Report of the survey on blood supply management

organised by the TS003 Working Group in member states and observer states of the Council of Europe

TS003 Working Group members:
Dr J. Alen, Dr P. Bowler, Dr O. Burta, Dr W. de Kort,
Dr G. Folléa (Chairman), Dr A. Hajiyev, Dr M. Vesga Casara

2012

edqm
European Directorate for the Quality of Medicines & HealthCare | Direction européenne de la qualité du médicament & soins de santé

COUNCIL OF EUROPE
CONSEIL DE L'EUROPE

Report of the survey on blood supply management

organised by the TS003 Working Group in member states and observer states of the Council of Europe

TS003 Working Group members:
Dr J. Alen, Dr P. Bowler, Dr O. Burta,
Dr W. de Kort, Dr G. Folléa (Chairman),
Dr A. Hajiyev, Dr M. Vesga Casara

European Directorate for the Quality of Medicines & HealthCare

The *Report of the survey on blood supply management organised by the TS003 Working Group in member states and observer states of the Council or Europe* is published by the European Directorate for the Quality of Medicines & HealthCare of the Council of Europe (EDQM).

Director of the publication: Dr S. Keitel

Cover design: EDQM

European Directorate for the Quality of Medicines & HealthCare (EDQM)
Council of Europe
7 allée Kastner
CS 30026
F-67081 Strasbourg
France

Website: www.edqm.eu

Published in PDF format and distributed online

EUROPEAN COMMITTEE (PARTIAL AGREEMENT) ON BLOOD TRANSFUSION (CD-P-TS)
of the COUNCIL of EUROPE

Report of the Survey on Blood Supply Management organised by the TS003 Working Group in member states and observer states of the Council or Europe

TS003 Working Group Members: Dr. J. Alen, Dr. P. Bowler, Dr. O. Burta, Dr. W. de Kort, Dr. G. Folléa (Chairman), Dr. A. Hajiyev, Dr. M. Vesga Casara.

The EDQM expresses its sincere thanks to all Experts of the TS003 Working Group and to the Chairman Dr. G. Folléa for having organised this survey and collected the data from which this report has been made.

REPORT OF THE TS003 SURVEY ON BLOOD SUPPLY MANAGEMENT

FOREWORD: This report was prepared by compiling data collected during the survey organised by the TS003 Working Group "Blood Supply Management" of the European Committee (Partial Agreement) on Blood Transfusion of the Council of Europe. The document has been communicated to the 39 Member States having returned data for approval before release and publication on the website of the European Directorate for the Quality of Medicines and HealthCare.

1. Introduction

All countries face challenges in making sufficient supplies of blood and blood products available and sustainable, while also ensuring the quality and safety of these products in the face of known and emerging threats to public health. So far studies on blood and blood product supply management have mainly focused on inventory management (1-6). A vision of a blood supply chain could have been formulated as a concept (7) or have been explored through modelling or computer simulations (8-11). But effective experiences of real blood supply management (BSM), co-ordinating activities from donors to patients, have still remained limited (6, 12-14).

However, in hospital patients are mostly at the heart of transfusion medicine activities, all aiming at providing them with the missing vital blood component(s). This patient-centred vision leads to conceiving all transfusion medicine activities as a "blood supply chain", starting with patients' needs and ending with transfusion of needed blood components to patients. This blood supply chain comprises two main sectors (6): the hospitals – where transfusion is ordered by clinicians and administered to patients; and the suppliers, acting from donor management to blood component distribution, usually Blood Establishments (BE).

Co-operation between hospitals and BEs for transfusion related matters is vital to ensure that the end user is satisfied with the products and services provided. The customers of the BEs (or of any blood supplier), which encompass all the actors concerned with transfusion-related matters in hospitals (patients, physicians, nurses), should be satisfied with the products and services supplied by the BE.

Although optimising blood utilisation greatly impacts both patient safety and blood supply security, the blood supply management (BSM) itself is the top mission carried out both by BEs, supplying blood components, and hospitals, storing, delivering, prescribing and transfusing blood components to patients, to make safe blood supply available for patients. The CD-P-TS working group (TS003) was assigned the task of investigating the issues of BSM through the main points of its terms of reference:

- Elaborate a methodological approach including an analysis based on a self-assessment questionnaire, complementary to the Council of Europe survey questionnaire on the

collection and use of blood, to help blood services to identify the gaps between the present situation and an optimal blood supply management.
- Disseminate the methodological approach by appropriate means.

The final goal was to help all involved stakeholders (patients, hospitals, blood component suppliers, healthcare providers) to achieve self-sufficiency and adequate blood supply in the future.

The assessment of the organisations of the blood supply chain in the 39 member states and observers of the Council of Europe having participated in the study was performed with data collected from the survey conducted by TS003 in 2012, using the self-assessment questionnaire developed by TS003. The results of this survey are presented in this report.

2. Material and methods

2.1 Blood supply management assessed as a real process

A major outcome from TS003 WG, through a review of scientific literature and experience sharing between the WG members, has been to conceive the BSM as a real process with the following steps for RBC supply management:

1. Assess past hospital RBC use for patients;
2. Establish a forecast for overall annual supply (BEs) and use (hospitals);
3. Establish annual blood collection program (BEs);
4. Weekly balance RBC use and supply in both BEs and hospitals;
5. Review and update the patients' RBC needs and their satisfaction.

2.1 Survey questionnaire and information material

This process has been used as a basis to develop a questionnaire to investigate each step of the BSM process in the Council of Europe countries, and Council of Europe observers (Australia, Canada, New Zealand and USA). Information material including a letter containing survey presentation and instructions, and definitions of some terms (use, demand, need, self-sufficiency of safe blood and RBC based on Voluntary Non-Remunerated Blood Donation, RBC supplier) has also been distributed. A web access to the draft questionnaire and information material through a link has been given to three TS003 members (respectively from ES, IE, RO) to test and validate the questionnaire and information material. Their comments have been used to finalise all documents. The questionnaire and information material used for the survey are appended in annexes 1 and 2.

2.2 Data collection and review

The survey was conducted in 2012 at the country level, through contact persons designated to the Council of Europe by each health authority. Each contact person was sent the web link to the survey questionnaire and information material. A user manual providing technical guidance to respond the questionnaire was also made available.

The collected data were reviewed by TS003. To facilitate review and analysis of responses, all data collected have then been converted to Excel tables thanks to help from Karin Habets and Elze Wagenmans (Sanquin) with one table per question.

As the first review of results found that the questionnaire used made difficult investigating hospital-based BEs, the following additional questions have been sent to countries identified as having hospital BEs, from the DOMAINE survey (15) and the TS003 results.

- How many hospital-based BEs (processing blood from donors to delivering to patients) have you in your country?
- Are there other type(s) of BE beside hospital-based BEs (e.g. national BE)?
    - If Y, what % of blood/RBC supply is provided by the respective systems?
    - If Y, is there a national co-ordination of all systems?

As systematically done by the Council of Europe for its surveys, all data tabulated in this report have been checked by each participating country. All corrections and comments have been integrated in the final survey results tables (appended in annex 4) and report.

3. Survey results: Blood supply chain organisations and practices in participating countries

3.1 Survey response rate (Annex 3, p 3)

The TS003 questionnaire has been sent to 45 countries, including 41 Council of Europe member states and 4 Council of Europe observers (Australia, Canada, New Zealand, USA). Despite several reminders, responses could not be obtained from 6 countries and full responses to the questionnaire were received from 39 countries (response rate: 86.7%). The abbreviations for countries used in this report are listed in annex 4.

3.2 Blood supply chain organisations in countries

The general questions of the TS003 survey and the additional questions on hospital-based BEs led to the identification of three main types of countries' organisations of blood supply chain:

- Countries (23%) in which one National BE collects, manufactures and distributes all the blood components to hospital blood banks in which they are stored and then issued to patients in response to orders from clinicians: AU, FI, FR, HU, IE, LU, MT, NL, NZ;
- Countries (10%) in which the transfusion activities are all included in hospitals that are responsible for all activities from donors to patients: DK, EE, IT, SE. Competition between hospital-based suppliers takes place only in SE, not in the 3 other countries;

- Countries (67%) in which the organisation comprises more than one RBC supplier, with a mix of different types of bodies (table A7, p 11): AM, AT, BE, BG, CA, CH, CY, CZ, DE, ES, GR, HR, LT, LV, MA, ME, PL, PT, RO, RS, RU, SI, SK, TR, UK, US. In 8 of these countries (AT, BG, CZ, DE, HR, LT, PT, SK) variable proportions of the RBC supply (ranging from 13% to 92%) come from hospital-based BEs. This last information, the proportion of the RBC supply coming from hospital based BEs could not be provided by 6 countries (AM, MA, ME, RS, RU, TR).

In the 30 countries having more than one RBC supplier, competition between different suppliers takes place in only 8 countries (table A7a, p 12): AT, DE, EE, LT, RU, SE, TR, US. In other countries, different RBC suppliers collaborate. As a whole, competition between RBC suppliers is observed in only 8/39 (20.5%) countries.

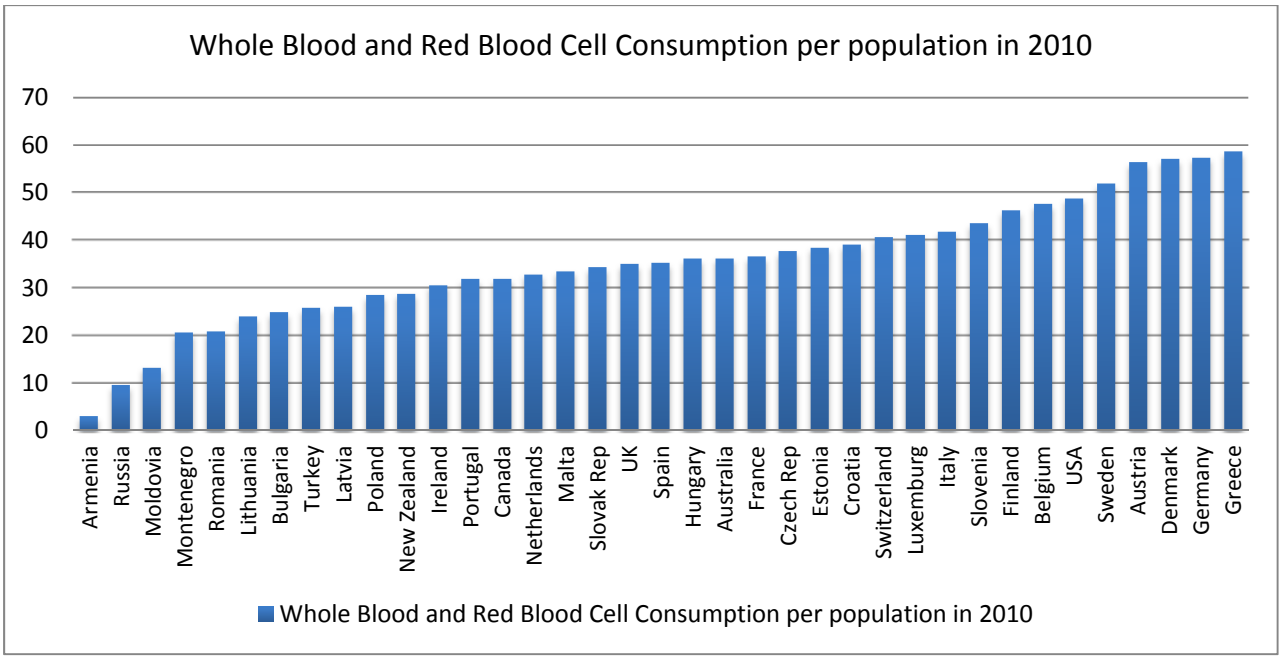
33/39 (84.6%) countries have nationally co-ordinated blood and plasma programmes (table A2, p5). 26/39 (66.7%) countries have nationally co-ordinated "vein to vein" (donor to patient) integrated blood supply management process (table A2, p6).

In all EU countries, blood transfusion therapy (costs of blood components) is Government / Public Health insurance funded, although mixed funding (with e.g. private insurance) could exist in a few countries (table A9, p 15-16).

3.3 Assessment of past hospital RBC use for patients (tables B1-B3, p 17-30)

WB/RBC use was monitored in all countries but one (RS). This was assessed as WB/RBC units **transfused** in 17/38 countries (43.6%), and only as WB/RBC units **distributed** by BE(s) to hospitals, in 21 countries (53.8%) in which transfused units were not made accessible. Monitoring of WB/RBC annual use was performed at **national** level in 35/38 countries and only at lower levels (regional, local) in 3 countries (AM, CY, ME). 23/38 countries (60.5%) used an IT-based system, either in-house developed or commercial software (or a combination of both) for this monitoring (HR has introduced a national IT system covering the full chain in early 2013). And annual use **trends** have been analysed in the last past years in 31/38 countries (81.6%). This monitoring and analysis involved governmental body(ies) in 28/37 countries having responded (75.7%). The data monitored at national level and their analyses were published by 23/37 countries (62.2%), among which 13 used a public website.

The WB/RBC use per 1 000 population in 2010 (data from the annual Council of Europe survey and from the TS003 survey) are presented in the figure below for the 37 countries having provided these data.



3.4 Forecast for overall annual supply (BEs) and use (hospitals) (Table C p 32)

A WB/RBC annual supply forecast was established in 28/39 countries (71.8%). A WB/RBC annual use forecast was established in 25 countries (64.1%). A reconciliation of WB/RBC annual use and supply forecasts was operated in 23 countries (59%). This reconciliation was operated at national level in 17 countries (43.6%).

3.5 Annual blood collection programmes (BEs) (tables D, P 33-35)

Blood collection/supply programmes, with expected numbers of collections per unit of time and location, were established in 32/39 countries (82.1%). The blood collection/supply programme was prepared on an annual basis for the next year in 27/32 countries having responded to this question (84.4%), representing 69.2% of the 39 countries. These programmes were assessed at national level in 22/32countries having responded to this question (68.9%), representing 56.4% of the 39 countries.

3.6 Weekly balance RBC use and supply in both BEs and hospitals

On the BE/supplier side

Regularly balancing WB/RBC use and supply implies regular monitoring of WB/RBC inventories and regular assessment (per day, week, month) of WB/RBC collected, WB/RBC units issued to hospitals in the service area(s), RBCs expired/outdated in the BE(s), and other losses in the BE part of the supply chain. To streamline this balancing process, it is important to pre-determine “normal range” for inventories and to define in advance ways to adapt in case of expected shortage or excess, and also to prevent the occurrence of such situations.

Three countries responded that the WB/RBC inventories were not monitored by the WB/RBC supplier (AM, ME, US). The answer from the US was discrepant from the regular publications of the US blood inventory and use, but it explains why all subsequent questions of this section have been responded by 36/39 countries. In the 36 responding countries, the WB/RBC inventories were monitored:

- With the total number of RBCs in inventory, in 34/36 countries (94.4%);
- With RBCs in inventory classified by RBC type (e.g. paediatric, irradiated, CMV-negative, washed) in 23 countries (63.9%);
- With RBC inventory classified by age in 19 countries (52.8%).

WB/RBCs collected were monitored in 30/36 countries (83.3%). WB/RBCs issued to hospitals in the service area(s) were monitored in 27/36 countries (75%). WB/RBCs expired/outdated were monitored in 28/36 countries (77.8%).
Limits for WB / RBC in inventories have been determined:

- For normal range in 31/36 countries (86.1%); in 30/31 countries, ranges were expressed as "distribution days" (number of units/average number of units distributed per day). Ranges varied both between countries and within countries (e.g. 1-10 days).
- For shortage in 29/36 countries (80.6%); variations between countries were wide, with 1.7 day as minimum and 24 days as maximum.
- For excess in 21/36 countries (58.3%). Variations between countries were from 4-5 days to > 10 days.

An IT-based system was used to monitor WB/RBC inventories in 28 countries (77.8%). These IT-based systems could be in-house developed (32.1%), or commercial (39.3%), or both (28.6%). SOPs for the management of the stock supplying process were available:

- For regular situations, to maintain adequate inventory levels in 27/39 countries (69.2%); regular calculation and forecast of the WB/RBC inventory for a specified period in the future (estimate in the future, based on present data and trends) were implemented in 24/15 countries (61.5%), with forecast periods going from one week to 52 weeks;
- For shortage situations, with description of measures to replenish inventory up to adequate levels, in 25/39 countries (64.1%);
- For excess situations, with description of measures to keep inventory within adequate levels in 16/39 countries (41%).

Procedures to prevent a foreseeable shortage from their forecast were available in 22/24 countries having responded to this question, representing 56.4% of the 39 countries.
Procedures to prevent a foreseeable excess from their forecast were available in 19/24 countries having responded to this question, representing 48.7% of the 39 countries.

On the hospital side
Regularly balancing WB/RBC use and supply implies to regularly monitor WB/RBC inventories, and to regularly assess (per day, week, month) WB/RBC entries in inventories, issues for patients and losses (mainly RBCs expired/outdated in the hospital). To streamline this balancing process, it is important to pre-determine "normal range" for inventories and to define in advance ways to adapt in case of expected shortage or excess, and also to prevent the occurrence of such situations.

The WB/RBC inventories were monitored in hospitals in 29/39 countries (74.4%):

- With the total number of RBCs in inventory, in 28/29 countries (71.8% of the 39);
- With RBCs in inventory classified by RBC type (e.g. paediatric, irradiated, CMV-negative, washed) in 16 countries (41% of the 39);
- With RBC inventory classified by age in 14 countries (35.9% of the 39).

WB/RBCs supplied by the BE/supplier were monitored in 17 countries (43.6%). WB/RBCs issued for patients were monitored in 18 countries (46.2%). WB/RBCs expired/outdated were monitored in 22 countries (56.4%).

Limits for WB / RBC in inventories have been determined:

- For normal range in 19/29 countries (48.7% of the 39), with normal ranges in hospitals varying between countries from 1 to 14 days;
- For shortage in 19/29 countries (48.7% of the 39), with shortage limits in hospitals varying between countries from 1 to 25 days;
- For excess in 10/29 countries (25.6% of the 39), with excess limits in hospitals varying between countries from 3 to 18 days.

An IT-based system, commercial in majority) was used to monitor WB/RBC inventories in hospitals in 17/29 countries (58.6%). A computerised vendor management system was used to automatically trigger the replenishment of hospital inventories in 5 countries for a percentage of hospitals in the country varying from ca 20% to more than 85%. SOPs for the management of the stock supplying process were available:

- For regular situations, to maintain adequate inventory levels in 20/39 countries (51.3%); regular calculation and forecast of the WB/RBC inventory for a specified period in the future (estimate in the future, based on present data and trends) were implemented in 9/39 countries (23.1%), with forecast periods going from 2 days to 52 weeks.
- For shortage situations, with description of measures to replenish inventory up to adequate levels, in 17/39 countries (43.6%);
- For excess situations, with description of measures to keep inventory within adequate levels in 12/39 countries (30.8%).

