

Lamellar Body Counts and Fetal Lung Maturity

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TEST UPDATE

Quick Facts

- ▶ **Lamellar body counts aid in the assessment of fetal lung maturity.**
- ▶ **LBC > 50,000 lamellar bodies/uL indicates fetal lung maturity.**
- ▶ **May be ordered with reflex to L/S ratio and PG tests.**
- ▶ **Testing performed on amniotic fluid.**
- ▶ **Lamellar body counts provides a quicker turnaround time than L/S ratio and PG testing.**
- ▶ **Order code is LBC. Order code for reflex to L/S ratio and PG tests is LBCR.**

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CLINICAL APPLICATION

Lamellar body counts are ordered to aid in the judgment of fetal lung maturity.

CLINICAL BACKGROUND

Lamellar bodies are concentrically layered “packages” of phospholipids that are produced by type II alveolar cells, representing the storage form of surfactant. They are present in amniotic fluid in increasing quantities as gestation advances. Lamellar bodies are similar in size to platelets and can be counted on most electronic cell counters. If trace amounts of blood are present in the amniotic fluid, an LBC can still be performed.

CLINICAL MANAGEMENT

An LBC > 50,000 Lamellar bodies/uL indicates fetal lung maturity. This cut-off gives a negative predictive value (NPV) of >99% and a sensitivity near 97%. NPV is defined as the fraction of negative tests (mature lungs) that are true negatives (true mature lungs) and sensitivity is defined as the percentage of babies with immature lungs (Respiratory Distress Syndrome, RDS) that the test correctly identified as immature.

This test is also used in the Lamellar Body Counts (Reflexive) test (LBCR). When this test is ordered, the LBC assay will be run and if the result is greater than 50,000, testing will stop indicating fetal lung maturity. If the LBC value is between 35,000 and 50,000 lamellar bodies/uL the Fetal Lung Maturity, L/S Ratio and PG (Phosphatidylglycerol) tests (RDS) will be performed. If the LBC value is less than 35,000 lamellar bodies/uL, indicating immaturity, no further testing will be performed.

Test Information

DESCRIPTION LAMELLAR BODY COUNTS (REFLEXIVE)

METHOD Automated Cell Count, TLC, and Spectroscopy

ORDER CODE LBCR

CPT CODE 83664, 83661, 84081, 82570

SPECIMEN REQUIREMENTS 5 mL amniotic fluid collected by amniocentesis. Collect amniotic fluid and put in a sterile, leakproof container. Protect from light. Do not centrifuge. When requesting cytogenetic studies do not freeze specimen. Store and transport entire specimen refrigerated. This test may reflex to additional tests depending upon the results of this test. Additional fees will be added. This test reflexes to an RDS Risk Panel if the result is transitional.

COMMENTS

- 1) Min Amt: 1 mL.
- 2) Unacceptable conditions: amniotic fluid from vaginal pools, samples containing meconium, or grossly bloody samples. Frozen and/or centrifuged samples.
- 3) Stability: Refrigerated-3 days.
- 4) PSHMC Hematology Department.

RANGES	Mature	GT 50000 Lamellar bodies/uL
	Transitional	35000 – 50000 Lamellar bodies/uL
	Immature	LT 35000 Lamellar bodies/uL
	L/S Ratio	Interpretive Comment.

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Selected References

1. A direct comparison between lamellar body counts and fluorescent polarization methods for predicting respiratory distress syndrome. Haymond S, Luzzi VI, Parvin CA, Gronowski AM. *Am J Clin Pathol.* 2006 Dec;126(6):894-9. PMID: 17074687 [PubMed - indexed for MEDLINE]

2. Comparison of lamellar body counts using light microscopy with standard coulter counter techniques to assess fetal lung maturity. Hunter LA, McKenna DS, Baptista MA. *Gynecol Obstet Invest.* 2006;61(1):29-33. Epub 2005 Nov 17. PMID: 16155401 [PubMed - indexed for MEDLINE]

3. Amniotic fluid lamellar body counts for the determination of fetal lung maturity: an update. Piazze JJ, Maranghi L, Cerekja A, Meloni P, Gioia S, Fumian L, Cosmi EV, Anceschi MM. *J Perinat Med.* 2005;33(2):156-60. PMID: 15843267 [PubMed - indexed for MEDLINE]

4. The use of lamellar body counts to predict fetal lung maturity in pregnancies complicated by diabetes mellitus. DeRoche ME, Ingardia CJ, Guerette PJ, Wu AH, LaSala CA, Mandavilli SR. *Am J Obstet Gynecol.* 2002 Oct;187(4):908-12. PMID: 12388975 [PubMed - indexed for MEDLINE]

5. Lamellar body counts: a consensus on protocol. Neerhof MG, Dohnal JC, Ashwood ER, Lee IS, Anceschi MM. *Obstet Gynecol.* 2001 Feb;97(2):318-20. Review. PMID: 11165603 [PubMed - indexed for MEDLINE]

6. Lamellar body counts compared with traditional phospholipid analysis as an assay for evaluating fetal lung maturity. Neerhof MG, Haney EI, Silver RK, Ashwood ER, Lee IS, Piazze JJ. *Obstet Gynecol.* 2001 Feb;97(2):305-9. PMID: 11165600 [PubMed - indexed for MEDLINE]

7. Amniotic fluid lamellar body count: a rapid and reliable fetal lung maturity test. Dalence CR, Bowie LJ, Dohnal JC, Farrell EE, Neerhof MG. *Obstet Gynecol.* 1995 Aug;86(2):235-9. PMID: 7617355 [PubMed - indexed for MEDLINE]

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