

Optimising Timing of Steroid Administration in Preterm Pre-eclampsia

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BACKGROUND

- Pre-eclampsia is a multisystem disorder, affecting 3– 5% of pregnancies and defined as new onset or worsening hypertension, with proteinuria, uteroplacental dysfunction or maternal organ dysfunction
- **The only cure for pre-eclampsia is delivery; with pre-eclampsia being a leading cause of iatrogenic preterm birth**
- Discovery of corticosteroids to promote lung maturation has been a major advance in preterm birth
- Steroids are recommended to be given 24 hours to 7 days pre-delivery, for preterm birth from 24⁺⁰- to 34⁺⁶-weeks' gestation
- Steroid-to-delivery intervals greater than 7 days are associated with increased mortality, brain injury and lower birthweight

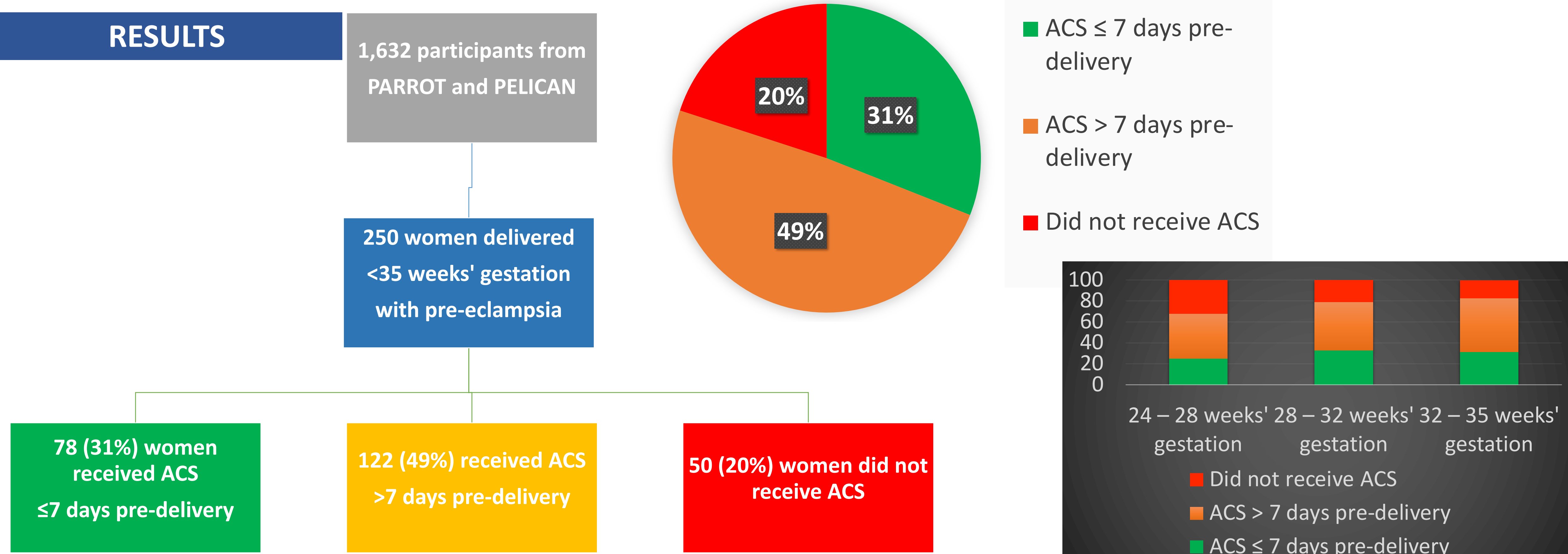
AIM

- The aim of this study was to investigate steroid use in women delivering before 35 weeks' gestation with pre-eclampsia

METHODS

- This was a retrospective analysis of the PELICAN study (*a multi-centre prospective observational study*) and the PARROT trial (*a multi-centre cluster-randomised controlled trial of revealed vs concealed PIGF testing*)
- A course of steroids was considered appropriate if two doses of betamethasone or dexamethasone were given between 24 hours to 7 days before delivery
- Information on ACS given <24 hours prior to delivery, or repeat courses of steroids were not available

