



THE UNIVERSITY OF  
MELBOURNE

## Critical Care Essentials for Nurses: Assessment and management of acute respiratory failure (COVID-19)

The University of Melbourne Department of Nursing,  
Melbourne Medical School mobile Learning Unit and The Centre for Integrated Critical Care,  
Melbourne School of Professional and Continuing Education (MSPACE)

9<sup>th</sup> April 2020

### **Contact:**

Email: [gerdtzmf@unimelb.edu.au](mailto:gerdtzmf@unimelb.edu.au)

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**Critical Care Essentials for Registered Nurses:**  
*Assessment and Management of Acute Respiratory Failure (COVID-19)*

Melbourne School of Health Sciences: Department of Nursing

Melbourne Medical School: Mobile Learning Unit and The Centre for Integrated Critical Care

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## **The University of Melbourne**

Date 9<sup>th</sup> April 2020

**Contact:**

Professor Marie Gerdtz

Head, Department of Nursing

Email: [gerdtzmf@unimelb.edu.au](mailto:gerdtzmf@unimelb.edu.au)

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## Executive Summary

The COVID-19 pandemic demands the rapid upskill of the nursing workforce in order to manage an anticipated surge in emergency presentations with acute respiratory problems and/or failure.

The Department of Nursing within the multidisciplinary School of Health Sciences (MSHS) has adapted existing educational content already developed for an award course (Graduate Certificate in Critical Care) to produce this short COVID-19 specific 10-hour online course.

The course is sponsored by Safer Care Victoria and has been developed by the Department of Nursing in collaboration with Melbourne School of Professional and Continuing Education, Melbourne Medical School's Mobile Learning Unit and the Centre for Integrated Critical Care.

The overall objective of the course is to support nurses' development of essential foundational knowledge to plan, monitor and evaluate nursing interventions for the critically ill patient in the context of the COVID-19 pandemic.

The target audience is Registered Nurses who are likely to be deployed to provide care for patients at risk of developing, or who have already developed acute respiratory failure.

The on-line course was released on April 13<sup>th</sup> 2020. An overview of the course content and structure is provided in the following pages together with information about our collaborative partners.

## Collaborative Team

### Melbourne School of Health Sciences: Department of Nursing

Located within the interdisciplinary environment of the Melbourne School of Health Sciences, the Department of Nursing is a research-led academic department in which an evidence base is implanted in all of our functions. For more than two decades, the department has forged and sustained strong relationships with key health providers including public and private hospitals along with state and federal government. We offer a comprehensive suite of specialty and advanced practice programs using innovative, flexible blended and online learning approaches. Courses are clinically based producing specialist practitioners who have the knowledge and skills to proceed to advanced practice, including that of Nurse Practitioner.

### Melbourne Medical School: Centre for Integrated Critical Care

Located within the Melbourne Medical School, the Centre for Integrated Critical Care (CICC) brings together the three key disciplines that manage high risk and critically ill adults and children: anaesthesia; emergency medicine; and intensive care. The core objective of CICC is to lead in policy and practice to improve the safety and quality of clinical care across the patient journey through internationally recognised, integrated academic research, education and engagement in the care of high risk and critically ill patients before, during and after their hospital stay.

### Mobile Learning Unit

Located within the Melbourne Medical School, The Mobile Learning Unit focuses on the development of Continuing Professional Development (CPD) online courses for health care practitioners on our eLearning platform. The Mobile Learning Unit was established by the University of Melbourne to interconnect

Academics and Researchers with Healthcare Professionals through the delivery of Online Medical Courses. The latest research discoveries, innovative treatments, and updated learnings from academics is offered online as Continuing Professional Development to general practitioners, specialists, nurses, physicians, medical students and allied health professionals.

## Short overview of the experts

Mr Nick Bridge RN GC-CritCare MEd

Nick Bridge is a Registered Nurse with extensive experience in critical care nursing, paramedicine and postgraduate nursing education. Nick leads a major program of work focussed on the development of 8 specialty courses in nursing practice (2017-current) in the Department of Nursing at The University of Melbourne. His expertise includes curriculum design in online learning and the development of assessment for work-integrated learning in blended postgraduate courses.

