Door-to-Drug in Obstetrics:
Time to antenatal corticosteroid therapy in patients at risk of preterm delivery, and factors that influence timing of administration
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2 Background
- The concept of "door-to-drug" or "door-to-balloon" times as standard of care for care of acute STEMI are well known.
- According to the American Heart Association (2011), “potential delay during the in-hospital evaluation period may occur from door to data, from data to decision, and from decision to drug.
- These 4 major points if in-hospital therapy are commonly referred to as the ‘4 D’s.’ “

3 Background
- The American College of Cardiology/American Heart Association recommend reperfusion therapy for patients with STEMI within 90 minutes of arrival for care (O’ Gara et al., 2013).
- The smaller the delay from presentation to intervention the better the outcomes (AHA, 2011).
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4 Background
- The concept of door-to-drug now is used not only for patients presenting with symptoms of MI, but also for those with stroke and sepsis (Dellinger, et al, 2013; Jauch, et al., 2013; Fonarow, 2011).
- In addition to evaluating door-to-treatment time, Bradley, et al., (2006) looked at subintervals and the process of evaluation(data), decision, and treatment (drug) to achieve guideline-based care for patients with STEMI.
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5 Background
- According to World Health Organization (WHO), 15 million babies, more than 1/10 babies worldwide are born prematurely every year.
- Preterm birth is the leading cause of infant death of infant mortality and morbidity including learning, hearing and visual disabilities (2013).
- Preterm birth rate in the US was 9.6 % in the United States, and 9.3 % in Delaware in 2015 (March of Dimes, 2015).

6 Background
- Antenatal corticosteroids have been given to obstetric patients between 24-34 weeks of gestation with a high risk of premature birth to improve neonatal outcomes by hastening fetal lung maturity as a standard of care (Makhija, et al., 2016; Surbek et al., 2012).
• Both the delivery and duration of drug administration of antenatal corticosteroids have been shown to positively improve neonatal outcomes (reduction in neonatal death, RDS, cerebroventricular hemorrhage, necrotizing enterocolitis, respiratory support, & ICU admissions) (Roberts & Dalziel, 2013).
• Corticosteroids reach their maximum benefit 48 hours after the administration (Simhan & Caritis, 2007).

7 Background
• However, there is currently no standard of care regarding the timing of antenatal steroid administration beyond what patient populations which should receive them.
• According to ACOG (2011), “Further research regarding the risks and benefits, optimal dose, and timing of a single rescue course of steroid treatment is needed.”
• Women who are candidates for this therapy may have a delay in presentation, delay in examination, the decision for treatment, and initiation of care based on a variety of variables.

8 Background
• We used the concept of door-to-drug to review opportunities for improvement in door-to-drug time for obstetrical patients, as there can be critical time subinterval variations which affect timely care for these patients where there is potential for improvement.
• Currently at Christiana Care, only 61% of women appropriately receive both doses of antenatal steroids prior to delivery.
• This warrants further investigation in order to improve door-to-drug time regardless of day or time of arrival.

9 Introduction
• There is currently no standard of care regarding the timing of antenatal steroid administration
• What is door-to-drug (D2D):
  • The time from presentation to treatment (drug)
  • Commonly used to describe the standard of care for common urgent procedures

10 Objectives
1. To determine the time from presentation for care to administration of antepartum corticosteroids
2. To identify factors that influence the timing of antenatal steroid administration
3.

11 Methods
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12 Results: Door to Drug
Decrease in D2D Time

Increase in D2D Time

Conclusions

- Door to Drug Time:
  - Potential unnecessary delays
  - Prolonged decision to drug time (0-380)
  - Wide range (0-595 minutes)
  - Inconsistency of care

- Factors associated with D2D time:
  - Source of admission
  - Dilation
  - Diagnosis
  - Time of the day

Clinical Implications

- The concept of Door-to-Drug can be applied to obstetrics
- Due to variations in how patients present for care and are evaluated, Decision-to-Drug may merit further study to recommend a standard of care
- Healthcare providers should develop a standard of care regarding timing of antenatal corticosteroid administration to provide equal care regardless of patients’ time of arrival and to decrease complications of preterm birth

Limitations

- Retrospective study
- Limits of paper charting
  - Illegible handwriting in older charts
  - Missing information (entries dated but not timed)
- No power analysis/convenience sample
- Association, not causality

References


19 References


20 References


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21 References


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22 Questions?

Thank you!