

Developmental outcomes for children following elective birth at 39 weeks: causal inference analyses examining the timing and mode of birth

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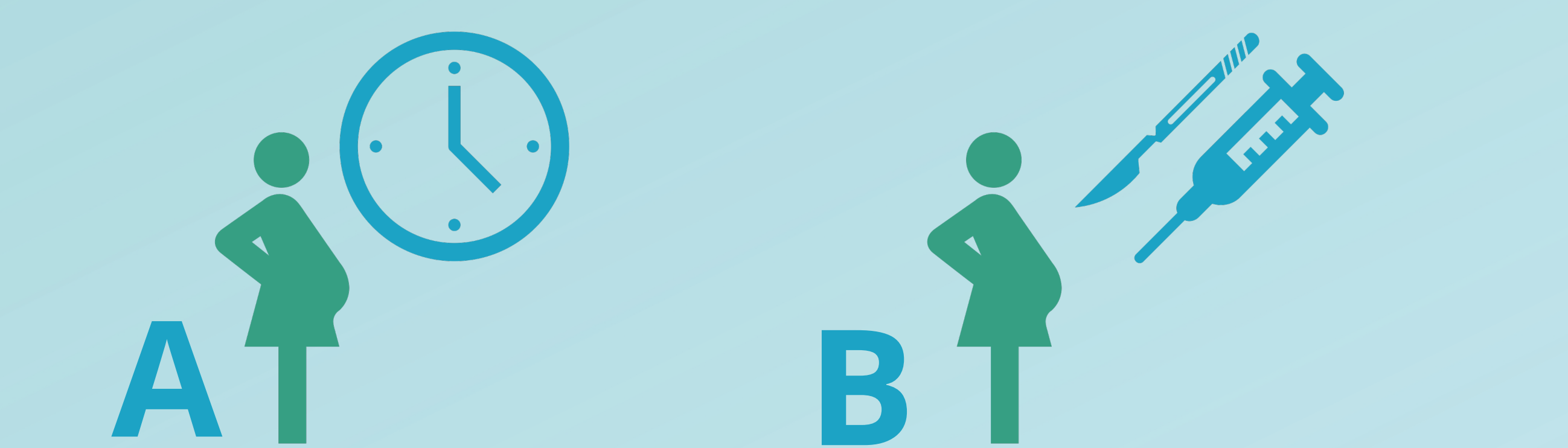
Introduction

Previous studies have shown the benefit of elective induction of labour at 39 weeks' gestation in reducing rates of caesarean section and adverse maternal and perinatal outcomes, compared with expectant management¹⁻³. Induction of labour at 39 weeks has been on the rise in recent years, however, the long-term childhood impacts of this change in practice have not been well established. Existing evidence suggests decreasing rates of special educational needs with increasing gestation⁴. There is also some evidence to indicate that induction of labour at 39-40 weeks does not have a detrimental impact on school performance^{5,6}. Global developmental outcomes have not been investigated.



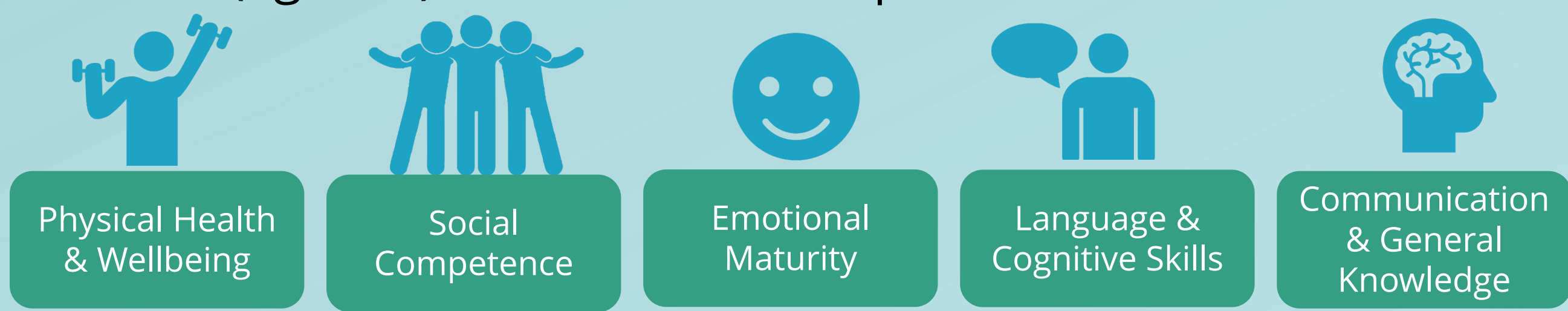
Objectives

- A) To compare developmental outcomes at school age following elective birth at 39 weeks vs expectant management after 39 weeks.
- B) To compare developmental outcomes at school age between induction of labour vs planned caesarean section at 39 weeks.



Methods

- Perinatal data from 01 Jan 2005 – 31 Dec 2013 were obtained from the Victorian Perinatal Collection Unit and linked with developmental outcomes from the triennial Australian Early Development Census (AEDC).
- 88,165 births were included.
- The AEDC assesses Australian Children in their first year of school (age 4-6) across five developmental domains.