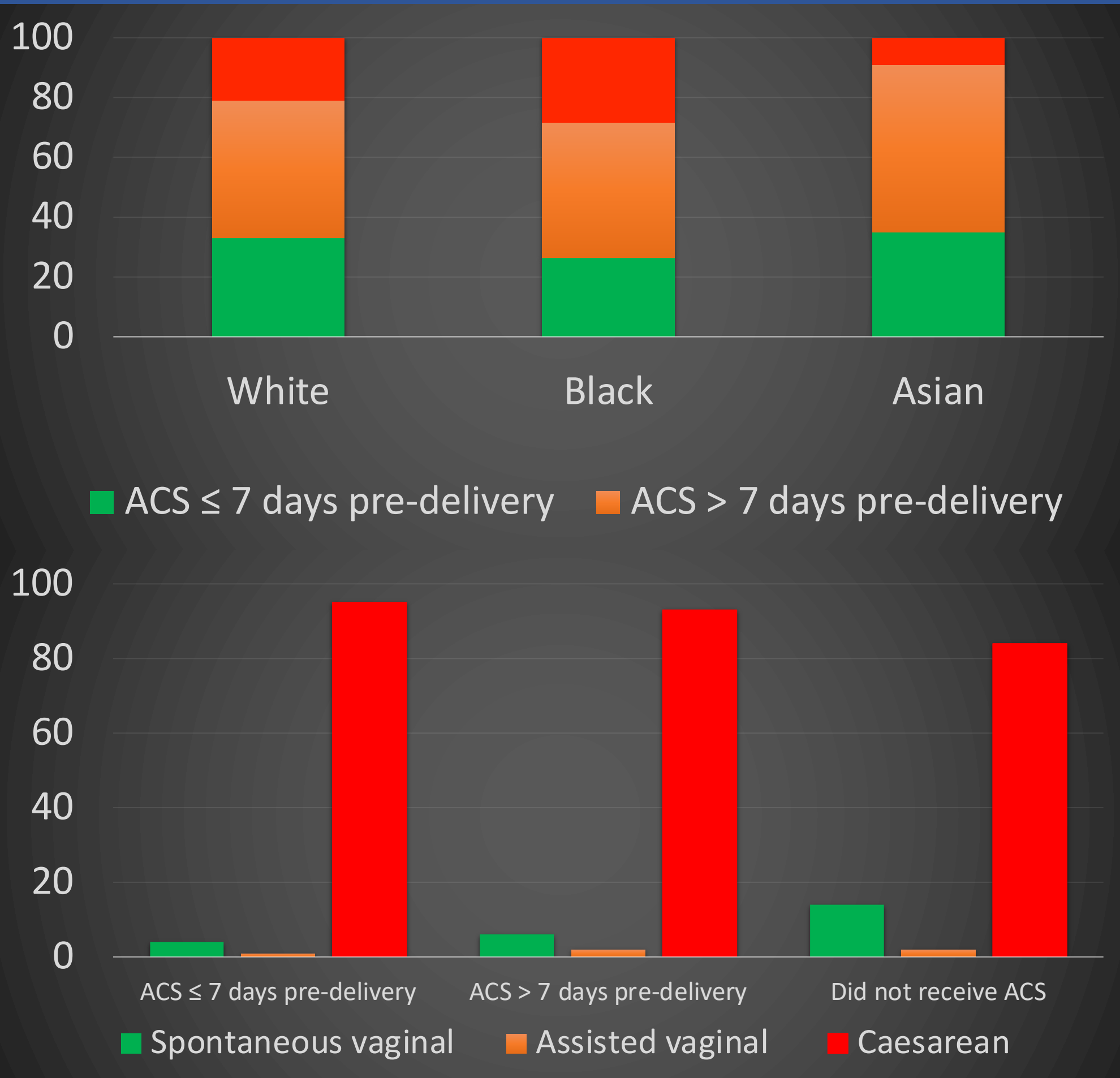
RESULTS



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- Of 1,632 women with suspected pre-eclampsia, 250 delivered before 35 weeks' gestation with pre-eclampsia
- 31% (78/250) received appropriate steroids, 49% (122/250) received steroids more than 7 days before delivery, 20% (50/250) did not receive steroids

	Received ACS ≤ 7 days before delivery	Received ACS > 7 days before delivery	Did not receive ACS
Gestational age at delivery (weeks), median (IQR)	32.3 (30.7 – 33.8)	32.6 (30.4 – 33.9)	31.7 (29.2 – 33.7)
Birthweight (grams), mean (SD)	1412 (469.6)	1467 (576.7)	1294 (582.2)
NNU admission, % (n/N)	93.5% (72/77)	93.4% (113/121)	91.1% (41/45)
RDS, % (n/N)	48.0% (37/77)	49.6% (60/121)	35.6% (16/45)
Fetal death, % (n/N)	1.3% (1/78)	0.8% (1/122)	10.0% (5/50)
Neonatal death, % (n/N)	2.6% (2/78)	3.3% (4/122)	2.0% (1/50)
Perinatal death, % (n/N)	3.8% (3/78)	4.1% (5/122)	12.0% (6/50)



DISCUSSION

- Despite sound evidence of neonatal benefit, clinicians find it difficult to give steroids in a timely manner
- The largest group of mistimed steroids were those given more than 7 days pre-delivery
- We suggest that if pre-eclampsia is diagnosed, clinicians should defer steroids until high likelihood of delivery within 7 days, with indications for early birth including: inability to control maternal hypertension, progressive deterioration in blood test results or neurological features, or signs of fetal compromise
- Once delivery is anticipated in the immediate future, steroid administration should be prioritised, and clinicians should be aware of neonatal benefit derived from steroid-to-delivery intervals of as little as 3 hours
- Research to improve prognosis and predict timing of birth in pre-eclampsia may improve steroid administration

REFERENCES

- Chappell LC, Duckworth S, Seed PT *et al.* Diagnostic accuracy of placental growth factor in women with suspected preeclampsia: a prospective multicenter study. *Circulation* 2013; **128**: 2121-2131.
- Duhig KE, Myers J, Seed PT *et al.* Placental growth factor testing to assess women with suspected pre-eclampsia: a multicentre, pragmatic, stepped-wedge cluster-randomised controlled trial. *Lancet* 2019; **393**: 1807-1818.