

Opioid Use in Pregnancy and Neonatal Abstinence Syndrome


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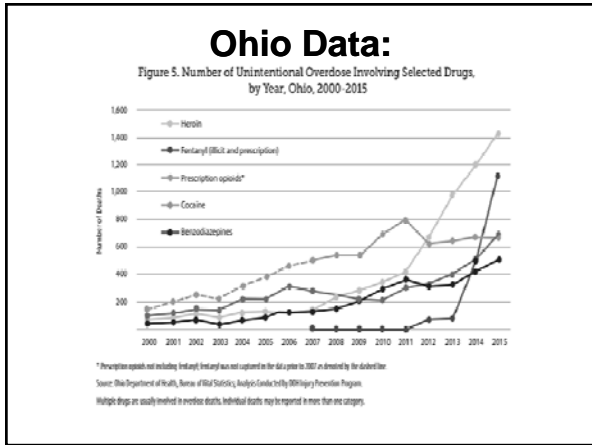
Objectives

- Understand the magnitude, medicine and scope of neonatal abstinence syndrome
- Obtain insights from Ohio's statewide Neonatal/Perinatal Collaborative work using QI methodology to improve NAS care
- Learn concrete, data driven public health measures and best practice approaches to the immense challenge of substance use in pregnancy


Opioid Epidemic; Pregnant Moms and Babies 2000-2009

- 2000-2009 4 fold increase in OPR prescriptions.
- US infants diagnosed with NAS increased x3
- By 2009, 1 infant per hour accounting for \$720 million






At delivery...



Abrupt adjustment to

- Extruterine life AND
- A drug-free environment



Withdrawal


What is Neonatal Abstinence Syndrome

- The clinical findings associated with opioid withdrawal has been termed the neonatal abstinence syndrome (NAS).
- Nearly all exposed infants will display some symptoms, but only a subset require treatment.
 - Opioid receptors concentrated in CNS and GI tract
 - NAS affects baby's ability to be alert, sleep, eat, communicate cues

CLINICAL FEATURES		
Neurological Excitability	Autonomic Instability	GI Dysfunction
<ul style="list-style-type: none"> • Hyperirritability • High-pitched inconsolable crying • Agitation/Restlessness → Exorations • Difficulty sleeping • Tremors • Exaggerated Moro reflex • Hypertonia • Excessive motor activity • Myoclonic jerks • Uncontrolled, constant sucking • Seizures (2-11%) 	<ul style="list-style-type: none"> • Apnea • Bradycardia • Tachypnea • Nasal flaring • Nasal stuffiness • Temperature instability • Sweating • Sneezing • Mottling • Yawning 	<ul style="list-style-type: none"> • Diarrhea → electrolyte disturbances, dehydration, perianal skin excoriation • Hyperphagia (may require up to 150 kcal/kg/d) • Regurgitation • Vomiting • Poor feeding • Poor weight gain/FTT


Clinical Timeline


SUBSTANCE	ONSET (hours)	DURATION (days)
Heroin	24-48	8-10
Methadone	48-72	Up to 30+
Buprenorphine	36-60	Up to 28
Prescription opioids	36-72	10-30
Polypharmacy	??	??
Fentanyl	??	??



- ### Discharge at 48 hrs???
- AAP (2014 and 2017)
 - WHO (2014)
 - Known fetal exposure: 4-7 days!
 - 1 in 5 has onset after 48 hrs

- ### Discharge at 48 hrs???
- Withdrawal at home...
 - Poor feeding
 - Vomiting and diarrhea
 - Extreme irritability
 - Sleep challenges
 - DEHYDRATION
 - SEIZURES
 - RISK FOR CHILD ABUSE

- ### Projects: OCHA & OPQC
- 
- Sept. 2012 – Sept. 2014
 - Six children's hospitals and their affiliates
 - (20 total hospitals)
 - 994 infants
 - Included only infants that required pharmacological treatment for NAS

- ### Projects: OCHA & OPQC
- 
- January 2014-June 2016
 - 54 sites:
 - 26 Level II NICU's
 - 26 Level II Special Care Nurseries
 - 2 Normal Newborn Nurseries
 - 6131 infants in the database
 - Includes infants that receive *both* non-pharmacological AND pharmacological treatment

Improve Consistency in Modified Finnegan Scoring

Key Driver:

Attain high reliability in NAS scoring by nursing staff

Intervention:

Fulltime RN staff at Level 2 and 3 hospitals to complete D'Apolito NAS scoring training video and achieve 90% reliability.

