



Research Directions

Office of Research Services

Neonatal Monitoring

Dr Carolyn McGregor, School of Computing and Mathematics, has been awarded an ARC Discovery Project to extend her recent data mining research to create a state of the art clinical research environment that will enable clinicians in Neonatal Intensive Care Units (NICU's) to look for new trends and patterns that are early warning signs for illnesses and other diagnoses.



'During 2003, 15% of babies born in NSW required special care or NICU admission' says Dr McGregor. 'A major limitation in their clinical research is that data from multiple monitors and other devices is not collected and integrated for historical analysis. The true meaning of the trend and behaviour of the data, rather than just the raw values, is also not currently considered. Several monitors might be hooked up at one time to measure different physiological data, but lack of integration means that it is difficult to detect complex multi-dimensional trends and patterns in vital signs such as blood oxygen, blood pressure, and heart rate. Cross-correlation of monitoring equipment data might allow new onset indicators for various diagnoses to be found'

The project is part of a collaboration between the Nepean Hospital's Neonatal Intensive Care Unit, and health informatics researchers at UWS. The project will apply the theory of 'multi-dimensional temporal abstraction' to establish an analytical framework to enable analysis for complex onset indicators for disease using all the clinical and physiological data as a whole, rather than as separate data sets from different machines.

The project is expected to improve neonatal clinicians' ability to identify important life-threatening trends in babies in NICU's, thereby decreasing the likelihood of adverse events that may result in disability or death.

Project Title: *Multi-dimensional temporal abstraction to support neonatal clinic research*

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