Blood Matters - Supply and Demand

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Introduction

Many aspects of blood transfusions have a poor evidence base. An example is providing an efficient and reliable supply of blood for elective orthopaedic patients at a hospital with no on site blood bank. Blood is issued to patients and then stored in a blood fridge until required or for a maximum of 72 hours. O negative blood is available on site.

Methods

Audits of transfusion behaviour commenced in 2001. The results demonstrated inappropriate transfusions were common and education was instigated to modify behaviour. The data provided opportunities to analyse aspects of blood provision.

From 2004 transfusion data was continuously recorded and includes over 2,000 primary total hip replacement (THR) and total knee replacement (TKR) cases.

Results

Reductions in inappropriate blood transfusions and automatic 2 unit post-operative "top up" transfusions (below) followed staff education; fewer patients now require less allogenic blood.

	2001		2009	
	THR	TKR	THR	TKR
Transfusion rate	50%	40.2%	34%	15%
Single unit transfusions	18%		80%	

Lower transfusions rates prompted a review of the maximum blood ordering schedule (MBOS) in 2003. This was rationalised after analysis of the relationship between pre-operative haemoglobin (Hb) level and transfusion rate.

MBOS

	Before 2003	After 2003
THR	cross-match 2 units	Hb ≤ 129g/L cross-match 2 units Hb ≥ 130 – group & screen
TKR	cross- match 2 units	Group & screen

Data from 2004-9 was analysed to determine predictor variables for transfusion. Variables in the transfused and non-transfused were compared by Student's t-tests (pre-operative haemoglobin and weight) and Chi square (sex).

		Transfused n = 422	Non transfused n = 1111	p
THR n = 1533	Pre-operative Haemoglobin (g/L)	136.9 (12.5)	125 (12.9)	<0.00001
	Weight (kg)	74.2 (16.7)	81.9 (17.3)	<0.00001
	Female (%)	73.7	58.7	0.002