Procedures to prevent a foreseeable shortage from their forecast were available in 6 countries (15.4% of the 39). Procedures to prevent a foreseeable excess from their forecast were available in 7 countries (17.9% of the 39).

Co-operation between BEs and hospitals

Co-operation between BEs / RBC suppliers and hospitals concerned:

- Exchange of blood inventory and blood demand data in 30/39 countries (76.9%);
- Analysis of blood inventory and blood demand data in 24/39 countries (61.5%);
- The process of regularly balancing the use/demand and supply in 18/30 countries (46.2%);
- SOPs in 14/39 countries (35.9%)
- IT systems in 15/39 countries (38.5%).

When existing, the collaboration between BEs/RBC suppliers and hospitals was active at the following levels:

- Local, in 31/39 countries (79.5%);
- Regional, in 27/39 countries (69.2%);
- National, in 17/39 countries (43.6%). A national effective co-ordination of BSM could be found in countries with any of the three organisation types (see 3.2): one national BE, 100% hospital-based BEs, mixed BEs. A “vein to vein” IT system covering the entire blood supply chain appeared to be of major importance to achieve such national co-ordination of BSM.

National contingency plans for blood supply management in special circumstances (e.g. earthquakes, pandemics, floods, wars, heatwaves, financial/economic/political crises) were existing in 34/39 countries (87.2%). All countries but three (IT, MT, SI) indicated Government/Ministry of Health/Competent Authority as institutions responsible for contingency planning.

3.7 Review and update the patients’ RBC needs and their satisfaction

Blood product needs for patients were assessed and updated annually in 33/39 countries (84.6%). This assessment was made at national level in 21 countries (53.8% of the 39). Hospital transfusion committees and BEs were the institutions most frequently mentioned as involved in this assessment.

Methods used to assess and update the patient's blood product needs were a regular review of evaluations of RBC transfusion settings (e.g. scientific studies, new/updated guidelines) in 17 countries, and/or reference to national guidelines in 17 countries.
Satisfaction of needs and/or demand of RBC for patients was assessed in 26/39 countries (66.7%). In countries practising such assessment, the indicators used to assess satisfaction of needs and/or demands of RBC for patients were as follows.

- Reviewing/benchmarking RBC ordering and use by clinics in 13/27 countries (48.1%);
- Monitoring the unmet demand (requests), in 19 countries;
- Postponed transfusions (delays), in 11 countries;
- Cancelled surgeries, in 8 countries;
- Need to import RBC, in 6 countries;
- Export of RBC, in 4 countries.

To the question on assessment of self-sufficiency for WB/RBC (meeting the patient's need), 28/39 countries (71.8%) responded they were 100% self-sufficient, 4 countries (10.3%) they were over 100% sufficient (CH, FI, IE, NZ), and 5 countries (12.8%) responded they were less than 100% self-sufficient (CY, GR, HR, RO, RU). Responses were unclear for 2 countries (RS, SE).
35/39 countries (89.7%) indicated they decided on actions in case of deficit or surplus of WB/RBC. In these countries, the decision on actions was made at local level in 22/39 countries (62.9%), at regional level in 24/39 countries (68.6%), at national level in 25/29 countries (71.4%). The main institutions mentioned as involved in such decision-making were BEs and hospitals. Major examples of such decisions/actions taken in the last 3 years were as follows.

- Development and implementation of transfusion guidelines for optimising blood use at national level, in 20/39 countries (57.1%);
- Development of training programme for clinicians/nurses for optimising blood use at national level, in 19/39 countries (54.3%);
- Actions to benchmark the blood use between hospitals in order to reduce consumption, in 12/39 countries (34.3%).

An assessment of the percentage of WB/RBC origin from VNRBD (according to the Council of Europe definition) was performed or available in all 39 countries but 3 (AU, CY, RU). The percentage of WB/RBC from VNRBD was assessed as 100% in 28/36 countries (77.8%) and less than 100% in 8/36 countries (22.2%): AM, BU, GR, LT, ME, MD, PL, TR (DE considered some donations as compensated, not paid. When specified, the proportion of paid donations could go from 1% (PL) to 85% (AM).
Most frequent major decisions/actions taken to improve the Blood Supply Management effectiveness and efficiency in the next 3 years were: developing nationally co-ordinated programmes, developing IT systems, improving BE-hospital collaboration.

3.8 Good practices of blood supply management

The symposium organised by the Council of Europe with interested parties in October 2012 has allowed the presentation and discussion of the main results of the study, with experts from the 39 participating countries. This symposium also provided an opportunity to evaluate the validity of the use of the TS003 questionnaire, combined with a SWOT (strengths, weaknesses, opportunities and threats) analysis, to self-assess the current status of the Blood Supply Management in a given country. This was done in 8 countries (ES, FI, FR, IE, NZ, PT, RO, UK), and gave rise to slideshow presentations prepared for each country according to a common template containing the following items: general organisation of Blood Supply Management, main strengths, weaknesses, threats, opportunities and recommendations as "good practice in Blood Supply Management". The method was much appreciated by both the speakers who used it and the attendants.

The TS003 method was also briefly described and applied and validated in three other countries (AU, NL, ZA) through the ISBT Working Party on BSM. This description and experiences of the TS003 method have been described elsewhere (16-19).

From this experience, a major outcome from the symposium was to recommend the use of the TS003 questionnaire, after a few modifications, as a self-assessment tool to evaluate current situation of Blood Supply Management, deduce corrective measures for improvement and assess the implemented measures. The TS003 self-assessment questionnaire has been posted on the EDQM website

http://www.edqm.eu/en/healthcare-news-44.html

and the International Society for Blood Transfusion (ISBT) website,

http://www.isbtweb.org/working-parties/blood-supply-management/questionnaire-and-method-to-assess-and-improve-blood-supply-management-bsm/, so anyone interested could use it.

Another major outcome from the symposium agreed by all participants was the strong encouragement to look for practical ways to improve collaboration between hospitals and BEs, as a key factor for continuous improvement of Blood Supply Management. The follow-up work after the symposium is expected to lead to a Council of Europe manual on Blood Supply Management with the following content: i) Finalised results of the survey; ii) Report of the symposium; iii) International "good practices of BSM". The manual is scheduled to be published in early 2014.

4. References

1. Elston RC, Pickrel JC. Guides to Inventory Levels for a Hospital Blood Bank Determined by Electronic Computer Simulation. Transfusion 1965, 5: 465-470.
2. Owens W, Tokessy M, Rock G. Age of blood in inventory at a large tertiary care hospital. Vox Sang. 2001, **81**: 21-23.
3. Chapman JF, Cook R. The Blood Stocks Management Scheme, a partnership venture between the National Blood Service of England and North Wales and participating hospitals for maximizing blood supply chain management. Vox Sang. 2002, **83 :** 239-246.
4. Nightingale S, Wanamaker V, Silverman B et al. Use of sentinel sites for daily monitoring of the US blood supply. Transfusion 2003, **43**: 364-372.
5. Chapman JF, Hyam C, Hick R. Blood inventory management. Vox Sang. 2004, **87** (Suppl. 2): S143-S145.
6. Devine DV, Sher GD, Reesink HW et al. Inventory management. Vox Sang. 2009, **98**: 295-363.
7. Chapman J, Hick R. Monitoring the nation's blood supply. Transfusion 2003, 43: 1639-1640.
8. Pereira A. Blood inventory management in the type and screen era. Vox Sang. 2005, **89** : 245–250.
9. Katsaliaki K, Brailsford SC. Using simulation to improve the blood supply chain. J Op Res Soc 2007, **58**: 219-227.

10. Kamp C, Heiden M, Henseler O, Seitz R. Management of blood supplies during an influenza pandemic. Transfusion 2010, **50**: 231-239.
11. An M-W, Reich NG, Crawford SO, Brookmeyer R, Louis TA, Nelson KE. A Stochastic Simulator of a Blood Product Donation Environment with Demand Spikes and Supply Shocks. PLoS ONE 2011, **6**- e21752: 1- 9.
12. Lim YA, Kim HH, Joung US et al. The development of a national surveillance system for monitoring blood use and inventory levels at sentinel hospitals in South Korea. Transfusion Medicine 2010, **20**: 104-112.
13. Yazer M. The Pittsburgh centralized transfusion model: less is more. Transfusion 2007, **47**: (Suppl.): 164S-168S.
14. Marques MB, Polhill SR, Waldrum MR, Johnson JE, Timpa J, Patterson A, Salzman D. How we closed the gap between red blood cell utilization and whole blood collections in our institution. Transfusion 2012, **52**: 1857-1867.
15. De Kort W, Veldhuizen I for the EU Donor Management in Europe Project Partners. Donor management manual. 2010. ISBN 978-90-815585-1-8. www.domaine-europe.eu
16. Folléa G on behalf of Council of Europe Working Group and ISBT Working Party on Blood Supply management. Blood supply management (RBC): definitions, description as a process, tools for assessment and improvement. ISBT Science Series 2013, 8: 37-40.
17. Caulfield J. Blood Supply Management: Experience and recommendations from Australia. ISBT Science Series 2013, 8: 41-45.
18. Mpuntsha L, Reddy R. Blood supply management – experience and recommendations from Africa. ISBT Science Series 2013, 8: 46–49.
19. Smid WM, Buining R, de Kort W. Blood supply management: experience and recommendations from the Netherlands. ISBT Science Series 2013, 8: 50-53.

Annex 1. Questionnaire Used for the TS003 Survey Conducted in 2012

Red Blood Cell Supply Management Questionnaire

Part A. General questions

A1. Which country does this questionnaire relate to?

Blood supply management

A2. Are there nationally coordinated blood and plasma programmes in your country (as recommended by WHA Resolution 63.12 May 2010 or Council of Europe)?

- Yes
- No

(Click here to view the WHA resolution)

A3. Is there a nationally coordinated "vein to vein" (donor to patient) integrated blood supply management process in your country?

- Yes
- No

Blood supply management

A4. Has your country completed the CoE survey for 2009?

- Yes
- No

For more information, please see the CoE report of 2009

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

Blood supply management

A5a. At which stage is WB / RBC transfusion development in your country? Please answer questions below on the use of blood and RBC for transfusion.

WB used (units)

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

% WB of total RBC used

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

RBC used (units)

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

A5b. In your country, are you using RBC from apheresis?

- Yes
- No

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

Blood supply management

A6. Are there paid donations for WB / RBC collection in your country?

- Yes
- No

For more information, please see the CoE report of 2009

Blood supply management

A7. What is the number of RBC supplier(s) in your country?

- 1
- more than 1

The next question is only shown if A7. What is the number of RBC supplier(s) in your country? *equals* more than 1

Blood supply management

A7a. Is there competition between RBC suppliers?

- Yes
- No

Blood supply management

A8. What main specific factors do influence RBC use in your country? (multiple answers possible)

- ☐ Changes in population demographics (e.g. aging)
- ☐ Access to health care system / Technologies
- ☐ Disease patterns (e.g. onco-hematologic diseases, thalassemia)
- ☐ Substantial minority groups
- ☐ Substantial patient groups with rare blood types
- ☐ Season mobility (e.g. holidays, prolonged stays of elderly in Southern Europe)
- ☐ Cross-border healthcare shopping
- ☐ Other (please specify)

Blood supply management

A9. In your country, blood transfusion therapy (cost of blood components) is funded by:

- ☐ Government / Public Health funded
- ☐ Private insurance funded
- ☐ Other (please specify)

Part B. Assessing the Past Red Blood Cells Use for patients

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

WB / RBC units

B1a. How many WB / RBC units (total WB + RBC) were used in your country per 1,000 population in 2009?

The next question is only shown if A4. Has your country completed the CoE survey for 2009? *equals* No

B1b. In your country, WB / RBC units were assessed as:

- distributed to hospital blood banks
- transfused
- both

Monitoring WB / RBC use

B2. Is WB / RBC annual use monitored in your country?

- Yes
- No

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

Monitoring WB / RBC use

You indicated that WB / RBC annual use is monitored in your country. Please answer the following questions.

B2a. In what year has monitoring been started?

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

B2b. Which institutions monitor WB / RBC annual use? (multiple answers possible)

- ☐ Blood Establishments (BEs) / RBC suppliers (independently)
- ☐ Hospitals (independently)
- ☐ Blood Establishments (BEs) / RBC suppliers and hospitals (jointly)
- ☐ Government body(ies)
- ☐ Other
- ☐ Other (please specify)

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

B2c. At what level(s) do these institutions monitor WB / RBC annual use?

- ☐ Local
- ☐ Regional
- ☐ National

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

Monitoring indicators for WB / RBC use

B2d. Is an IT-based system used to monitor indicators for WB /RBC annual use?

- ○ Yes
- ○ No

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

and

if B2d. Is an IT-based system used to monitor indicators for WB /RBC annual use? *equals* Yes

Monitoring indicators for WB / RBC use

You indicated that an IT-based system is used to monitor indicators for WB / RBC annual use. Please answer the following question.

B2d1. What kind of IT-based system is used?

- ☐ In-house developed software
- ☐ Commercial software, please specify below
- ☐ Otherwise, please specify below

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

and

if B2d. Is an IT-based system used to monitor indicators for WB /RBC annual use? *equals* Yes

Please specify the commercial or other software that is used:

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

Publishing WB / RBC use

B2e. Are the national monitored data and analysis of these data published?

- ○ Yes
- ○ No

The next question is only shown if B2. Is WB / RBC annual use monitored in your country? *equals* Yes

and

if B2e. Are the national monitored data and analysis of these data published? *equals* Yes

Publishing WB / RBC use

You indicated that national data and analysis of these data are published. Please answer the following question.

B2e1. Where are the national data and analysis of these data published?

- ☐ Public website
- ☐ Private website
- ☐ Otherwise (please specify)

The next question is only shown if B2e. Are the national monitored data and analysis of these data published? *equals* Yes

Please specify the web address(es):

Analysing WB / RBC use trends

B3. Have WB / RBC annual use trends been analysed over the last past years?

- ○ Yes
- ○ No

The next question is only shown if B3. Have WB / RBC annual use trends been analysed over the last past years? *equals* Yes

Analysing WB / RBC use trends

You indicated that WB / RBC annual use trends have been analysed over the last past years. Please answer the following question.

B3a. What was the starting year of this trend analysis?

Part C. Establishing Forecast for overall annual supply (for BEs) and use (for Hospitals)

Supply forecast in BEs / RBC supplier(s)

C1. Is an WB / RBC annual *supply* forecast established in your country?

- ○ Yes
- ○ No

C2. Is an WB / RBC annual *use* forecast established in your country?

- ○ Yes
- ○ No

Supply forecast

C3. Is there a reconciliation of WB / RBC annual use and supply forecasts in your country?

- ○ Yes
- ○ No

The next question is only shown if C3. Is there a reconciliation of WB / RBC annual use and supply forecasts in your country? *equals* Yes

Supply forecast

You indicated that there is a reconciliation of WB / RBC annual use and supply forecasts in your country. Please answer the following question.

C3a. At what level(s) does this reconciliation occur? (multiple answers possible)

- ☐ Local
- ☐ Regional
- ☐ National

Part D. Establishing annual Blood Collection / Donor base / Supply Programme

Blood collection programme

D1. Is there a blood collection programme in your country (expected number of collections per unit of time / location)?

- ○ Yes
- ○ No

The next question is only shown if D1. Is there a blood collection programme in your country (expected number of collections per unit of time / location)? *equals* Yes

Blood collection programme

You indicated that there is a blood collection programme in your country. Please answer the following questions.

D1a. How far in advance is the Blood Collection / Supply Programme assessed? (multiple answers possible)

- ☐ For the next week
- ☐ For the next 4 weeks
- ☐ For the next 8 weeks
- ☐ For the next year
- ☐ Other (please specify)

The next question is only shown if D1. Is there a blood collection programme in your country (expected number of collections per unit of time / location)? *equals* Yes

D1b. At what level(s) is the Blood Collection / Supply programme assessed? (multiple answers possible)

- ☐ Local
- ☐ Regional
- ☐ National

Part E. Weekly balancing WB / RBC use (demand) and supply in BE(s) / RBC supplier(s) and Hospitals

Inventories in BE(s) / RBC supplier(s)

The following questions deal with monitoring inventories within the *BE(s) / RBC supplier(s).*

E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored?

- Yes
- No

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that the inventories in BE(s) / RBC supplier(s) are monitored. Please answer the following questions.

E1a. Which indicators are used for monitoring the inventories in the BE(s) / RBC supplier(s)? (multiple answers possible)

- [ ] The total number of RBC's in inventory
- [ ] RBC inventory classified by RBC type (e.g. pediatric, irriated, CMV negative, washed)
- [ ] RBC inventory classified by age
- [ ] RBCs collected by your blood establishment
- [ ] RBCs issued to hospitals in your service area (per day, week, month)
- [ ] RBCs expired/outdated in the blood establishment
- [ ] Other losses from collection to released RBC in the blood collection
- [ ] RBCs expired/outdated in the hospitals in corresponding service area
- [ ] Other (please specify)

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

Inventories in BE(s) / RBC supplier(s)

E1b. Are the inventory limits defined for WB / RBC inventories in the BE(s) / RBC supplier(s)?

	Yes	No
Normal range	○	○
Shortage	○	○
Excess	○	○
Other	○	○

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

and

if Normal range *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that the inventory limits for WB / RBC inventories are defined in normal situations.

Please specify the limits expressed in days of total RBC coverage you apply for normal situations (e.g. 3-7 days)

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

and

if Shortage *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that the inventory limits for WB / RBC inventories are defined in shortage situations.

Please specify the limits expressed in days of total RBC coverage you apply for shortage situations (e.g. <3 days)

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

and

if Excess *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that the inventory limits for WB / RBC inventories are defined in excess situations.

Please specify the limits expressed in days of total RBC coverage you apply for excess situations (e.g. >7 days)

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

and

if Other *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that the inventory limits for WB / RBC inventories are defined in other situations.

Please specify the limits expressed in days of total RBC coverage you apply for other situations

---

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

Inventories in BE(s) / RBC supplier(s)

E1c. Is an IT-based system used to monitor indicators for WB /RBC inventories in the BE(s) / RBC supplier(s)?

