



Peli BioThermal Products Saving Lives Globally in Remote Regions



THE CHALLENGE

For emergency first responders having immediate access to vital blood products helps save lives in pre-hospital operations by Helicopter Emergency Medical Services (HEMS) worldwide.

The instant availability of life-giving, lifesaving blood is a critical component to the effective delivery of pre-hospital emergency medicine and paramount to ensure patients' survival rates are maximised.

Administering blood and blood products pre-hospital is especially essential for HEMS teams operating in more remote regions, where challenging terrain and sparsely populated vast areas, mean missions can include hours of travel to reach casualties in isolated locations.

Delivering pre-hospital emergency medicine in extreme environments is the daily challenge for Norwegian HEMS teams, including medics operating in HEMS Kirkenes, based in Finnmark county, the northernmost and easternmost county in Norway.

Although, by area Finnmark is Norway's largest county, even larger than the neighbouring country of Denmark, with a population of around 75,000 it is also the least populated of all Norwegian counties.

With potential patients spread over such a vast area the flying times for missions by the HEMS Kirkenes team and its sister helicopter base Lakselv, can often be several hours. Call-outs can sometimes require an overnight stay, depending on extreme weather conditions, another challenge the HEMS teams have to contend with. On average 10 per cent of all call-outs are cancelled due to adverse climate conditions.

With such extreme operational challenges to overcome it's paramount that blood and blood products can be safely stored and transported aboard emergency response helicopters to be administered when needed.

ENVIRONMENTAL CHALLENGES & THE SEARCH FOR SOLUTIONS

Within the context of this complex, challenging environment it was imperative a system solution was sought that would safely keep blood products at the required temperature aboard the rescue helicopter, which could be on call-outs which last several hours to 24 hours.

The region is large, only sparsely populated and is particularly, in winter, a difficult area to operate in. Weather is often a limiting factor both in getting to patients and transporting them to hospital, whereby roads are often closed due to adverse weather and communities can be totally cut off from the outside world for hours or even days.

Within the region covered by the Norwegian HEMS teams temperatures can plummet considerably with national cold records hitting extremes of -51 °C and winter temperatures in some areas hitting averages of -25°C to -30°C.

Dr Thomas Wilson, who has been medical director for the HEMS base at Kirkenes since its inception in July 2020, is a consultant anaesthesiologist/intensivist and worked as a helicopter doctor on the rescue helicopter in Lakselv since 2015 as part of his extensive, multifaceted medical career.

Dr Wilson made it his mission to search for a temperature-controlled solution that would fulfil his goal to find a system, which could safely store blood products for extended durations once removed from fridge storage and be utilised in extreme environments.

He said: "The challenge is not only keeping blood products cold, but it's also keeping them from freezing. Both helicopter services can find themselves out on operations for several hours at a time, with heating shut off. It is paramount with good temperature control to make sure we do not offer damaged blood products to patients.

"Therefore, we need to have constant temperature control. The Crêdo ProMed™ was chosen by myself after looking for systems which could be used for constant storage of blood in the helicopter, and I could not find any other system which had better characteristics. The Crêdo ProMed™ system makes life so much easier for us. We now have a product that is meant for pre-hospital transport, a system that works for a long time, and we don't have to worry about getting the blood back to a fridge within a certain number of hours. It is light weight for excellent thermal performance."

Peli BioThermal's Crêdo ProMed™ carry bags are durable enough to withstand the most rugged conditions, all while protecting blood, platelets and commercial biopharma product samples.

Built on Golden Hour™ technology, these temperature-controlled containers offer a unique space-saving design and a carrying case for easy on-the-go transport.

The Crêdo ProMed™ carry bag is available in three sizes and two temperature ranges.

TIC™ coolants filled with phase change material and vacuum insulated panels (VIP) keep medical materials at the required temperature for up to 72 hours and all Crêdo ProMed™ shippers are tested to ISTA7D profiles.



RAPID RESPONSE – BLOOD ON BOARD

Norway's national response time goal is 15 minutes from scramble to take-off, and HEMS Kirkenes had an average of 11 minutes in 2021.

All anaesthesiologist-manned ambulance and SAR helicopters in Norway are essentially equipped with the same medical equipment, including intensive care capabilities such as ventilators, advanced monitoring, advanced emergency surgical equipment and medications to cater for emergency anaesthesia and intensive care.

SAR-helicopters in Norway are, with two exceptions, run by the Royal Norwegian Air Force (RNoAF) 330 squadron, under the jurisdiction of the justice department, and supported by the national health service.

There are in practice no differences in what the two types of helicopter services can deliver medically. There are differences in SAR-capabilities of the two models of helicopters used for missions in Finnmark county. The 330 squadron helicopters have a wide range of systems to aid in search and rescue, including night-vision, heat-seeking capability, radar and two rescue hoists.

The ambulance helicopters are equipped with light SAR capabilities including personal night vision, search lights, hand-held thermal goggles and possibility for fixed-rope underslung operations with human external cargo.

In 2021 the service in Kirkenes had 420 requests for assistance, carrying out 325 of them. Similar numbers of service are seen at their sister-base in Lakselv.

From September 2020 a project led by national health services in cooperation with regional health trusts and Norwegian armed forces fast-tracked availability of whole blood and "walking blood banks" in remote areas of Finnmark county.

SAVING LIVES

Dr Wilson said: "Now we have blood at the hangar, it is easier to make sure blood is onboard when we need it and approximately 5-10 transfusions per year take place.

"However small the need may be, it is obvious that blood products can be lifesaving and can also be used as a supplement at local hospitals in cases of massive intraoperative bleeding, whether that be after planned surgery or stabilisation after major trauma."

The decision to carry blood on board as part of the pre-hospital emergency medical service offering continues to save lives.

Dr Wilson said: "Within our patient cases blood has been used mostly for medical cases including gastrointestinal bleeding or other cases of non-traumatic bleeding. For our operations it is of paramount importance to have blood for those patients because of our often longer transport times. We have no option of having someone else bring blood out to us, it would take too long.

"We have patients that can be over four hours away from the nearest surgeon and the nearest blood bank by road, and that is not considering patients on vessels in the Barents sea which can be even further away. That means there are potentially several hours where blood products may be the only thing keeping the patient alive."

FOR MORE INFORMATION ABOUT PELI BIOTHERMAL PRODUCTS, PLEASE CONTACT:

EMEA OFFICE - INFOEMEA@PELIBIOTHERMAL.COM T: +44 (0)1525 243 770

AMERICAS OFFICE - INFOAMERICAS@PELIBIOTHERMAL.COM T: +1(763) 412-4800 TOLL FREE US: T: +(877) 537-9800

ASIA OFFICE - INFOASIA@PELIBIOTHERMAL.COM T: +65 6681 0095

PELIBIOTHERMAL.COM

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