### Overview

#### Rationale
- Confusion among anesthesia staff regarding need for fetal monitoring
- Variable practices among anesthesia, obstetric and surgical staff regarding implementation of fetal monitoring.
- Lack of a standard procedure for obtaining fetal monitoring when a need for monitoring has been determined
- Desirability from a quality assurance perspective to have a standardized policy for fetal monitoring

#### Purpose of Intra-operative Fetal Monitoring
- To provide continual assessment of fetal well-being.
  1. In order to identify anesthetic (pharmacological & physiological) factors which adversely affect fetal well-being
  2. In order to identify surgical maneuvers (positioning, retraction etc) which adversely affect fetal well-being.
- To provide documentation, for medicolegal reasons, of fetal viability and well-being during surgical procedures.

#### Review of the Literature
- "the decision to use fetal monitoring should be individualized, and, if used, may be based on gestational age, type of surgery, and facilities available." (1)
- "monitoring may allow rapid improvement of the fetal status or uterine activity when early compromise or contractions are detected." (2)
- "other advantages included the ability to use FHR responses as early signs of compromised maternal physiology" (2)
- "the advantages of assessing FHR in a nonviable fetus are similar to those... for a viable fetus." (2)
- "technical problems may limit the use of continuous FHR monitoring between 18 and 22 weeks' gestation." (3)
- "persistent severe fetal bradycardia typically indicates true fetal distress." (3)
- "ideally, continuous fetal heart rate monitoring during surgery should be employed after the 16th week of gestation. This may provide an indication of abnormalities in maternal ventilation or uterine perfusion." (4)
**Policy**

1) When possible, all patients should have a pre-op Obstetric consult.
2) The surgeon booking the case must inform Scheduling to flag pregnant patients (including gestational age) on the schedule & on the OR board.
3) An experienced obstetric provider, who can interpret the results, should perform all FHR/uterine monitoring.
   - Call Labor & Delivery (tel #: 84616) to arrange for an OB nurse to be available for FHR monitoring if necessary.
4) Inform the on-call OB team when the case is starting. They are available for advice and should be involved in management of the mother and fetus perioperatively.
5) Fetal monitoring as follows:
   - 16 – 20 weeks gestation: FHR should be monitored and documented pre and postoperatively, if technically possible.
   - 20 – 24 weeks: FHR should be monitored and documented preoperatively, continuously intraoperatively, if technically possible, and for a period postoperatively.
   - 24 weeks onwards: FHR and uterine activity should be monitored and documented preoperatively, continuously intraoperatively, and for a period postoperatively.

(A sterile sleeve is available for direct uterine monitoring during intra-abdominal surgery.)

6) Post-op, the patient should initially go to PACU with fetal monitoring, and then to 6 South (L & D) for continued fetal monitoring, if necessary.

**NB**

1) Give sodium citrate & do a RSI if giving a GA > 16wks gestation
2) Remember the LEFT Lateral TILT/Wedge > 20wks gestation
3) ALL anesthesia drugs are safe during pregnancy

**Action and Reaction**

- Baseline FHR is usually 120 – 150 bpm
  - Under general anesthesia the baseline may decrease by 10 bpm
- FHR variability is present by 25 – 27 weeks gestation
  - Variability is typically decreased or absent under general anesthesia
- For a slow or sudden decrease in FHR < 100bpm for more than 30 seconds:

  *Page the on-call Obstetrician for advice / help AND...*

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<thead>
<tr>
<th>ACTION</th>
<th>REACTION</th>
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<tbody>
<tr>
<td>Increase maternal left lateral tilt</td>
<td>Minimizes aortocaval compression</td>
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<tr>
<td>Check surgeons not compromising uterine perfusion with retractors, external pressure or high laparoscopic pressures</td>
<td>Improves of uterine perfusion once pressure relieved</td>
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<tr>
<td>Increase maternal FiO₂</td>
<td>Improves fetal oxygenation</td>
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<tr>
<td>Alter maternal ventilation (pCO₂ &gt; 35 mmHg)</td>
<td>Improves oxygen transfer to fetus</td>
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<tr>
<td>Increase maternal blood pressure (iv fluids +/- ephedrine)</td>
<td>Improves uterine perfusion</td>
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<tr>
<td>Check maternal acid-base status</td>
<td>Directly affects fetal acid-base status</td>
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References:


