

Strategic Clinical Networks™

Critical Care Strategic Clinical Network™

Building Capacity Update 2018–2023



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Contact

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Introduction

A core function of the Critical Care Strategic Clinical Network (CC SCN) is to build research capacity in critical care. To achieve this, the CC SCN holds studentship, seed grant, and systematic review funding competitions annually. These competitions are designed to advance the Critical Care SCN's long-term research goals:

1. To increase capacity for scientific work within the Alberta critical care community,
2. To enhance the culture of science and innovation within the Alberta critical care community,
3. To improve the health and health care delivered to critically ill patients through knowledge creation and knowledge translation.

The **Critical Care Strategic Clinical Network Summer Studentship Award (CC SCN-SSA)** is designed to foster research interest in critical care medicine and related disciplines among students at the undergraduate level of study. It is the CC SCN goal that this experience will stimulate an interest in critical care research or clinical practice in critical care medicine (i.e., nurse, physician, allied health professional) and related disciplines (e.g., public health, social sciences, etc.).

The **CC SCN Systematic Review and Seed Grant funding competitions** encourage the development of implementable and scalable ideas that will improve the quality of critical care medicine care delivery within the Health Quality Council of Alberta's six domains of quality: appropriateness, accessibility, effectiveness, efficiency, safety, and acceptability. They are designed to provide critically ill patients with better care and better health outcomes.

Studentships

The CC SCN held Studentship funding competitions in 2021 and 2022 and funded **9 studentships** from a variety of undergraduate disciplines (e.g. medicine, nursing, bioinformatics, health sciences, pharmacy) with a common interest in Critical Care Medicine.



There have been **8 supervisors** who supported student learning and fostered research interest in the field of critical care medicine.



All students funded by the CC SCN have presented their work at conferences.



4 students have been published in a peer-reviewed academic journal with their supervisor for research conducted during their studentship.

The following lists students funded, their supervisor(s), project title, amount funded, and publications as identified up to January 2024.

2021 Studentships

Student: Harleen Cheema

Supervisor: D Dr. Erika MacIntyre (University of Alberta)

Project Title: Best Practices in Prolonged Mechanical Ventilation: A Qualitative Examination of Patient, Family and Healthcare Provider Perspectives

\$ Awarded (Length of Time): \$7,500 (4 months)

Student: Sara Cui

Supervisor: Dr. Amy Metcalfe (University of Calgary)

Project Title: Quality Improvement Initiatives to Prevent Unplanned Extubations in the PICU: a Systematic Review

\$ Awarded (Length of Time): \$7,500 (4 months)

Publication: Wollny K, Cui S, McNeil D, Benzies K, Parsons SJ, Sajobi T and Metcalfe A. Quality improvement interventions to prevent unplanned extubations in pediatric critical care: a systematic review. Sys Rev 2022 Dec 2;11(1):259.



Student: Rachel Livergant

Supervisor: Dr. Abdullah Saleh (University of Alberta)

Project Title: Comparison of intensive care unit capacity and oxygen availability in low- and high-resource settings

\$ Awarded (Length of Time): \$7,500 (4 months)

Publication: Livergant RJ, Demetrick S, Cravetchi X, Kung JY, Joos E, Hawes HG and Saleh A. World J Surg 2021 Dec; 45(12):3543-3557.



Student: Sophia Lu

Supervisor: Dr. Mark Ungrin (University of Calgary)

Project Title: Developing a Negative Pressure Ventilation System for Use in Ventilatory Shortages

\$ Awarded (Length of Time): \$7,500 (4 months)

Student: Therese Poulin

Supervisor: Dr. Kirsten Fiest (University of Calgary)

Project Title: Clinical Practice Guideline Recommendations for Diagnosis and Management of Anxiety and Depression in Critically Ill Adults with Delirium: A Systematic Review

\$ Awarded (Length of Time): \$5,625 (3 months)

Publication: Poulin TG, Jaworska N, Stelfox HT, Fiest KM, Moss SJ. Clinical practice guideline recommendations for diagnosis and management of anxiety and depression in hospitalized adults with delirium: a systematic review. Syst Rev 2023 Sep 25;12(1):174.



Publication: Poulin TG, Krewulak KD, Rosgen BK, Stelfox HT, Fiest KM, Moss SJ. The impact of patient delirium in the intensive care unit: patterns of anxiety symptoms in family caregivers. BMC Health Serv Res 2021 Nov 5;21(1):1202.



Student: Muhammad Saahim Salman

Supervisor: Dr. Brent Winston & Dr. Chel Hee Lee (University of Calgary)

Project Title: Development of Metabolomic Biomarkers for Early Detection of ARDS

\$ Awarded (Length of Time): \$7,500 (4 months)

2022 Studentships

Student: Riley Fedoruk

Supervisor: Dr. Brent W. Winston and Dr. Chel Hee Lee (University of Calgary)

Project Title: Discovery of metabolomic signature for sTBI diagnosis

\$ Awarded (Length of Time): \$7,500 (4 months)

Publication: Fedoruk RP, Lee CH, Banoei MM, Winston BW. Metabolomics in severe traumatic brain injury: scoping review. BMC Neurosci 2023 Oct 16;24(1):54.

Student: Geoffrey McKinnon

Supervisor: Dr. Carmel Montgomery (University of Alberta)

Project Title: Functional ability and health-related quality of life outcomes in survivors of ECMO.

\$ Awarded (Length of Time): \$7,500 (4 months)

Student: Muhammed Saahim Salam

Supervisor: Dr. Brent W. Winston and Dr. Chel Hee Lee (University of Calgary)

Project Title: Machine learning approach in identifying metabolomic biomarkers of ARDS.

