

More detailed information about current research

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1 Current researches

Medical research helps us understand health problems better and improve our care of patients in the future. Improvements in our knowledge of how the body works, in health and in sickness have led to huge improvements in medical care over the last 100 years. We are constantly striving to understand the conditions we treat better, discover new treatments, and improve the way we care for patients. The Melbourne Children's Sleep Centre has had an active research partnership with the Ritchie Centre at Monash University for the past 10 years, obtaining over \$5 million in funding from the National Health and Medical Research Council of Australia and producing over 90 research publications. We often approach parents of our patients to ask whether they are interested and willing to be involved in some of the research we are carrying out.

2 What's involved?

Parents and children can become involved in our research in several different ways. When parents come in for their child's sleep study, they are asked if they are willing for the results to be used for research. In certain cases parents will be approached by research staff before their child's sleep study to see if they are willing to take part in research studies which require additional measurements to those usually carried out. In some studies we advertise for participants from the community. In every case, parents receive information in writing about the study they are being asked to be involved in, and if they are willing to take part, they are asked to sign a consent form. All involvement in research is voluntary and the decision to participate or not does not affect the care your child receives from the Melbourne Children's Sleep Centre. All information collected is kept completely confidential. By agreeing to participate in our research you and your child will be helping to improve the treatment of children with sleep disorders in the future.

3 What role does oxygen delivery to the brain and sleep disruption play in the memory, learning and behaviour of children who snore or who have obstructive sleep apnoea (OSA)?

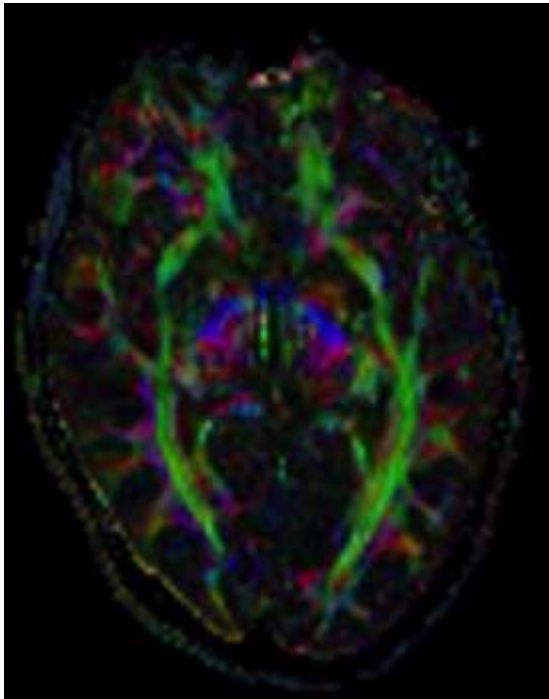
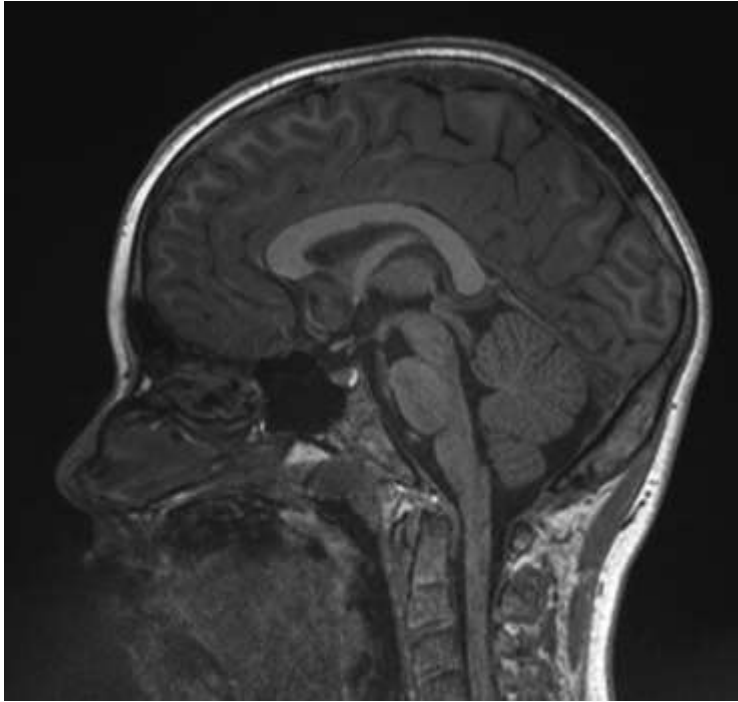
Did you know that breathing problems at night can be linked to learning and behaviour problems? We want to find out what happens to the level of oxygen getting to the brain in children who snore or have OSA to see whether any changes in these oxygen levels affect their learning and behaviour. To do this we ask that your child wears an additional sensor which is placed on your child's forehead to measure brain oxygen levels. Following your child's sleep study, depending on where you live, one of our psychologists will arrange a time that is suitable to you to come to your house and assess your child's learning and memory.



