

Drug Detection Panel, Umbilical Cord Tissue, Qualitative

Testing for prenatal drug exposure is preferred to maternal self-reporting because drug use is generally underreported by pregnant women.¹ For instance, in a recent study, 2.6% of expectant mothers reported marijuana use to their health care providers; however, THC-COOH was detected in 22.4% using an umbilical cord assay.² Testing may be indicated for neonates born with unexplained neurological complications, growth restriction, or evidence of drug withdrawal symptoms (eg, neonatal abstinence syndrome [NAS]).¹ Testing may also be indicated if the mother has a history of high-risk behaviors (eg, drug use, sex work), had little or no prenatal care, regularly uses nicotine, or experienced unexplained placental abruption or premature labor.¹

Umbilical cord tissue testing may be preferable to meconium testing due to the ease of collecting a large volume of specimen, a relatively fast turnaround time if specimen is sent to the laboratory on the day of birth, and a long window of detection.¹

Disease Overview

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.^{1,3} The actual time window for detecting exposure is unknown and is drug dependent, but is thought to represent approximately the last trimester.¹

Detection of drugs depends on the following factors¹:

- Extent of maternal drug use
- Specific drug used
- Deposition of drug analytes in umbilical cord tissue
- Performance characteristics of analytical method

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 methodology reduces false positives and the need for confirmatory testing

Results

Result	Clinical Significance	Notes
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

Tests to Consider

[Drug Detection Panel, Umbilical Cord Tissue, Qualitative 2006621](#)

Method: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

- Use to detect and document maternal drug use during the last trimester of pregnancy
- Qualitative detection of drugs and drug metabolites
- Alternative to meconium screening
- Confirmation testing usually not required due to analytical specificity (mass spectrometry)

Related Tests

[Marijuana Metabolite, Umbilical Cord Tissue, Qualitative 3000256](#)

Method: Qualitative Liquid Chromatography-Tandem Mass Spectrometry

Marijuana/cannabis metabolite is detected by an independent LC-MS/MS method

[Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative 3000443](#)

Method: Qualitative Liquid Chromatography-Tandem Mass Spectrometry

- Alcohol/ethanol metabolite is detected by an independent LC-MS/MS method
- For more test information, see the [Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative](#) Test Fact Sheet



Limitations

- 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 the 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
- Minimum reporting limits are established for each compound, but quantitation of detected drugs is not performed
- Interpretive questions should be directed to the laboratory

References

1. Wabuye SL, Colby JM, McMillin GA. [Detection of Drug-Exposed Newborns](#). Ther Drug Monit. 2018;40(2):166-185. PubMed
2. Metz TD, Silver RM, McMillin GA, et al. [Prenatal marijuana use by self-report and umbilical cord sampling in a state with marijuana legalization](#). Obstet Gynecol. 2019;133(1):98-104. PubMed
3. Wu F, Jensen TL, McMillin GA. [Detection of in utero cannabis exposure in umbilical cord tissue by a sensitive liquid chromatography-tandem mass spectrometry method](#). Methods Mol Biol. 2019;1872:211-222. PubMed

Related Information

[Newborn Drug Testing - Meconium and Umbilical Cord Tissue](#)
[Newborn Drug Testing Algorithm](#)
[Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative](#)

ARUP Laboratories is a nonprofit enterprise of the University of Utah and its Department of Pathology. 500 Chipeta Way, Salt Lake City, UT 84108
(800) 522-2787 | (801) 583-2787 | aruplab.com | arupconsult.com
Content Review May 2020 | Last Update July 2020