- Yes
- No

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

and

if 1Ec. Is an IT-based system used to monitor indicators for WB /RBC inventories in the BE(s) / RBC supplier(s)? *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that an IT-based system is used to monitor indicators for WB / RBC inventories in the BE(s) / RBC supplier(s). Please answer the following question.

E1c1. What kind of IT-based system is used?

- ☐ In-house developed software
- ☐ Commercial software, please specify below
- ☐ Otherwise, please specify below

The next question is only shown if E1. In your country, are the inventories in BE(s) / RBC supplier(s) monitored? *equals* Yes

and

if E1c. Is an IT-based system used to monitor indicators for WB /RBC inventories in the BE(s) / RBC supplier(s)? *equals* Yes

Please specify the commercial or other software that is used:

Inventories in BE(s) / RBC supplier(s)

E2. Do you have inventory limits defined for special RBC in the BE(s) / RBC supplier(s)?

	Yes	No
RBCs of certain blood groups and types (e.g.ZO Rh Neg)	○	○
Paediatric red cells	○	○
Irradiated red cells	○	○
Red cells for patient groups e.g. sickle cell disease	○	○
RBCs classified in other categories	○	○

In the BE(s) / RBC supplier(s)

The following questions deal with stock supply within the *BE(s) / RBC supplier(s).*

E3. Are there SOPs for the management of the stock supplying process (maintaining adequate inventory level) for regular situations in the BE(s) / RBC supplier(s)?

- Yes
- No

E4. Are there SOPs describing measures to replenish inventory up to adequate level in the BE(s) / RBC supplier(s) in case of shortage?

- Yes
- No

E5. Are there SOPs describing measures to bring the inventory back to adequate level in the BE(s) / RBC supplier(s) in case of excess?

- Yes
- No

Inventories in BE(s) / RBC supplier(s)

E6. Do BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)?

- Yes
- No

The next question is only shown if E6. Do BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)? *equals* Yes

Inventories in BE(s) / RBC supplier(s)

You indicated that BEs regularly calculate and forecast the WB / RBC inventory for a specific period in the future. Please answer the following questions.

E6a. What is the inventory forecast period from the starting day (in weeks)?

The next question is only shown if E6. Do BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)? *equals* Yes

E6b. From this forecast, are there procedures to prevent a foreseeable shortage?

- Yes
- No

The next question is only shown if E6. Do BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)? *equals* Yes

E6c. From this forecast, are there procedures to prevent a foreseeable excess?

- Yes
- No

Inventories in Hospitals

The following questions deal with monitoring inventories within the *Hospitals.*

E7. Are the inventories in the Hospitals monitored?

- Yes
- No

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

Inventories in Hospitals

You indicated that the inventories in the Hospitals are monitored. Please answer the following questions.

E7a. Which indicators are used for monitoring the inventories in the Hospitals? (multiple answers possible)

- The total number of RBCs in inventories
- RBC inventories classified by RBC type (e.g. pediatric, irriated, CMV negative, washed)

- [ ] RBC inventories classified by age
- [ ] RBCs supplied by the blood establishment
- [ ] RBCs issued to hospital departments (per day, week, month)
- [ ] RBCs expired/outdated at the hospital
- [ ] Other (please specify)

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

Inventories in Hospitals

E7b. Are the inventory limits defined for WB / RBC inventories in the Hospitals?

	Yes	No
Normal range	○	○
Shortage	○	○
Excess Other	○	○

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if Normal range *equals* Yes

Inventories in Hospitals

You indicated that the inventory limits for WB / RBC inventories are defined in normal situations.

Please specify the limits expressed in days of total RBC coverage you apply for normal situations (e.g. 3-7 days)

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if Shortage *equals* Yes

Inventories in Hospitals

You indicated that the inventory limits for WB / RBC inventories are defined in shortage situations.

Please specify the limits expressed in days of total RBC coverage you apply for shortage situations (e.g. <3 days)

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if Excess *equals* Yes

Inventories in Hospitals

You indicated that the inventory limits for WB / RBC inventories are defined in excess situations.

Please specify the limits expressed in days of total RBC coverage you apply for excess situations (e.g. >7 days)

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if Other *equals* Yes

Inventories in Hospitals

You indicated that the inventory limits for WB / RBC inventories are defined in other situations.

Please specify the limits expressed in days of total RBC coverage you apply for other situations

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

Inventories in Hospitals

E7c. Is an IT-based system used to monitor indicators for WB /RBC inventories in Hospitals?

- Yes
- No

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if E7c. Is an IT-based system used to monitor indicators for WB /RBC inventories in Hospitals? *equals* Yes

Inventories in Hospitals

You indicated that an IT-based system is used to monitor indicators for WB / RBC inventories in Hospitals. Please answer the following question.

E7c1. What kind of IT-based system is used?

- In-house developed software
- Commercial software, please specify below
- Otherwise, please specify below

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if E7c. Is an IT-based system used to monitor indicators for WB /RBC inventories in Hospitals? *equals* Yes

Please specify the commercial or other software that is used:

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if E7c. Is an IT-based system used to monitor indicators for WB /RBC inventories in Hospitals? *equals* Yes

Inventories in Hospitals

E7d. Is a computerized vendor management system used to automatically trigger the replenishment of Hospital inventories in your country?

- Yes
- No

The next question is only shown if E7. Are the inventories in the Hospitals monitored? *equals* Yes

and

if E7c. Is an IT-based system used to monitor indicators for WB /RBC inventories in Hospitals? *equals* Yes

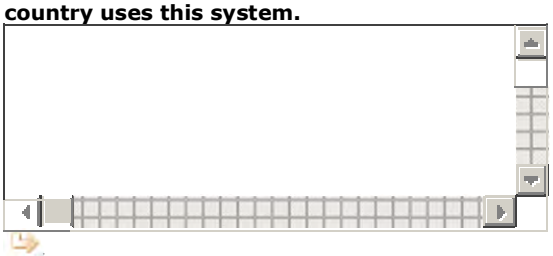
and

if E7d. Is a computerized vendor management system used to automatically trigger the replenishment of Hospital inventories in your country? *equals* Yes

Inventories in Hospitals

You indicated that a computerized vendor management system is used to automatically trigger the replenishment of Hospital inventories.

E7d1. Please specify what proportion of Hospitals in your country uses this system.



Inventories in Hospitals

E8. Do you have inventory limits defined for special RBC in Hospitals?

	Yes	No
RBCs of certain blood groups and types (e.g. O Rh Neg)	○	○
Paediatric red cells	○	○
Irradiated red cells	○	○
Red cells for patient groups e.g. sickle cell disease	○	○
RBCs classified in other categories	○	○

In the Hospitals

The following questions deal with stock supply within the *Hospitals.*

E9. Are there SOPs for the management of the stock supplying process (maintaining adequate inventory level) for regular situations in the Hospitals?

○ Yes

○ No

E10. Are there SOPs describing measures to replenish inventory up to adequate level in the Hospitals in case of shortage?

○ Yes

○ No

E11. Are there SOPs describing measures to bring the inventory back to adequate level in the Hospitals in case of excess?

○ Yes

○ No

Inventories in Hospitals

E12. Do Hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)?

○ Yes

○ No

The next question is only shown if E12. Do Hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)? *equals* Yes

Inventories in Hospitals

You indicated that Hospitals regularly calculate and forecast the WB / RBC inventory for a specific period in the future. Please answer the following questions.

E12a. What is the inventory forecast period from the starting day (in weeks)?

The next question is only shown if E12. Do Hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)? *equals* Yes

E12b. From this forecast, are there procedures to prevent a foreseeable shortage?

○ Yes

○ No

The next question is only shown if E12. Do Hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)? *equals* Yes

E12c. From this forecast, are there procedures to prevent a foreseeable excess?

○ Yes

○ No

Information sharing

E13. Do BE(s) / RBC supplier(s) and the Hospitals in your country share:

	Yes	No
Blood inventory and blood demand data	○	○
Analysis of blood inventory and blood demand data	○	○
The process of regularly balancing the use /	○	○

demand and supply

E14. Do BE(s) / RBC supplier(s) and the Hospitals in your country share:

	Yes	No
SOPs	○	○
IT system	○	○
Otherwise	○	○

Please specify 'otherwise':

E15. At what level(s) is this collaboration between the BE(s) / RBC supplier(s) and the Hospitals active? (multiple answers possible)

- ☐ Local
- ☐ Regional
- ☐ National
- ☐ Otherwise (please specify)

Information sharing

E16. Are there national contingency plans for special circumstances (e.g. earthquakes, pandemics, floods, wars, heat waves, financial/economical/political crises)?

- ○ Yes
- ○ No

The next question is only shown if E16. Are there national contingency plans for special circumstances (e.g. earthquakes, pandemics, floods, wars, heat waves, financial/economical/political crises)? *equals* Yes

Information sharing

You indicated that there are national contingency plans for special circumstances. Please answer the following question.

E16a. Which institution(s) is (are) responsible for contingency planning? (multiple answers possible)

- [ ] BE(s)
- [ ] Hospitals
- [ ] Government
- [ ] MoH
- [ ] Competent authority
- [ ] Otherwise, please specify

Part F. Assessing and updating the patients' Blood Product needs and their satisfaction (self-suffiency) from VNRBD

Assessing Blood Product needs

F1. In your country, do you assess and update annual Blood Product needs for patients?

- ○ Yes
- ○ No

The next question is only shown if F1. In your country, do you assess and update annual Blood Product needs for patients? *equals* Yes

Assessing Blood Product needs

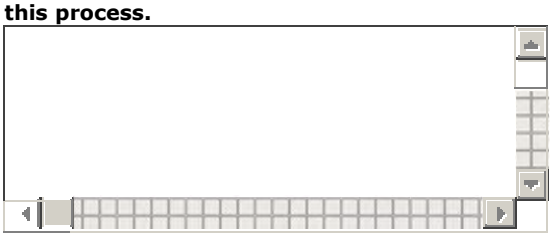
You indicated that in your country, you assess and update annual Blood Product needs for patients. Please answer the following questions.

F1a. On what level(s) do you make this assessment? (multiple answers possible)

- [ ] Local
- [ ] Regional
- [ ] National

The next question is only shown if F1. In your country, do you assess and update annual Blood Product needs for patients? *equals* Yes

F1b. Please specify which institutions (e.g. Hospital Transfusion Committees, national committees) are in charge of this process.



The next question is only shown if F1. In your country, do you assess and update annual Blood Product needs for patients? *equals* Yes

F1c. Which method(s) do you use to assess and update the patients' Blood Product needs? (multiple answers possible)

- ☐ National standard of care
- ☐ National guidelines
- ☐ Regular review of evolutions of RBC transfusion settings (e.g. scientific studies, new / updated guidelines)
- ☐ Other, please specify

Assessing Blood Product needs

F2. In your country, do you assess satisfaction of needs and / or demand of RBC for patients?

- ○ Yes
- ○ No

The next question is only shown if F2. In your country, do you assess satisfaction of needs and / or demand of RBC for patients? *equals* Yes

Assessing Blood Product needs

You indicated that in your country, you assess satisfaction of needs and / or demand of RBC for patients. Please answer the following questions.

F2a. Which indicators do you use to assess satisfaction of needs and / or demand of RBC for patients? (multiple answers possible)

- ☐ (Need to) import RBC
- ☐ Export of RBC
- ☐ Review / benchmarking of RBC ordering and use by clinics
- ☐ Monitoring the unmet demand (requests)
- ☐ Postponed transfusions (delays)
- ☐ Cancelled surgeries

The next question is only shown if F2a. Which indicators do you use to assess satisfaction of needs and / or demand of RBC for patients? (multiple answers possible) *equals* Monitoring the unmet demand (requests)

and

if F2. In your country, do you assess satisfaction of needs and / or demand of RBC for patients? *equals* Yes

Assessing Blood Product needs

You indicated that you monitor the unmet demand (requests). Please answer the following question.

F2a1. What unmet demands (requests) do you monitor? (multiple answers possible)

- ☐ Postponed transfusions (delays)
- ☐ Cancelled surgeries
- ☐ Other (please specify)

Assessing Blood Product needs

F3. Please specify the assessment of self-suffiency for WB / RBC (meeting the patients' needs) in your country:

- ○ more than 100% suffiency, please specify below
- ○ 100% sufficiency
- ○ less than 100% sufficiency, please specify below

If more or less than 100%, please specify the % of sufficiency:

Assessing Blood Product needs

F4. In your country, do you decide on actions in case of deficit or surplus?

- ○ Yes
- ○ No

The next question is only shown if F4. In your country, do you decide on actions in case of deficit or surplus? *equals* Yes

Assessing Blood Product needs

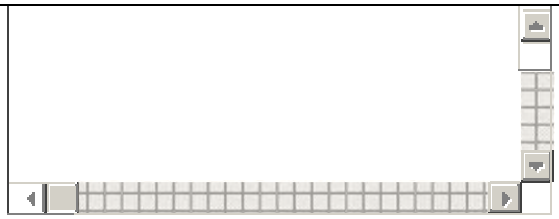
You indicated that you decide on actions in case of deficit or surplus. Please answer the following questions.

F4a. On what level(s) do you decide on actions? (multiple answers possible)

- ☐ Local
- ☐ Regional
- ☐ National

The next question is only shown if F4. In your country, do you decide on actions in case of deficit or surplus? *equals* Yes

4b. Please specify which institutions (e.g. Hospital Transfusion Committees, national committees) are in charge of this process.



The next question is only shown if F4. In your country, do you decide on actions in case of deficit or surplus? *equals* Yes

F4c. Please specify major examples of such decisions / actions taken in the last 3 years. (multiple answers possible)

- ☐ Development and implementation of transfusion guidelines for optimizing blood use at national level
- ☐ Development of training programme for clinicians/nurses for optimising blood use at national level
- ☐ Actions to benchmark the blood use between hospitals in order to reduce consumption
- ☐ Programme funded bij CoE
- ☐ Programme funded by WHO
- ☐ Otherwise (please specify)

Assessing Blood Product needs

F5. In your country, do you assess the percentage of WB / RBC origin from VNRBD (according to the CoE / WHO definition)?

- ○ Yes
- ○ No

The next question is only shown if F5. In your country, do you assess the percentage of WB / RBC origin from VNRBD (according to the CoE / WHO definition)? *equals* Yes

Assessing Blood Product needs

You indicated that you assess the percentage of WB / RBC origin from VNRBD in your country.

F5a. Please specify the percentage of WB / RBC origin from VNRBD you assess in your country:

- ○ 100%

less than 100% (please specify %)

The next question is only shown if F5a. Please specify the percentage of WB / RBC origin from VNRBD you assess in your country: *equals* less than 100%

Assessing Blood Product needs

You indicated that you assess less than 100% WB / RBC from VNRBD in your country.

F5b. Please specify major examples of decisions / actions taken in the last 3 years to increase the VNRBD origin.

F6. Please specify major decisions / actions taken to improve in the next 3 years the BSM process effectiveness and efficiency in your country.

Part G. Ethical issues

Ethical issues

G1. Do you have ethical guidelines regarding blood supply management at the national level?

Yes

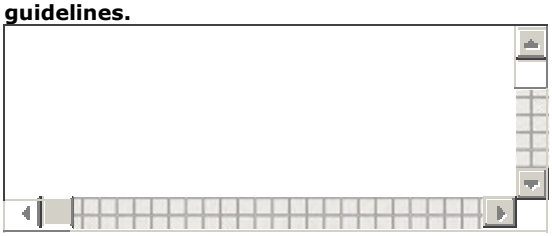
No

The next question is only shown if G1. Do you have ethical guidelines regarding blood supply management at the national level? *equals* Yes

Ethical issues

You indicated that you have ethical guidelines regarding blood supply management at the national level. Please answer the following questions.

G1a. Please define the main principles of these ethical guidelines.



The next question is only shown if G1. Do you have ethical guidelines regarding blood supply management at the national level? *equals* Yes

G1b. On which guidelines are these ethical guidelines based? (multiple answers possible)

- ☐ Oviedo convention
- ☐ AABB guidelines (American Association of Blood Banks)
- ☐ CoE guidelines (Council of Europe guidelines)
- ☐ WHO guidelines (World Health Organization)
- ☐ ISBT guidelines (International Society of Blood Transfusion)
- ☐ Donor Management Manual (DOMAINE project)
- ☐ Other (please specify)

Ethical issues

G2. Do you have ethical committee(s)/ advisory board(s) dealing with principles of blood supply management?

- ○ Yes

No

The next question is only shown if G2. Do you have ethical committee(s)/ advisory board(s) dealing with principles of blood supply management? *equals* Yes

Ethical issues

You indicated that you have ethical committee(s)/ advisory board(s) dealing with principles of blood supply management. Please answer the following question.

G2a. On what level(s) do these ethical committees/advisory boards operate? (multiple answers possible)

- [ ] National level
- [ ] Regional/local level
- [ ] Hospital level

Part H. Research objectives

Research on blood products consumption

The following questions pertain to research on blood products consumption.

H1. Is your country involved in clinical studies on optimal use of blood?

- Yes, as a leader
- Yes, as a participant
- No

The next question is only shown if H1. Is your country involved in clinical studies on optimal use of blood? *equals* Yes, as a participant

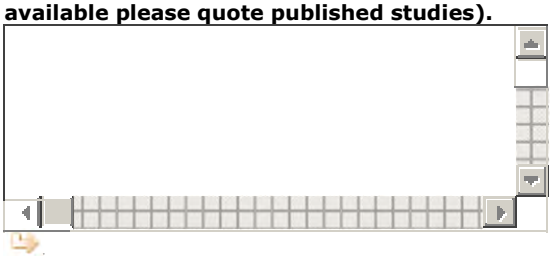
or

if H1. Is your country involved in clinical studies on optimal use of blood? *equals* Yes, as a leader

Research on blood products consumption

You indicated that your country is involved in clinical studies on optimal use of blood.

H1a. Please give more information on the research (where available please quote published studies).



Research on blood products consumption

H2. Is your country involved in research in the field of blood supply management?

- Yes, as a leader
- Yes, as a participant
- No

The next question is only shown if H2. Is your country involved in research in the field of blood supply management? *equals* Yes, as a participant

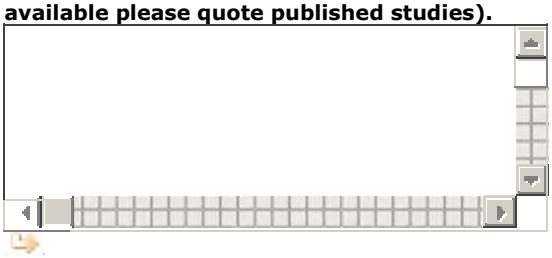
or

if H2. Is your country involved in research in the field of blood supply management? *equals* Yes, as a leader

Research on blood products consumption

You indicated that your country is involved in research in the field of blood supply management.

