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Media Release

Steroid use in pregnancy study reveals breakthrough finding

Wednesday, 13 October 2021

A pioneering research program aiming to optimise steroid dosing in pregnancy for fetal lung maturation is set to benefit the millions of families worldwide at risk of delivering preterm.

The long-standing collaborative Western Australian-based program, involving researchers from the Women and Infants Research Foundation, Cincinnati Children's Hospital, USA, and Tohoku University Hospital, Japan, has used a fetal sheep model to determine the optimum dose of antenatal steroids (ANS) therapy for those at risk of preterm birth.

Findings recently published in the prestigious medical journal, *The American Journal of Obstetrics & Gynecology*, have shown that the inclusion of betamethasone phosphate in ACS therapy, which generates elevated drug exposures, was associated with lower birth weights, higher treatment variability, and did not improve lung maturation relative to use of low concentration-yielding betamethasone acetate alone.

One of the most pressing challenges facing preterm babies (born before 37 weeks' gestation) is the transition to breathing room air. As such, perinatal care is significantly focussed on improving preterm lung function.

The use of steroid therapy in pregnancy to rapidly mature the fetal lung has been responsible for saving the lives of countless thousands of preterm babies.

Lead author, Dr Tsukasa Takahashi, explained that while ACS therapy has been used widely, and benefits clearly demonstrated when given to the right women at the right time, concerns remain regarding an increased potential risk of adverse effects.

"The research team hypothesised that the high fetal betamethasone levels achieved by the betamethasone phosphate component of combined Beta-P and Beta-Ac therapy would be redundant for driving preterm lung maturation," he said.

"The results of this study support this and also strongly suggest that lower-dose treatment with Beta-Ac, avoiding high materno-fetal steroid exposures, is both safer and more effective than combined Beta-P and Beta-Ac therapy."

Lungs of extreme premature babies are often too structurally and functionally under-developed for the baby to breathe easily, and those born at the earliest gestational ages may suffer from severe and life-long problems such as cerebral palsy, developmental delay or blindness.

WIRF Deputy Director, Professor Kemp, said the findings represent a clear pathway to optimising health outcomes in cases where preterm birth is inevitable.

"This study significantly expands on our work in understanding how fetal steroid exposure can change the durability of preterm lung maturation," he said.

"Given the strong link between excess fetal steroid exposure and lower birth weights, the global use of this drug, and other potentially adverse effects, these results are set to play a major role in improving immediate and longer term health outcomes for preterm infants."



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The Study paper can be viewed online at [The American Journal of Obstetrics & Gynecology here.](#)

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Media opportunity:

Dr Tsukasa Takahashi and Professor Matt Kemp are available for interview and follow-up media comment.

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Background:

The Women and Infants Research Foundation

The Women & Infants Research Foundation is one of Australia's leading medical research institutes dedicated to improving the health of women and infants. We focus our research and programs across four principal areas: the prevention of preterm birth, gynaecological cancers, women's mental health, and the development of an Artificial Womb. Our research and programs have directly contributed to a number of improved clinical practices and health outcomes.