Overview

Useful For
Predicting fetal lung maturity and assessing the risk of developing neonatal respiratory distress syndrome, when performed from 32 to 39 weeks gestation

Method Name
Impedance

NY State Available
Yes

Specimen

Specimen Type
AmnioticFld

Specimen Required
Container/Tube: Amniotic fluid container or plastic vial
Specimen Volume: 2 mL
Collection Instructions:
1. Do not centrifuge
2. Amniotic specimens must be free of blood and meconium contamination.

Reject Due To

- Gross hemolysis
- Centrifuged specimen
- Presence of blood or meconium

Specimen Minimum Volume
0.75 mL

Specimen Stability Information

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<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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Clinical & Interpretive

Clinical Information
Fetal lung maturity testing is used to determine the risk for developing respiratory distress syndrome (RDS) in infants
born prematurely (32-39 weeks). The risk for developing RDS is inversely related to gestational age and is the most common cause of respiratory failure in neonates. RDS is associated with preterm birth due to insufficient production of pulmonary surfactant. Pulmonary surfactant is synthesized by type II pneumocytes. Surfactant consists of 90% phospholipids (primarily phosphatidylcholine and phosphatidylglycerol) and 10% proteins (surfactant proteins [SP]-A, SP-B, SP-C). Surfactant is packaged into lamellar bodies and is excreted into the alveolar space where it unravels and forms a monolayer on alveolar surfaces. Lamellar bodies can also pass into the amniotic cavity and, hence, are found in amniotic fluid. The surfactant functions to reduce the surface tension in the alveoli, preventing atelectasis. When surfactant is deficient, the small alveoli collapse and the large alveoli become overinflated and stiff, which has been associated with increased risk of developing respiratory distress. The status of fetal lung maturity is reflected in the concentration of surfactant in the form of phospholipids and lamellar bodies present in amniotic fluid. Lamellar bodies are similar in size to platelets and can be quantified on a hematology analyzer utilizing the platelet channel and used to estimate fetal lung maturity.

**Reference Values**

| Immature | <15,000/mcL |
| Indeterminate | 15,000-50,000/mcL |
| Mature | >50,000/mcL |


**Interpretation**

Amniotic fluid lamellar body counts (LBC) above 50,000/mcL are predictive of fetal lung maturity.

Amniotic fluid LBC below 15,000/mcL are suggestive of fetal lung immaturity and increased risk of neonatal respiratory distress syndrome (RDS).

The main value of fetal lung maturity testing is predicting the absence of RDS. An immature test result for fetal lung maturity is less reliable in predicting the presence of RDS.(1)

**Cautions**

Surfactant secretion into the amniotic fluid is minimal prior to 32 weeks gestation.

Fetal lung maturity testing is not indicated beyond week 39.

Specimens must not be frozen or centrifuged. Freezing and centrifuging the amniotic fluid falsely decreases the lamellar body count.

**Clinical Reference**

**Test Definition: LBC**  
Lamellar Body Count, AF


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**Performance**

**Method Description**  
The Sysmex Automated Hematology Analyzer XN-9000 measures platelet count by the impedance method to quantify lamellar body counts. (Instruction manual: Automated Hematology Analyzer/Transportation units XN series [XN-9000] Instructions for Use [North American Edition]. Sysmex Corporation; 02/2014)

**PDF Report**  
No

**Specimen Retention Time**  
2 weeks

**Performing Laboratory Location**  
Rochester

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**Fees & Codes**

**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 US Food and Drug Administration.

**CPT Code Information**  
83664

**LOINC® Information**

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