H1a. Please give more information on the research (where available please quote published studies).



Research on blood products consumption

H3. Is your country involved in research in the field of VNRBD / paid donations / replacement donors?

- Yes, as a leader
- Yes, as a participant
- No

The next question is only shown if H3. Is your country involved in research in the field of VNRBD / paid donations / replacement donors? *equals* Yes, as a participant

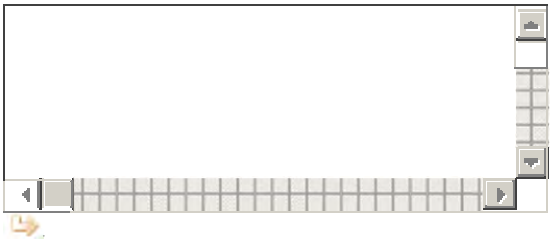
or

if H3. Is your country involved in research in the field of VNRBD / paid donations / replacement donors? *equals* Yes, as a leader

Research on blood products consumption

You indicated that your country is involved in research in the field of VNRBD / paid donations / replacement donors.

H3a. Please give more information on the research (where available please quote published studies).



Research on blood products consumption

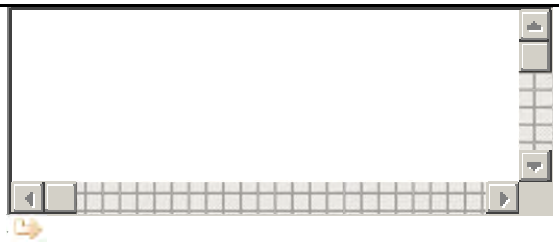
H4. Do you have suggestions for subjects of research in the field of blood supply management / self-suffiency of RBC form VNRBD?

- Yes
- No

The next question is only shown if H4. Do you have suggestions for subjects of research in the field of blood supply management / self-suffiency of RBC form VNRBD? *equals* Yes

Research on blood products consumption

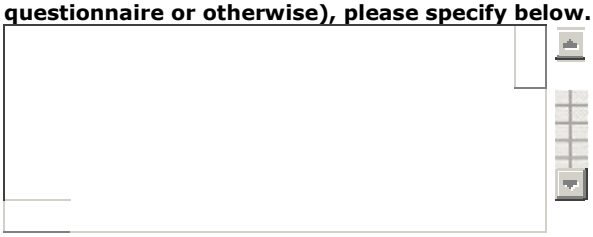
H4a. Please specify your suggestions for research subjects in the field of blood supply management / self-suffiency of RBC from VNRBD.



The next question is only shown if H4. Do you have suggestions for subjects of research in the field of blood supply management / self-suffiency of RBC form VNRBD? *equals* Yes

Comments or suggestions

If you have any comments or suggestions (regarding this questionnaire or otherwise), please specify below.



Annex 2. Self-assessment questionnaire on red blood cell supply management: Terminology, definitions, acronyms

To respond the questionnaire for the survey on blood supply management, we systematically referred, when existing, to the definitions of the EC Directives and/or the Council of Europe documents (e.g. annual survey reports, Blood Guide). For the following terms, since we did not find definitions in these sources, we referred to the following definitions, given with their origin between brackets.

- **Use:** actual amount of blood currently transfused by a defined number of facilities over a defined period of time. Use may be appropriate or inappropriate. (WHO expert Committee, 2010).
- **Demand:** number of blood units required to meet all confirmed requests at a defined number of facilities over a defined period of time (WHO expert Committee, 2010).
- **Need:** number of blood units required to transfuse all individuals who require a blood transfusion in a defined population over a defined period of time (WHO expert Committee, 2010).
- **Self-sufficiency of safe blood and RBC based on Voluntary Non-Remunerated Blood Donation (VNRBD)** shall mean that national needs of patients, as assessed by independent experts in the framework of national health system, are met in a timely manner and that Government is accountable for making the needed blood and RBC equitably available to patients and ensure that they are obtained by VNRBD of national or regional origin (provisional definition elaborated in September 2011 by a WHO panel of experts).
- **RBC supplier:** an organisation entitled to supply red blood cell concentrates to hospitals for transfusion use; it could be a blood establishment, a hospital, a commercial company. (BSM group)

The following acronyms are currently used in the questionnaire.

- BE: Blood establishment
- CMV: cytomegalovirus
- CoE: Council of Europe
- IT: Information technology
- RBC: Red blood cells
- SOP: Standard operating procedure
- VNRBD: Voluntary non-remunerated blood donation
- WB: Whole blood
- WHO: World Health Organization
- WHA: World Health Assembly

Annex 3. TS003 Survey Result Tables

Content

Response rate: 86.7%

Countries contacted	Response	
	Yes	No
Armenia	X	
Australia	X	
Austria	X	
Azerbaijan		X
Belarus		X
Belgium	X	
Bosnia & Herzegovina		X
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Georgia		X
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand	X	
Norway		X
Poland	X	
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
Ukraine		X
United Kingdom	X	
USA	X	
Total	**39**	**6**

Part A. General questions

A1. Which country does this questionnaire relate to?

Armenia, Republic of
Australia
Austria
Belgium
Bulgaria
Canada*
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Moldova, Republic of
Montenegro
Netherlands
New Zealand
Poland
Portugal
Romania
Russia
Serbia
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Turkey
United Kingdom*
USA

* For Canada, the answers given by Canada Blood Services and Héma Québec were merged in this survey, in order to provide national data.

** For the United Kingdom, the answers given by NHSBT (England and North Wales) and the Welsh Blood Service were merged in this survey, in order to provide national data.

A2. Are there nationally coordinated blood and plasma programmes in your country (as recommended by WHO Resolution 63.12 May 2010 or Council of Europe)?

	Yes	No
Armenia, Republic of	X	
Australia	X	
Austria		X
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia		X
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania		X
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic		X
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA		X
TOTAL	**33 (84.6%)**	**6 (15.4%)**

A3. Is there a nationally coordinated "vein to vein" (donor to patient) integrated blood supply management process in your country?

	Yes	No
Armenia, Republic of	X	
Australia		X
Austria	X	
Belgium		X
Bulgaria		X
Canada		X
Croatia		X
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany		X
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia	X	
Serbia		X
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland		X
Turkey		X
United Kingdom		X
USA		X
TOTAL	**26 (66.7%)**	**13 (33.3%)**

A4. Has your country completed the CoE survey for 2009?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium	X	
Bulgaria		X
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania		X
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand		X
Poland		X
Portugal		X
Romania	X	
Russia		X
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey		X
United Kingdom	X	
USA	X	
TOTAL	**28 (71.8%)**	**11 (28.2%)**

A5a. At which stage is WB / RBC transfusion development in your country?

	WB units	% WB of Total RBC used	RBC used (units)
Armenia, Republic of	0	0%	9939
Australia	0	0%	800570
Austria*	301	0.1%	425537
Belgium*	0	0%	522475
Bulgaria	767	0.49%	157424
Canada	0	0%	1066221
Croatia*	451	0.3%	17335
Cyprus	0	0%	40366
Czech Republic*	256	0.1%	408856
Denmark*	0	0%	330781
Estonia*	6	0%	28124
Finland*	0	0%	251742
France*	0	0%	2332640
Germany*	7362	0.2%	4727995
Greece*	93	0%	582786
Hungary*	0	0%	361151
Ireland*	0	0%	146585
Italy*	4140	0.2%	2496132
Latvia*	0	0%	53251
Lithuania	38	0.03%	89309
Luxembourg*	0	0%	20272
Malta*	0	0%	14164
Moldova, Republic of*	0	0%	47925
Montenegro*	542	4.2%	12930
Netherlands*	0	0%	564290
New Zealand	508	0.41%	124004
Poland	924	0.1%	947192
Portugal	316	0.09%	336305
Romania*	102024	27.3%	373487
Russia	2215	0.15%	1423007
Serbia*	248216	53.6%	462542
Slovak Republic*	941	0.5%	179044
Slovenia*	0	0%	87005
Spain	no data	no data	no data
Sweden*	0	0%	495011
Switzerland*	2109	0.7%	314077
Turkey	127576	7.31%	1744787
United Kingdom*	1	0%	2216456
USA	no data	no data	no data

* Data from the Council of Europe survey report „The Collection, Testing and Use of Blood Products in Europe in 2009"

A5b. In your country, are you using RBC from apheresis?

	Yes	No	
Armenia, Republic of		X	
Australia		X	
Austria*	X		
Belgium*	X		
Bulgaria		X	
Canada	X		
Croatia*		X	
Cyprus		X	
Czech Republic*		X	
Denmark*		X	
Estonia*		X	
Finland*		X	
France*	X		
Germany*	X		
Greece*	X		
Hungary*	X		
Ireland*		X	
Italy*	X		
Latvia*		X	
Lithuania	X		
Luxembourg*		X	
Malta*		X	
Moldova, Republic of*		X	
Montenegro*		X	
Netherlands*		X	
New Zealand		X	
Poland	X		
Portugal	X		
Romania*		X	
Russia		X	
Serbia*		X	
Slovak Republic*	X		
Slovenia*		X	
Spain	no data	no data	
Sweden*	X		
Switzerland*	X		
Turkey	X		
United Kingdom*		X	
USA	no data	no data	
Total	**15 (38.5%)**	**22 (56.4%)**	**missing: 2 (5.1%)**

* Data from the Council of Europe survey report „The Collection, Testing and Use of Blood Products in Europe in 2009"

A6. Are there paid donations for WB / RBC collection in your country?

	Yes	No
Armenia, Republic of	X	
Australia		X
Austria*		X
Belgium*		X
Bulgaria	X	
Canada		X
Croatia*		X
Cyprus		X
Czech Republic*		X
Denmark*		X
Estonia*		X
Finland*		X
France*		X
Germany*	X	
Greece*		X
Hungary*		X
Ireland*		X
Italy*		X
Latvia*		X
Lithuania	X	
Luxembourg*		X
Malta*		X
Moldova, Republic of*		X
Montenegro*		X
Netherlands*		X
New Zealand		X
Poland		X
Portugal		X
Romania*		X
Russia	X	
Serbia*		X
Slovak Republic*		X
Slovenia*		X
Spain		X
Sweden*		X
Switzerland*		X
Turkey	X	
United Kingdom*		X
USA		X
Total	**6 (15.4%)**	**33 (84.6%)**

* Data from the Council of Europe survey report „The Collection, Testing and Use of Blood Products in Europe in 2009"

A7. What is the number of RBC supplier(s) in your country?

	1	More than 1
Armenia, Republic of		X
Australia	X	
Austria		X
Belgium		X
Bulgaria		X
Canada		X
Croatia		X
Cyprus		X
Czech Republic		X
Denmark		X
Estonia		X
Finland	X	
France	X	
Germany		X
Greece		X
Hungary	X	
Ireland	X	
Italy		X
Latvia		X
Lithuania		X
Luxembourg	X	
Malta	X	
Moldova, Republic of		X
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia		X
Slovak Republic		X
Slovenia		X
Spain		X
Sweden		X
Switzerland		X
Turkey		X
United Kingdom		X
USA		X
TOTAL	**9 (23.1%)**	**30 (76.9%)**

A7a. Is there competition between RBC suppliers?

NB: This question was answered only by the countries that answered „more than 1" to question A7.

	Yes	No
Armenia, Republic of		X
Austria	X	
Belgium		X
Bulgaria		X
Canada		X
Croatia		X
Cyprus		X
Czech Republic		X
Denmark		X
Estonia	X	
Germany	X	
Greece		X
Italy		X
Latvia		X
Lithuania	X	
Moldova, Republic of		X
Montenegro		X
Poland		X
Portugal		X
Romania		X
Russia	X	
Serbia		X
Slovak Republic		X
Slovenia		X
Spain		X
Sweden	X	
Switzerland		X
Turkey	X	
United Kingdom		X
USA	X	
TOTAL	**8 (26.7%)**	**22 (73.3%)**

A8. What main specific factors do influence RBC use in your country?

	Changes in population demographics	Access to health care system / Technologies	Disease patterns (e.g. onco-hematologic diseases, thalassemia)	Substantial minority groups	Substantial patient groups with rare blood types	Seanson mobility (e.g. holidays, prolonged stays of elderly in Southern Europe	Cross-border healthcare shopping	Other*
Armenia, Republic of		X	X		X			
Australia	X	X	X					
Austria	X		X			X		
Belgium	X		X					
Bulgaria	X	X	X					
Canada	X		X	X				X
Croatia	X		X			X		
Cyprus	X		X			X	X	
Czech Republic			X					X
Denmark	X							X
Estonia	X	X	X					
Finland	X							X
France	X	X	X	X		X		
Germany	X		X	X				
Greece	X		X			X		
Hungary	X	X	X		X	X		
Ireland	X	X	X	X				
Italy	X		X	X				
Latvia	X	X	X					
Lithuania		X	X			X		
Luxembourg	X		X			X		
Malta	X	X	X					
Moldova, Republic of			X					X
Montenegro	X	X	X			X		
Netherlands	X		X	X				X
New Zealand	X	X						X
Poland	X	X	X			X		
Portugal	X	X				X		
Romania		X	X			X		X
Russia	X	X	X					
Serbia	X	X	X			X		
Slovak Republic	X	X	X					
Slovenia	X		X			X		
Spain	X	X	X			X		
Sweden	X		X					
Switzerland	X		X					
Turkey		X	X			X		
United Kingdom	X	X	X	X	X			X
USA	X		X			X		
TOTAL	**33 (84.6%)**	**21 (53.8%)**	**35 (89.7%)**	**7 (17.9%)**	**3 (7.7%)**	**17 (43.6%)**	**1 (2.6%)**	**9 (23.1%)**

*Other factors can be found on the next page.

Other main specific factors that influence RBC use

Canada	Population increase and increase of minority groups
Czech Republic	Access to health care / technologies / demographics and cross-border health care shopping have some, but minor role
Denmark	Blood supply management program
Finland	Treatment guidelines/practices in hospitals
Moldova, Republic of	Seasonal morbidity
Netherlands	Consensus Guidelines
New Zealand	Patient blood management initiatives in the hospitals aimed at reducing use of blood components
Romania	Excessive use due to free of charge distribution to hospitals
United Kingdom	Initiatives to reduce inappropriate blood use

A9. In your country, blood transfusion therapy (cost of blood components) is funded by:

	Government / Public Health funded	Private insurance funded	Other*
Armenia, Republic of	X		X
Australia	X		
Austria	X		X
Belgium	X		
Bulgaria	X		
Canada	X		
Croatia	X		
Cyprus	X		
Czech Republic	X		
Denmark	X		
Estonia	X		
Finland	X		
France	X		
Germany	X		X
Greece	X		
Hungary	X		
Ireland	X	X	
Italy	X		
Latvia	X		
Lithuania	X		
Luxembourg	X		
Malta	X		
Moldova, Republic of	X		
Montenegro	X		
Netherlands		X	
New Zealand	X		
Poland	X		
Portugal	X		
Romania	X		
Russia	X		
Serbia	X		
Slovak Republic	X		
Slovenia	X		
Spain	X		
Sweden	X		
Switzerland	X	X	
Turkey	X	X	X
United Kingdom	X		
USA	X	X	
TOTAL	**38 (97.4%)**	**5 (12.8%)**	**4 (10.3%)**

*Other ways of funding can be found on the next page.

Other ways of funding

Armenia, Republic of	By patients" relatives
Germany	Public health insurance (mandatory for employees)
Romania	BEs are financed by Government, from the health budget = hospitals receive BC free of charge for the moment
Turkey	People' s own pocket who has no health insurance

Part B. Assessing the Past Red Blood Cells Use for patients

B1a. How many WB / RBC units (total WB + RBC) were used in your country per 1,000 population in 2009?

	WB + RBC units
Armenia, Republic of	3.1
Australia	36.3
Austria*	50.9
Belgium*	48.4
Bulgaria	21.0
Canada	32.0**
Croatia*	39.1
Cyprus	N/A
Czech Republic*	39.6
Denmark*	59.8
Estonia*	21.0
Finland*	47.0
France*	36.1
Germany*	57.8
Greece*	55.5
Hungary*	36.1
Ireland*	32.9
Italy*	41.6
Latvia*	23.7
Lithuania	26.7
Luxembourg*	41.1
Malta*	35.0
Moldova, Republic of*	13.4
Montenegro*	20.7
Netherlands*	34.0
New Zealand	28.8
Poland	27.6
Portugal****	30.7
Romania*	17.4
Russia	9.62
Serbia*	no data
Slovak Republic*	34.4
Slovenia*	43.5
Spain	34.9
Sweden*	53.0
Switzerland*	40.8
Turkey	25.8
United Kingdom*	36.2
USA***	48.8

* Data from the Council of Europe survey report „The Collection, Testing and Use of Blood Products in Europe in 2009"

** 2009/20 fiscal April 2009 to March 2010

*** Data from „The 2009 National Blood Collection and Utilization Survey Report", Department of Health & Human Services, USA

**** Data calculation based on Eurostat population data 2009

B1b. In your country, WB / RBC units were assessed as:

	Distributed to hospital banks	Transfused	Both	
Armenia, Republic of			X	
Australia	X			
Austria*	X			
Belgium*	X			
Bulgaria			X	
Canada	X			
Croatia*	X			
Cyprus	X			
Czech Republic*		X		
Denmark*		X		
Estonia*	X			
Finland	X			
France*		X		
Germany*	X			
Greece*	X			
Hungary*	X			
Ireland*	X			
Italy*		X		
Latvia*	X			
Lithuania		X		
Luxembourg*	X			
Malta*	X			
Moldova, Republic of*	X			
Montenegro*		X		
Netherlands*	X			
New Zealand		X		
Poland	X			
Portugal			X	
Romania*	X			
Russia	X			
Serbia*	no data	no data	no data	
Slovak Republic*		X		
Slovenia*		X		
Spain			X	
Sweden*		X		
Switzerland*		X		
Turkey		X		
United Kingdom*	X			
USA		X		
TOTAL	**21 (53.8%)**	**13 (33.3%)**	**4 (10.3%)**	**missing: 1 (2.6%)**

* Data from the Council of Europe survey report „The Collection, Testing and Use of Blood Products in Europe in 2009"

B2. Is WB / RBC use monitored in your country?

	Yes	No
Armenia, Republic of	X	
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia	X	
Serbia		X
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**38 (97.4%)**	**1 (2.6%)**

B2a. In what year has monitoring been started?

