

Drug Detection Panel, Umbilical Cord Tissue, Qualitative

Indications for Ordering

- Detect prenatal exposure to drugs in umbilical cord tissue for infants
 - Born to mothers with
 - High risk (eg, history of drug use, sex worker, sexually transmitted infection)
 - Little or no prenatal care
 - Unexplained placental abruption or premature labor
 - Born with
 - Unexplained neurological complications
 - Unexpected intrauterine growth retardation
 - Evidence of drug withdrawal symptoms (eg, neonatal abstinence syndrome [NAS])
- Order as an alternative to meconium screening or when meconium is not available

Test Description

- Qualitative liquid chromatography/tandem mass spectrometry/enzyme-linked immunosorbent assay

Tests to Consider

Primary test

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- Detect and document maternal drug use during approximately the last trimester of a full term birth
- Qualitative detection of drugs and drug metabolites
- Alternative to meconium screening
- Confirmation testing usually not required due to analytical specificity (mass spectrometry)

Disease Overview

Screening/detection

- Timely detection of in utero drug exposure is critical for effective management of withdrawal syndromes, and long-term needs (social and medical) for exposed neonates
 - Actual time window for detecting exposure is unknown and is drug dependent, but is thought to represent approximately the last trimester
- Detection of drugs depends on
 - Extent of maternal drug use
 - Drug stability
 - Deposition of drug analytes in umbilical cord tissue
 - Analytical method

- Umbilical cord tissue testing may be preferable to meconium due to
 - Ease of collection of a larger volume of specimen
 - Relatively fast turnaround time if specimen is sent to the laboratory on the day of birth
 - Reflex/confirmation testing typically not required

Test Interpretation

Sensitivity/specificity

- Clinical sensitivity – consistent with detection of most compounds and metabolites observed in meconium testing, but may not correlate with maternal urine results
- Clinical specificity – high
 - Mass spectrometric method reduces false positives and the need for confirmatory testing

Results

- Present – drug analytes detected in umbilical cord tissue
 - Consistent with exposure to relevant drug(s) prior to birth
 - Does not insinuate impairment and may not affect outcomes for the infant
 - Drugs administered during labor and delivery may be detected
- Not detected – drug analytes absent in umbilical cord tissue
 - Does not exclude the possibility that the mother used drugs during pregnancy

Limitations

- Detection of drugs in umbilical cord tissue is intended to reflect maternal drug use during pregnancy
 - The pattern and frequency of drug(s) used by the mother cannot be determined by this test
- A negative result does not exclude the possibility that a mother used drugs during pregnancy
- Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method
- Concentrations of drugs and metabolites in cord tissue are generally lower than those found in meconium
- Marijuana metabolites (eg, THC) are detected by immunoassay and are not confirmed
- Minimum reporting limits are established for each compound, but quantitation of detected drugs is not performed
- Interpretive questions should be directed to the laboratory