Dr Rebecca Jarden BA RN BHS (Nursing) MN PhD

<https://findanexpert.unimelb.edu.au/profile/824812-rebecca-jarden>

Rebecca Jarden's 20 years of nursing has been predominantly focused in critical care across a variety of roles in the senior nursing team, such as associate charge nurse manager, flight nurse, and quality portfolio manager. Rebecca has worked at the University of Melbourne's nursing department since 2018, previously working in the nursing department at Auckland University of Technology (New Zealand). Her ongoing research collaborations include nurse-led quality improvement initiatives and critical care nurses' wellbeing.

Associate Professor Sharon Kinney RN, Cardiothoracic Cert, PICU Nursing Cert, MN, PhD

<https://findanexpert.unimelb.edu.au/profile/1969-sharon-kinney>

Sharon has dual appointments at The University of Melbourne and the Nursing Research Department at the Royal Children's Hospital in Melbourne. She coordinates the Master of Advanced Nursing Practice program and oversees the Graduate Certificate programs in paediatrics, paediatric intensive care and neonatal intensive care. She worked for many years in paediatric critical care and has held clinical and educational appointments within the area. Her program of research focuses on improving the safety and quality of care of hospitalised children with a particular focus on improving the detection and response to paediatric clinical deterioration. She is the nursing lead on the Victorian Children's Tool for Observation and Response (ViCTOR) projects in Victoria.

Professor Marie Gerdtz RN BN A&E Cert GDAET PhD

<https://findanexpert.unimelb.edu.au/profile/3542-marie-gerdtz>

Marie Gerdtz's approach to scholarship emanates from 15 years of clinical practice as a Registered Nurse working in the specialty of emergency nursing. Prior to the completion of her PhD at The University of Melbourne in 2003, she held senior clinical leadership roles in a number of tertiary hospitals. Prof Gerdtz holds an honorary appointment at Melbourne Health, where she has developed a program of research focusing on emergency access, resource allocation, and clinical risk management. Within her research program she has supervised eight RHD candidates to completion, many of these students have progressed to senior roles in health care settings. Clinical implementation of her research findings is enhanced by the strong collaborative partnerships she

has established within the health care industry and with government. In late 2016 she was appointed to position of Head, Department of Nursing.

## Module contributors

- Nick Bridge RN GC-CritCare MEd
- Dr Rebecca Jarden BA RN BHS (Nursing)MN PhD
- Rosemary Turner RN, GradDip (Critical Care) MPH
- Prue Cambridge RN, GradCert(Cardiac) MNurs(CritCare)
- John Thompson RN, NP, MANP
- Andrew Scanlon RN, NP, DNP
- Hollie Prescott RN, BN, GC-EN, MANP.

## Course Objective

Provide evidence-based, rapid, up to date, flexible, online education to support nurses' development of essential foundational knowledge to plan, monitor and evaluate nursing interventions for the critically ill patient in the context of the COVID-19 pandemic.

## Target Audience

Registered nurses who may be deployed to care for patient at risk or who have developed acute respiratory failure. These RNs will require rapid upskilling and knowledge related to specialty nursing practice skills needed to safely care for patients in acute respiratory failure.

## Course Overview

Ten self-paced modules provide online active learning with self-assessment focused on the care of the patient with acute respiratory failure and sepsis.

## Mode of Delivery

This is a wholly online modularized mobile learning course. The course is scaffolded by a series of interactive case studies and problem-solving activities. Emphasis is given to critical elements of practice to highlight application of relevant clinical practice guidelines.

## Learning Outcomes

By the end of the ten modules learners will be able to:

1. Apply evidence to the nursing assessment and management of patients with acute respiratory failure and a systemic inflammatory response
2. Identify core risks and control measures implemented to safely care for critically ill patients

## Learning Management System

The Learning Management Platform provides a mobile enabled digital learning environment that facilitates the organization and sequencing of content, learning activities, and assessment and streamlines the delivery of learning.

## Course administration

Student enrolment and administration are managed by the Mobile Learning Unit (MLU). The MLU have significant experience and infrastructure in the management of large cohorts of student applications, enrolment, LMS management and course administration of fully online courses.

## Course Syllabus

Each of the ten modules is one hour of learning focused on achieving learning outcomes. Practice and safety alerts are drawn from key current guidelines to support practice. The ten online modules draw from case studies to move through the critical care patient journey from their presentation with acute respiratory and/or haemodynamic deterioration.

### 1. Core principles in assessing severe acute respiratory infection

- Explain fundamental nursing assessments of the patient with a severe acute respiratory infection
- Describe the key findings that are important in determining the severity of an acute respiratory infection
- Explore the triggers and strategies for escalation of care for the patient with a severe acute respiratory infection through clinical case study analysis.

