



# TIME INTERVAL BETWEEN ADMINISTRATION OF ANTENATAL CORTICOSTEROIDS AND DELIVERY – A SHOT IN THE DARK?

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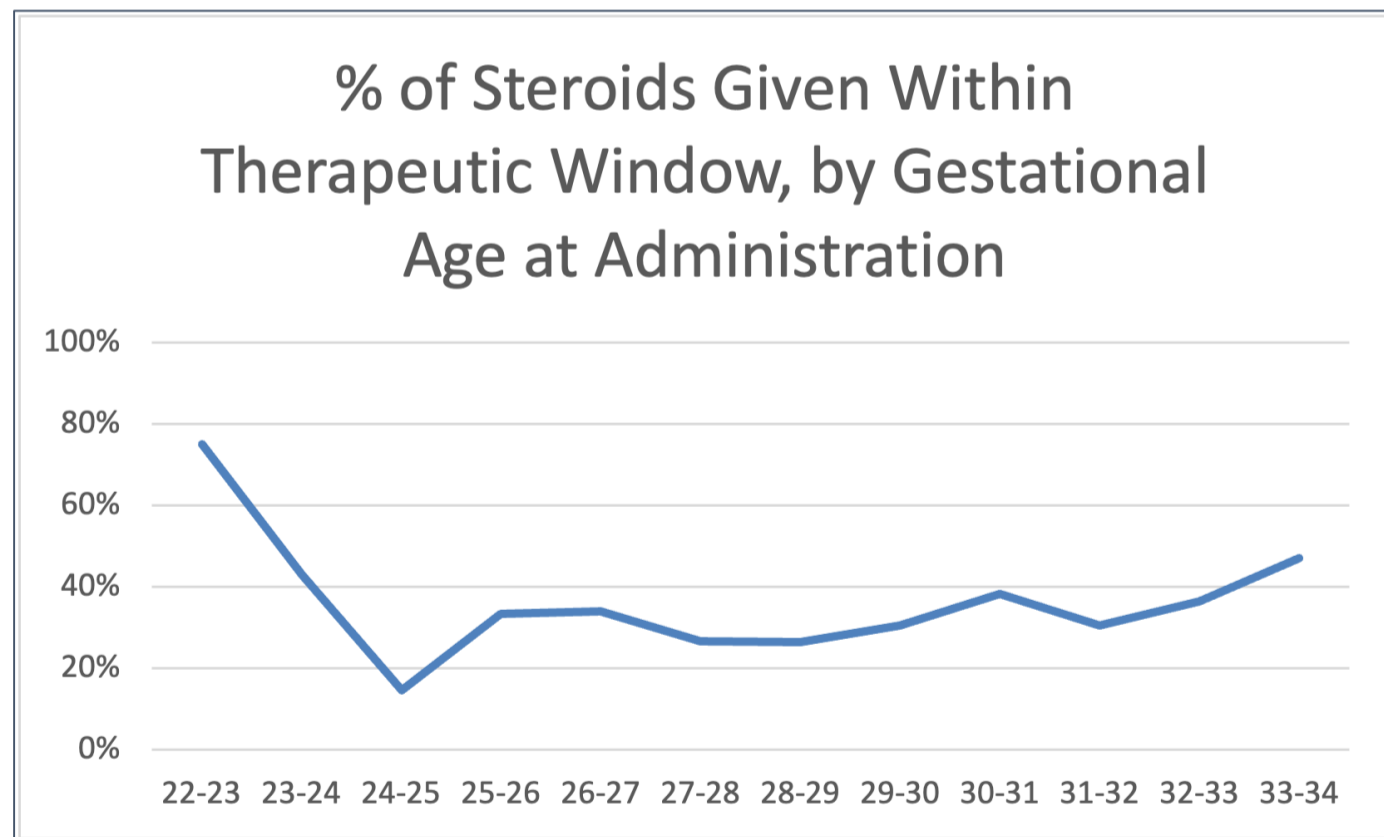


