

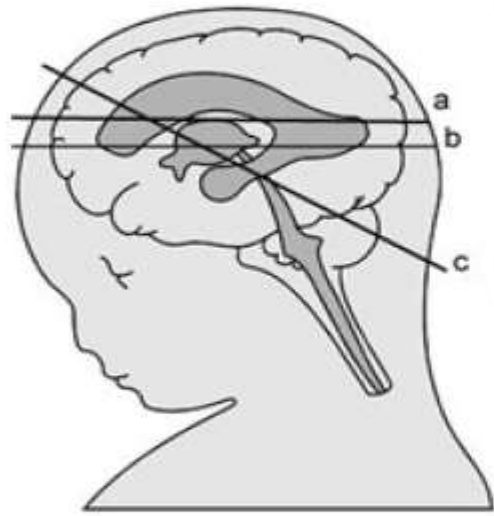
Fetal Biometry

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What should be measured?

- Before 14⁺⁰ weeks gestation:
 - Crown-rump length (CRL)
- Starting at 14⁺⁰ weeks gestation:
 - BiParietal Diameter (BPD)
 - Head Circumference (HC)
 - Abdominal Circumference (AC)
 - Femur Length (FL)

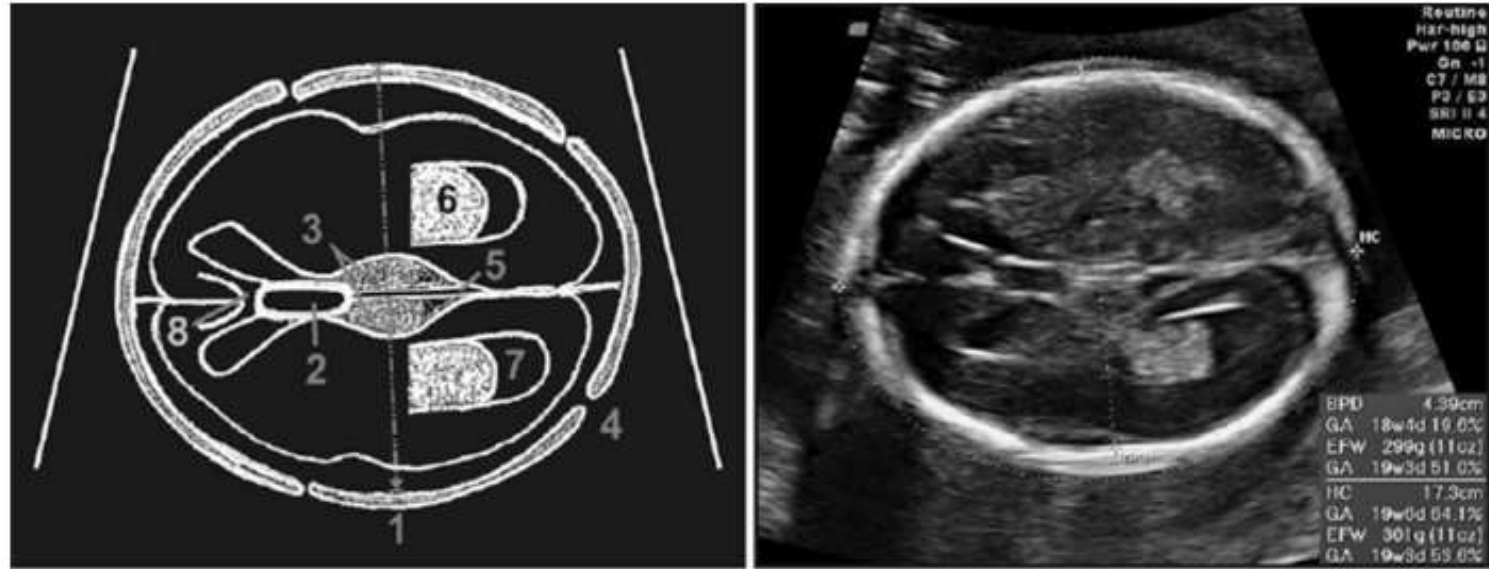
Head Circumference HC



Glowm.com



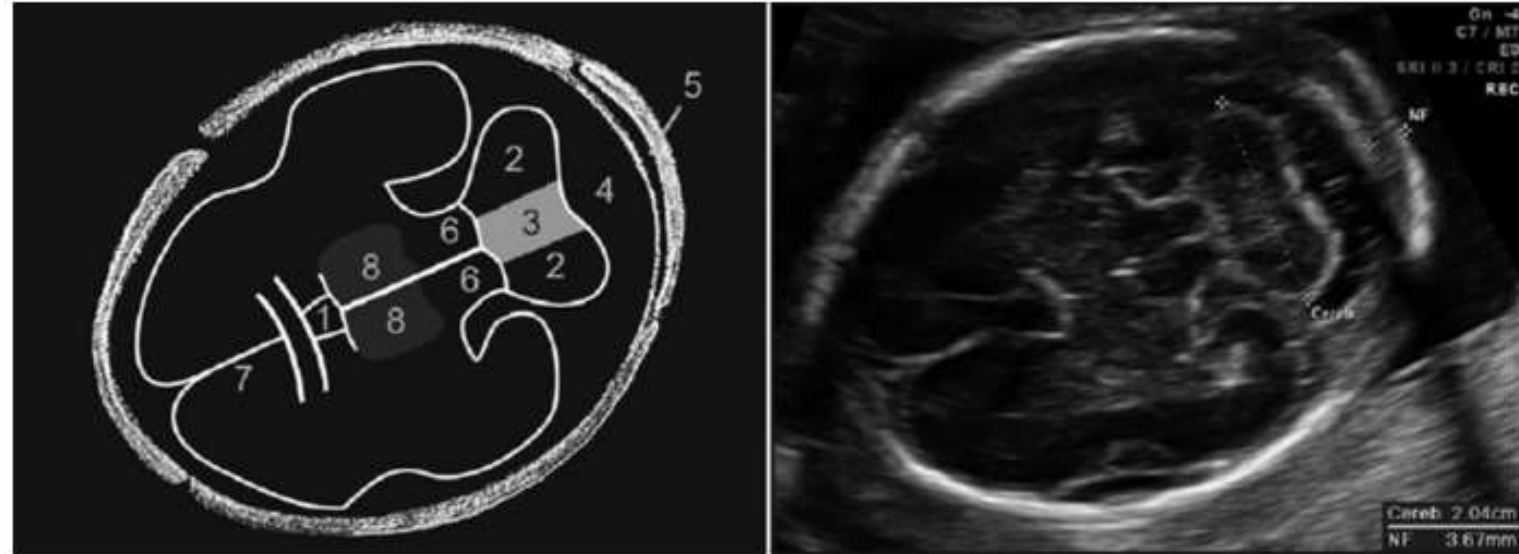
Axial Plane – BPD level



BPD Level Structures | © 2013 Australasian Society for Ultrasound in Medicine

1. Biparietal diameter (BPD)
2. Cavum Septum Pellucidum (CSP)
3. Thalami
4. Hypoechoic skull sutures
5. Third ventricle
6. Choroid
7. Posterior lateral ventricles
8. Corpus callosum

Axial Plane – Cerebellum level



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1. Cavum septum pellucidum (CSP)
2. Cerebellar lobes
3. Cerebellar vermis
4. Cisterna magna
5. Nuchal fold
6. Cerebellar peduncles
7. Falx
8. Thalami

Where to measure BPD and HC?

- BPD and HC must be measured on a standard plane.
- The following landmarks should always be present in the view:
 - centered horizontal midline (falx cerebri)
 - two symmetrical brain hemispheres
 - “box”-like cavum septum pellucidum
 - thalami
