



## Critical Care

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### Key Partners

eCritical  
[Alberta Precision Laboratories](#)  
[Alberta Health, Research and Innovation Branch](#)

[Department of Critical Care Medicine, University of Alberta](#)  
[Department of Critical Care Medicine, University of Calgary](#)  
[Métis Nation of Alberta \(MNA\)](#)  
[Physician Learning Program](#)

## Major milestones and achievements, 2023-2024

### Reducing avoidable blood transfusions

Patients admitted to critical care and high-risk surgical units are frequently prescribed blood and blood component transfusions. In Alberta, data suggest that up to 60% of these transfusions might be avoidable. When indicated, blood transfusions are lifesaving, but are associated with risk to patients and substantial healthcare costs. Don't Misuse my Blood (DMMB) is an initiative co-led by the Critical Care Strategic Clinical Network (SCN) that involved developing Clinical Decision Support Tools for appropriate blood use. These tools were developed through rigorous review and distillation of hundreds of guidelines, specialty society statements, randomized controlled trials, and stakeholder consensus.

This work has now shifted to the implementation phase. Over the past fiscal year, DMMB has been implemented by teams in 27 units across 5 zones, including adult ICUs, coronary care units, cardiovascular ICUs, high risk surgical units and pediatric ICUs. To support implementation, the network provided in-person and virtual in-services to clinical providers, developed quick reference tools and other educational resources, and collaborated with teams to integrate the tools into clinical workflows.

Evaluations demonstrate that low value red blood cell transfusions decreased by 29% in ICUs that have implemented DMMB. In the same units, low value plasma transfusions have decreased by 23%, and low value platelets have decreased by 28%.

### ICU discharge delay and predicting capacity strain

ICU discharge delay and capacity strain were identified as growing concerns by Alberta's critical care operational and physician leaders in 2023-2024. Intensive care unit (ICU) discharge delay occurs when a patient is considered ready to be discharged, but remains in the ICU. Delays in transferring discharge-ready patients contribute to strained ICU capacity, and are associated with an increased patient risk and avoidable healthcare costs.

Over the past fiscal year, the Critical Care SCN collaborated with Alberta Health's Research and Innovation Branch and the Institute of Health Economics on a Health Evidence Review that focused on optimizing patient flow through ICUs. The network has also partnered with AHS' Health Evidence and Innovation team to investigate whether strained ICU capacity can be predicted and subsequently mitigated using machine learning capabilities and predictive modelling, leveraging data captured through Connect Care.

The ability to forecast critical care demand and develop an ICU capacity strain alert, would provide a valuable decision support tool for operational leaders and enable Alberta's acute care system to proactively plan for and manage periods of anticipated strain. Work is ongoing, with expected completion in 2025.

### Clinical appropriateness in ICU care – The LIBERATE study

Hypotension and shock are primary conditions prompting ICU admission. Although clinical practice guidelines exist for the initial management of these conditions, there are no guidelines for weaning patients from medications (vasopressors) commonly used to increase blood pressure. This represents a significant knowledge gap.

The LIBERATE study is a multinational randomized controlled trial (RCT) that includes hospitals from across Canada. The study aims to determine if midodrine therapy will result in earlier vasopressor liberation and reduced ICU length of stay in critically ill patients. ICU length of stay is a key performance indicator and common RCT endpoint for patient-centred and system-centred outcome improvements (e.g., reduced costs and health service utilization). If realized, this study may lead to significant cost savings and more efficient resource allocation in a climate of strained healthcare capacity and funding. LIBERATE has been designed to be readily spread and scaled to any ICU, including in community hospitals.

The trial is currently enrolling participants with any form of shock across medical, surgical, medical/surgical, trauma, neurosciences and cardiovascular ICUs in both academic and community settings. In 2023-2024, the LIBERATE trial enrolled 120 patients from 11 centres, with another 9 centres in Canada planned for early 2025. The study is expected to reach its target recruitment of 1,000 patients by the end of 2026.



## Impact on health, care, quality or performance

Through **Innovation and Collaboration**, the Critical Care SCN has worked to ensure evidence-based, quality care for people in Alberta experiencing critical illness or injury. We are committed to improving patient outcomes and health system sustainability through clinical best practices, quality improvement, addressing practitioner burnout, and focusing on patient- and family-centred care.

Over the past fiscal year, the Critical Care SCN has partnered to add value and sustainability to the health system through:

- ▶ *Clinical appropriateness* – optimizing care, improving patient safety and outcomes for critically ill patients
- ▶ *Capacity building* – for critical care quality, research and infrastructure to address knowledge gaps and foster innovation
- ▶ *Clinical pathway development and implementation* – e.g., standardized acute dialysis therapy initiation, avoiding over 1,000 days of dialysis therapy through provincial implementation of the Dialyzing Wisely Care pathway
- ▶ *Co-design* – strategies for culturally safe, equitable, high-quality critical care for Indigenous patients, families, and communities
- ▶ *Efforts to understand causes and potential interventions to mitigate health care practitioner burnout in the ICU*
- ▶ *Interdisciplinary collaboration* – hosted a Quality, Innovation and Research Forum to facilitate knowledge translation and showcase local initiatives and innovations by ICU care teams across Alberta
- ▶ *Efforts to reduce unwarranted variation* – e.g., minimizing low-value blood and blood component use (Don't Misuse My Blood)
- ▶ *Quality improvements* – including the use of life-saving therapies for ventilated patients with hypoxemic respiratory failure and acute respiratory distress syndrome (Venting Wisely)
- ▶ *Support for ICUs* – in sustaining ICU Delirium and Venting Wisely initiative

### CRITICAL CARE SCN

#### Publications & Grants



53

Peer-reviewed Publications



29

Presentations & Workshops

#### Outcomes and Impact

44 units

across Alberta have implemented interventions such as Don't Misuse My Blood and Dialyzing Wisely



\$1.0M

Research Grants



123

Research Members

29% decrease

in avoidable blood transfusions in units that have implemented Don't Misuse My Blood

[www.ahs.ca/ccscn](http://www.ahs.ca/ccscn)