

Helping preterm babies get the best start

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Babies born prematurely could be at greater risk of developing kidney diseases later in life according to a landmark study investigating the impacts of preterm birth on kidney development.

The Monash University study is identifying new strategies for minimising the consequences of being born preterm, which accounts for around eight per cent of births each year in [Australia](#).

By comparing the kidneys of babies born prematurely with those born after the full nine-month gestation, the research team, led by Associate Professor Jane Black from the Department of [Anatomy](#) and Cell Biology, identified that [preterm babies](#) had far fewer nephrons – the 'building blocks' that make our kidneys.

"An average person has around 800,000 to 1.5 million nephrons and the number we have at [birth](#) is the number we have for life," Associate Professor Black said.

"We have shown that babies born preterm have less nephrons, in the range of 400,000 – 600,000. This is because nephron development occurs in the last few weeks of pregnancy, so babies born preterm have not had time to complete the developmental process."

"Even moderate preterm babies, those born within four weeks of full gestation, who were previously considered to have achieved 'normal' development, were found to have far fewer nephrons and underdeveloped kidneys."

Associate Professor Black said the findings were of critical importance because of the known link between having fewer nephrons and renal, or kidney, diseases.

"The more nephrons you have the more 'solid' a structure your kidneys will have. When we look at kidneys that have fewer nephrons, abnormalities are present, which indicates that preterm babies could be much more susceptible to renal disease and possible kidney failure later in life," Associate Professor Black said.

"Particularly in the last 30 years, we have had great successes with preterm births and today even babies born 26 weeks premature have an 80 per cent chance of survival. Preterm babies now account for around eight per cent of births in Australia and 12-14 per cent in the USA."

"Because the improvements in survival rates are only recent, we have not yet witnessed the impact of premature births on the health system."

Associate Professor Black has received two prestigious grants from the National Health and Medical Research Council (NHMRC) administered by Monash University.

"The NHMRC funding will enable Monash researchers to study the development of kidneys and hearts in preterm babies," Associate Professor Black said.

"With the kidney studies, our aim is to develop strategies that will ensure these babies have the highest number of nephrons possible, in order to give them the best start in life."

"We need to know the things that restrict nephron development and are looking at a range of factors, including blood pressure, respiration, medications taken during pregnancy, and care following birth."

"We are also working with Indigenous communities in the Northern Territory so we can make a comparison between the renal development of Indigenous and non-Indigenous babies. This is timely as Indigenous people have 17 times greater incidence of renal disease than the non-Indigenous population," said Associate Professor Black.

Provided by Monash University

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