IS PRENATAL SEX SELECTION AN ISSUE IN AUSTRALIA? A POPULATION-BASED STUDY OF 1,191,250 BIRTHS 1999–2015 USING THE VICTORIAN PERINATAL DATA COLLECTION

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Background: High male-to-female (M/F) ratios at birth have been documented across Asia, particularly in China and India. This phenomenon has been attributed to prenatal sex selection due to son preference. A number of recent studies have indicated that sex-selective practices may continue following migration to Western high-income countries, however, the situation in Australia has not yet been explored.

Methods: In this population-based study we assessed M/F ratios at birth per mother’s country of birth for all registered births 1999-2015 in Victoria, Australia (n=1,191,250), using the natural occurring M/F ratio of 1.05 as reference point. We also compared the M/F ratio among births to mothers born elsewhere to that of mothers born in Australia by calculating relative risk, stratified by time period and parity.

Results: Analyses revealed an increased ratio of male births to mothers born in India, China and South-East Asia, particularly at higher parities, and in more recent time periods, with statistically significantly elevated M/F ratios from 1.079 to 1.248, and relative risks for male birth 1.012 to 1.084. The most notable increased ratio of male births was found among multiple births to Indian-born mothers, and parity ≥2 births to Chinese and Indian-born mothers in 2010-2015.

Conclusions: This study provides evidence that sex selection is happening in Australia. The increased ratio of males among multiple births also suggests that assisted reproduction, and possibly, ‘reproductive tourism’ may play a role in this. Existing legal prohibitions of prenatal sex selection are insufficient to prevent this early form of discrimination against females.

REDUCED BLOOD VOLUME DECREASES CEREBRAL BLOOD FLOW IN PRETERM NEONATES

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Background: Preterm infants often have impaired cardiovascular function that may contribute to poor neurodevelopmental outcomes. This study aimed to determine the effects of reduced blood volume in preterm and term piglets on cardiovascular function, including cerebral blood flow.

Methods: In term (97/115 d) and term piglets, up to 10% of the estimated blood volume was removed. Heart rate, cardiac contractility and relaxation, cardiac output, mean arterial pressure (MAP), and cerebral blood flow were measured at baseline and again after blood volume reduction. Removal of blood was ceased if MAP dropped below 20 mmHg.

Results: The volume of blood removed was less in preterm piglets than in term piglets (5.1 ± 1.8 vs 7.7 ± 0.9 mL/kg, Mean ± SD, p<0.001). With reduction in blood volume, cardiac output and MAP decreased in both term and preterm piglets. Cerebral blood flow decreased in preterm but not term piglets and cerebral vascular conductance decreased in term piglets only.

Conclusions: Compensatory responses to protect cerebral blood flow after blood volume reduction are active in term piglets but not in preterm piglets. Results highlight the importance of effective methods to detect and treat hypovolemia in preterm neonates.

WHY DO TERM BABIES CRY AT BIRTH? FIRST INSIGHTS OF REAL-TIME LUNG IMAGING IN THE DELIVERY ROOM (THE AERATE STUDY)

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Background: The AERATE study aims, for the first time, to image breath-to-breath aeration and ventilation during the successful and supported respiratory transition in term and preterm infants. Herein we report our initial observations in healthy term infants.

Methods: At birth a non-adhesive electrical impedance tomography (EIT) belt was placed around the chest in term infants born via caesarean section, and EIT images, video, SpO2 and heart rate recorded until 6-min during clinical care. Post-hoc EIT artefact-free in EIT artefact-free in

Results: Initial analysis of the first 10 infants (total 30 infants) found that 553 (49.7%) in the first 6-min life identified as cry or tidal breathing (video), the volume shape classified and ventilation homogeneity, inflation FRC change and inspiratory (Ti)/expiratory (Te) times determined.

Conclusions: The AERATE study aims, for the first time, to image breath-to-breath aeration and ventilation during the successful and supported respiratory transition in term and preterm infants. Herein we report our initial observations in healthy term infants.

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