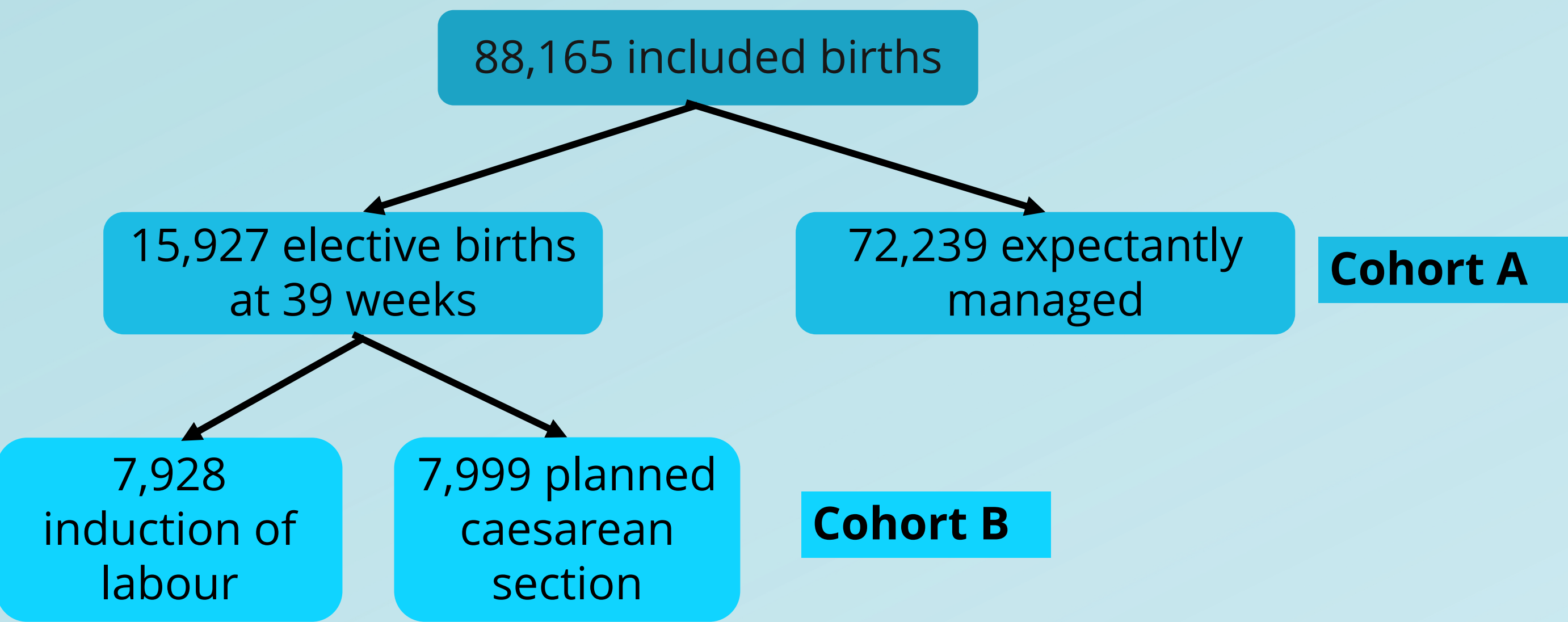


AEDC developmental domains

- Primary outcome:** A score in the lowest 10% of two or more domains of the AEDC ('developmentally vulnerable').
- Secondary outcomes:** A score in the lowest 10% of any one of the AEDC domains.

Results

Cohort Identification



Results

Cohort A

Elective birth at 39 weeks (induction of labour or caesarean section) vs. expectant management.

Outcome	Adjusted Relative Risk (95% CI)
Primary Outcome	
Developmental vulnerability in ≥2 domains	1.03 (0.96 – 1.12)
Secondary Outcomes	
Physical health & wellbeing	0.94 (0.86 – 1.02)
Social competency	1.04 (0.96 – 1.13)
Emotional maturity	1.03 (0.94 – 1.12)
Language & cognitive skills	1.02 (0.92 – 1.13)
Communication & general knowledge	1.04 (0.94 – 1.10)

No difference in school-age developmental outcomes between children born electively at 39 weeks' gestation compared with those who were expectantly managed.

Conclusions

Our study has, for the first time, assessed the effect of elective birth at 39 weeks' on childhood developmental outcomes. We observed that elective birth at 39 weeks did not alter the risk of developmental vulnerability at school entry. There was no difference between induction or elective caesarean section at 39 weeks. These findings are reassuring given the increasing prevalence of elective birth at this gestation. Our results will provide timely and relevant information for clinicians and patients, to assist in shared decision-making when planning for birth.

Cohort B

Induction of labour vs. planned caesarean section at 39 weeks only.

Outcome	Adjusted Relative Risk (95% CI)
Primary Outcome	
Developmental vulnerability in ≥2 domains	0.96 (0.82 – 1.12)
Secondary Outcomes	
Physical health & wellbeing	1.05 (0.90 – 1.18)
Social competency	0.96 (0.81 – 1.06)
Emotional maturity	1.03 (0.92 – 1.19)
Language & cognitive skills	1.03 (0.88 – 1.15)
Communication & general knowledge	0.89 (0.79 – 1.02)

No difference in school-age developmental outcomes between children born via induction of labour compared with elective caesarean section at 39 weeks.

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