

DELIVERING BLOOD TRANSFUSIONS AT TRAUMA SCENES

Major bleeding is one of the top causes of death from major trauma. And now for the first time in Ireland, due to the roll-out of a new blood transfusion service by hospitals and pre-hospital critical care services in both the Dublin and Cork regions, blood transfusions can now be delivered to trauma scenes, which is also expected to reduce mortality rates.

This is the first time in Ireland that blood has been made available for pre-hospital transfusions and will provide a significant improvement in the level of care of delivered to patients suffering life-threatening bleeding.

This may include patients suffering massive hemorrhage due to trauma, medical or maternity causes, and it means that they will no longer have to wait until they arrive at the Emergency Department (ED) before receiving a blood transfusion.

In the Dublin/Wicklow region, the Blood Transfusion Laboratory at St Vincent's University Hospital (SVUH), in partnership with Wicklow Rapid Response (WWRR), is now able to provide emergency blood and plasma directly at the scene of a trauma.

Wicklow Rapid Response is a pre-hospital critical care service driven voluntarily by Dr David Menzies, Emergency Medicine Consultant at St Vincent's University Hospital, in partnership with the National Ambulance Service (NAS). It is one of a handful of services in Ireland where doctors are tasked by the NAS to serious medical and trauma emergencies where the patient may benefit from critical care treatment at the roadside.

LIFESAVING TRANSFUSIONS

To date the only method for pre-hospital medics to resuscitate bleeding

patients has been to use saline solution but, because it doesn't carry oxygen or clot, it is not the ideal treatment. Now, in the event of life-threatening bleeding, the WWRR critical care doctor will be able to deliver lifesaving blood transfusions to patients without having to wait until their arrival at the Emergency Department.

According to Dr Menzies, "Pre-hospital blood transfusion will reduce significantly the time it takes to deliver this treatment. Our current case load indicates that a small but important number of patients may benefit from this every year."

He noted that the facility to administer lifesaving transfusions in the pre-hospital setting is already the standard of care for pre-hospital critical care services in the UK, Northern Europe, Australasia and the USA. "It's fantastic that we can now offer it here in Ireland for the first time," he added.

MAKING A REAL DIFFERENCE

Dr Joan Fitzgerald, Consultant Haematologist at St Vincent's University Hospital, said that this exciting new development has been several months in preparation and will make a real difference to the treatment delivered to seriously-injured patients in the region.

"The medical scientists in the Blood Transfusion Laboratory



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have worked closely with the Emergency Department, the National Ambulance Service and Wicklow Rapid Response to ensure the system is safe and secure with no wastage of blood products and full traceability (24/7) including holiday periods," she claimed.

In addition to red cells, WWRR will carry two units of plasma to promote blood clotting. While red cells carry oxygen, transfusing plasma in a 1:1 ratio with red cells is the current best evidence for promoting blood clotting, a recognised problem in major trauma patients.

Emergency blood and plasma are supplied every 48 hours from the Blood Transfusion Lab at SVUH and replenished as required. If unused, the products are returned within 48 hours to the lab at SVUH for use elsewhere, preventing any wastage.

PREVENTING ANY COMPLICATIONS

"Blood products are a precious resource and must be stored refrigerated. The blood products are stored in Credo © 'Golden Hour' boxes, which are validated for prolonged storage on the WWRR RRV at 4°C thereby making the blood and plasma immediately available at the location of a major trauma," noted Dr Fitzgerald.

When the blood is required, it must be warmed to body temperature, which is a key step in preventing hypothermia and other complications in patients receiving blood products. Thanks to fundraising and donations, the St Vincent's Foundation was recently able to purchase a portable blood and fluid warmer for pre-hospital use.

The Qinflow © Warrior blood and fluid warmer is a state-of-the-art device, specifically designed for out-of-hospital use. This will be the first such unit in use in Ireland and it has the capability to warm intravenous fluids and blood products from 4°C to body temperature in seconds.