\$ Awarded (Length of Time): \$7,500 (4 months)

Systematic Review Grant Funding

The CC SCN held a Systematic Review grant funding competition in 2019 and funded **2 awards of \$10,000 each** to produce high-quality research summaries for critical care medicine.

The following summarizes competition results from 2019 and the 2 projects that were funded with CC SCN support, including the principal investigator, list of co-investigators, amount funded, project title, and any publications as identified up to January 2024.

2019 Systematic Review Grant Funding

Principal Investigator: Dr. Raiyan Chowdhury (University of Alberta)

Co-Investigator(s): Dr. Jonathan Davidow, Dr. Demetrios Kutsogiannis

Project Title: Determining the optimal treatment method for opioid withdrawal in ER/ICU patients within Alberta: A systematic review and meta-analysis

\$ Awarded: \$10,000

Principal Investigator: Dr. Darryl Rolfson

Co-Investigator(s): Dr. Sean Bagshaw, Dr. Carmel Montgomery

Project Title: Frailty inclusive care pathways in acute and community-based care

\$ Awarded: \$10,000

Publication: Montgomery CL, Hopkin G, Bagshaw SM, Hessey E, Rolfson DB. Frailty inclusive care in acute and community-based settings: a systematic review protocol. Syst Rev 2021 Mar 26;10(1):83.



Seed Grant Funding

The CC SCN held seed grant funding competitions in 2018 and 2022 and funded **8 awards**. Successful seed grant proposals targeted science and innovation in any part of the continuum: from improved understanding of the biologic aspects of a particular disease, the application of a new therapy or supportive care, improved health outcomes for critically ill patients, improved quality of life for patients, their families, or both, enhancing the quality of survivorship or bereavement, or supporting critical care teams facing moral distress/injury and burnout.

The following summarizes the competition results from 2018 and 2022 and the 8 research proposals that were funded with CC SCN support, including the principal investigator, list of co-investigators, amount funded, project title, and any publications as identified up to January 2024.

2018 Seed Grant Funding

Principal Investigator: Dr. Braedon McDonald (University of Calgary)

Co-Investigator(s): Dr. Kathy McCoy

Project Title: Microbiota-Immune Interactions and Critical Illness Outcomes in the Intensive Care Unit (MicroICU) – A Pilot Study

\$ Awarded: \$10,000

Publication: McDonald B, Zucoloto AZ, Yu IL, Burkhard R, Brown K, Geuking MB, McCoy KD. Programming of an intravascular immune firewall by the gut microbiome protects against pathogen dissemination during infection. *Cell Host Microbe* 2020 Nov 1;28(5):660-668.



Publication: Schlechte J, Zucoloto AZ, Yu IL, Doig CJ, Dunbar, MJ, McCoy KD, McDonald B. Dysbiosis of a microbiota-immune metasytem in critical illness is associated with nosocomial infections. *Nat Med* 2023 Apr;29(4):1017-1027.



Principal Investigator: Dr. Tanya Mudry (University of Calgary)

Co-Investigator(s): Dr. Christiane Job McIntosh

Project Title: A Recovery-Oriented Counselling Group: Supporting Physical, Emotional and Social Recovery Processes of Critical Care Patients in the ICU Recovery Clinic

\$ Awarded: \$10,000

Publication: Mudry TE, Strong T, Doyle EM, Sapacz M. Doing Recovery Work Together: Clients' and Counsellors' Social, Discursive, and Institutional Practices. *Can J Counselling and Psychotherapy* 54(7):715-737.



Principal Investigator: Dr. Danijela Piskulic (University of Calgary)

Co-Investigator(s): Stelfox HT, Fiest KM, Kashyap D, Hruska P, Grant CJ, Sept B.

Project Title: Feasibility of implementing a patient-oriented discharge summary in the ICU

\$ Awarded: \$9,000

Publication: Shahid A, Sept B, Kupsch S, Brundin-Mather R, Piskulic D, Soo A, Grant C, Leigh JP, Fiest KM, Stelfox HT. Development and pilot implementation of a patient-oriented discharge summary for critically ill patients. World J Crit Care Med 2022 Jul 9;11(4):255-268.



2022 Seed Grant Funding

Principal Investigator: Dr. Natalia Jaworska (University of Calgary)

Co-Investigator(s): Dr. Daniel Niven, Dr. Kirsten Fiest

Project Title: Evaluation of sedation monitoring practices in critically ill patients: A systematic review and meta-analysis.

\$ Awarded: \$15,000

Principal Investigator: Dr. Vincent Lau (University of Alberta)

Co-Investigator(s): Dr. Sadie Deschenes, Dr. Sarah Andersen

Project Title: Examining internal & eXternal Influences leading to health care worker Turnover in ICUs during the COVID-19 pandemic: **EXIT-ICU** Study.

\$ Awarded: \$15,000

Principal Investigator: Laurie Lee (University of Calgary)

Co-Investigator(s): Dr. Kirsten Fiest, Sylvie Debigare, Ruth Mastroiani, Dr. Karen Chong, Dr. Katie Birnie, Dr. Krista Wollny

Project Title: Comfort holding in critically ill children (CHICKs): a pilot feasibility study.

\$ Awarded: \$14,528

Principal Investigator: Dr. Carmel Montgomery (University of Alberta)

Co-Investigator(s): Dr. Sean Bagshaw, Dr. Oleksa Rewa, Dr. Lazar Milovanovic, Dr. Elizabeth Papathanasoglou, Dr. Allyson Jones, Dr. Raiyan Chowdhury, Dr. Darryl Rolfson, Dr. Joanne McPeake

Project Title: ICU Survivorship Clinic – Identifying patient priorities.

\$ Awarded: \$15,000