 - lateral ventricle (usually the posterior horn is most prominent in this view) with choroid plexus visible
 - regular skull contour
- The following structure shouldn't be present:
 - cerebellum!
 - orbits!



Second trimester

Where to measure BPD and HC?

- BPD and HC must be measured on a standard plane.
- The following landmarks should always be present in the view:
 - centered horizontal midline (falx cerebri)
 - two symmetrical brain hemispheres
 - “box”-like cavum septum pellucidum
 - thalami
 - lateral ventricle (usually the posterior horn is most prominent in this view) with choroid plexus visible
 - regular skull contour
- The following structure shouldn't be present:
 - cerebellum!
 - orbits!



Third trimester

How to measure BPD and HC?

BPD:

- The measurement should be done at the widest place perpendicular to the midline.
- The calipers should always be placed at:
 - 1) **outer** edge of the **near** calvarial wall, and
 - 2) **inner** edge of the **far** calvarial wall.

HC:

- Place the ellipse around the **outer** edge of the calvarial wall.



Practice:



Asymmetrical intracranial structure

- Could happen when head low in pelvis
- What to do next?



Wrong cursor placement



Oblique view (cerebellum present)

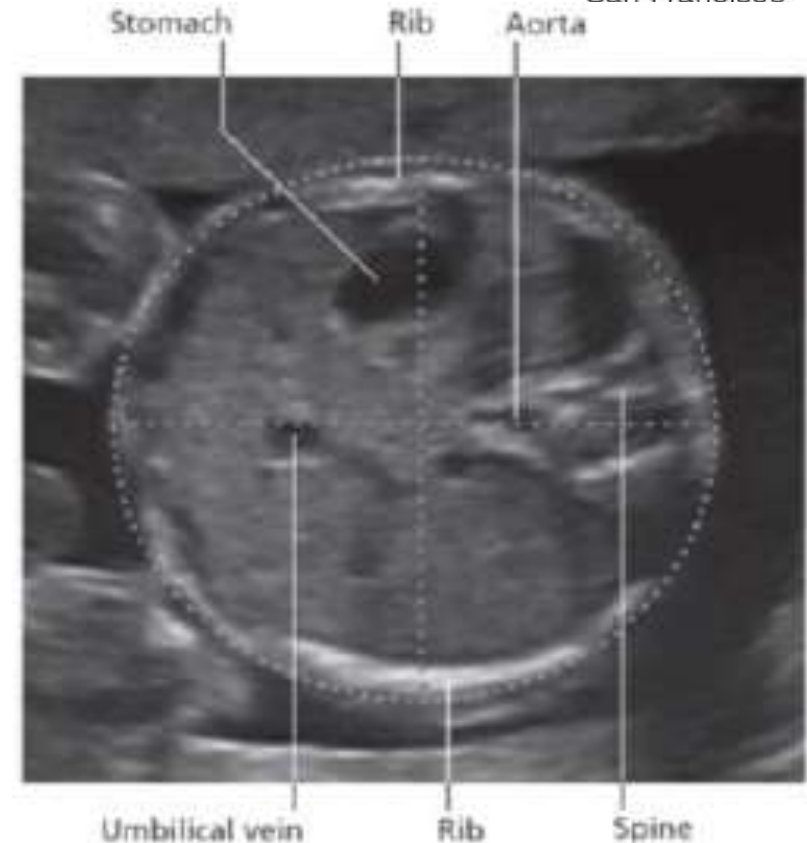
Practice:



