

# Age of Blood Transfused In the United States: Data for 166,208 Transfusions

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## Background:

The importance of the storage duration of transfused red cells (RBC) to their ability to provide improved oxygen delivery to tissues is controversial. While animal studies and retrospective clinical data suggest that transfusing “younger” blood is associated with better outcomes, the results of randomized, prospective clinical trials are still pending. Since the results of these studies may heighten the demand for “fresh” blood, an understanding of the current age of RBC transfused is a necessary prelude to a potential redesign of the supply chain and inventory management systems for allogeneic RBC.

## Methods:

Using a proprietary blood management business intelligence portal (IMPACT® Online, Haemonetics, Braintree, MA) we were able to determine the duration of storage prior to transfusion of 166,208 RBC transfusions administered at 10 hospitals throughout the United States from 2009-2011.

## Results:

47% of transfused RBC units were stored in excess of 21 days and 25% were more than 28 days old. Types O (42% >21 days) and B (45% >21 days) had shorter storage durations than types A (54% >21 days) and AB (76% >21days).

Type	0-14 days (number and % of type)		15-21 days (number and % of type)		22-28 days (number and % of type)		29-42 days (number and % of type)		Total
A-	1,699	19.5%	1,978	22.7%	1,861	21.3%	3,183	36.5%	<b>8,721</b>
A+	7,750	17.3%	13,112	29.3%	12,805	28.6%	11,036	24.7%	<b>44,703</b>
B-	576	19.3%	469	15.7%	504	16.9%	1,434	48.1%	<b>2,983</b>
B+	4,314	26.2%	5,264	32.0%	3,634	22.1%	3,238	19.7%	<b>16,450</b>
O-	3,621	20.1%	6,468	35.9%	2,528	14.0%	5,423	30.1%	<b>18,040</b>
O+	19,025	26.8%	23,020	32.4%	14,119	19.9%	14,873	20.9%	<b>71,037</b>
AB-	121	11.0%	155	14.1%	239	21.8%	581	53.0%	<b>1,096</b>
AB+	326	10.3%	431	13.6%	756	23.8%	1,665	52.4%	<b>3,178</b>
<b>Total</b>	<b>37,432</b>	<b>22.5%</b>	<b>50,897</b>	<b>30.6%</b>	<b>36,446</b>	<b>21.9%</b>	<b>41,433</b>	<b>24.9%</b>	<b>166,208</b>

## Conclusions:

- For the hospitals studied, the current RBC supply chain and inventory management systems result in 47% of RBC units being transfused more than 3 weeks and 25% more than 4 weeks after their donation.
- Modifying the current supply chain to provide “fresher” blood will require substantial practice change and system redesign.