- All sites use same tool
- Train RN staff to 90% reliability in scoring using D'Apolito Training System
- OPQC has sent out DVD's to each site

Pharmacological Bundle

Key Driver:

Standardize NAS Treatment Protocol

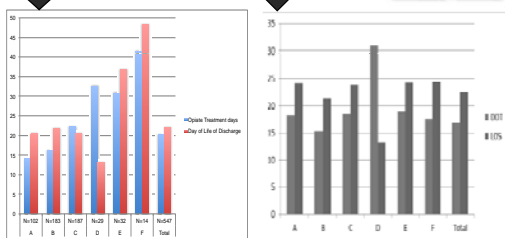
- Initiate Rx If NAS score > 8 twice.
- Stabilization/ Escalation Phase
- Begin wean when stable for 48hrs
- Discharge home after 48hrs (Morphine) to 72hrs (Methadone)



Impact of Ohio OCHA Weaning Protocol

2012-2014 with 199 centers.

N=3458 infants with NAS



Non-Pharmacological Bundle

Key Driver:

Optimize Non-Pharmacologic Rx Bundle

Intervention

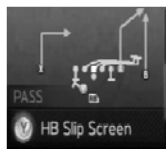
- Swaddling, low stimulation.
- Encourage kangaroo care
- Feed on demand-
 - MBM if appropriate
 - lactose free
 - 22 cal formula



METHODS OF SCREENING / TESTING

- Maternal Interview Screen
- Maternal Urine Drug Test
- Infant Urine Drug Test
- Meconium Toxicology Test
- Umbilical Cord Toxicology Test

Screen vs. Test



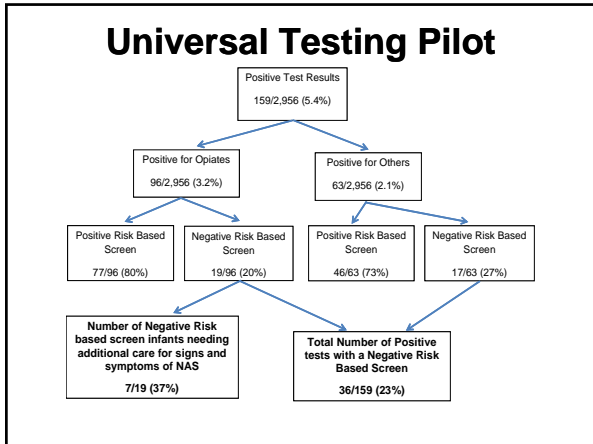
Risk Based Screen

- In 2012 Mercy Hospital Anderson cared for:
 - 1,868 neonates born to 1,874 women
 - 96% were Caucasian,
 - 52% were married, and
 - 51% had private insurance

Table 1. Maternal risk-based screen used at Mercy Anderson Hospital before universal testing.
 Document, receipt, or acknowledgment maternal history of drug use
 receipt prenatal care, initiated at starting care after 12 weeks gestation
 Placental abruption
 Admission from a justice center
 Positive for HIV
 Positive for hepatitis B surface antigen
 Positive for hepatitis C virus
 Maternal history of gonorrhea or syphilis