CORK AT FOREFRONT OF PRE-HOSPITAL CARE

For patients in the southern region, the Blood Transfusion Laboratory at Cork University Hospital is working in partnership with East and West Cork Rapid Response (ECRR and WCRR). It means that Cork University Hospital (CUH) Emergency and Retrieval Consultant Dr Eoin Fogarty can now provide emergency blood directly to the scene of a bleeding patient.

CUH has been to the forefront of pre-hospital care in Ireland and now, in association with UCC, is the academic partner to the National Ambulance Service. CUH has also been designated as one of two adult Major Trauma Centers in the Trauma System for Ireland report, published by the Department of Health in February 2018.

According to A/Prof Conor Deasy, Clinical Lead and Consultant in Emergency Medicine at CUH and NAS Deputy Medical Director, "CUH has been very fortunate to have Dr Hugh Doran, East Cork Rapid Response (ECRR) and Dr Jason van der Velde, West Cork Rapid Response (WCRR), to provide



Dr Joan Fitzgerald, SVUH Consultant Haematologist, said this new development will make a real difference to treatment delivered to seriously-injured patients in the region.



A/Prof Conor Deasy is Clinical Lead and Consultant in Emergency Medicine at CUH and NAS Deputy Medical Director.

voluntary critical care support services to critically ill and injured patients in our community; their capacity to support paramedics in saving lives will be enhanced by the availability of pre-hospital blood.”

CRITICAL CARE SUPPORTS

In addition to WCRR and ECRR, there are just a handful of services in Ireland where doctors are tasked by the NAS to attend serious medical and trauma emergencies where the patient may benefit from critical care treatment.

For example, Mayo Rapid Response is operated by Dr Jason Horan, Consultant in Emergency Medicine at Mayo General Hospital, and already noted earlier, Wicklow Rapid Response is operated by Dr David Menzies, Consultant in Emergency Medicine, St Vincent’s Hospital. Each one provides critical care support to the National Ambulance Service in a voluntary capacity supported by charitable donations for equipping costs.

In explaining how the blood transfusion protocol works, Dr Eoin Fogarty, CUH Consultant in Emergency and Retrieval Medicine, said they were supported

in establishing this initiative by Dr Cathal O’Donnell, Medical Director of the National Ambulance Service and the Transfusion Laboratory Services at CUH.

“We take three units of O negative blood to the patient – O negative blood is called the ‘universal donor’ as it can be administered safely to patients no matter what their blood type. We have the ability to warm the blood to body temperature with a special warmer which is very important in preventing further bleeding.

“Prior to the availability of blood we would use salty water (saline); the problem with this is that it does not carry oxygen and can dilute clotting factors, making bleeding worse. Life-saving blood transfusion pre-hospital by paramedics and doctors has been established in parts of the UK, Northern Europe, Australasia and the USA; this is a very important development in Ireland.”

DONATING IS ‘PAYING IT FORWARD’

Medical scientists at the Blood Transfusion Laboratory have worked closely with the Emergency Department, the National Ambulance Service and West and East Cork Rapid Response teams to ensure the system is safe and secure with no wastage of blood products and full traceability, 24/7, including holiday periods.

The intervention of frontline pre-hospital care providers, statutory and voluntary is vital in reducing blood loss. “As our number one priority we must reduce bleeding through pressure dressings, tourniquets, hemostatic dressings, pelvic binders, splints and so on, to prevent the patient becoming cold (which causes further bleeding).

“We need to get the patient to hospital as soon as possible to have their bleeding stopped. Pre-hospital blood availability may buy time but we shouldn’t let it delay scene times.”

In stressing the importance of encouraging people to donate blood, A/Prof Conor Deasy said that it’s way of “paying it forward”. He cited that one in four people will need a blood transfusion at some stage in their life; “you never know when it could be you or your loved one receiving that blood transfusion and it’s good to know you’ve played your part in ensuring those blood stocks are available”.



Dr Jason van der Velde, West Cork Rapid Response, and Dr Eoin Fogarty, Cork University Hospital’s Emergency and Retrieval Consultant.