4 Why some children develop sleep disordered breathing and others do not

Not all children who have breathing problems during sleep are the same and doctors and scientists still don't really understand why some children snore and others do not. We are

looking at the effects of body weight and airway structure in children who have breathing problems during sleep to see how this impacts on their blood pressure, behaviour, learning and brain structure. This will help us to better understand why some children snore and others do not, and why some have effects on their learning and behaviour and others do not. As part of this study, we will be asking your child to have a MRI scan (picture below) to look at the structure of the airways and areas of the brain that are involved in blood pressure control, learning and memory. Following your child's sleep study, depending on where you live, one of our psychologists will arrange a time that is suitable to you to come to your house and assess your child's learning and memory.





5 Sudden Infant Death Syndrome (SIDS)

Sadly, SIDS still remains the leading cause of death in infants aged between 1 month and 1 year in Western countries. Many parents worry about their infant dying suddenly and unexpectedly during sleep and our studies have contributed to the current advice about safe sleeping for babies. All infants should be slept on their backs from birth to protect against SIDS. In our current studies we are looking at the effects of sleeping infants on their tummies on levels of oxygen in the brain of preterm infants while they are in the intensive care unit. Babies in the intensive care unit are routinely slept on their tummies to help them breathe. However, we know that sleeping infants on their tummies at home increases the risk for SIDS. Our studies will help us understand the best position for babies to sleep in the neonatal unit, to give these vulnerable babies the best possible start in life.

6 Sleep and effects on the heart in children born small

Did you know that children with Down Syndrome are up to 10 times more likely to have breathing problems during sleep compared to other children? We are interested in understanding more about how sleep problems affect children with Down Syndrome and other medical conditions such as cystic fibrosis. Breathing problems during sleep affect daily activities in children, and detecting and treating the breathing problems will often improve daytime wellbeing in these children.

7 Use of machines to support children's breathing while asleep

A small number of children need support for their breathing using a machine while they sleep, known as CPAP (Continuous Positive Airway Pressure) or BiPAP (**Bilevel Positive Airway Pressure**). We are a specialist centre caring for this group of children and are constantly reviewing our procedures with the aim of improving our care of patients. This

includes collecting data on how many hours each child uses their machine and how much their condition has improved since they started using the treatment.

8 Alternatives to hospital sleep studies

Staying in hospital overnight for a sleep study is time consuming and can be stressful for children and parents. We are undertaking a number of studies looking at alternatives to sleep studies in hospital that can be performed at home. We are evaluating questionnaires, simple home testing like oximetry (an oxygen monitor that attaches to the toe or finger) and activity monitors worn on the wrist. This research will enable us to avoid testing in hospital for more children, while still ensuring they get appropriate treatment as soon as possible.

9 Finding ways to improve behaviour and learning in children who snore

Approximately 1 million Australian children snore. Our research has shown that snoring is associated with behavioural and learning problems in some children. Surgical treatment by removing the tonsils and adenoids can help, but is not usually recommended unless a child has more severe breathing problems. This means that some children with more mild breathing problems may still be at risk of behavioural and learning issues. We are looking at potential non-surgical treatment methods that will improve behaviour and learning in children who snore. For this study, we will be asking parents for their child to have a sleep study **at home**, during which we will test their child's ability to learn before and after sleep. This will help us understand what might be driving the behaviour and learning problems and will lead to the development of new treatments.

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