**Abstract**

The obstetric belly band, which holds the tocometer and ultrasound transducer in place, tends to bunch up during labor; this causes a great amount of discomfort to the expectant mother. In an effort to improve the existing belly band, we have designed a belly band to minimize both discomfort and cost while maximizing monitoring reliability. This design consists of a two-piece band with gathering on the sides, stiff elastic lining the back of the band, and a hook system. Future testing in hospitals will allow this product to be perfected and introduced into the competitive market.

**Background**

- 4 million babies are born in the United States a year.
- Electronic fetal monitoring is used during labor (from the time the expectant mother arrives at the hospital until she has given birth) to monitor the health of the fetus.
- An ultrasound transducer monitors fetal heart rate.
- A tocometer measures the frequency of uterine contractions.
- Belly bands or straps are used to hold these instruments in place.

**Mission**

Our mission is to redesign an obstetric belly band so that it has more rigidity in the transverse direction and will not roll up during use. Current methods for securing the instruments are inefficient for nurses and uncomfortable for patients. The team’s solution fits the needs of health care professionals using the device for monitoring purposes and ensures comfort for laboring women.

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**Testing**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Elastic cotton blend material</td>
<td>$2.50</td>
</tr>
<tr>
<td>Elastic strip</td>
<td>$1.59</td>
</tr>
<tr>
<td>Bra Back Extender (hooks)</td>
<td>$1.05</td>
</tr>
</tbody>
</table>

Table 1: Total cost of materials in single prototype, $5.54. Labor for fabrication not included. Material price is expected to decrease during mass-production.

**Advantages**

- Secures monitoring devices
- Comfortable Fit
- 13 inch diameter
- 6 inches high in back
- 12 inches high in front

**Specifications**

- Elastic Cotton Blend Fabric
- Contains no Latex Hooks for increasing pressure
- Costs $5.54

**Future Work**

- Obtain IRB
- Get a principle investigator
- Submit our design to the review board
- Keep review board up to date

**Further Testing**

- Once IRB is obtained, need to test on a laboring woman in a hospital setting
- Receive and correct any negative feedback

**Produce Multiple Sizes**

- Prototype is a smaller size to fit the simulated belly
- Need larger sizes to accommodate larger women

**Streamline Production**

- Need most efficient way to produce our design
- Obtain material directly to reduce costs
- Set up an automated system to manufacture the design

**References**