## BACKGROUND

Preterm birth is a birth occurring at less than 37 weeks gestation. Globally, it is a leading cause of childhood morbidity and mortality. In Ireland and the UK, the rate of preterm birth is between 7-8%. Antenatal corticosteroids are among the most important interventions in the prevention of morbidity and mortality in the preterm infant. A Cochrane review first published in 1996, and updated in 2020, reported a significant reduction in the rate of perinatal death, neonatal death, respiratory distress syndrome and some probable reduction in the risk of intraventricular haemorrhage. More recent data has demonstrated an optimal window of between 24 hours and 7 days between the administration of steroids and delivery of the preterm infant (Norberg et al.). The potential harm of antenatal corticosteroids has been coming into focus in recent years. There is an emerging body of evidence to suggest that steroids administered close to term may be associated with mental and behavioural disorder in the child.

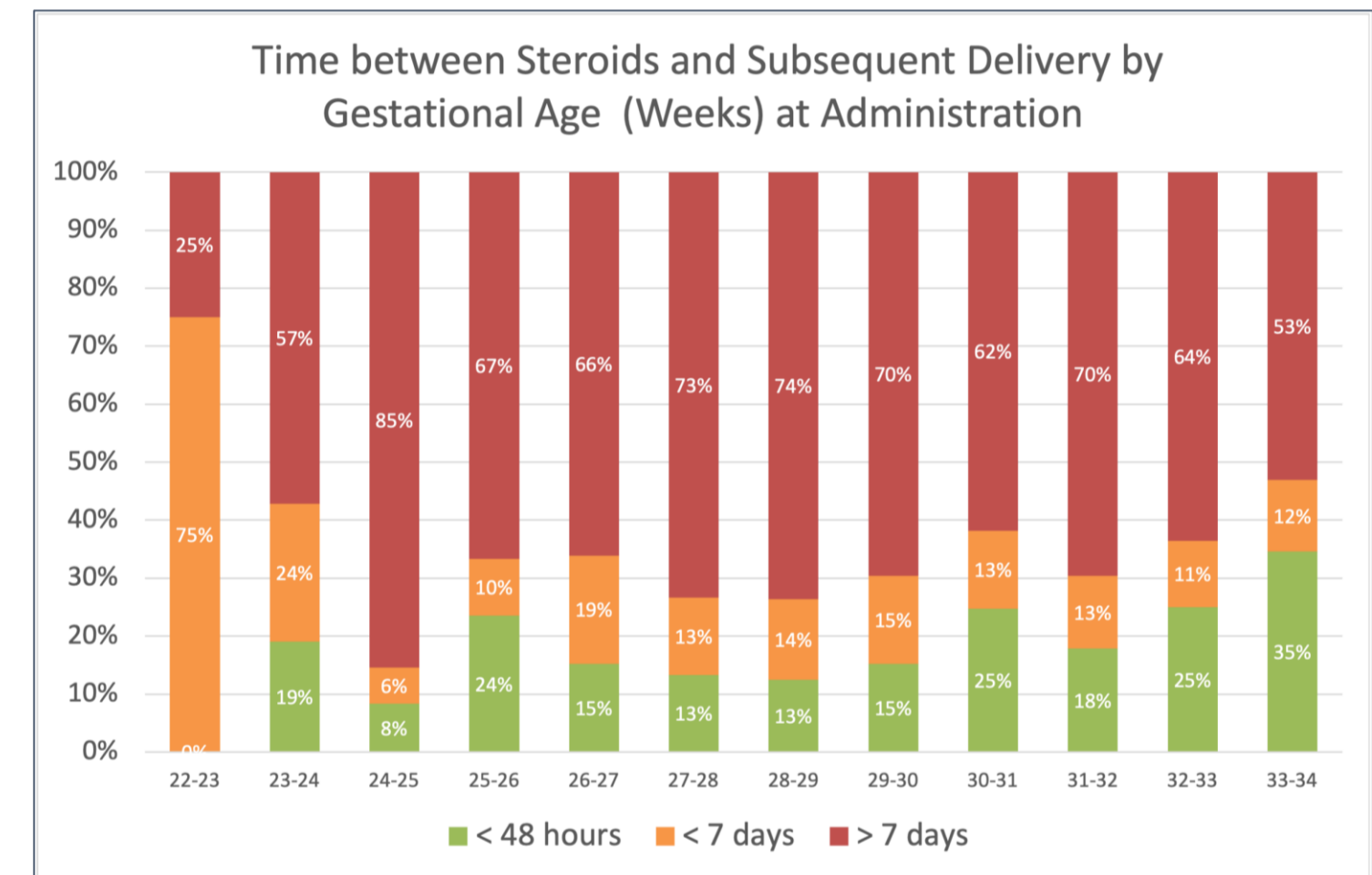
## AIMS

This study aims to examine the relationship between timing of administration of corticosteroids and subsequent delivery in a large stand-alone tertiary referral centre with over 8,000 deliveries annually.



## RESULTS

1552/26181 pregnant women received steroids in the antepartum between January 2019 and June 2022. Steroids were administered to 918 women at less than 34 weeks, 395 women between 34 and 37 weeks and 239 women at >37 weeks. For women who received steroids at <34 weeks, the average time interval between administration of steroids and subsequent delivery was 35 days. Of the preterm infants (<34 weeks), 195 (21%) received steroids within 2 days of delivery, 319 (34%) within 7 days of delivery, 366 (39%) less than 14 days before delivery.



## CONCLUSION

Preterm delivery is difficult to predict and the majority of women who present with threatened preterm labour do not deliver within 7 days. This study demonstrates the variation in correct timing of antenatal corticosteroids by gestational age. At less than 24 weeks, more accurate timing of steroids may be due to senior clinical decision making around the administration of ANS. Certainly, the statistical likelihood of delivery