Oblique view (orbits visualized)

Where to measure AC?

- The following landmarks should always be present in the view:
 - as circular as possible without indentation
(remove pressure from the probe)
 - at least one intact rib
 - short straight portion of the umbilical vein, about 1/3 from the anterior abdominal wall at the level of portal sinus
 - stomach “bubble”
 - spine and descending aorta
- The following structures shouldn't be present:
 - kidneys!
 - lungs!



How to measure AC?

AC:

- place the ellipse around the **outer** edge of the ~~rib cage~~ abdominal wall (skin),



Practice:



Press too hard, release pressure



Wrong ellipse placement



Inaccurate view (kidneys present)

Practice:



Irregular contour, measure later

Where to measure FL?

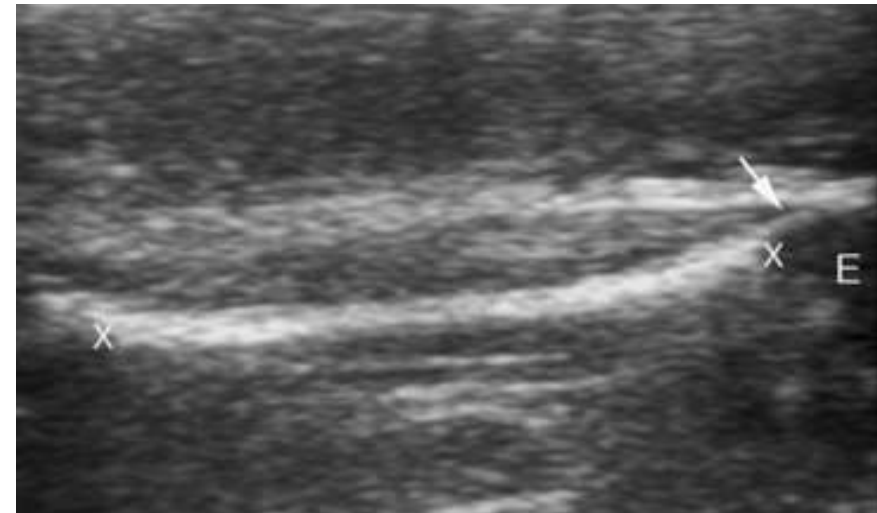
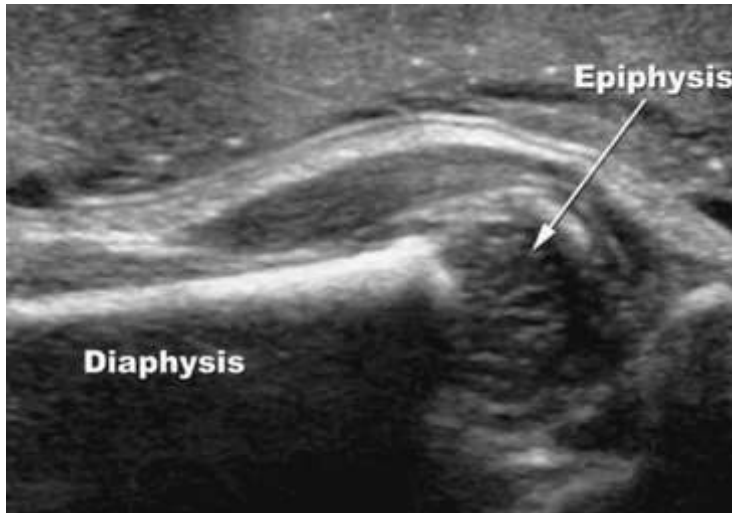
- The femur should be imaged lying as horizontal as possible. Ideal angle of insonation of the ultrasound beam is 90 degrees.
- Careful adjustment of the view to ensure visualization of the whole shaft (diaphysis).
- Both ends of ossified metaphysis should be clearly visible.



How to measure FL?

FL:

- measure along the long axis from the midpoint of one end of the bone to that of the other end of the bone (**NOT** point to point).
- distal femoral epiphysis should **NOT** be included if visible.



Practice:



Angle too large with insonation



Wrong cursor placement



Bont spur artifact

At the end:

- Zoom in for better measurement!!