Universal Testing Pilot

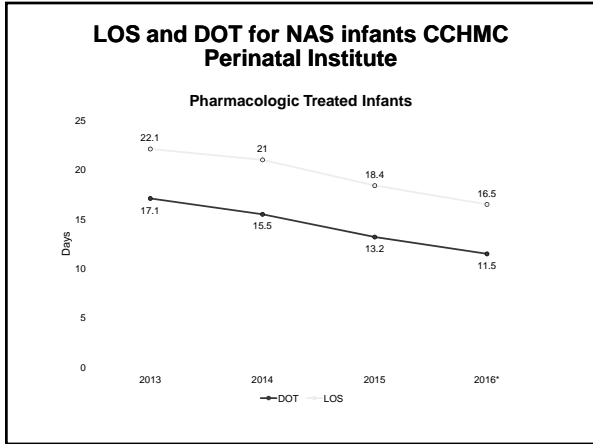
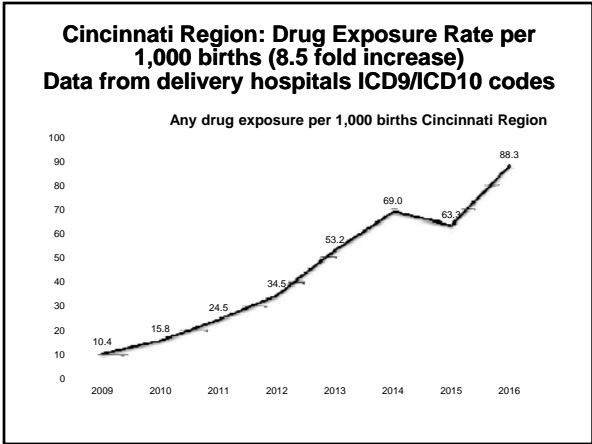
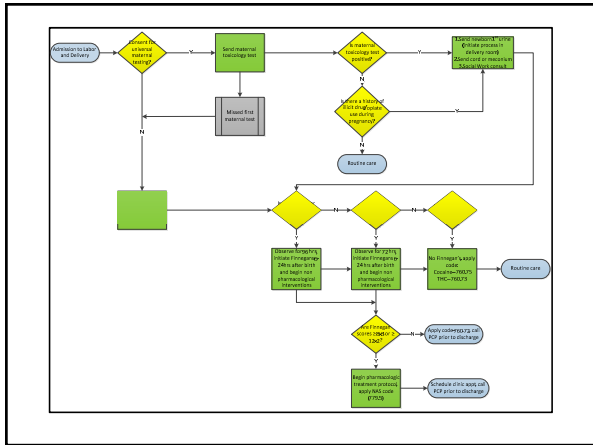
- We evaluated the efficacy of a universal testing protocol for all mothers in a community hospital setting that experienced a three-fold increase in neonatal abstinence syndrome (NAS)



Universal Testing, OH/KY

- 18 hospitals in our region now doing universal testing (2015)
- Being able to start nonpharmacological bundle earlier, may lead to a decrease in percentage of infants requiring medications for NAS.

Delivery Service Hospitals
 Atrium Medical Center
 The Christ Hospital
 Dearborn County Hospital
 Kettering Health Network
 Highland District Hospital
 Margaret Mary Hospital
 Mercy Health Partners
 St Elizabeth Hospital
 TriHealth
 UC Health



Breastfeeding and Substance Use

- AAP committee recommends all mothers in methadone/buprenorphine treatment be allowed to breast-feed regardless of dose
- Data suggests a protective effect on the rate of NAS (May be non-pharm bundle effect)
- HCV and HBV not contraindication for breast feeding
- HIV contraindications in developed countries

Criminal Justice Approaches to Substance Use in Pregnancy

- “Prosecution and punishment of pregnant women who use illicit substances, have no proven benefits for infant health.”
- Formally affirmed by:



Criminal Justice Approaches to Substance Use in Pregnancy

- American Academy of Pediatrics
- American Association of Family Practice
- American College of OB/GYN
- American Nurses Association
- American Medical Association
- American Psychiatric Association
- National Perinatal Association
- American Society of Addiction Medicine

Criminal Justice Approaches to Substance Use in Pregnancy

- March of Dimes
- American Public Health Organization

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- Primary Prevention
- Improved Identification and Access to Treatment
- Criminal Justice Approach



Primary Prevention

Preconception

1. Provider education re: abuse
2. Bolstering PDMP's
3. Proper disposal
4. Empower law enforcement around illegal prescribing



Primary Prevention

Post delivery

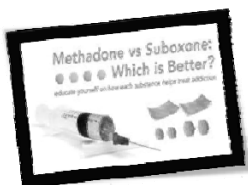
- Unintended pregnancy : 31-45% vs 85-90% in SUD women



- LARC!!!!
- Funding for EI, DHR

Identification / Treatment / Criminal Justice

- Medication assisted treatment



- Coordinated effort with transparency and communication