NB: This question was answered only by the countries that answered „yes" to question B2 (= countries that monitor WB / RBC use).

	Year
Armenia, Republic of	2000
Australia	1996
Austria	1999
Belgium	2001
Bulgaria	2000
Canada	1980
Cyprus	N/A
Czech Republic	Since 60ies, but up to 1990 data were considered as 'top secret' (military reasons) and only some of them are available (number of donations etc.) Since 1991 data for Czech Republic are available.
Denmark	1971
Estonia	2000
Finland	1980"s
France	1993
Germany	1998
Greece	2008
Hungary	1976
Ireland	2006
Italy	1995
Latvia	1985
Lithuania	2009
Luxembourg	before 1998
Malta	2006
Moldova, Republic of	2010
Montenegro	2008
Netherlands	More than 10 years ago
New Zealand	2001
Poland	between 1980-1990
Portugal	2001
Romania	2011 for 2010 for hospitals, as annual report . BE have reported activity on collection, processing and distribution since '95 estimation(s)
Russia	1992
Slovak Republic	No exact year known, long time ago during socialistic period, before 1960
Slovenia	2002
Spain	1984
Sweden	before year 2000
Switzerland	1996
Turkey	1998
United Kingdom	1990s
USA	Mid 1980s

B2b. Which institutions monitor WB / RBC annual use?

NB: This question was answered only by the countries that answered „yes" to question B2 (= countries that monitor annual WB / RBC use).

	Blood Establishments / RBC suppliers (independently)	Hospitals (independently)	Blood Establishments / RBC suppliers and hospitals (jointly)	Government body(ies)	Other*
Armenia, Republic of	X	X			X
Australia	X	X		X	
Austria	X	X		X	
Belgium	X	X		X	
Bulgaria	X	X		X	
Canada	X	X		X	
Cyprus	X		X		X
Czech Republic				X	
Denmark	X			X	
Estonia	X	X		X	
Finland	X	X	X	X	
France			X	X	
Germany	X	X	X	X	X
Greece				X	
Hungary	X		X	X	
Ireland	X	X			
Italy				X	X
Latvia	X			X	
Lithuania				X	
Luxembourg	X	X		X	
Malta			X		
Moldova, Republic of			X	X	
Montenegro			X		
Netherlands	X	X			
New Zealand	X	X			
Poland	X			X	X
Portugal			X	X	
Romania	X	X		X	
Russia	X			X	
Slovak Republic	X	X	X	X	
Slovenia	X			X	
Spain			X	X	X
Sweden	X				
Switzerland	X	X		X	
Turkey		X		X	
United Kingdom	X	X	X		
USA	X	X		X	
TOTAL	**26 (70.3%)**	**19 (51.4%)**	**12 (32.4%)**	**28 (75.7%)**	**6 (16.2%)**

*Other institutions that monitor WB use can be found on the next page.

Other institutions that monitor WB / RBC use

Armenia, Republic of	Haematology center
Cyprus	Regional Blood Banks
Germany	All others (physicians, private transfusion services, military)
Italy	Regional Blood Authorities
Poland	Regional Blood Authorities
Spain	Regional Authorities

B2c. At what level(s) do these institutions monitor WB / RBC annual use?

NB: This question was answered only by the countries that answered „yes" to question B2 (= countries that monitor annual WB / RBC use).

	Local	Regional	National
Armenia, Republic of	X		
Australia	X	X	X
Austria	X	X	X
Belgium	X	X	X
Bulgaria			X
Canada	X	X	X
Cyprus		X	
Czech Republic			X
Denmark		X	X
Estonia	X		X
Finland	X	X	X
France		X	X
Germany	X	X	X
Greece			X
Hungary	X	X	X
Ireland	X	X	X
Italy		X	X
Latvia			X
Lithuania			X
Luxembourg			X
Malta			X
Moldova, Republic of	X		X
Montenegro	X		
Netherlands	X	X	X
New Zealand	X		X
Poland		X	X
Portugal			X
Romania	X	X	X
Russia			X
Slovak Republic	X	X	X
Slovenia			X
Spain	X	X	X
Sweden	X	X	X
Switzerland	X	X	X
Turkey			X
United Kingdom	X	X	X
USA		X	X
TOTAL	**20 (54.1%)**	**21 (56.8%)**	**34 (91.9%)**

B2d. Is an IT-based system used to monitor indicators for WB / RBC annual use?

NB: This question was answered only by the countries that answered „yes" to question B2 (= countries that monitor annual WB / RBC use).

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium		X
Bulgaria	X	
Canada	X	
Cyprus		X
Czech Republic		X
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania		X
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania		X
Russia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden		X
Switzerland		X
Turkey	X	
United Kingdom		X
USA		X
TOTAL	**22 (59.5%)**	**15 (40.5%)**

B2d1. What kind of IT-based system is used?

NB: This question was answered only by the countries that answered „yes" to question B2 (= countries that monitor annual WB / RBC use) *and* „yes" to question 2d (= countries that use an IT-based system to monitor WB / RBC annual use).

	In-house developed software	**Commercial software***	**Otherwise***
Austria		X	
Bulgaria	X		
Canada	X	X	X
Denmark	X		
Finland	X		
France	X		
Germany	X	X	X
Greece		X	
Hungary			X
Italy			X
Luxembourg	X	X	
Malta		X	
Moldova, Republic of	X		
Netherlands	X	X	
New Zealand	X	X	
Poland			X
Portugal	X		
Russia	X	X	
Slovak Republic			X
Slovenia	X		
Spain	X	X	
Turkey	X		
TOTAL	**15 (68.2%)**	**10 (45.5%)**	**6 (27.3%)**

* A specification of commercial or other software can be found on the next page.

Specification of commercial or other software

Austria	Edgecare or eProgesa in BE`s, Bluewin and others in hospitals
Canada	Some provinces out of Québec have local systems to monitor with in the province. Used in Québec: Progesa (MAK-system) Traceline, BW
Germany	-
Greece	N/A
Hungary	eProgesa+ TraceLine + paper based
Finland	Ecomed Analyzer
Italy	National Blood Information System (softeware-house: Accentur/Almaviva)
Luxembourg	In the blood establishment we have in-house developed software (Magic) and in hospital each establishment has his own commercial software.
Malta	Microsoft Excel
Netherlands	Access database= Progesa
New Zealand	Progesa
Poland	Software used depends on BE, most used software called "Bank Krwi"
Russia	AIST
Slovak Republic	Hospitals have their own informatic system, also transfusion establishments and blood banks have their own IT system, in majority commercial made in Slovakia - we have 3 IT systems in Slovakia for blood establishment. On national level there exist IT system of National Center of Healthcare Informations. This system is used to collect and summarize data from hospital"s blood banks and blood establishments.
Spain	Ministry of Health (in house). BE and hospitals use different commercial software: e-Delphyn, Progesa, Netbank and Medinfo

B2e. Are there national monitored data and analysis of these data published?

NB: This question was answered only by the countries that answered „yes" to question B2 (= countries that monitor annual WB / RBC use).

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria		X
Canada	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece		X
Hungary	X	
Ireland	X	
Italy	X	
Latvia		X
Lithuania		X
Luxembourg		X
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand		X
Poland	X	
Portugal		X
Romania		X
Russia	X	
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden	X	
Switzerland	X	
Turkey		X
United Kingdom	X	
USA	X	
TOTAL	**23 (62.2%)**	**14 (37.8%)**

B2e1. Where are the national data and analysis of these data published?

NB: This question was answered only by the countries that answered „yes" to question B2e (= countries where national monitored data and analysis of these data are published).

	Public website	Web address	Private website	Otherwise*
Australia	X	nba.gov.au and transfusion.com.au		
Austria				X
Belgium	X	www.fagg-afmps.be		
Canada			X	X
Czech Republic	X	www.uzis.cz		X
Denmark	X	www.lægemiddelsstyrelsen.dk		
Finland	X	www.veripalvelu.fi/www/1162	X	X
France	X	www.afssaps.fr/Afssaps-media/Publications/Bilans-Rapports-d-activite-Bilans-et-rapports-d-activites		
Germany	X	www.pei.de		X
Hungary				X
Ireland				X
Italy				X
Malta				X
Moldova, Republic of	X	www.cnms.md		
Netherlands		www.sanquin.nl	X	X
Poland				X
Russia				X
Slovak Republic				X
Spain	X	www.msps.es/profesionales/saludPublica/medicinaTransfusional/home.htm		
Sweden	X	http://www3.svls.se/sektioner/tr/index.htm	X	
Switzerland	X	www.blutspende.ch		X
United Kingdom	X	www.bloodstocks.co.uk		
USA				X
TOTAL	**12 (54.5%)**		**4 (17.4%)**	**15 (65.2%)**

*A specification of other locations can be found on the next page

Specification of other locations where national data and analysis of national monitored data are published

Austria	Annual reports on request
Canada	Hard copy report shared with National Advisory
Czech Republic	Scientific journal (Transfuze a hematologie dnes)
Finland	Scientific publications
Germany	Journal "Bundesgesundheitsblatt"
Hungary	In the Human Resource of Ministry, Health Policy Part
Ireland	Annual reports
Italy	Official Journal of the Italian Republic & National Blood Centre Reports
Malta	Annual report of Blood Establishment
Netherlands	Periodic information of hospitals
Poland	Journal of Transfusion Medicine
Russia	www.transfusion-web.ru
Slovak Republic	Data are published by NCHI as book
Switzerland	Annual report
USA	Printed Reports

B3. Have WB / RBC annual use trends been analysed over the last past years?

	Yes, since	No
Armenia, Republic of	2008	
Australia	2003/2004	
Austria	2001	
Belgium	2001	
Bulgaria	2000	
Canada	1980	
Croatia		X
Cyprus	2007**	
Czech Republic	1992	
Denmark	1985	
Estonia		X
Finland	2002	
France	2005	
Germany	1998	
Greece	2008	
Hungary	1986	
Ireland	2005	
Italy	2008	
Latvia		X
Lithuania	2009	
Luxembourg		X
Malta	2006	
Moldova, Republic of	2010	
Montenegro	2008	
Netherlands	2000	
New Zealand	2004	
Poland	between 1980-1990	
Portugal	2001	
Romania		X
Russia	1992	
Serbia		X
Slovak Republic		X
Slovenia		X
Spain	1984	
Sweden	2004	
Switzerland	1996	
Turkey	2008	
United Kingdom	1990	
USA	1980s	
TOTAL	**31 (79.5%)**	**8 (20.5%)**

* It has been analysed unregularly through the years but became analysed systematically since 2007, at first the focus was on O Rh negative use and then moved on all blood types and products.

** Only from the Blood Centre in Nicosia (capital) and the Hospital Blood Bank in Nicosia

Part C. Establishing Forecast for overall annual supply (for BEs) and use (for hospitals)

	C1. Is an WB / RBC annual *supply* forecast established in your country?		C2. Is an WB / RBC annual *use* forecast established in your country?		C3. Is there a reconciliation of WB / RBC annual use and supply forecasts in your country?		C3a. If yes to C3, at what level(s) does this reconciliation occur?		
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Local**	**Regional**	**National**
Armenia, Republic of		X		X		X			
Australia	X		X		X		X	X	X
Austria	X		X		X		X	X	
Belgium	X		X		X			X	
Bulgaria	X		X		X			X	X
Canada	X		X		X		X	X	X
Croatia	X		X		X		X		
Cyprus		X	X			X			
Czech Republic		X		X		X			
Denmark	X		X			X			
Estonia		X		X		X			
Finland	X		X		X				X
France	X		X		X			X	X
Germany	X		X			X			
Greece		X		X		X			
Hungary	X		X		X			X	X
Ireland	X		X		X				X
Italy	X		X		X			X	X
Latvia	X			X		X			
Lithuania	X		X		X				X
Luxembourg		X		X		X			
Malta		X		X		X			
Moldova, Republic of	X		X		X				X
Montenegro		X		X		X			
Netherlands	X			X		X			
New Zealand	X		X		X				X
Poland	X			X		X			
Portugal	X		X		X				X
Romania		X		X		X			
Russia	X		X		X			X	
Serbia	X		X		X				X
Slovak Republic	X			X	X			X	
Slovenia	X		X		X		X	X	X
Spain	X		X		X			X	
Sweden		X		X		X			
Switzerland	X		X		X		X	X	X
Turkey	X		X		X				X
United Kingdom	X		X		X				X
USA		X		X		X			
TOTAL	**28 (71.8%)**	**11 (28.2%)**	**25 (64.1%)**	**14 (35.9%)**	**23 (59.0%)**	**17 (43.6%)**	**6 (23.1%)**	**13 (50.0%)**	**17 (65.4%)**

Part D. Establishing annual Blood Collection / Donor base / Supply Programme

D1. Is there a blood collection programme in your country (expected number of collections per unit of time / location)?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic		X
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania		X
Luxembourg	X	
Malta		X
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand	X	
Poland		X
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA		X
TOTAL	**32 (82.1%)**	**7 (17.9%)**

D1a. How far in advance is the Blood Collection / Supply Programme assessed?

NB: This question was answered only by the countries that answered „yes" to question D1 (= countries that have a blood collection programme).

	For the next week	For the next 4 weeks	For the next 8 weeks	For the next year	Other
Australia					3 years
Austria			X	X	
Belgium	X	X		X	
Bulgaria				X	
Canada	X	X	X	X	semi-annual assessment
Croatia	X	X	X	X	
Cyprus		X			
Denmark				X	
Finland	X	X	X	X	for the next day
France			X	X	
Germany		X	X	X	
Greece			X		
Hungary	X	X	X	X	
Ireland	X	X	X	X	13 weeks
Italy				X	
Latvia		X		X	
Luxembourg		X		X	
Moldova, Republic of					
Montenegro				X	
Netherlands	X	X		X	
New Zealand	X	X		X	3 year forward plan
Portugal				X	
Romania				X	
Russia				X	
Serbia		X		X	
Slovak Republic				X	
Slovenia				X	
Spain			X	X	
Sweden		X	X		3 months
Switzerland				X	rolling 12 months period
Turkey				X	
United Kingdom			X	X	
TOTAL	**8 (25.0%)**	**14 (43.8%)**	**12 (37.5%)**	**27 (84.4%)**	**7 (21.9%)**

D1b. At what level(s) is the Blood Collection / Supply Programme assessed?

NB: This question was answered only by the countries that answered „yes" to question D1 (= countries that have a blood collection programme).

	Local	Regional	National
Australia	X	X	X
Austria	X	X	
Belgium	X	X	
Bulgaria		X	X
Canada	X	X	X
Croatia	X	X	X
Cyprus		X	
Denmark		X	
Finland	X	X	X
France	X	X	
Germany	X	X	
Greece	X		X
Hungary	X	X	X
Ireland	X	X	X
Italy		X	X
Latvia	X		X
Luxembourg			X
Moldova, Republic of	X	X	X
Montenegro	X		
Netherlands		X	X
New Zealand			X
Portugal			X
Romania	X		X
Russia		X	
Serbia			X
Slovak Republic		X	X
Slovenia		X	X
Spain		X	
Sweden	X	X	
Switzerland	X	X	X
Turkey	X	X	X
United Kingdom	X	X	X
TOTAL	**19 (59.4%)**	**24 (75.0%)**	**22 (68.8%)**

Part E. Weekly balancing WB RBC use (demand) and supply in BE(s) / RBC supplier(s) and Hospitals)

Additional questions on hospital-based blood establishments

Useful information on countries having hospital-based blood supply activities can be found in Annex I on page 112

E1. In your country, are the inventories in the BE(s) / RBC supplier(s) monitored?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA		X
TOTAL	**36 (92.3%)**	**3 (7.7%)**

E1a. Which indicators are used for monitoring the inventories in the BE(s) / RBC supplier(s)?

NB: This question was answered only by the countries that answered „yes" to question E1 (= countries where the inventories in BE(s) / RBC supplier(s) is monitored).

	The total number of RBC's in inventory	RBC inventory classified by RBC type (e.g. paediatric, irradiated, CMV negative, washed)	RBC inventory classified by age	RBCs collected by your blood establishment	RBCs issued to hospitals in your service area (per day, week, month)	RBCs expired/outdated in the blood establishment	Other losses from collection to released RBC in the blood collection	RBCs expired/outdated in the hospitals in corresponding service area	Other, please specify*
Australia	X		X	X	X	X	X	X	
Austria	X	X	X	X	X	X	X	X	
Belgium	X		X	X	X	X			
Bulgaria	X		X						
Canada	X	X	X	X	X	X	X	X	
Croatia	X	X	X	X	X	X	X	X	
Cyprus	X			X					
Czech Republic	X	X	X	X	X	X	X	X	X
Denmark	X		X	X	X				
Estonia	X	X	X	X	X	X			
Finland	X	X	X	X	X	X	X	X	
France	X	X	X	X	X	X	X	X	X
Germany	X	X	X	X	X	X	X	X	
Greece	X	X		X	X	X	X	X	
Hungary	X		X	X	X	X			
Ireland	X	X	X	X	X	X	X	X	X
Italy	X			X	X	X	X		
Latvia	X			X	X		X		
Lithuania	X	X				X			
Luxembourg	X	X		X	X	X	X		X
Malta	X	X			X		X		
Moldova, Republic of	X	X	X	X	X	X			
Netherlands	X	X	X	X	X	X	X		
New Zealand	X		X	X	X	X	X	X	
Poland				X					
Portugal	X	X		X					
Romania		X		X	X	X	X		X
Russia	X	X				X			
Serbia	X	X				X		X	
Slovak Republic	X	X		X	X	X	X	X	
Slovenia	X								
Spain	X	X	X	X	X	X	X	X	X
Sweden	X			X		X	X	X	
Switzerland	X			X	X	X	X		
Turkey	X	X		X	X	X	X		
United Kingdom	X	X	X	X	X	X	X	X	X
TOTAL	**34 (94.4%)**	**23 (63.9%)**	**19 (52.8%)**	**30 (83.3%)**	**27 (75.0%)**	**28 (77.8%)**	**23 (63.9%)**	**16 (44.4%)**	**7 (19.4%)**

* A specification can be found on the next page

Specification of other indicators used for monitoring the inventories in the BE(s) / RBC supplier(s)

Czech Republic	Details depend on individual BE / BB
France	ABO and RhD type
Ireland	Red cells issued on sale/return basis, other hospital losses
Luxembourg	We permanently compare the stock versus an ideal number for each group.
Romania	RBC inventory classified by ABO/D type
Spain	Blood ABO-rh type
United Kingdom	The number of RBCs by blood group and 'Days Stock'

E1b. Are the inventory limits defined for WB / RBC inventories in the BE(s) / RBC supplier(s)?

