

# The «true» costs of blood: The average unit production cost of an erythrocyte concentrate in Spain from a societal perspective

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## Background

Erythrocyte concentrates (EC) are a valuable and scarce resource, however, the decision making on strategies to reduce needs for EC transfusion from an economical perspective is complicated. Furthermore, societal cost of EC production are barely reflected in current prices and the development of a standardised and comprehensive methodology to assess the «true» cost of the EC transfusion still remains a challenge. Differences in the organisation and structure of the blood transfusion services across Europe and numerous studies with a high variability regarding the valuation methods, scope, economic perspective and methodology, have contributed to the complexity of estimating the real financial burden associated with the production and use of EC in the treatment of anaemia.

Therefore, the aim of this study was to assess the average unit production cost of an EC in Spain from a societal perspective.

## Method

The study was conducted in three Regional Transfusion Centers in Malaga, Zaragoza and Barcelona.

Data was collected from the general ledgers, databases, interviews with transfusion specialists and managers working in the selected centers and reports.

A management accounting approach, based on the Time Driven Activity Based Costing (TDABC) methodology, was chosen to develop the cost model because of its ability to capture a wide spectrum of the indirect costs and the cost for unused capacity as well.

1. Capacity cost rate (CCR) as the ratio of the supplied capacity (resources allocated to the processes expressed in monetary units) and practical capacity of the resources actually performing the main activities (expressed in time units).
2. Time estimates for the processes to capture the usage of the supplied capacity by the cost object.

