Test Definition: PCPMC

PCP Confirmation, Meconium

Overview

Useful For

Detection of in utero to phencyclidine (PCP) exposure up to 5 months before birth

Method Name

LiquidChromatography-TandemMassSpectrometry(LC-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Meconium

Ordering Guidance

For chain-of-custody testing, order PCPMX / Phencyclidine (PCP) Confirmation, Chain of Custody, Meconium.

Specimen Required

Supplies: Stool container. Small (Random), 4 oz (T288)

Container/Tube: Stool container (T288)

Specimen Volume: 1 g (approximately 1 teaspoon)

Collection Instructions: Collect entire random meconium specimen.

Forms

If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume

0.3 g (approximately 1/4 teaspoon)

Reject Due To

Other	Grossly bloody reject, Pink OK Stool Diapers

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Meconium	Frozen (preferred)	28 days	
	Ambient	28 days	
	Refrigerated	28 days	

Clinical and Interpretive

Clinical Information

Phencyclidine (PCP) was originally developed as an anesthetic in the 1950s but later was abandoned because of a high frequency of postoperative delirium with hallucinations. It was classed as a dissociative anesthetic because, in the anesthetized state, the patient remains conscious with staring gaze, flat facies, and rigid muscles.(1) PCP binds with high affinity to sites located in the cortex and limbic structures, resulting in blocking of N-methyl-D-aspartate (NMDA)-type glutamate receptors.(1) PCP became a drug of abuse in the 1970s because of its hallucinogenic effects.(1,2)

PCP is approximately 65% protein bound and has a volume of distribution (Vd) of 5.3 to 7.5 L/kg. The drug is metabolized by the liver via oxidative hydroxylation and has a dose-dependent half-life ranging from 7 to 46 hours.(2)

Meconium is the first fecal material passed by the neonate. Meconium forms in the first trimester of pregnancy but is seldom excreted before the 34th week. It is composed of approximately 70% water, bile acids, cholesterol, squamous cells, protein and drug metabolites, and no bacteria are normally present. Prebirth excretion of meconium is a sign of fetal distress.

Because drugs and metabolites can accumulate in meconium, assessment of meconium for the presence of illicit drugs can be an indicator of maternal drug use during pregnancy. Illicit drug use during pregnancy can have a profound effect on fetal development.

The disposition of drug in meconium is not well understood. The proposed mechanism is that the fetus excretes drug into bile and amniotic fluid. Drug accumulates in meconium either by direct deposit from bile or through swallowing of amniotic fluid.(3) The first evidence of meconium in the fetal intestine appears at approximately the tenth to twelfth week of gestation, and slowly moves into the colon by the sixteenth week of gestation.(4) Therefore, the presence of drugs in meconium has been proposed to be indicative of in utero drug exposure during the final 4 to 5 months of pregnancy, a longer historical measure than is possible by urinalysis.(3)

Reference Values

Negative

Positives are reported with a quantitative LC-MS/MS result.

Cutoff concentrations

PCP by LC-MS/MS: 10 ng/g

Interpretation

The presence of phencyclidine (PCP) in meconium is indicative of in utero drug exposure up to 5 months before birth.

Cautions

No significant cautionary statements.

Clinical Reference

1. O'Brien CP: Drug addiction and drug abuse. In Goodman and Gilman's the Pharmacological Basis of Therapeutics. 11th edition. Edited by LL Brunton, JS Lazo, KL Parker. McGraw-Hill Book Company, Inc, 2006

2. Baselt RC: Phencyclidine. In Disposition of Toxic Drugs and Chemicals in Man. Eighth edition. Edited by RC

Baselt. Foster City, CA, Biomedical Publications, 2008, pp 1735

3. Ostrea EM Jr, Brady MJ, Parks PM, et al: Drug screening of meconium in infants of drug-dependent mothers: an alternative to urine testing. J Pediatr 1989 Sep;115(3):474-477

4. Ahanya SN, Lakshmanan J, Morgan BL, Ross MG: Meconium passage in utero mechanisms, consequences, and management. Obstet Gynecol Surv 2005 Jan;60(1):45-56; quiz 73-74

Performance

Method Description

Meconium is mixed with internal standard and then digested with acetic acid. The sample is then extracted with organic solvent and further processed by solid-phase extraction. The extract is analyzed by high-performance liquid chromatography with detection by tandem mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

2 to 3 days

Specimen Retention Time

2 weeks

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

83992

G0480 (if appropriate)

LOINC® Information

Test Definition: PCPMC

PCP Confirmation, Meconium

Test ID	Test Order Name	Order LOINC Value
PCPMC	PCP Confirmation, Meconium	92816-8

Result ID	Test Result Name	Result LOINC Value
89069	PCP Confirmation, Meconium	92816-8
29905	Interpretation	69050-3