NB: This question was answered only by the countries that answered „yes" to question E1 (= countries where the inventories in BE(s) / RBC supplier(s) is monitored).

	Normal range	Shortage	Excess	Other
Australia	5 days	<1.7 days	>6.2 days	no limits defined
Austria	1-10 days	<3 days	>10 days	no limits defined
Belgium	7 days (5-8 d)	<3 days	>10 days (>8 days = large coverage)	no limits defined
Bulgaria	3 days	<3 days	no limits defined	no limits defined
Canada	4-8 days	<2-3 days	>10 days	Level definitions to prompt actions in response to inventory levels: Emergency 0-1.5, Serious 1.5-3, Minimum 3-5, Optimal 5-8, Maximum 8-10, Excess >10. These measures are expressed as days on hand of inventory
Croatia	3-6 days	<2 days	>7 days	no limits defined
Cyprus	3-5 days	<3 days	no limits defined	no limits defined
Czech Republic	10 days (depends on individual hospital-based blood bank)	<5 days (depends on individual hospital-based blood bank)	>14 days (depends on individual hospital-based blood bank)	alarming shortage usually <2 days (depends on individual hospital-based blood bank)
Denmark	10-15 days	<10 days	>18 days	no limits defined
Estonia	3-7 days	<3 days	>7 days	no limits defined
Finland	5-7 days	<3 days	>8 days	no limits defined
France	10-15 days	<10 days	>15 days	no limits defined
Germany	>3 days	<3 days	>7 days	extreme shortage <1 day
Greece	10 days	24 days	no limits defined	no limits defined
Hungary	4-6 days	<4 days	no limits defined	no limits defined
Ireland	6-8 days	<5 days	>8 days	specific red cell phenotypes have stock targets to be maintained
Italy	3-4 days	<2 days	>4-5 days	no limits defined
Latvia	964 doses per week	no limits defined	no limits defined	no limits defined
Lithuania	3 days	no limits defined	no limits defined	no limits defined
Luxembourg	5 days	<3 days	>7 days	no limits defined
Malta	no limits defined	no limits defined	no limits defined	no limits defined
Moldova, Republic of	3-5 days	<3 days	>7 days	no limits defined
Netherlands	-9 days for O, A, Bpos; 6-11 days for Bneg; AB in 85% of the days	<5 days for O, A, Bpos; <6 days for Bneg, AB	>9 days for O, A and Bpos; >11 days for Bneg, AB	no limits defined
New Zealand	6-9 days	<2.5 days	≥10 days	A trigger level for action at 3.5 days
Poland	no limits defined	Total RBC coverage is monitored every day. Shortage situation: <12000 RBC units	Total RBC coverage is monitored every day. Excess situation: >30000 RBC units	no limits defined
Portugal	7 days	<3 days	>10 days	no limits defined
Romania	no limits defined	no limits defined	no limits defined	no limits defined
Russia	no limits defined	no limits defined	no limits defined	no limits defined
Serbia	3-7 days	<3 days	no limits defined	no limits defined
Slovak Republic	1-7 days	no limits defined	no limits defined	no limits defined
Slovenia	5-7 days	<3 days	>7 days	no limits defined

	Normal range	Shortage	Excess	Other
Spain	7 days	<3 days	no limits defined	no limits defined
Sweden	3-7-10 days, depending on BE	3 days	no limits defined	no limits defined
Switzerland	7-10 days	<7 days, and <4 days for national press release requesting donation	no limits defined	no limits defined
Turkey	no limits defined	no limits defined	no limits defined	no limits defined
United Kingdom	5-9 days	<3 days	>9 days	no limits defined

E1c. Is an IT-based system used to monitor indicators for WB / RBC inventories in the BE(s) / RBC supplier(s)?

NB: This question was answered only by the countries that answered „yes" to question E1 (= countries where the inventories in BE(s) / RBC supplier(s) is monitored).

	Yes	No
Australia	X	
Austria	X	
Belgium	X	
Bulgaria		X
Canada	X	
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia		X
Lithuania		X
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Netherlands	X	
New Zealand	X	
Poland		X
Portugal	X	
Romania		X
Russia	X	
Serbia		X
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
TOTAL	**28 (77.8%)**	**8 (22.2%)**

E1c1. What kind of IT-based system is used?

NB: This question was answered only by the countries that answered „yes" to question E1 (= countries where the inventories in BE(s) / RBC supplier(s) is monitored) *and* „yes" to question E1c [= countries that use an IT-based system to monitor indicators for WB / RBC inventories in the BE(s) / RBC supplier(s)]

	In-house developed software	**Commercial software***	**Otherwise***
Australia		X	
Austria		X	
Belgium		X	
Canada	X	X	
Croatia	X	X	
Czech Republic		X	
Denmark	X		
Finland	X		
France	X		
Germany		X	
Greece		X	
Hungary		X	
Ireland		X	
Italy		X	
Luxembourg	X		
Malta		X	
Moldova, Republic of	X		
Netherlands	X	X	
New Zealand	X	X	
Portugal	X		
Russia	X	X	
Slovak Republic			X
Slovenia	X		
Spain		X	
Sweden	X	X	
Switzerland	X	X	
Turkey	X		
United Kingdom	X		
TOTAL	**16 (57.1%)**	**18 (66.7%)**	**1 (3.7%)**

* A specification of commercial or other software can be found on the next page.

Specification of commercial or other software

Australia	Excel
Austria	Edgecare + LPM or eProgesa
Canada	MAK Progesa
Croatia	E-Delphyn, in-house software in hospital based blood banks
Czech Republic	At least 6 CZ-made commercial SWs
France	SAS (in-house developed) and Excel
Germany	SAP, Inlog
Greece	Pliroforiki CSF
Hungary	eProgesa
Ireland	Progesa & Blood Operations Support Software (BOSS)
Italy	Various, nationally approved
Luxembourg	Magic System
Malta	Progesa
Netherlands	Excel-database and Progesa
New Zealand	Wherescape Red software development tool used to develop a data warehouse using data extracted from Progesa, the national blood management system
Russia	-
Slovak Republic	All BEs of National transfusion service of SR have to put on intranet the situation in RBC inventories
Spain	E-delphyn, Progesa, Netbank, Medinfo
Sweden	ProSang
Switzerland	Mainly Inlog and eProgesa, possibly a third one
United Kingdom	In-house based on Excel spreadsheet

E2. Do you have inventory limits defined for special RBC in the BE(s) / RBC supplier(s)?

	RBCs of certain blood groups and types (e.g. O Rh Neg)	Paediatric red cells	Irradiated red cells	Red cells for patient groups (e.g. sickle cell disease)	RBCs classified in other categories
Armenia, Republic of					
Australia	X				
Austria	X	X			X
Belgium	X	X			
Bulgaria	X	X			
Canada	X				
Croatia	X	X			
Cyprus					
Czech Republic	X				
Denmark	X	X	X		
Estonia	X	X			
Finland	X	X	X		X
France	X	X	X	X	X
Germany	X				
Greece	X			X	
Hungary	X				X
Ireland	X	X	X	X	X
Italy		X	X	X	
Latvia					
Lithuania					
Luxembourg	X	X		X	X
Malta	X	X	X		X
Moldova, Republic of	X				
Montenegro					
Netherlands					
New Zealand	X				
Poland					
Portugal					
Romania					
Russia					
Serbia	X	X	X		
Slovak Republic	X				
Slovenia	X				
Spain	X	X	X	X	X
Sweden	X				
Switzerland					
Turkey					
United Kingdom	X	X	X	X	X
USA					
TOTAL	**25 (64.1%)**	**15 (38.5%)**	**9 (23.1%)**	**7 (17.9%)**	**9 (23.1%)**

E3. Are there SOPs for the management of the stock supplying process (maintaining adequate inventory level) for regular situations in the BE(s) / RBC supplier(s)?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France		X
Germany	X	
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand	X	
Poland		X
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden	X	
Switzerland	X	
Turkey		X
United Kingdom	X	
USA		X
TOTAL	**27 (69.2%)**	**12 (30.8%)**

E4. Are there SOPs describing measures to replenish inventory up to adequate level in the BE(s) / RBC supplier(s) in case of shortages?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France		X
Germany	X	
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand	X	
Poland		X
Portugal		X
Romania	X	
Russia		X
Serbia	X	
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden	X	
Switzerland	X	
Turkey		X
United Kingdom	X	
USA		X
TOTAL	**25 (64.1%)**	**14 (35.9%)**

E5. Are there SOPs describing measures to replenish inventory up to adequate level in the BE(s) / RBC supplier(s) in case of excess?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland		X
France		X
Germany	X	
Greece		X
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania		X
Luxembourg	X	
Malta		X
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand	X	
Poland		X
Portugal		X
Romania	X	
Russia		X
Serbia		X
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden		X
Switzerland		X
Turkey		X
United Kingdom		X
USA		X
TOTAL	**16 (41.0%)**	**23 (59.0%)**

E6. Do BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy		X
Latvia		X
Lithuania	X	
Luxembourg	X	
Malta		X
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand	X	
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia	X	
Slovak Republic		X
Slovenia		X
Spain		X
Sweden		X
Switzerland	X	
Turkey		X
United Kingdom	X	
USA		X
TOTAL	**24 (61.5%)**	**15 (38.5%)**

E6a. What is the inventory forecast period from the starting day?

NB: This question was answered only by the countries that answered „yes" to question E6 (= countries where BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future).

	Inventory forecast period
Australia	4 weeks
Austria	8 weeks
Belgium	4 weeks
Bulgaria	1 week
Canada	8 - 24 weeks. Héma Québec: IMPORTANT: the inventory forecast is an ongoing process reviewed on a weekly basis for the upcoming 6 months so, 24 weeks. So every week, we analyse our current situation and trends (planned vs demand »» inventory forecast) and for the purpose of the exercise, we use two potential scenarios, one with +2% potential increase and one with a +5%. We then look at the gaps and take action.
Croatia	continuously, daily, monthly, annually
Cyprus	1 month
Czech Republic	depends on individual hospital based BB, usually short time (4 weeks) and long time (1 year) forecast
Denmark	52 weeks
Finland	1 week
France	52 weeks
Germany	52 weeks
Greece	4 weeks
Hungary	1 week, 1 month, 1 year
Ireland	13 weeks
Lithuania	N/A
Luxembourg	Usually 2 weeks and during holidays 4 weeks
Moldova, Republic of	1 week
Montenegro	3-7 weeks
Netherlands	1-4 weeks
New Zealand	1 week
Serbia	4 weeks
Switzerland	weekly – Monday to Monday
United Kingdom	Forecasts are done on a daily, weekly, monthly and annual basis

E6b. From this forecast, are there procedures to prevent a foreseeable shortage?

NB: This question was answered only by the countries that answered „yes" to question E6 (= countries where BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future).

	Yes	No
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Lithuania		X
Luxembourg	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Serbia	X	
Switzerland	X	
United Kingdom	X	
TOTAL	**22 (91.7%)**	**2 (8.3%)**

E6c. From this forecast, are there procedures to prevent a foreseeable excess?

NB: This question was answered only by the countries that answered „yes" to question E6 (= countries where BEs regularly calculate and forecast the WB / RBC inventory for a specified period in the future).

	Yes	**No**
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Lithuania		X
Luxembourg	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Serbia	X	
Switzerland		X
United Kingdom	X	
TOTAL	**19 (79.2%)**	**5 (20.8%)**

E7. In your country, are the inventories in the hospitals monitored?

	Yes	No
Armenia, Republic of	X	
Australia	X	
Austria	X	
Belgium	X	
Bulgaria		X
Canada		X
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France		X
Germany		X
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland		X
Portugal	X	
Romania	X	
Russia		X
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland		X
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**29 (74.4%)**	**10 (25.6%)**

E7a. Which indicators are used for monitoring the inventories in the hospitals?

NB: This question was answered only by the countries that answered „yes" to question E7 (= countries where the inventories in the hospitals is monitored).

	The total number of RBC's in inventory	RBC inventory classified by RBC type (e.g. paediatric, irradiated, CMV negative, washed)	RBC inventory classified by age	RBCs supplied by the blood establishment	RBCs issued to hospital departments (per week, day, month)	RBCs expired/outdated at the hospital	Other, please specify*
Armenia, Republic of	X	X	X			X	
Australia	X					X	
Austria	X	X	X	X	X	X	
Belgium	X			X		X	
Croatia	X	X	X	X	X	X	
Cyprus	X						
Czech Republic	X	X	X	X	X	X	X
Denmark	X		X	X	X		
Estonia	X			X	X	X	
Finland	X		X	X	X	X	
Greece	X	X			X	X	
Hungary	X	X	X	X	X	X	
Italy	X		X	X	X	X	
Lithuania	X	X		X		X	
Luxembourg	X	X					
Malta	X	X	X	X		X	X
Moldova, Republic of	X	X	X	X	X	X	
Netherlands	X	X			X		X
New Zealand	X		X	X	X	X	
Poland	X						
Romania							X
Serbia	X	X			X	X	
Slovak Republic	X	X	X	X	X	X	
Slovenia	X						
Spain	X	X	X	X	X	X	X
Sweden	X				X	X	
Turkey	X	X		X	X	X	
United Kingdom	X	X	X	X	X	X	X
USA	X					X	
TOTAL	**28 (96.6%)**	**16 (55.2%)**	**14 (48.3%)**	**17 (58.6%)**	**18 (62.1%)**	**22 (75.9%)**	**6 (20.7%)**

* A specification can be found on the next page

Specification of other indicators used for monitoring the inventories in the BE(s) / RBC supplier(s)

Czech Republic	BTS service is hospital based in Czech Republic - question is duplicating previous section
Malta	By blood group
Netherlands	Monitoring is organised by hospitals themselves, not by Sanquin
Romania	RBC inventories classified by ABO/D type
Spain	ABO-Rh type
United Kingdom	Some information from Blood Stocks Management Scheme - hospitals will monitor their own stock levels

E7b. Are the inventory limits defined for WB / RBC inventories in the hospitals?

NB: This question was answered only by the countries that answered „yes" to question E7 (= countries where the inventories in the hospitals is monitored).

	Normal range	Shortage	Excess	Other
Armenia, Republic of	no limits defined	no limits defined	no limits defined	no limits defined
Australia	5-7 days	< 5 days total inventory in hospital plus Blood Service for group O	>7 days	no limits defined
Austria	3-7 days	< 3 days	>7 days	no limits defined
Belgium	7 days	<3 days	no limits defined	no limits defined
Croatia	no data available	no data available	no data available	no limits defined
Cyprus	3-5 days	<3 days	no limits defined	no limits defined
Czech Republic	10 days (depends on individual hospital-based blood bank)	<5 days (depends on individual hospital-based blood bank)	>14 days (depends on individual blood bank)	alarming shortage usually <2 days (depends on individual blood bank)
Denmark	14 days	<10 days	>18 days	no limits defined
Estonia	no limits defined	no limits defined	no limits defined	no limits defined
Finland	5-10 days	<5 days	>10 days	no limits defined
Greece	10 days	22-25 days	no limits defined	no limits defined
Hungary	3-5 days	no limits defined	no limits defined	no limits defined
Italy	2-3 days	<2 days	>3 days	no limits defined
Lithuania	no limits defined	no limits defined	no limits defined	O Rh - stock may exceed demand by 15%
Luxembourg	no limits defined	3 days	no limits defined	no limits defined
Malta	no limits defined	no limits defined	no limits defined	no limits defined
Moldova, Republic of	2-5 days	<2 days	>5 days	no limits defined
Netherlands	Different for hospitals, usually 1-2 weeks	Different for hospitals, usually < few days	no limits defined	no limits defined
New Zealand	3.5-6 days plus contingency stock defined by distance from BE	<2.5 days (excluding the contingency stock level)	no limits defined	no limits defined
Portugal	no limits defined	<3 days	no limits defined	no limits defined
Romania	no limits defined	no limits defined	no limits defined	no limits defined
Serbia	3-7 days	<3 days	no limits defined	no limits defined
Slovak Republic	1 day	3 days	7 days	no limits defined
Slovenia	2-3 days	no data available	no data available	no limits defined
Spain	3 days for bigger hospitals (>500 beds) and 7 days for smaller ones (<500 beds)	<3 days	>7 days	no limits defined
Sweden	1-3 days, depending on hospital	1 day	no limits defined	no limits defined
Turkey	no limits defined	no limits defined	no limits defined	no limits defined
United Kingdom	variable by hospital and monitored locally	variable by hospital and monitored locally	variable by hospital and monitored locally	defined by individual hospitals
USA	no limits defined	no limits defined	no limits defined	no limits defined

E7c. Is an IT-based system used to monitor indicators for WB / RBC inventories in the hospitals?

NB: This question was answered only by the countries that answered „yes" to question E7 (= countries where the inventories in the hospitals is monitored).

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium	X	
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
Greece	X	
Hungary		X
Italy		X
Lithuania		X
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Netherlands	X	
New Zealand		X
Portugal	X	
Romania		X
Serbia		X
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Turkey		X
United Kingdom	X	
USA		X
TOTAL	**17 (58.6%)**	**12 (41.4%)**

E7c1. What kind of IT-based system is used?

NB: This question was answered only by the countries that answered „yes" to question E7 (= countries where the inventories in the hospitals is monitored) *and* „yes" to question E7c (= countries that use an IT-based system to monitor indicators for WB / RBC inventories in the hospitals)

	In-house developed software	**Commercial software***	**Otherwise***
Austria		X	
Belgium	X	X	
Croatia	X	X	
Czech Republic		X	
Denmark	X		
Finland	X		
Greece		X	
Luxembourg		X	
Malta		X	
Moldova, Republic of	X		
Netherlands	X		
Portugal	X		
Slovak Republic			X
Slovenia	X		
Spain		X	
Sweden	X	X	
United Kingdom			X
TOTAL	**9 (52.9%)**	**9 (52.9%)**	**2 (11.8%)**

* A specification of commercial or other software can be found on the next page.

Specification of commercial or other software

Austria	Bluewin and others
Belgium	Glims, Jade, Molis
Croatia	e-Delphyn, in-house software in some
Czech Republic	At least 6 CZ-made commercial SWs
Greece	Pliroforiki CFS
Luxembourg	Glims
Malta	iSoft
Netherlands	Software for Vendor Managed Inventory in some of the hospitals
Slovak Republic	No exactly known. Maybe some hospitals do not have IT, some hospitals have commercial software
Spain	e-Delphyn, Progesa, Netbank, Medinfo
Sweden	ProSang
United Kingdom	Not standardised

E7d. Is a computerized vendor management system used to automatically trigger the replenishment of hospital inventories in your country?

