Mother & Baby Substance Exposure Toolkit

Best Practice No. 6

A part of the California Medication Assisted Treatment Expansion Project

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Implement selective newborn biological toxicology testing

Best Practice No. 6

Nursery/NICU and Screening, Assessment and Level of Care Determination

Overview

Newborn toxicology testing is an important identification tool. However, it is limited by testing sensitivity and timing requirements.

Why we are recommending this best practice

- The incidence of substance use in pregnancy is difficult to quantify. Maternal screening using validated surveys, and when necessary, toxicology testing in pregnancy may still underrepresent the true incidence.

- If in utero substance exposure has been identified from either prenatal history (including inquiries into prescription and nonprescription drug use) or maternal toxicology testing, this information is vital for guiding assessment and treatment options and may lead to improved outcomes for mothers and newborns.

- If maternal toxicology testing or treatment history has been confirmed, testing of the newborn may not be clinically necessary; however, it is often requested by external agencies such as child protective services (CPS). Education of CPS about the validity of other information can avoid unnecessary and in appropriate use of screening resources.

- Newborn health care providers should be provided with information on the usefulness and limitation of the birth center's biological toxicology testing and the availability/appropriateness of confirmatory testing.

Strategies for Implementation

- When the information would influence healthcare treatment, Selective biological toxicology testing should be considered for newborns when diagnostic information about the mother is limited or not available, or when the clinical picture indicates risk for in utero exposure, including but not limited to:
    - Mother with limited or no prenatal care
    - Maternal symptoms of drug intoxication or withdrawal that are otherwise unexplained
    - Newborn signs and symptoms of potential substance exposure (i.e., withdrawal) that are otherwise unexplained

- Hospital policies and procedures should include protocols that would trigger newborn biological toxicology testing.

- Toxicology testing is limited by substance levels (concentrations) and timing. Therefore, samples should be collected and sent for analysis as soon as possible after delivery.

- Review available biological toxicology testing methods at each birth center. Traditionally, urine immunoassay has been used as the initial screen, and multiple commercial antibodies are validated.

- For certain substances, immunoassay-based urine toxicology testing is a reliable method with rapid turnaround time. For opioid exposure, routine opioid testing panels usually only detects morphine, codeine, and heroin metabolites. Synthetic opioids such as methadone, oxycodone, fentanyl, buprenorphine, etc. may require more specific testing.

- A newborn who has a biological toxicology test with unexpected positive results should have confirmatory testing (gas chromatography-mass spectrometry) and/or confirmation of drug presence by a more time specific test sample (i.e., meconium, umbilical cord).

- Providers should be aware of false-positive drug testing from common maternal medications including antihistamines, antidepressants, antibiotics, decongestants, analgesics, antipsychotics, and over-the-counter products (See table below).

- Due to assay limitations, a negative biological toxicology result does not represent an absence of in utero substance exposure, specifically if the newborn exhibits clinical signs consistent with neonatal abstinences syndrome (NAS) and all other diagnoses have been appropriately ruled out.

- A positive biological toxicology result, in and of itself, does not represent child abuse or neglect. Hospitals must ensure that the multidisciplinary team caring for mothers and newborns includes social workers trained in care and treatment resources for affected families. Care should be taken to ensure that policies which delineate criteria for toxicology testing do not directly or indirectly target low income women and women of color (refer to **Best Practice #3** for more information on this).

	Amphetamine/ Methamphetamine	Benzodiazepine	Barbiturate	Phencyclidine (PCP)	Methadone
Bupropion	X				
Dextromethorphan				X	
Diphenhydramine					X
Doxylamine					X
Fioricet/Fiorinal			X		
Labetalol	X				
Metformin	X				
Promethazine	X				
Quetiapine (≥ 125 mg)					X
Sertraline (150 mg or >)		X			
Trazadone	X				
Venlafaxine				X	

*Source: Kirsten Harter, PharmD (Zuckerberg San Francisco General Hospital). Reproduced with permission.

Commonly prescribed medications in obstetrics that may result in false positives

Resources

1. State of Vermont Guidelines for Screening for Substance Abuse During Pregnancy.

2. IDPH Decision Tree for Identifying Newborns at Risk for Prenatal Substance Exposure Decision Tree (see page 22).

References

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6. Yee LM, Wu D. False-positive amphetamine toxicology screen results in three pregnant women using labetalol. Obstet Gynecol. 2011; 117(2 Pt 2): 503-506.

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She has a rich history of involvement in healthcare administration for a variety of organizations, expertise in program and policy development, practice transformation, public health, maternal, and child health policy, community systems development, performance improvement, and managed care. Prior to joining HMA, Dr. DuPlessis served as the chief medical officer with St. John’s Well Child and Family Center. Other notable professional experiences include her work as senior advisor to the UCLA Center for Healthier Children, Families and Communities where she provided leadership, research, program development support, counsel and representation to local, state and national efforts, and community level systems transformation. She also trained and mentored students in various disciplines and educational levels.

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Dr. Jadene Wong is Clinical Assistant Professor of Pediatrics at Stanford University School of Medicine. She has practiced as a neonatal hospitalist at Lucile Packard Children's Hospital Stanford for more than 10 years, and practiced in primary care outpatient community settings for more than 20 years. She is a member of the task force for the joint CMQCC/CPQCC Mother & Baby Substance Exposure Initiative. She is also the Newborn Clinical Lead for this project and mentors Central California hospitals participating in the initiative.

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Dr. Castro is a Board-Certified Pediatric physician with a specialization in Neonatal-Perinatal Medicine. Dr. Castro is currently the Director of the LPCH-affiliated NICU in Monterey County, CA and a Clinical Professor of Pediatrics at Stanford University School of Medicine. He has completed a term as the President of the Southern Society of Pediatric Research and is a Fellow of the American Academy of Pediatrics (AAP). He served on the AAP Perinatal Section Executive Committee and completed a six-year term on the AAP NeoReviews Journal Editorial Board. More recently, he is a member of the CPQCC Advisory Board and in 2016, he was elected to the California Association of Neonatologists Board of Trustees. In 2019, Dr. Castro was selected to serve on the American Board of Pediatrics-Subboard Neonatal Perinatal Medicine.

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