

Intravenous Dexamethasone and its Impact on Placental Inflammation at Term

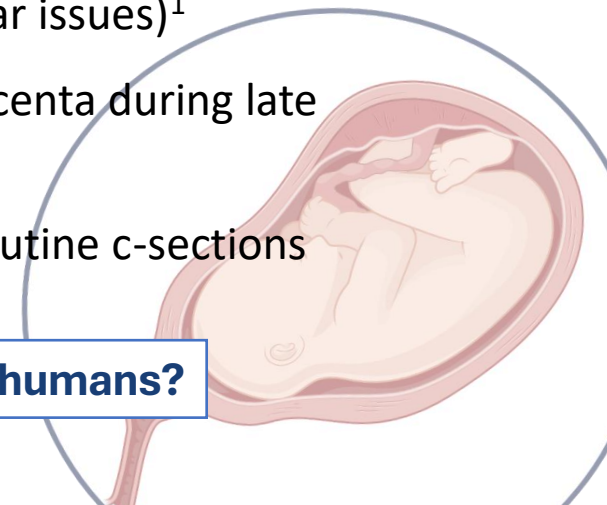
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Background

- Antenatal Steroids (ANS) are broadly used for reducing morbidity and mortality in premature infants
- Dexamethasone (DEX) administration during c-section has become routine, e.g. part of ERAC bundle
- With the goal of improving dosing regimens and patient selection, recent studies are examining potential long-term risks of ANS (e.g. neurodevelopmental disorders, metabolic disturbances, and cardiovascular issues)¹
- Animal studies have suggested that DEX can paradoxically increase inflammation in the placenta during late gestation – not explored in human placentas²
- Our placenta biorepository spans the introduction of an ERAC that included DEX 4mg for routine c-sections

Does acute exposure to dexamethasone affect inflammation in the placenta in humans?



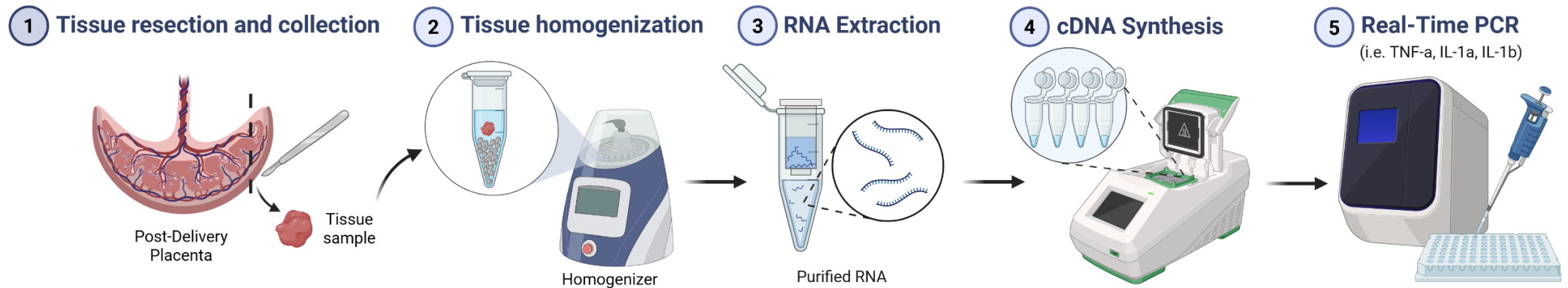
Study Design

Hypothesis:

A single dose of dexamethasone 4mg would not acutely upregulate placental inflammatory mediators.

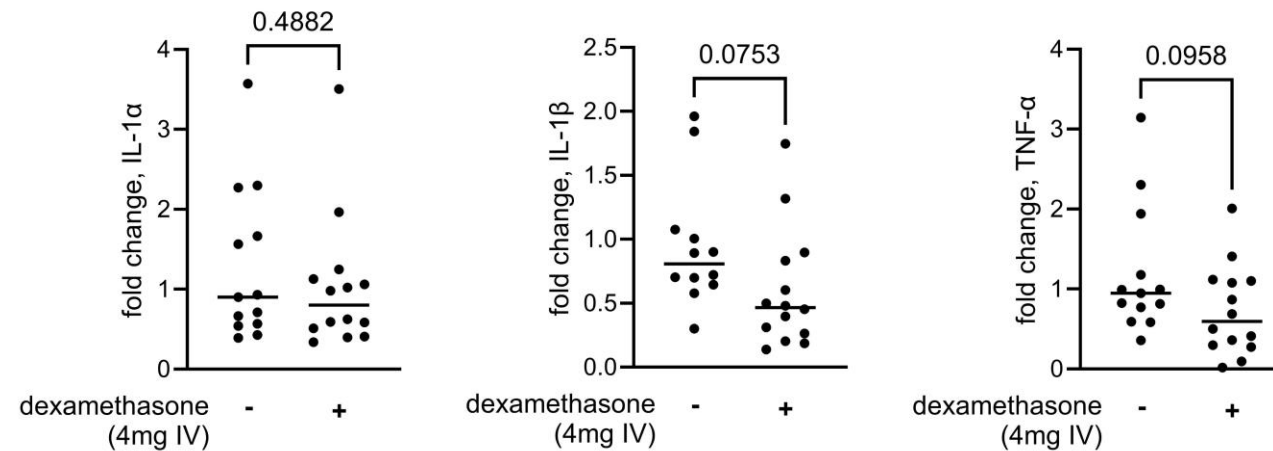
Methods:

**Retrospective cohort analysis of healthy patients presenting for scheduled c-section at ≥ 37 weeks*



Results

	No Dexamethasone	Dexamethasone 4mg	
	n=14	n=14	p-value
Maternal age (y)	36.0 ± 2.9	33.9 ± 10.1	0.20
Maternal race			0.94
Asian	1 (7.1%)	1 (7.1%)	
Black	1 (7.1%)	1 (7.1%)	
White	11 (78.6%)	10 (71.4%)	
Unknown	1 (7.1%)	2 (14.3%)	
Maternal BMI (kg/m²)	31.1 ± 4.8	30.2 ± 3.6	0.56
Primipara	2 (14.3%)	6 (42.9%)	0.10
Gestational age (weeks)	39.1 ± 0.5	38.7 ± 0.7	0.06
Underlying medical conditions?	none	none	
Neonatal Sex: female	6 (42.9%)	4 (28.6%)	0.43
Time: Dex to delivery (min)	N/A	28.3 ± 13.5	



TNF-α and IL-1β trend toward suppressed expression with DEX

- 4mg IV dexamethasone does not acutely upregulate inflammatory mediators in the placenta at term
- Limitations:
 - DEX vs Betamethasone
 - Single Dose at a Single Timepoint
 - 3 candidate inflammatory markers
- Future studies:
 - Consider similar analysis in patients who received multi-dose ANS regimen for prematurity
 - Analyze an expanded panel of inflammatory markers

References:

[1] Sean W. D. Carter et al., Expert Opinion on Pharmacotherapy, 2025

[2] Peter J. Mark et al., Placenta, 2013

Images were generated using Biorender