Management decisions based on ESC

Results

Proportion of Infants that Received Morphine

- Received Morphine (ESC): 12%
- Would Have Received Morphine (Finnegan): 62%

p < .001
<table>
<thead>
<tr>
<th>Old Protocol</th>
<th>New Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal: suppress withdrawal signs</td>
<td>Goal: have infant function as a normal neonate</td>
</tr>
<tr>
<td>NICU: Mom visits</td>
<td>Mother and child together</td>
</tr>
<tr>
<td>Finnegan Scores: treat the number</td>
<td>Eat/Sleep/Console: treat the infant</td>
</tr>
<tr>
<td>“supportive care”</td>
<td>SUPPORTIVE CARE</td>
</tr>
<tr>
<td>“feed on demand”</td>
<td>No feeding schedule</td>
</tr>
<tr>
<td>Morphine</td>
<td>Meds on page 3</td>
</tr>
<tr>
<td>Surprise!</td>
<td>Prenatal preparation</td>
</tr>
<tr>
<td>Staff takes care of infant</td>
<td>Staff coaches parents</td>
</tr>
</tbody>
</table>
Mean LOS decreased from 22 days down to just over 5 days
Percent Treated with Morphine

<table>
<thead>
<tr>
<th>Date</th>
<th>Percent Treated</th>
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<tbody>
<tr>
<td>2008</td>
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</tr>
<tr>
<td>2009</td>
<td>90.0%</td>
</tr>
<tr>
<td>2010</td>
<td>80.0%</td>
</tr>
<tr>
<td>2011</td>
<td>70.0%</td>
</tr>
<tr>
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<tr>
<td>2015</td>
<td>30.0%</td>
</tr>
<tr>
<td>2016</td>
<td>20.0%</td>
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</tbody>
</table>
Boston Medical Center

- Had been using FNASS approach
- Finnegam prioritization from June-November 2016
- Developed ESC approach as a scoring tool
- Piloting since December 2016

Boston Medical Center – Results

- Use of morphine decreased from 82% to 40%
- Length of stay decreased from 18 days to 10 days
- No readmissions
ESC Model

* Yale-New Haven
  * Boston Medical Group
  * Dartmouth

Conclusions

- Hugs before drugs
  - Empower families
  - Rooming-in
  - Non-Pharmacologic care as 1st line treatment
  - ESC approach
  - PRN meds
- Ask why
Advancing the Care of Pregnant and Parenting Women with Opioid Use Disorder and their Infants

Medication-Assisted Treatment for Opioid Addiction: Facts for Families and Friends
https://store.samhsa.gov/shin/content/SMA09-4443/SMA09-4443.pdf

The Facts about Buprenorphine for Treatment of Opioid Addiction
https://store.samhsa.gov/shin/content/SMA09-4442/SMA09-4442.pdf

Clinical Use of Extended-Release Injectable Naltrexone in the Treatment of Opioid Use Disorder, A Brief Guide
https://store.samhsa.gov/shin/content/SMA14-4892R/SMA14-4892R.pdf

Medicaid Coverage and Financing of Medications to Treat Alcohol and Opioid Use Disorders
http://store.samhsa.gov/shin/content/SMA14-4854/SMA14-4854.pdf

Federal Guidelines for Opioid Treatment Programs
http://store.samhsa.gov/shin/content/PEP15-FEDGUIDEOTP/PEP15-FEDGUIDEOTP.pdf

Quick Guide For Physicians Based on TIP 40 Clinical Guidelines for the Use of Buprenorphine in the Treatment of Opioid Addiction Buprenorphine
https://store.samhsa.gov/shin/content/SMA05-4003/SMA05-4003.pdf

Treatment Improvement Protocol (TIP) 43: Medication-Assisted Treatment for Opioid Addiction in Opioid Treatment Programs
https://store.samhsa.gov/shin/content/SMA12-4214/SMA12-4214.pdf

Buprenorphine Physician and Treatment Program Locator (SAMHSA)
https://www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator
CMCS Informational Bulletin

Date: June 11, 2018

From: Timothy B. Hill, Acting Director

Subject: Neonatal Abstinence Syndrome: A Critical Role for Medicaid in the Care of Infants

This Informational Bulletin provides states with considerations when designing approaches to treatment of infants with Neonatal Abstinence Syndrome (NAS), including Medicaid coverage options and limitations. It contains a summary of some current studies on such treatment, which suggest possible strategies states may want to consider in building effective coverage programs.

Mothers as Part of Treatment

Several studies currently highlight the importance of the involvement of mothers and their interaction with the newborns during treatment whenever possible. The importance of mothers residing (or “rooming in”) with the infant (or spending as much time as possible in direct contact with the infant) during the NAS treatment period and breastfeeding when possible is becoming more recognized as the standard of care. Skin-to-skin contact and breastfeeding have been shown to be of direct benefit to the infant in the treatment of the symptoms of infants with NAS.
“Treat the babies with love/treat the parents with respect” (Dr. Matthew Grossman, Yale-New Haven)
Resources:

* AAP
* Yale-New Haven webinar (https://www.youtube.com/watch?v=Ak-kFwlyVM)
* https://www.drugabuse.gov
Thank You!