The Intensive Care Unit (ICU) at The Alfred remains one of the largest ICUs in Australia, with 35 beds in the complex and another 6 beds in ward 2C. This allows for the treatment of more than 1,700 patients annually, with major specialties including trauma, major burns, heart/lung transplantation, bone marrow transplantation, artificial hearts, extracorporeal membrane oxygenation, neurosurgery and infectious diseases.

The department has a well-developed clinical research program with major research themes including trauma (particularly severe traumatic brain injury), resuscitation fluids, septic shock, mechanical ventilation for acute lung injury, nutrition, extracorporeal support and cardiothoracic surgery.

Emphasis is placed on performing investigator-driven projects, the majority of which are multicentre collaborations with the Australian and New Zealand Intensive Care Society Clinical Trials Group (ANZICS CTG), the National Trauma Research Institute, and several research groups in Canada. However, participation in industry-sponsored trials also occurs. Associate Professor Jamie Cooper (who holds an NHMRC Practitioner Fellowship), Dr Andrew Davies, Dr Vincent Pelligrino, Dr Bob Salamonsen and Associate Professor Carlos Scheinkestel are the predominant investigators. Most other full-time intensivists participate in research, eagerly supported by the entire ICU nursing group and allied health staff.

Research is funded from successful competitive grants (NHMRC, Victorian Trauma Foundation and Australian and New Zealand Intensive Care Foundation), with some funding from industry-sponsored projects. Such funding has supported our outstanding and enthusiastic ICU research team, which in 2004 included Lynne Murray, Shirley Vailance, Catherine Harry, Lisa Higgins, Katherine Moulden, Cindy Weatherburn, Siouxzy Morrison and Denise Durling.

Two randomised controlled trials of resuscitation fluids led by Alfred ICU investigators were published in major medical journals in 2004. A successful study of the use of hypertonic saline in the pre-hospital treatment of patients with hypotension and severe traumatic brain injury, led by Jamie Cooper, was published in JAMA. Another study comparing albumin and saline in the resuscitation of patients in the ICU (the SAFE study) was published in the New England Journal of Medicine. Jamie Cooper and Andrew Davies were heavily involved in the design and performance of the SAFE study, which recruited 6,997 patients, making it the largest study ever done with ICU patients.

Among many others, several major grants awarded in 2004 are worthy of note. The RENAL study with which Carlos Scheinkestel has had major involvement and which will investigate the ‘dose’ of renal replacement therapy in critically ill patients with acute renal failure, received over $1.8 million from the NHMRC, and will commence in 2005.

The DECRA study, led by Jamie Cooper and Professor Jeffrey Rosenfeld, testing early decompressive craniectomy in severe traumatic brain injury, was awarded nearly $500,000 by the NHMRC. This multicentre study is already under way in Australia and New Zealand and is presently in the process of expansion into Canada and Asia.

A multicentre study comparing the delivery of enteral nutrition into the jejunum with the stomach, led by Andrew Davies and endorsed by the ANZICS CTG, was awarded over $150,000 by the Australian and New Zealand Intensive Care Foundation, and will commence in 2005.

ICU nurse and research coordinator Cindy Weatherburn received a $15,000 project grant to perform a study of the BIS (bispectral index) monitor in ICU patients. With her colleagues, she was able to complete patient enrolment by the end of 2004.
Current Projects

- DEGRA: a randomised controlled trial of early decompressive cranectomy in traumatic brain injury
- VASST: randomised controlled trial of vasopressin versus noradrenaline in septic shock
- LOVS: a study of a lung open ventilation strategy in acute lung injury
- VALID: a study of surfactant in patients with acute lung injury
- DORI-10: a study comparing doripenem and imipenem in patients with ventilator-associated pneumonia
- CAPTIVATE: a phase 3, multicentre, study of Tifacogin (recombinant tissue factor pathway inhibitor) in severe community-acquired pneumonia
- The effects of low dose aminophylline on renal function in critically ill patients
- The effects of PEEP and recruitment manoeuvres in ALI
- Manual hyperinflation in patients on mechanical ventilation
- Invasive neuromonitoring in patients with traumatic brain injury
- Better outcome prediction in patients with traumatic brain injury
- A randomised controlled multicentre study comparing jejunal and gastric delivery of nutrition in ICU patients
- The impact of bispectral index monitoring on sedation administration in mechanically ventilated patients
- Evaluating the effect of pre-dilution on filter clotting time in the setting of acute renal failure
- Rapid sequence intubation in head injured patients
- Treatment of cardiac arrest with hypothermia
- CPR studies in swine
- Thromboelastogram in patients with VentrAssist VAD

Publications

Journal articles


Bob Salamonsen has been closely involved with ongoing research studies involving the VentrAssist device (a ventricular assistance device for heart failure) and has received specific funding from Ventracor to assist him and his cardiothoracic surgery colleagues in understanding the performance characteristics and anticoagulation requirements of the device.

Cindy Weatherburn

Cindy Weatherburn is a critical care nurse, currently working as a research coordinator and clinical nurse specialist within the ICU. Cindy obtained her Bachelor of Nursing in 1996 and has had extensive experience in critical care nursing in Australia and overseas. She has developed a keen interest in the sedation of ICU patients, which provided a research focus for her Master of Nursing Degree, completed in 2004 through the University of New England (NSW).

Cindy actively supports the development of a clinical nurse research model in which best practice is established by those who deliver nursing care. The model involves a clinical nurse research coordinator currently working as a critical care nurse, Cindy Weatherburn, actively supporting the development of a clinical nurse research model in which best practice is established by those who deliver nursing care. The model involves Cindy Weatherburn, actively supporting the development of a clinical nurse research model in which best practice is established by those who deliver nursing care.

Grants and Other Funding


Bernard S, Patrick I, Cooper DJ, Kelly AM, Silvester W. Treatment of cardiac arrest with hypothermia. NHMRC Project Grant. 2003-2006: $295,000.

Cooper DJ, NHMRC Practitioner Fellowship. 2002-2006: $250,000.


Salamonsen RF, James N. CPR studies in swine. Ventracor Project Grant. 2004: $40,000.


Weatherburn C. Impact of BIS monitoring in intensive care patients. Australian College of Critical Care Nurses (ACCCN) Project Grant. 2004-2005: $15,000.

Substantial commercial funding was also received by the department.