Table 1: Components of the TDABC framework

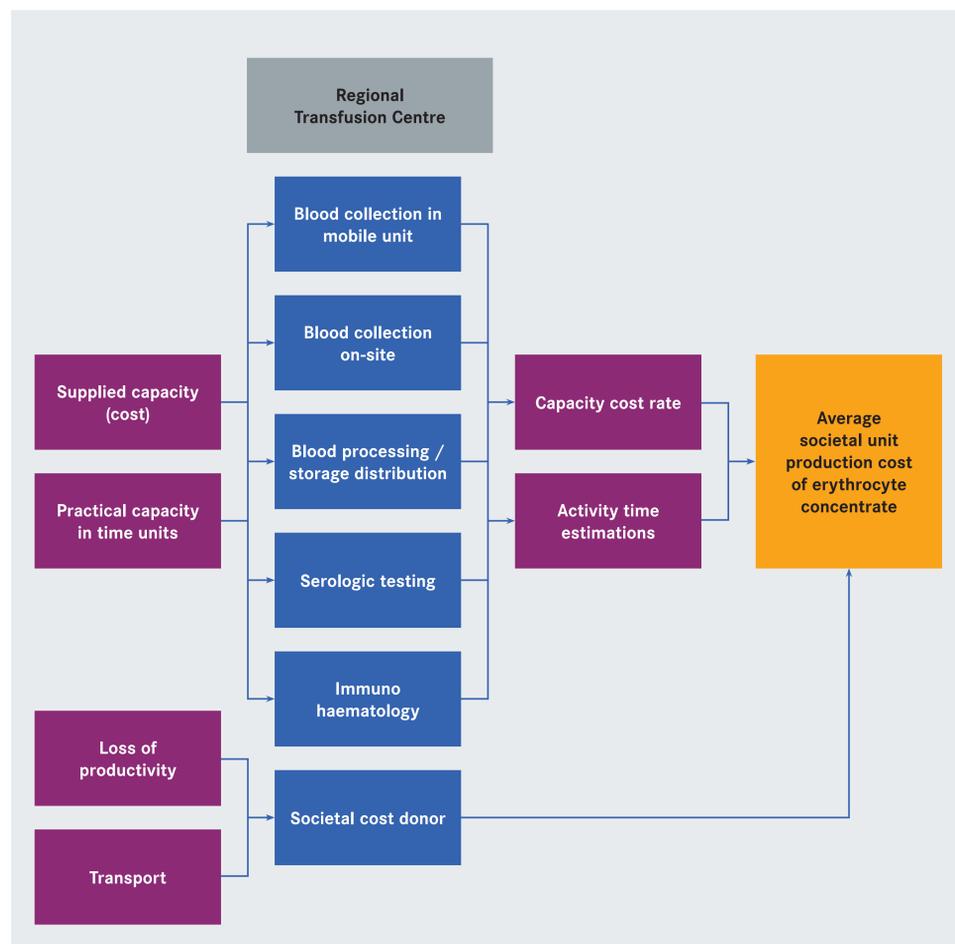


Figure 1: TDABC model for the Regional Transfusion Center

## Results

Main processes in the Regional Transfusion Centre	Personnel (direct labor) actually performing the main activities
Blood collection in mobile units	Nurses
Blood collection onsite	Nurses
Blood processing, storage and distribution	Laboratory technicians
Serologic testing	Laboratory technicians
Immunohaematology	Laboratory technicians

Table 2: Identified direct labor (personnel) per process in the Regional Transfusion Centers

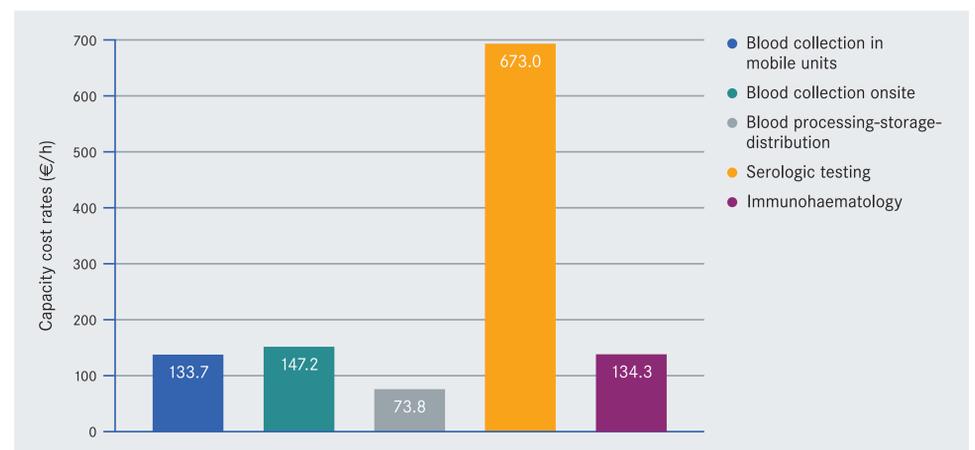


Figure 2: Capacity cost rates per process expressed in €/hour

Blood component	Percentage of the total number of transfused blood components
Erythrocyte concentrates	82.4%
Plasma	8.7%
Platelet	8.9%

Table 3: Usage of the different blood components in relation to the total transfusion activity

	Main areas in the Regional Transfusion Centre	Average unit cost	% of the total cost
Regional Transfusion Centre	Blood collection in mobile units	€ 33.2	21.02%
	Blood collection onsite	€ 20.7	13.09%
	Blood processing, storage and distribution	€ 31.3	19.77%
	Serologic testing	€ 39.8	25.17%
	Immunohaematology	€ 7.9	5.03%
	Societal cost for donor	Donor	€ 25.2
	<b>Total cost</b>	<b>€ 158.1</b>	<b>100%</b>

Table 4: Average societal production unit cost of erythrocyte concentrate

## Conclusions

- The model provides a complete and documented insight into the production costs of EC, capturing the costs for used and unused capacity.
- Our results indicate that production of EC in Spain is higher than the «official cost» (€ 90–115). Quality related processes such as serologic testing incur the highest costs as the process demands high quality and safety standards.
- This model can be used as an economic decision tool to document decisions about EC transfusion (which will cause further high costs), avoiding the use of the valuable EC, where other alternatives are available with the same effectiveness.