Amniotic Fluid

Physiology and production

Amniotic fluid is produced by the fetal kidneys, tissue, skin and maternal perfusion of the amnion. However, in the second and third trimesters, it consists primarily of fetal urine. Amniotic fluid serves several functions:

- Cushions fetus against injury
- Allows for free movement of fetus
- Essential for fetal lung development
- A source of fetal nutrition
- Aids in maintaining fetal temperature

Amniotic Fluid Volume	
Weeks Gestation	Volume (cc)
10	30
20	350
38	1000
Term	500
Post-term	<500

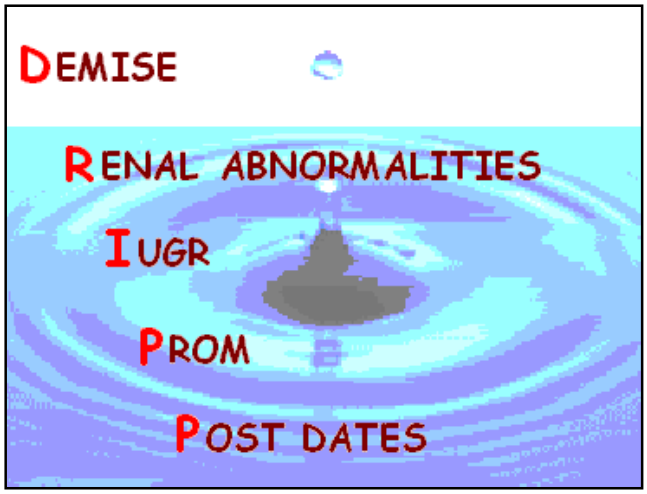
Amniotic fluid index (AFI)

Measurements are taken in each of four uterine quadrants and the greatest vertical measurements are summed. A progressive increase in the AFI is noted until approximately 28 weeks. After that, the AFI slowly decreases.

Normal AFI = 5 - 22cm

Oligohydramnios

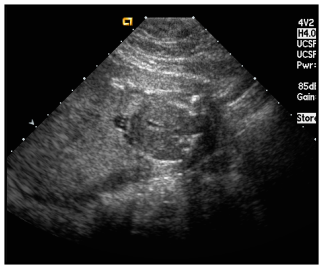
Abnormally decreased amount of amniotic fluid. Oligohydramnios is frequently associated with conditions that allow a **DRIPP** of fluid to remain.



POLYHYDRAMNIOS

An abnormal increase in the amount of amniotic fluid present. It is frequently the primary sign of an underlying fetal disorder. Polyhydramnios is associated with:

- Fetal neural tube defects
- Fetal GI obstructive anomalies
- Fetal hydrops
- Trisomy 18
- Cystic hygroma
- Placental abnormalities
- Twin to twin transfusion



Severe oligohydramnios

Polyhydramnios

AMNIOCENTESIS

Laboratory analysis of amniotic fluid can provide a great deal of information about the condition of a pregnancy. The procedure is relatively safe with a 0.5% risk for miscarriage or infection. In the second and third trimesters, amniocentesis is performed primarily to assess fetal lung maturity.

FETAL MATURITY STUDIES

Maturity of the fetal lungs is an important clinical consideration when managing a patient in preterm labor or who may need surgical intervention prior to term. The following tests can be performed:

- **Lecithin/Sphingomyelin ratio (LS ratio)** the most accurate measure of fetal lung maturity. > 2:1 indicates respiratory distress syndrome (RDS) will be unlikely
- **PhosphatidyLglycerol (PG)** appears at about the time of lung maturity (35 wks)
- **Surfactant associated protein (SP-A)** enzyme linked immunoassays using monoclonal antibodies.
- **ΔOD (Change in optical density)**
- **Foam stability index (FSI)**