Calling urgent and emergent cesarean sections: Are we on time?
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PROBLEM
Patients with time sensitive cesarean sections include those with an immediate threat to life or those with maternal or fetal compromise that is not immediately life threatening (urgent). Even when a cesarean delivery is deemed emergent or urgent (i.e., time sensitive), patient, anesthesia, and procedure related delays may occur.

OBJECTIVE
This quality improvement study aimed to assess whether caregiver education would improve on time cesarean deliveries.

METHODS
Study Design:
• Retrospective study design

Study Population:
• Reviewed all emergent (<15 minutes) and urgent (<30 minutes) patients in one labor and delivery unit
• Emergent and urgent patients six months before and after nursing and provider education were compared
  • Nursing and provider education (9/2017-10/2017)
  • Development of communication pathways and reorientation to decision making timelines.

RESULTS
• A total of 149 and 185 patients were included pre- and post-education (Table 1).
• On univariate analysis, mean time from decision to incision, as well as mean time from decision to anesthesia in patients who didn’t already have anesthesia initiated, significantly improved (p<0.01; Figure 1).
• Delays significantly improved (67.1% vs. 53.5%, p<0.01; Figure 2), although documented reasons for delays did not (p=0.14; Table 2).
• Overall, only 21.1% of delayed patients (n=199) were emergent cesarean sections.
• Multivariable regression suggested case classification, patient delay, BMI, and time to anesthesia, but not the educational intervention, significantly predicted time to incision (p<0.01; R²=0.86).

CONCLUSIONS
Although an improvement in decision to incision time was observed, it was unrelated to the educational intervention performed.

Concurrent nursing education initiatives aimed at improving cesarean section timing may have contributed to on time deliveries. Ongoing education and team collaboration should continue in order to further improve cesarean delivery timing and patient care.

Table 1: Patient demographics

<table>
<thead>
<tr>
<th>Patient Demographics</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (years)</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>BMI at admission, mean (kg/m²)</td>
<td>34.5</td>
<td>33.7</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>32 (21.48)</td>
<td>34 (18.38)</td>
</tr>
<tr>
<td>African-American</td>
<td>84 (56.38)</td>
<td>99 (53.51)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>16 (10.74)</td>
<td>23 (12.43)</td>
</tr>
<tr>
<td>Other</td>
<td>17 (11.43)</td>
<td>29 (15.88)</td>
</tr>
<tr>
<td>Case Classification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red (Emergent)</td>
<td>46 (30.69)</td>
<td>53 (28.65)</td>
</tr>
<tr>
<td>Yellow (Urgent)</td>
<td>103 (69.12)</td>
<td>132 (71.35)</td>
</tr>
</tbody>
</table>

Table 2: Reason for delay

<table>
<thead>
<tr>
<th>Reason for Delay</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia</td>
<td>7</td>
<td>20 (10.81)</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>13 (7.03)</td>
</tr>
<tr>
<td>Patient</td>
<td>5</td>
<td>7 (3.78)</td>
</tr>
<tr>
<td>Physician/Surgeon</td>
<td>3</td>
<td>1 (1.67)</td>
</tr>
<tr>
<td>Staff</td>
<td>5</td>
<td>2 (3.23)</td>
</tr>
</tbody>
</table>

Table 3: Representing Best Model for Predicting Time to Incision

Variable | Parameter Estimate | Standard Error | T-Value | p-value |
----------|--------------------|----------------|---------|---------|
Intercept | 11.57              | 1.57           | 7.35    | <0.0001 |
Case Classification | -8.33 | 1.02 | -8.11 | <0.0001 |
Patient Delay | 10.89 | 1.00 | 10.89 | <0.0001 |
Intervention | -0.46 | 0.88 | -0.53 | 0.5972 |
BMI at admission | 0.34 | 0.056 | 5.35 | 0.021 |
Time to Anesthesia | 0.86 | 0.03 | 27.07 | <0.0001 |