

# Trends in Red Blood Cell Utilization in British Columbia

Shannon Selin, Cheryl Lewis, Louis Wadsworth  
BC Provincial Blood Coordinating Office

## Background

The population structure in many developed countries is changing, with a shift from younger to older age groups. This study examined overall trends in red blood cell (RBC) utilization in the Canadian province of British Columbia (population 4.4 million) over an 8-year period, as well as trends in the age and gender of recipients. The objectives were to identify the demographic sources of increasing demand for RBCs and to provide a basis for forecasting demand in the future.

## Methods

The following RBC data for fiscal years 2000-01 through 2007-08 were extracted from the BC Central Transfusion Registry (CTR), which is a population-based registry capturing all blood use in the province: number of units transfused; number of recipients; mean number of units per recipient; number of transfusion episodes (defined as all products transfused to one recipient on one day at one institution); and mean number of units per transfusion episode. Recipient totals were broken down by age category and by gender. Population denominator data were drawn from the Statistics Canada website.

RBC counts were based on whole units of packed red cells. If a unit was divided into aliquots, the aliquots were grouped back to the whole unit so only one unit was counted. If a unit was split and aliquots were transfused to both genders, the unit was counted in each gender category.

## Thanks and Contact Info

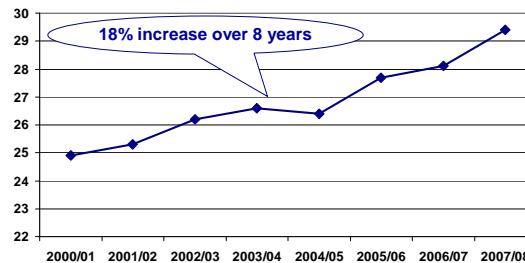
The PBCO gratefully acknowledges the BC Transfusion Medicine Advisory Group and all BC hospital transfusion services for their partnership in data collection through the CTR.

For more information, please contact:  
BC Provincial Blood Coordinating Office  
#310 – 1190 Hornby Street, Vancouver, BC, Canada, V6Z 2K5  
Tel. 604-806-8840, Fax 604-806-8824  
pbcoinfo@pbco.ca, www.pbco.ca

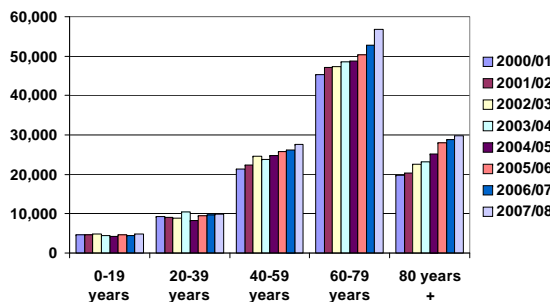
## Results

The number of RBCs transfused in BC grew by 28.2% between 2000-01 and 2007-08, to 128,767 units. The per capita increase was 18%, from 24.9 to 29.4 units per 1,000 population. The number of RBC recipients grew by 31.6%, compared to a BC population increase of 8.4% over the same period. The increase in volume transfused was larger in women (30.9%) than men (25.9%). Adjusting for population growth, the greatest increase in volume transfused was in the age group of 80 and older (up 11.8%), followed by ages 40-59 (9.8%). The largest proportion of units transfused in 2007-08 went to patients aged 60-79 years (44.1%), followed by ≥80 years (23.1%) and 40-59 years (21.4%). The mean number of transfused red cells per recipient decreased 2.6%, to 4.8 units. The number of transfusion episodes grew 40.7% in the years under study, with the largest increase (66.9%) in patients aged ≥80 years. The mean number of transfused RBC units per transfusion episode increased 4.2% for men (from 1.92 to 2) and 5.6% for women (from 1.78 to 1.88).

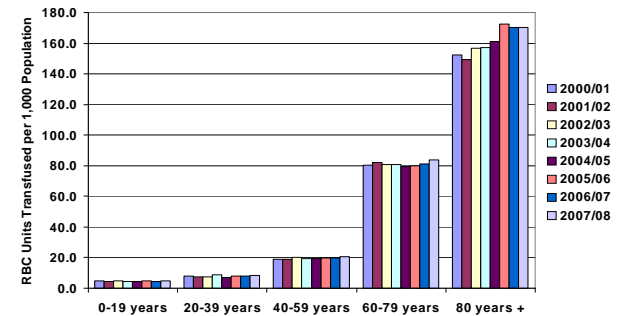
RBC Units Transfused per 1,000 Population



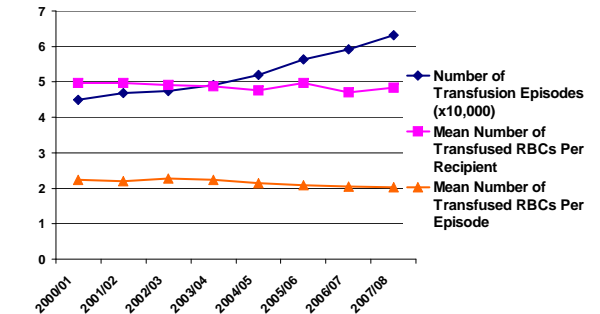
RBC Units Transfused by Age of Recipient



RBC Units Transfused Per Capita by Age of Recipient



Transfusion Episodes, RBCs Per Recipient and Per Episode



## Conclusion

The substantial increase in RBC use in BC is accounted for by an increase in the number of patients receiving transfusions and in the number of transfusion episodes, rather than an increase in the volume of red cells transfused per patient. The high proportion of blood used by older patients suggests that an aging population will put upward pressure on demand. Demographic shifts are only part of the explanation for rapidly increasing RBC use in BC and further study is needed to better understand the reasons for the growth, which continues to outpace population increase. However, analysis of population data could enhance demand forecasting.