Biophysical Profile (BPP)

BPP: What is it?
- 30 minute test to evaluate fetal well-being
- There are 4 ultrasound parameters:
  - Amniotic fluid
  - Gross fetal body motion (FM)
  - Fetal tone
  - Fetal breathing movement (FBM)
- A non-stress test (NST) is also included in a complete BPP
- The BPP is often used without the benefit of a NST

BPP: Why do we do it?
- Hypertension
- Diabetes mellitus
- Multiple gestation
- Suspected IUGR or oligohydramnios
- Known placental or cord abnormality
- Failed NST

BPP: Why do we do it?
- Maternal heart or renal disease
- Previous unexplained fetal demise
- Hemoglobinopathy
- Postdated pregnancy
- Decrease in fetal motion
- Other…..

What Does the BPP Assess?
- The BPP assesses $O_2$ delivery & adaptive behavior of the fetus
- If the fetus is functioning in a normal fashion, then systemic hypoxia is unlikely.
- The renal function is also assessed. Fluid changes occur over longer time periods (12-24 hours).

BPP: How do we score it?
- 2 or 0 points are awarded for each parameter.
- If the fetus meets the criteria for the parameter, it is given 2 points.
- No partial scoring is done in the standard BPP
- Highest possible score is 10
Older versions use 30 sec of resp & 2 episodes of gross motion
Fluid is 2 x 2cm h x width of h x length

### BPP: What are the parameters?
- NST *Not Discussed*
- Fluid
- Motion
- Breathing
- Tone

#### Parameters: Fluid
- Fluid throughout the uterine cavity with the largest pocket of fluid equal or greater than 2 cm in AP
- Many hospitals will go beyond reporting a 2 or a 0 score for this parameter & additionally report the AFI along with the BPP score.
- Fluid is the most important parameter.
- It takes 12-24 hours for a significant change in fluid volume to take place

#### Causes of Oligohydramnios
- Renal dysfunction (bilateral)
- Renal obstruction (bilateral)
- Renal agenesis (bilateral)
- Bladder outlet obstruction
- PROM
- Postdates pregnancy
- Hypoxia

#### Parameters: Gross Fetal Motion
- 2 discrete (was 3) episodes of fetal motion
- Simultaneous motion of the trunk and a leg or the head and an arm etc. counts as one episode.
- Motions can include: twisting or flexion of the trunk or neck. Movement on the legs or arms and arching of the spine.
- This parameter tests neurological function. Is the cerebrum getting enough oxygen?
Parameters: Fetal Breathing

- Complex reflex, cerebellar and brainstem function
- 2 points are given if at least one episode of fetal breathing (duration of at least 20 sec.) occurs during the 30 minute exam.
- Fetal breathing is exhibited by diaphragm motion or motion of the kidneys, liver or expansion of rib spaces.

Parameters: Fetal Breathing

- Fetal breathing is rhythmic
- Fetal breathing is problematic if usually doesn’t occur during fetal sleep cycles.
Parameters: Fetal Tone

- Fetal tone is controlled by the cerebrum
- The opening of a hand and return to original position counts as one episode of tone
- **Active** flexion and extension of a limb.

The fetal hands are often near the face.

Motion (clenching, arching) of the feet can be used for assessing tone.

Duration of the BPP

Manning has reported that in over 200,000 BPP tests, the average time was less than 8 minutes for normal results (8/8).
Of course a score of <8 will take 30 min.

Value of the Biophysical Profile:

Outcome Data
Umbilical Artery Doppler as an Addition to Assessment of Fetal Well-Being

34w1d

S/D vs. Gestational Age

1. S/D < 3.0 WNL for 27w
2. S/D > 4.5 Abn for 31w
3. No diastolic flow Abn
4. Rev diastolic Abn
Some nurse midwives find it useful to obtain a set of fetal measurements during the BPP for EFW.

Any Questions?