increases with gestational age, however there is a marked difference in precise timing of steroids at 24 weeks. The question remains, whether the risk of inappropriate administration of corticosteroids is acceptable to confer benefit to the small percentage of patients who will deliver within the therapeutic window. Incorrect administration of antenatal corticosteroids may have significant consequences and where the safety of antenatal corticosteroids was previously believed to be absolute, recent large scale studies have challenged this perception. Thus, efforts should be made to reduce the disproportion between administration of corticosteroids and actual time of birth.

## METHODS

This is a retrospective cohort study of all patients who received antenatal corticosteroids (ANS) in anticipation of preterm birth between January 2019 and June 2022, at the National Maternity Hospital Dublin. Patients who received ANS were identified by the hospital pharmacy via the electronic healthcare record. Medical records were then reviewed to gather clinical data. This study was done so with the approval of the hospital Research Ethics Committee. The primary outcome was to determine the number of patients who delivered within 7 days of administration of ANS. Patients were included if they had received ANS at any gestation. During the time of this study between 2019 and 2022 it was the practice at our institution to administer ANS to women who attended with threatened preterm labour or were having a planned preterm delivery. Corticosteroids at term were given to women undergoing a caesarean section at less than 39 weeks gestation.

McGoldrick E, Stewart F, Parker R, Dalziel SR. Antenatal corticosteroids for accelerating fetal lung maturation for women at risk of preterm birth. *Cochrane Database Syst Rev.* 2020;12(12):CD004454.  
 Räikkönen K, Gissler M, Kajantie E. Associations Between Maternal Antenatal Corticosteroid Treatment and Mental and Behavioral Disorders in Children. *JAMA.* 2020;323(19):1924-1933.  
 Norman J, Shennan A, Jacobsson B, Stock SJ, FIGO Working Group for Preterm Birth. FIGO good practice recommendations on the use of prenatal corticosteroids to improve outcomes and minimize harm in babies born preterm. *Int J Gynaecol Obstet.* 2021;155(1):26-30.