NB: This question was answered only by the countries that answered „yes" to question E7 (= countries where the inventories in the hospitals is monitored) *and* „yes" to question E7c (= countries that use an IT-based system to monitor indicators for WB / RBC inventories in the hospitals).

E7d1. Please specify what proportion of hospitals in your country uses this system.

NB: This question was answered only by the countries that answered „yes" to question E7 (= countries where the inventories in the hospitals is monitored) *and* „yes" to question E7c (= countries that use an IT-based system to monitor indicators for WB / RBC inventories in the hospitals) *and* „yes" to question E7d (= countries that use a computerized vendor management system to automatically trigger the replenishments of the hospital inventories).

	Yes	Used by	No
Austria	X	bigger hospitals and hospital chains	
Belgium			X
Croatia			X
Czech Republic			X
Denmark			X
Finland	X	55-60% of the Red Cell use in the country	
Greece	X	70% of the hospitals	
Luxembourg			X
Malta			X
Moldova, Republic of			X
Netherlands	X	20-25% of the hospitals	
Portugal			X
Slovak Republic			X
Slovenia			X
Spain	X	>85% of the hospitals	
Sweden			X
United Kingdom			X
TOTAL	**5 (29.4%)**		**12 (70.6%)**

E8. Do you have inventory limits defined for special RBC in hospitals?

	RBCs of certain blood groups and types (e.g. O Rh Neg)	Paediatric red cells	Irradiated red cells	Red cells for patient groups (e.g. sickle cell disease)	RBCs classified in other categories
Armenia, Republic of					
Australia					
Austria	X	X			X
Belgium	X				
Bulgaria					
Canada					
Croatia	X	X			X
Cyprus					
Czech Republic	X				
Denmark	X		X		
Estonia	X				
Finland	X				
France					
Germany	X				
Greece	X			X	
Hungary	X	X	X		
Ireland		X		X	
Italy	X				
Latvia					
Lithuania	X				
Luxembourg	X				
Malta	X		X	X	
Moldova, Republic of	X				
Montenegro					
Netherlands	X				
New Zealand	X				
Poland					
Portugal					
Romania	X				
Russia					
Serbia	X	X	X		
Slovak Republic	X	X	X		
Slovenia	X				
Spain	X	X	X	X	X
Sweden	X				
Switzerland					
Turkey					
United Kingdom					
USA					
TOTAL	**23 (59.0%)**	**7 (17.9%)**	**6 (15.4%)**	**4 (10.3%)**	**3 (7.7%)**

E9. Are there SOPs for the management of the stock supplying process (maintaining adequate inventory level) for regular situations in the hospitals?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium	X	
Bulgaria	X	
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France		X
Germany	X	
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand	X	
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia		X
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden	X	
Switzerland	X	
Turkey		X
United Kingdom		X
USA		X
TOTAL	**20 (51.3%)**	**19 (48.7%)**

E10. Are there SOPs describing measures to replenish inventory up to adequate level in the hospitals in case of shortages?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium		X
Bulgaria		X
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France		X
Germany	X	
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg		X
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand	X	
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia		X
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden		X
Switzerland	X	
Turkey		X
United Kingdom	X	
USA		X
TOTAL	**17 (43.6%)**	**22 (56.4%)**

E11. Are there SOPs describing measures to replenish inventory up to adequate level in the hospitals in case of excess?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium		X
Bulgaria	X	
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland		X
France		X
Germany	X	
Greece		X
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania		X
Luxembourg		X
Malta		X
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand	X	
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia		X
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden		X
Switzerland		X
Turkey		X
United Kingdom		X
USA		X
TOTAL	**12 (30.8%)**	**27 (69.2%)**

E12. Do hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future (estimate in the future, based on present data and trends)?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium		X
Bulgaria		X
Canada		X
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland		X
France		X
Germany	X	
Greece		X
Hungary	X	
Ireland		X
Italy		X
Latvia		X
Lithuania	X	
Luxembourg		X
Malta		X
Moldova, Republic of	X	
Montenegro		X
Netherlands		X
New Zealand		X
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia	X	
Slovak Republic		X
Slovenia		X
Spain		X
Sweden		X
Switzerland		X
Turkey		X
United Kingdom		X
USA		X
TOTAL	**9 (23.1%)**	**30 (76.9%)**

E12a. What is the inventory forecast period from the starting day?

NB: This question was answered only by the countries that answered „yes" to question E12 (= countries where hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future).

	Inventory forecast period
Austria	4 weeks
Croatia	continuously daily, weekly, monthly, yearly
Czech Republic	depends on individual hospital based BB, usually short time (4 weeks) and long time (1 year) forecast
Denmark	52 weeks
Germany	12 weeks
Hungary	2 days. 1 week
Lithuania	N/A
Moldova, Republic of	1 week
Serbia	1 week

E12b. From this forecast, are there procedures to prevent a foreseeable shortage?

NB: This question was answered only by the countries that answered „yes" to question E12 (= countries where hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future).

	Yes	No
Austria	X	
Croatia	X	
Czech Republic	X	
Denmark	X	
Germany	X	
Hungary		X
Lithuania		X
Moldova, Republic of	X	
Serbia		X
TOTAL	**6 (66.7%)**	**3 (33.3%)**

E12c. From this forecast, are there procedures to prevent a foreseeable excess?

NB: This question was answered only by the countries that answered „yes" to question E6 (= countries where hospitals regularly calculate and forecast the WB / RBC inventory for a specified period in the future).

	Yes	**No**
Austria	X	
Croatia	X	
Czech Republic	X	
Denmark	X	
Germany	X	
Hungary		X
Lithuania		X
Moldova, Republic of	X	
Serbia	X	
TOTAL	**7 (77.8%)**	**2 (22.2%)**

E13. Do BE(s) / RBC supplier(s) and the hospitals in your country share:

	Blood inventory and blood demand data	Analysis of blood inventory and blood demand data	The process of regularly balancing the use / demand and supply
Armenia, Republic of		X	X
Australia	X	X	
Austria	X	X	
Belgium	X	X	X
Bulgaria	X		
Canada	X	X	X
Croatia	X		
Cyprus			
Czech Republic	X	X	X
Denmark	X	X	X
Estonia			
Finland	X	X	X
France			
Germany	X	X	X
Greece	X	X	X
Hungary	X	X	X
Ireland			
Italy	X	X	X
Latvia	X	X	X
Lithuania			
Luxembourg	X	X	
Malta	X	X	X
Moldova, Republic of	X	X	X
Montenegro			
Netherlands	X	X	
New Zealand	X	X	
Poland	X		
Portugal	X		
Romania	X		
Russia	X		
Serbia	X	X	X
Slovak Republic			
Slovenia	X	X	X
Spain	X	X	X
Sweden	X	X	
Switzerland			
Turkey	X		X
United Kingdom	X	X	X
USA	X	X	
TOTAL	**30 (76.9%)**	**24 (61.5%)**	**18 (46.2%)**

E14. Do BE(s) / RBC supplier(s) and the hospitals in your country share:

	SOPs	IT system	Otherwise*
Armenia, Republic of			X
Australia			
Austria			
Belgium			
Bulgaria	X		
Canada	X		X
Croatia		X	
Cyprus			
Czech Republic	X	X	X
Denmark	X	X	
Estonia			
Finland	X		X
France			
Germany	X	X	
Greece	X	X	
Hungary		X	
Ireland			
Italy	X	X	
Latvia			
Lithuania			
Luxembourg	X	X	
Malta			
Moldova, Republic of	X	X	X
Montenegro			
Netherlands			X
New Zealand	X	X	
Poland			
Portugal		X	
Romania			
Russia		X	
Serbia			
Slovak Republic	X	X	X
Slovenia		X	
Spain	X		X
Sweden	X	X	
Switzerland			
Turkey			
United Kingdom			X
USA			
TOTAL	**14 (35.9%)**	**15 (38.5%)**	**9 (23.1%)**

* A specification can be found on the next page.

Specification of other ways of sharing

Armenia, Republic of	All RBC suppliers/hospitals share annual collected and used RBC data
Canada	Only applicable to Héma Québec: we share information and data but we don"t share the same IT system
Czech Republic	BTS service in Czech Republic is hospital based
Finland	Premises (3 hospitals) and staff (1 assistant nurse in 3 big hospitals)
Hungary	Partly IT system
Moldova, Republic of	-
Netherlands	Data on stock and use in hospitals and in the BE
Slovak Republic	If BE is a part of hospital, they share SOPs and IT. If BE is part of National transfusion service of SR - they do not.
Spain	Some regions share IT system (Basque Country, Aragón, Galicia, Cantabria, part of Catalonia...) and information between BE and Hospitals.
Switzerland	Currently only in exceptional cases/hospitals
United Kingdom	They share annual demand / supply predictions= and regularly in times of RBC shortage

E15. At what level(s) is this collaboration between the BE(s) / RBC supplier (s) and the hospitals active?

	Local	Regional	National	Otherwise
Armenia, Republic of	X	X	X	
Australia	X	X	X	
Austria	X	X		
Belgium	X	X		X
Bulgaria	X	X		
Canada	X	X	X	
Croatia	X			
Cyprus		X		
Czech Republic	X			X
Denmark		X		
Estonia	X			
Finland	X	X	X	
France	X	X		
Germany	X	X		
Greece	X		X	
Hungary	X	X	X	
Ireland				X
Italy	X	X		
Latvia			X	
Lithuania	X			
Luxembourg				X
Malta	X		X	
Moldova, Republic of	X	X	X	
Montenegro	X			
Netherlands	X	X	X	
New Zealand		X	X	
Poland	X	X		
Portugal	X	X	X	
Romania	X			
Russia		X		
Serbia	X	X		
Slovak Republic	X	X	X	
Slovenia	X	X	X	
Spain		X		
Sweden	X			
Switzerland	X	X	X	
Turkey	X	X	X	
United Kingdom	X	X	X	
USA	X	X		
TOTAL	**31 (79.5%)**	**27 (69.2%)**	**17 (43.6%)**	**4 (10.3%)**

* A specification of the collaboration level can be found on the next page.

Specification of the collaboration level

Belgium	BE have a representative in each hospital transfusion committee
Czech Republic	Regional / national cooperation in need (contingency plan)
Ireland	Links to hospital blood program managers
Luxembourg	Directly between BE and hospitals

E16. Are there national contingency plans for special circumstances (e.g. earthquakes, pandemics, floods, wars, heat waves, financial/economic/political crises)?

	Yes	No
Armenia, Republic of	X	
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia		X
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania	X	
Luxembourg		X
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia		X
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**34 (87.2%)**	**5 (12.8%)**

E16a. Which institution(s) is (are) responsible for contingency planning?

NB: This question was answered only by the countries that answered „yes" to question E16 (= countries that have national contingency plans for special circumstances).

	BE(s)	Hospitals	Government	MoH	Competent authority	Otherwise
Armenia, Republic of	X	X	X	X	X	
Australia	X	X	X			
Austria	X	X	X	X		
Belgium	X	X			X	
Bulgaria	X	X	X			
Canada	X	X	X	X		X
Cyprus			X	X		
Czech Republic				X		X
Denmark	X	X	X			
Finland	X	X		X	X	
France	X	X	X	X	X	
Germany	X	X	X		X	
Greece	X	X			X	
Hungary	X		X			
Ireland	X	X	X			
Italy						X
Latvia			X			
Lithuania	X	X	X	X	X	
Malta	X					
Moldova, Republic of	X	X	X		X	
Netherlands	X	X	X	X		
New Zealand	X	X				
Poland	X		X	X		
Portugal	X				X	X
Romania	X	X		X	X	X
Serbia	X			X		
Slovak Republic	X				X	
Slovenia	X					
Spain	X	X		X	X	
Sweden		X	X	X	X	X
Switzerland	X		X		X	
Turkey	X			X	X	
United Kingdom	X	X	X	X		
USA	X	X	X			X
TOTAL	**29 (85.3%)**	**21 (61.8%)**	**20 (58.8%)**	**16 (47.1%)**	**15 (45.5%)**	**7 (20.6%)**

* A specification of other responsible institutions can be found on the next page.

Specification of other responsible institutions

Canada	National Advisory Committee on Blood and Blood Products
Czech Republic	Military BTS regulated by MoH
Italy	Regional Blood Authorities & National Blood centre
Portugal	Portuguese Institute of Blood and Transplant
Romania	Plan for WNV
Sweden	County council (responsible for regional health care)
USA	American Association of Blood Banks

Part F. Assessing and updating the patient´s Blood Product needs and their satisfaction (self/sufficiency) from VNRBD

F1. In your country, do you assess and update annual Blood Product needs for patients?

	Yes	No
Armenia, Republic of	X	
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg		X
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal		X
Romania		X
Russia	X	
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden		X
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**33 (84.6%)**	**6 (15.4%)**

F1a. On what level(s) do you make this assessment?

NB: This question was answered only by the countries that answered „yes" to question F1 (= countries that assess and update annual Blood Product needs for patients).

	Local	Regional	National
Armenia, Republic of	X		
Australia			X
Austria	X	X	
Belgium	X	X	
Bulgaria		X	
Canada		X	X
Croatia	X	X	X
Cyprus		X	
Czech Republic	X		X
Denmark		X	
Estonia	X		
Finland	X	X	
France		X	X
Germany	X	X	
Greece	X		
Hungary			X
Ireland			X
Italy	X	X	X
Lithuania	X	X	X
Malta			X
Moldova, Republic of	X	X	X
Netherlands	X	X	X
New Zealand			X
Poland		X	X
Russia		X	
Serbia		X	X
Slovak Republic	X	X	X
Slovenia			X
Spain		X	
Switzerland	X	X	X
Turkey	X	X	X
United Kingdom	X	X	X
USA	X	X	X
TOTAL	**18 (54.5%)**	**23 (69.7%)**	**21 (63.7%)**

F1b . Please specify which institutions (e.g. Hospital Transfusion Committees, national committees) are in charge of this process.

NB: This question was answered only by the countries that answered „yes" to question F1 (= countries that assess and update annual Blood Product needs for patients).

	Institutions in charge of this process
Armenia, Republic of	Hospital Transfusion Committees
Australia	National Blood Authority
Austria	Authorized representatives for transfusion matters in hospitals and hospital chains
Belgium	BE
Bulgaria	Hospital transfusion Committees
Canada	National Blood Establishment (CBS) looks at this for planning purposes in consultation with the hospitals – Hospital, Health Ministry and Héma Québec
Croatia	Blood Transfusion Service
Cyprus	Regional Hospital Blood Banks and Blood Center in Nicosia
Czech Republic	local: BB + hospital transfusion committee national: MoH (National blood transfusion committee)
Denmark	CEO of Blood bank
Estonia	Hospital Blood Banks
Finland	Hospital Transfusion Committees
France	EFS
Germany	Hospital Transfusion Committees
Greece	National Blood Transfusion Committee
Hungary	Blood Transfusion Service with the National Institutes
Ireland	National committee, MoH
Italy	Hospital Transfusion Services Regional Blood Authorities National Blood Centre
Lithuania	Hospital transfusion committees
Malta	Hospital Blood Bank Transfusion Committee
Moldova, Republic of	Ministry of Health National Blood Transfusion Center Hospital Transfusion Committees
Netherlands	Both Hospital Transfusion Committees and a National Committee (National User Group)
New Zealand	National blood Service with input from hospital blood banks and hospitals transfusion committees
Poland	The National Blood Center and Regional Blood Establishments
Russia	Blood Establishments
Serbia	National committees, blood transfusion service- BE
Slovak Republic	National transfusion service
Slovenia	Blood Transfusion Centre of Slovenia – www.ztm.si/sl www.jazmp.si www.drustvo-hemofilikov.si
Spain	Mixed Committees B.E.- Hospital Transfusion Services
Switzerland	National and regional Blood Transfusion Services Hospital Transfusion Committees (or comparable)
Turkey	Ministry of Health and Turkish Red Crescent
United Kingdom	Local - blood transfusion departments and/or HTCs Regional - BE assesses usage requirements based on discussions with hospitals
USA	Hospital Transfusion Committees, Blood Center Advisory Boards= American Association of Blood Banks= ABC

F1c. Which method(s) do you use to assess and update the patient's Blood Product needs?

NB: This question was answered only by the countries that answered „yes" to question F1 (= countries that assess and update annual Blood Product needs for patients).

	National standard of care	National guidelines	Regular review of evaluations of RBC transfusion settings (e.g. scientific studies, new/updated guidelines)	Otherwise*
Armenia, Republic of				X
Australia		X	X	
Austria		X	X	
Belgium		X		
Bulgaria			X	
Canada		X		X
Croatia				X
Cyprus				X
Czech Republic			X	
Denmark	X	X	X	
Estonia				X
Finland			X	X
France				X
Germany		X	X	
Greece			X	X
Hungary	X	X	X	
Ireland		X		
Italy		X	X	
Lithuania		X	X	
Malta		X		
Moldova, Republic of	X	X	X	
Netherlands		X	X	
New Zealand				X
Poland	X			
Russia				X
Serbia		X	X	
Slovak Republic				X
Slovenia	X	X		
Spain		X	X	
Switzerland				X
Turkey			X	
United Kingdom	X	X	X	X
USA	X			
TOTAL	**7 (21.2%)**	**17 (51.5%)**	**17 (51.5%)**	**13 (39.4%)**

* A specification of other methods can be found on the next page.

Specification of other methods

Armenia, Republic of	Local
Canada	Demand forecasting, environmental scan of factors affecting demand, Canadian hospital plans (through liaisons) – National Advisory Committee on Transfusion Medicine
Croatia	Other guidelines
Cyprus	Feedback from the services using blood
Estonia	Hospital blood banks submit an annual order
Finland	Hospital guidelines, analysis of hospital practices
France	Time series method
Greece	Specific work has been done for the thalassaemia blood programme
New Zealand	Overall needs are based on components supplied, components expired, and requests not filled data.
Russia	Retrospective analysis
Slovak Republic	By evaluation of demands, production, inventories and expiration
Switzerland	Responsibility of the transfusing institution, usually according to available evidence
United Kingdom	Local hospitals will independently apply national guidelines and best practice

F2. In your country, do you assess satisfaction of needs and / or demand of RBC for patients?

