Calling urgent and emergent cesarean sections: Are we on time?
Naomi Light, MD1,2; Jessica JF. Kram, MPH3,4; Kayla Heslin, MPH3,4; Cheryl Bauer, MSN, RN3,4; Maria Peterson, BSN, RN1,4; Carla Kelly, DO, MMM1,3
1Department of Obstetrics and Gynecology; 2Aurora Sinai Medical Center, Milwaukee, WI; 3Aurora UW Medical Group/Center for Urban Population Health, Milwaukee, WI; 4Aurora Research Institute, Milwaukee, WI

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.

BACKGROUND
- When a decision for operative delivery in the setting of a Category II-III fetal heart rate (FHR) is made, American College of Obstetricians and Gynecologists recommends:
  - Operative delivery should be accomplished quickly
  - Historically a decision to incision time <=30 minutes
  - To prevent adverse neonatal outcomes
  - Ideal decision-to-incision interval or delay interval remains controversial as scientific evidence is lacking
  - Timing potentially should be individualized based on the clinical picture
  - Particular clinical situations may favor faster delivery to prevent adverse neonatal outcomes

- Multiple studies affirm no association of increased adverse outcomes with 30 minute decision-to-incision timeframe
- 30 minute recommendation was based on a survey of 125 hospitals who estimated the minimum time required to initiate cesarean delivery given established resources
- This time constraint primarily applies to hospitals with full in house staffing capabilities and is limited based on confounding factors (e.g., OR availability)

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)
  - Focused on development of communication pathways and reorientation to decision making timelines.

Statistics:
- Basic descriptive statistics were used to compare the groups, before the intervention and after the intervention
- Chi-square tests were used to analyze categorical variables
- T-tests were used to analyze continuous variables
- Multivariable linear regression was used to predict time to incision

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=0.03; 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.