

KEYNOTE



KEYNOTE OVERVIEW

Canadian Institute for Military and Veteran Health Research Forum 2025 Keynote Speaker:
Major Tristan Alie, MSc, MD, FRCPC M. Alie

THRIVING IN THE COLD: MEDICAL PRIORITIES TO ENABLE COLD WEATHER OPERATIONAL RESILIENCY FOR THE FIGHTING FORCE IN CANADA'S HIGH NORTH AND ARCTIC

OVERVIEW

This keynote focused on the realities of operating and providing medical care in Canada's Arctic and other extreme cold environments. Major Tristan Alie, joined by a member of Canadian Special Operations Forces Command (CANSOFCOM), examined how cold weather affects soldiers, medics, equipment, and evacuation, and why Arctic readiness is essential to Canada's sovereignty, NATO commitments, and national defence.

WHY IT MATTERS

Canada's Arctic is warming three to four times faster than the rest of the world, increasing accessibility, international interest, and operational demands. The Canadian Armed Forces (CAF) are now active in the North for longer periods and across more complex missions. Northern and Indigenous communities are critical partners in Arctic health and security. Military operations in extreme cold introduce additional, mission-specific medical requirements that must be planned and resourced accordingly. Ensuring personnel can survive, operate, and be medically supported in these environments is both a duty of care and a strategic necessity.

THE ROAD TO DISCOVERY

The presentation combined operational experience with medical and logistical planning. Major Alie outlined Canada's Arctic defence context and three core medical challenges: preparing medics for cold environments, sustaining medical logistics, and evacuating casualties over vast distances. A CANSOFCOM operator provided a first-hand account of a 30-day winter exercise deep in the Arctic, illustrating the physical, cognitive, and psychological strain of prolonged cold exposure. Together, they highlighted how weather, terrain, equipment, training, and leadership interact to shape survival and effectiveness.

The Canadian Institute for Military and Veteran Health Research (CIMVHR) works to engage academic and government researchers, facilitate new research, increase research capacity, and foster knowledge translation. CIMVHR hosts an annual Forum that brings together thought leaders to present new research, exchange ideas, share insights, learn and collaborate with the shared objective of serving military, Veteran, public safety personnel and family health needs.

KEYNOTE



WHAT WE LEARNED

Cold weather fundamentally changes how soldiers and medics function. Everything takes longer. Clothing is protective equipment, not comfort. Training must be progressive and repeated across consecutive winters. Adaptation cannot be rushed, and leadership presence is critical. Operational effectiveness depends as much on discipline, morale, routines, hydration, shelter, equipment care, as on physical endurance.

From a medical perspective, three lessons stood out:

1. Medics must be trained to survive and operate in the cold themselves, including movement, sheltering, feeding, and emergency responses such as ice immersion.
2. Medical logistics are fragile in the Arctic. Blood products, for example, are lifesaving but difficult to store and transport in extreme cold, prompting research into alternatives such as dried plasma and new delivery methods.
3. Evacuation is slow and uncertain. Weather, aircraft availability, and long distances mean that definitive care may be hours or days away, reinforcing the need for forward planning and realistic testing of equipment and systems.

Key Messages for Leaders and Researchers

- Arctic operations are central to Canada's sovereignty and defence posture.
- Cold weather readiness is a capability that must be deliberately built, not assumed.
- Medical planning must account for prolonged timelines, equipment failure, and limited evacuation options.
- Training, logistics, and evacuation systems must be tested in real conditions, not just in simulations.
- Military and civilian systems in the North are interdependent, and collaboration is essential.
- Investment in cold-weather expertise positions Canada as NATO's Arctic leader and strengthens global security.

This is a keynote summary of the plenary presentation, **THRIVING IN THE COLD: MEDICAL PRIORITIES TO ENABLE COLD WEATHER OPERATIONAL RESILIENCY FOR THE FIGHTING FORCE IN CANADA'S HIGH NORTH AND ARCTIC** at the Canadian Institute for Military and Veteran Health Research (CIMVHR) Forum on October 22, 2025, in Ottawa, Ontario

Speaker: Major Tristan M. Alie, MD, FRCPC, Anesthesiologist, Critical Care Medicine

See the video - <https://youtu.be/yDuUFielkbQ>