### 2. Management of hypoxic respiratory failure

- Explain the indications for high flow oxygen therapy and non-invasive positive pressure ventilation
- Describe the common modes, settings, terminology, risks and benefits of high flow oxygen therapy and non-invasive positive pressure ventilation
- Explore key nursing considerations for the critically ill patient receiving non-invasive ventilation through clinical case study analysis.

### 3. Arterial blood sampling and blood gas analysis

- Describe a structured approach to blood gas sampling and analysis
- Explain the significance of the findings in the analysis of a blood gas
- Explore key nursing considerations across a range of blood gas analyses from clinical case studies.

### 4. Airway management

- Explain the initial preparation of a patient and environment for rapid sequence intubation
- Describe the commonly used drugs and equipment for rapid sequence intubation
- Explore the specific precautions to maximise safety during the intubation of the COVID-19 patient through clinical case study analysis

### 5. Invasive ventilation principles

- Understand the most common invasive positive pressure ventilation modes, settings and terminology

- Learn about ventilator-induced lung injury and dyssynchrony, and explore key nursing considerations for the critically ill patient receiving invasive positive pressure ventilation through clinical case study analysis

## 6. Invasive ventilation management

- Explain the common alarm parameters, modifications and nursing actions taken to minimise harmful effects and risks of mechanical ventilation on the critically ill patient
- Describe the monitoring and evaluation requirements for the patient receiving mechanical ventilation
- Explore, through clinical case study analysis, risk mitigation and management strategies in the mechanically ventilated patient with acute respiratory distress syndrome

## 7. Haemodynamic monitoring

- Explain the function, positioning and risks of invasive haemodynamic monitoring and blood sampling Mitigating and managing haemodynamic monitoring risks
- Describe the key nursing considerations required to mitigate risk when managing the patient with an arterial line and/or central venous access device
- Explore key nursing considerations for the critically ill patient with arterial and central venous access devices and pressure monitoring through clinical case study analysis.

## 8. Haemodynamic support

- Explain the most common intravenous fluid management strategies, vasopressors and inotropes used in the care of the critically ill patient
- Describe the risks and benefits of the use of intravenous fluids, vasopressors and inotropes in the critically ill patient
- Explore key nursing considerations for the critically ill patient receiving intravenous fluid, vasopressor and/or inotropic support through clinical case study analysis

## 9. Care of the sedated and ventilated patient

- Explain the fundamental nursing interventions for health promotion in the critically ill paralysed, sedated, ventilated patient
- Describe the relationship between the fundamental nursing interventions and the risks associated with critical illness and admission to critical care
- Explore fundamental nursing considerations and risk assessment for the paralysed, sedated, ventilated patient through clinical case study analysis

## 10. Specific guidelines for the management of sepsis in COVID-19

- Describe the key assessment criteria for sepsis
- Explain the standard nursing considerations for the patient admitted to critical care with COVID-19
- Explore the major changes with respect to the management of sudden deterioration or cardiac arrest in the COVID-19 patient through clinical case study analysis



## Methods of assessment

Engaged methods of self-assessment are used to provide formative feedback to learners. This will include interactive gamification, polling, quizzes and brainstorming with immediate feedback on responses to support self-paced, flexible learning.

The course will require participants to attain the following:

- successfully complete all 10 modules (evidence as marked as “complete”)
- achieve 80% correct answer for Multiple Choice Questions (MCQ) across all modules (total of 100 questions) with a maximum of 5 attempts

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## COVID-19 Guidelines

The Australian and New Zealand Intensive Care Society (ANZICS) COVID-19 Guidelines  
<https://www.covid19repository.com/the-australian-and-new-zealand-intensive-care-society-anzics-covid-19-guidelines/>

Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19) <https://www.sccm.org/getattachment/Disaster/SSC-COVID19-Critical-Care-Guidelines.pdf>

World Health Organisation. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected. ([https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected))

## Resources

Australia and New Zealand Intensive Care Society (ANZICS; <https://www.anzics.com.au/>)

Australia and New Zealand College of Anaesthetists (ANZCA; <http://www.anzca.edu.au/>)

Australian College for Emergency Medicine (ACEM; <https://acem.org.au/>)

Australian College of Critical Care Nursing (ACCCN; <https://www.acccn.com.au/>)

College of Emergency Nursing Australasia (CENA; <https://www.cena.org.au/>)

World Health Organisation <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>