

# REDUCING BLOOD TRANSFUSIONS CUTS DEATHS, RISKS AND COSTS



Blood is a scarce, expensive but vital healthcare resource, with more than 500,000 people in the UK receiving a red blood cell (RBC) transfusion each year.

Blood supply for transfusions is limited as not only is the donor pool shrinking due to an aging population and a stringent donor selection process, but demand is also increasing.

In addition, the screening of blood donated for transfusion is an expensive process. In order to assure a safe supply of blood for patients, it must be tested for several bacterial, viral and, depending on the donor's travel history, parasitic infections.

And even amid such precautionary measures, blood transfusions come with risks. Patients can develop antibodies to the transfused red blood cells. Transfusions can also suppress the patient's immune system, which increases the risk of infections including pneumonia and sepsis.

For these reasons, Tim Walsh, Professor of Critical Care at the University of Edinburgh, undertook a programme of clinical and implementation research to reduce unnecessary patient exposure to blood transfusions, and conserve existing supplies.

## RESEARCH BACKS 'RESTRICTIVE' USE

It was previously shown by Canadian researchers that patients who were given a transfusion only if their haemoglobin level fell below 7g/dl – 'restrictive transfusion' patients – did as well as, and in some cases better than, those patients given a transfusion at the higher haemoglobin level of below 10g/dl – 'liberal transfusion' patients.

Professor Tim Walsh documented and analysed data about transfusion practice in the UK from more than 1,000 patients. He was then able to highlight areas where better evidence was required to define the risk of RBC transfusions:

### 1. Critically ill patients with heart disease

Professor Walsh showed that even in those sickest patients in intensive care units, the use of a restrictive transfusion of RBCs trended towards a lower death rate than in those patients receiving a liberal transfusion.

The Walsh group also showed that this restrictive transfusion had no adverse effects on patient survival, disability or quality of life over a six-month follow-up. This provides further evidence to support restricting RBC transfusions.

### 2. Storage age of blood

The Walsh group were key collaborators in an international trial that has shown that blood stored for around 21 days, which is currently used as standard practice, is just as safe for transfusions as freshly donated blood.



## PATHWAYS TO IMPACT

Professor Walsh has spoken at more than 30 conferences and authored a clinical review and eight book chapters or contributions on blood transfusion between 2001 and 2012. He also organised national education meetings in 2004 and 2009.

## IMPACT ON PUBLIC POLICY

Professor Walsh chaired the committee that drew up the first evidence-based UK guidelines for RBC transfusion practice in critical care. In addition, six of his research papers have been used for evidence in US/international guidelines for RBC transfusion in critical care.

## IMPACT ON UK CRITICAL CARE

Professor Walsh showed that the number of intensive care unit patients given blood transfusions dropped from 40% in 2001 to 33% in 2006. This means around 7,000 fewer patients received transfusions in 2006 compared with in 2001, saving more than 40,000 RBC units a year. There have been substantial changes in practice among clinicians and a major saving in precious blood supplies.

## IMPACT ON SURGICAL PRACTICE

The recognition that RBC transfusions should be avoided wherever possible has led to an increase in the use of cell salvage during surgery. Prof Walsh's study supported the widespread introduction of this technique and he initiated the Scotland-wide cell salvage programme. Red blood cell salvage use has increased from 90 cases/million population in 2005 to 650 cases/million population in 2010, and this technology is now used in all health boards in Scotland undertaking major surgery.

## IMPACT ON HEALTH AND WELFARE

In critical care, reducing RBC transfusions is associated with improved outcomes in many patient sub-groups. An estimate of 1-2% reduction in patient deaths in the UK over 10 years would indicate around 500 lives saved per year.

## OVERALL AND ECONOMIC IMPACT

In both Scotland and England, there has been a 22% reduction (comparing 2001 to 2012) in RBC transfusions carried out each year, saving around £100 million annually. In intensive care, around 7,000 fewer patients received RBC transfusions, saving around £5 million a year.



## 3. Cell salvage during surgery

Professor Walsh, in collaboration with the National Blood Transfusion Service, led a study in 11 hospitals (210 patients undergoing orthopaedic surgery) that demonstrated that cell salvage (recovering blood lost during surgery and re-infusing it into the patient) is an effective blood conservation strategy.



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