	Yes	No
Armenia, Republic of	X	
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia		X
Cyprus	X	
Czech Republic	X	
Denmark		X
Estonia	X	
Finland	X	
France		X
Germany		X
Greece		X
Hungary	X	
Ireland		X
Italy		X
Latvia	X	
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand	X	
Poland		X
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic		X
Slovenia	X	
Spain		X
Sweden		X
Switzerland		X
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**26 (66.7%)**	**13 (33.3%)**

F2a. Which indicators do you use to assess satisfaction of needs and / or demand of RBC for patients?

NB: This question was answered only by the countries that answered „yes" to question F2 (= countries that assess satisfaction of needs and / or demand of RBC for patients).

	(Need to) import RBC	Export of RBC	Review / bench-marking of RBC ordering and use by clinics	Monitoring the unmet demand (requests)	Postponed transfusions (delays)	Cancelled surgeries
Armenia, Republic of			X			
Australia				X		X
Austria			X	X	X	
Belgium			X	X		
Bulgaria			X	X	X	X
Canada			X	X		
Cyprus				X	X	X
Czech Republic	X	X				
Estonia			X	X	X	
Finland			X	X	X	X
Hungary			X		X	
Latvia			X	X		
Lithuania			X	X	X	
Luxembourg	X		X			
Malta			X	X		
Moldova, Republic of			X			
Netherlands	X	X	X	X	X	X
New Zealand				X		X
Portugal		X				
Romania				X		
Russia			X			
Serbia	X		X	X		
Slovenia			X	X	X	
Turkey			X			
United Kingdom	X		X	X	X	X
USA	X	X		X	X	X
TOTAL	**6 (23.1%)**	**4 (15.4%)**	**19 (73.1%)**	**18 (69.2%)**	**11 (42.3%)**	**8 (30.8%)**

F2a1. What unmet demands (requests) do you monitor?

NB: This question was answered only by the countries that answered „yes" to question F2 (= countries that assess satisfaction of needs and / or demand of RBC for patients) *and* monitor the unmet demand (question F2a).

	Postponed transfusions (delays)	**Cancelled surgeries**	**Other***
Australia		X	X
Austria	X		X
Belgium			X
Bulgaria	X	X	
Canada			X
Cyprus	X	X	
Estonia	X		
Finland	X	X	X
Latvia			X
Lithuania	X	X	
Malta	X	X	
Netherlands	X		
New Zealand			X
Romania			X
Serbia	X	X	
Slovenia	X	X	
United Kingdom	X	X	X
USA	X	X	
TOTAL	**12 (66.7%)**	**10 (55.6%)**	**9 (50.0%)**

* A specification of other unmet demands can be found on the next page.

Specification of other unmet demands

Australia	Ability to fulfil orders
Austria	Order/demand not delivered within 24 h
Belgium	Bi-annual general survey to assess satisfaction of/in hospitals by one BE
Canada	When evaluating unmet demand, we try to distinguish between orders for specific patients or for stock only
Finland	Delivery/shipment = as ordered
Latvia	Required - issued RBC
New Zealand	Failure to supply on request for whatever reason
Romania	% of unmet demands = no info available on number of postponed transfusion or cancelled surgery, if they really exist, as transfusion therapy is suspected to be overused in many hospitals or demands overestimated, to get the real needs
United Kingdom	- % fulfilment by BE of hospital order - Very rare (not at all in last 5 years at least) to have significant shortage to cancel ops or postpone transfusions.

F3. Please specify the assessment of self-sufficiency for WB / RBC (meeting the patient's need) in your country.

Armenia, Republic of	100% sufficiency
Australia	100% sufficiency, except rare if required
Austria	100% sufficiency
Belgium	100% sufficiency
Bulgaria	100% sufficiency
Canada	100% sufficiency
Croatia	data are available for CITM (87%)
Cyprus	between 90% and 100%
Czech Republic	100% sufficiency
Denmark	100% sufficiency
Estonia	100% sufficiency
Finland	99 - 106% (blood group dependent)
France	100% sufficiency
Germany	100% sufficiency
Greece	95%
Hungary	100% sufficiency
Ireland	hospital demand is dropping and it has been necessary to cut back collection programs
Italy	100% sufficiency
Latvia	100% sufficiency
Lithuania	100% sufficiency
Luxembourg	100% sufficiency
Malta	100% sufficiency
Moldova, Republic of	100% sufficiency
Montenegro	100% sufficiency
Netherlands	100% sufficiency
New Zealand	Currently we have expiry of up to 7% of manufactured red cells
Poland	100% sufficiency
Portugal	100% sufficiency
Romania	87%
Russia	<100% sufficiency
Serbia	shortage of blood in season
Slovak Republic	100% sufficiency. During specific periods - as summer (vacations) sometimes (very rare) we have to postpone the intervention in patients with specific blood group.
Slovenia	100% sufficiency
Spain	100% sufficiency
Sweden	Regional variation, some have shortage and buy from other regions
Switzerland	Ca. 110% of demand with export of ca. 10%
Turkey	100% sufficiency
United Kingdom	100% sufficiency
USA	100% sufficiency

F4. In your country, do you decide on actions in case of deficit or surplus?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus	X	
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia	X	
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden		X
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**35 (89.7%)**	**4 (10.3%)**

F4a. On what level(s) do you decide on actions?

NB: This question was answered only by the countries that answered „yes" to question F4 (= countries that decide on actions in case of deficit or surplus).

	Local	Regional	National
Austria	X	X	X
Belgium	X	X	
Bulgaria	X	X	
Canada	X	X	X
Croatia	X	X	X
Cyprus		X	
Czech Republic	X		X
Denmark		X	
Estonia	X		
Finland		X	X
France	X	X	X
Germany	X	X	X
Greece			X
Hungary			X
Ireland	X	X	X
Italy		X	X
Lithuania	X	X	X
Luxembourg			X
Malta			X
Moldova, Republic of	X	X	X
Montenegro	X		
Netherlands	X	X	X
New Zealand			X
Poland		X	X
Portugal	X	X	X
Romania	X		
Russia		X	
Serbia	X	X	X
Slovak Republic			X
Slovenia	X	X	X
Spain		X	
Switzerland	X	X	X
Turkey	X	X	X
United Kingdom	X	X	X
USA	X		
TOTAL	**22 (62.9%)**	**24 (68.6%)**	**25 (71.4%)**

F4b. Please specify which institutions (e.g. Hospital Transfusion Committees, national committees) are in charge of this process.

NB: This question was answered only by the countries that answered „yes" to question F4 (= countries that decide on actions in case of deficit or surplus).

	Institutions in charge of this process
Austria	Authorized representatives of hospitals and hospital chains, BE´s, Medical Societies (in Austria: Österreichische gesellschaft für Blutgruppenserologie und Transfusionsmedizin - ÖGBT)
Belgium	Decisions of prioritization are taken in the hospitals (hospital transfusion committee, hospital blood bank) BE: alerts and notifies the hospitals in case of shortage (including business to business website)
Bulgaria	BES
Canada	Emergency Blood Management Committee - Natinoal, Provincial, Hopsital/Regional Health Authority – Héma-Québec and Hospitals at regional (designated hospitals) and local level
Croatia	Red Cross, BE
Cyprus	Regional Blood Banks and Blood Center
Czech Republic	Local: BE / BB National: MoH (National Blood Transfusion Committee)
Denmark	CEO of Blood bank
Estonia	Blood centers and hospital blood banks
Finland	Finnish Red Cross Blood Service together with Hospitals
France	EFS
Germany	BEs, National Committees "AK Blut", competent authorities
Greece	National Blood Centre (EKEA) decides on proposals by the National Scientific Committee
Hungary	The Hungarian National Blood Transfusion Service is responsible for the supplying of blood products according to a decree, so the service has to do everything for this aim.
Ireland	BE
Italy	Regional Blood Authorities National Blood Centre
Lithuania	Hospital transfusion committees
Luxembourg	The Blood Establishment (There is only one BE in Luxembourg)
Malta	Hospital Blood Bank (Mater Dei)
Moldova, Republic of	Blood establishment Hospital Transfusion Committees National committees
Montenegro	Blood Transfusion services - Hospital based
Netherlands	Sanquin in cooperation with National User Group
New Zealand	National Blood Service
Poland	Ministry of Health The National Blood Center Regional Blood Establishments
Portugal	Portuguese Institute of Blood and Transplant
Romania	HBB/BE
Russia	Blood Establishments
Serbia	Blood establishment, national committee
Slovak Republic	National transfusion service of SR
Slovenia	www.ztm.si/sl - Blood Transfusion Centre of Slovenia www.ukc-mb.si - University Medical Centre Maribor www.sb-celje.si/index.php?id=371 - Hospital Celje
Spain	Mixed Committees B.E. - Hospital Transfusion Services
Switzerland	National and regional Blood Transfusion Services
Turkey	Ministry of Health and Red Crescent
United Kingdom	Local hospitals (TCS and blood transfusion departments) decide actions if their own stocks are in deficit or surplus. The BE decides on actions if its stocks are in deficit or surplus.
USA	Hospital Transfusion Committees= Blood Center Advisory Boards

F4c. Please specify major examples of such decisions / actions taken in the last 3 years.

NB: This question was answered only by the countries that answered „yes" to question F4 (= countries that decide on actions in case of deficit or surplus).

	Development and implementation of transfusion guidelines for optimizing blood use at national level	Development of training programme for clinicians/nurses for optimising blood use at national level	Actions to benchmark the blood use between hospitals in order to reduce consumption	Programme funded by CoE	Programme funded by WHO	Otherwise*
Austria	X	X	X			
Belgium	X	X				X
Bulgaria	X	X				
Canada	X		X			X
Croatia						X
Cyprus						X
Czech Republic	X					
Denmark	X	X	X			
Estonia	X			X		
Finland		X	X			
France						X
Germany	X	X	X			
Greece	X	X				
Hungary		X	X			
Ireland			X			X
Italy	X		X			
Lithuania	X	X				
Luxembourg			X			
Malta	X	X				
Moldova, Republic of	X	X				
Montenegro	X				X	
Netherlands	X		X			
New Zealand						X
Poland	X	X				X
Portugal	X	X				
Romania		X				
Russia		X				
Serbia	X	X				
Slovak Republic						X
Slovenia		X				
Spain	X	X				
Switzerland						X
Turkey			X			
United Kingdom	X	X	X			X
USA						X
TOTAL	**20 (57.1%)**	**19 (54.3%)**	**12 (34.3%)**	**1 (2.9%)**	**1 (2.9%)**	**12 (34.3%)**

* A specification of other major examples can be found on the next page.

Specification of other major examples of such decisions/action taken in the last 3 years

Belgium	Master in Transfusion Medicine
Canada	- National Advisory Committee on Blood and Blood Products "Allocation guidelines for RBCs". There are also provincial documents - Other benckmarking actions such as % of products out-of-date, etc - Development and implementation of transfusion guidelines for optimizing blood use at national level - Actions to benchmark the blood use between hospitals in order to reduce consumption
Croatia	Promotion activities, appeals, donor deferral
Cyprus	For deficit we provided hospital directors with suitable instructions
France	Transfusion advice, campaigns launch in advance, regulation by blood groups
Ireland	Blood program management structure established
New Zealand	Aiming to better manage the level of collection to anticipated demand and ensuring sites collect to targets
Poland	Ministry of Health Programme
Slovak Republic	Organisation of new mobile collection, recruitment of donors and new donors by national and local T.V. and radios
Switzerland	National and/or regional press releases requesting donation
USA	Transfusion guidelines for optimizing blood use through local blood center
United Kingdom	Convening emergency committee at BE in cases of defined RBC shortage

F5. In your country, do you assess the percentage of WB / RBC origin from VNRBD (according to the CoE / WHO definition)?

	Yes	No
Armenia, Republic of	X	
Australia		X
Austria	X	
Belgium	X	
Bulgaria	X	
Canada	X	
Croatia	X	
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia	X	
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia	X	
Lithuania	X	
Luxembourg	X	
Malta	X	
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand	X	
Poland	X	
Portugal	X	
Romania	X	
Russia		X
Serbia	X	
Slovak Republic	X	
Slovenia	X	
Spain	X	
Sweden	X	
Switzerland	X	
Turkey	X	
United Kingdom	X	
USA	X	
TOTAL	**36 (92.3%)**	**3 (7.7%)**

F5a. Please specify the percentage of WB / RBC origin from VNRBD you assess in your country.

NB: This question was answered only by the countries that answered „yes" to question F5 (= countries that assess the percentage of WB / RBC origin from VNRBD).

	Percentage
Armenia, Republic of	5%
Austria	100%
Belgium	100%
Bulgaria	97%
Canada	100%
Croatia	100%
Czech Republic	100%
Denmark	100%
Estonia	100%
Finland	100%
France	100%
Germany	80%
Greece	52%
Hungary	100%
Ireland	100%
Italy	100%
Latvia	100%
Lithuania	38%
Luxembourg	100%
Malta	100%
Moldova, Republic of	28% in 2010
Montenegro	33.15%
Netherlands	100%
New Zealand	100%
Poland	99% (<1% are donors with rare blood groups, which are paid)
Portugal	100%
Romania	100%
Serbia	100%
Slovak Republic	100%
Slovenia	100%
Spain	100%
Sweden	100%
Switzerland	100%
Turkey	<100%
United Kingdom	100%
USA	100%

F5b. Please specify major examples of decisions / actions taken in the last 3 years to increase the VNRBD origin.

NB: This question was answered only by the countries that assess <100% WB / RBC origin from VNRBD (Q5a).

Armenia, Republic of	Booklets Working with media
Bulgaria	Promotion of VNRBD among the population of 18 - 25 years old.
Germany	German transfusion law promotes VNRBD. This is fully endorsed by medical and scientific experts. However, free market policies also allows remunerated donations which leads to conflicting developments.
Greece	- Cooperation with the Panhellenic Association of Voluntary Blood Donors (POSEA) - Public Information - Training Programmes
Lithuania	Program on promotion of voluntary, non-remunerated blood donation approved and have been implemented
Moldova, Republic of	The national program of development and promotion of voluntary blood donation and service
Montenegro	Development the National Blood Supply Programme, increasing the number of voluntary blood session, education in the high school population.
Poland	Publicity campaign on VNRBD
Turkey	- National Safe Blood Provision Programme: It is a programme carried out by Turkish Red Crescent under the supervision of Ministry of Health to meet the blood demand of the country through voluntary and regular donors, which is specified by the World Health Organization as the safest blood. TRC trained 90 “Recruitment of Blood Donation Specialists” on recruiting blood donators, team planning and increasing the society‟s awareness on the importance of blood donation. - Increasing the society‟s awareness on blood donation is targeted through trainings and organizations by these specialists. Since its commencement in 2005, when the staff started delivering trainings, blood donation increased 232 %, reaching 1.014.516 units of blood donations in 2010. This programme is the first programme about recruitment of blood donors in Turkey and basic activity in all recruitment activities. Increasing The Society‟s Blood Donation Awareness Project: The beneficiaries of the project are MoNE, MoH and TRC. A protocol was signed between MoNE and TRC in 08.08.2006 regarding the fact that the information and awareness level of the society starts in primary and secondary education level. Through the protocol “Increasing The Society‟s Blood Donation Awareness Project” was launched and blood donation topics have been included into the curriculum of 6th, 7th, 8th and 9th Grade Turkish, Social Sciences, Science and Technology, Health and Religion Culture and Moral Awareness subjects. 373 teachers were trained to increase the effectiveness of these subjects and those teachers (as formators) delivered trainings to 65.000 teachers for who have blood donation topics in their subjects. The blood donation campanings were organized in volunteer schools for the families of students. However the project wasn't successful because of the fact that training support material for teachers and other documents could not been ensured. The project is the starting point for recruitment of future blood donors project. - Target 25 was planned and implemented regarding issues of blood donor education and awareness raising among 18-25 aged young people with the coordination of World Health Organization which aims resolving the problems of safe blood provision in countries with high prevalence of infectious diseases. Turkey is the first country to implement this project in Europe (www.hedef25.org). The beneficiaries of this project are Ministry of Health and Turkish Red Crescent. Target 25 that has been in progress since 2006, is the successor of “Recruitment of Future Blood Donors Project” at universities. It will support the students to become regular blood donors by developing the blood donation education at primary and secondary schools. - EU project of Recruitment of Future Blood Donors is in tendering process.

F6. Please specify major decisions / actions taken to improve in the next 3 years the BSM effectiveness and efficiency in your country.

	Major decisions / actions taken to improve BSM effectiveness and efficiency
Armenia, Republic of	Resolutions have been written
Australia	- Implementing sale and operations planning - Improved collaboration with hospitals - Feasibility of vendor management inventories - National service standards - National inventory framework - Patient Blood Management and guidelines
Austria	- Improve national pool of available RCC - Develop a nationwide donor database - Develop convergence of RCC within Austria
Belgium	-
Bulgaria	- Development of training programme for clinicians / nurses for optimising blood usage. - Elaboration of National transfusion guidelines.
Canada	- Formation of Business Performance Councils to improve focus on performance of individual business lines within CBS - Focus on operational excellence - Shaping our change portfolio to drive Labour Hours per Unit, Cost per Unit, Overall cost, minimize waste - To improve the efficiency of our manufacturing, transformation and collection process. Ex: action: Evaluate and redesign the packaging of frozen products such as plasma. Action: Implementation of a self-administered questionnaire. Action: Increase the flexibility of our collection staff by implementing skills crossing function/role. - To evaluate and reduce the cost per blood drive based on target/market/distance from the manufacturing/transformation facility. Ex: Action: Implementation of multi-departur points for the collection teams. - To increase our fixed site collection. Ex: Action: Opening of a new fixed site. 4. To increase our plasma collections for fractionation. Ex: Action: Development (pilot) and implementation of plasmapheresis centers to collect plasma for fractionation.
Croatia	- Implementation e-Delphyn in whole TS - Monitoring blood stock in whole TS
Cyprus	Preparation and publication of a number of associated guidelines organising training the personnel involved
Czech Republic	Stable situation = no major decisions
Denmark	BSM program to reduce the demand of RBC
Estonia	- Crisis program on national level - Connection together all BE-s information systems
Finland	More co-operation with hospitals (shared premises and staff in big hospitals), computerized vendor management system to follow/replenishment of hospital inventories, centralization of production/distribution/supply chain management
France	- Forecast by statistical model (time series) - Optimization of the regulatory system with ABO-RH information - Collection planning at a national scale - Elaboration of SOPs
Germany	- Recruitment of older donors - Optimal blood use programs - PBMs
Greece	- Full implementation of the existing IT-based system to monitor indicators for blood/blood components' use - Full implementation of quality indicators for the evaluation and monitory of the optimal use of blood - Better strategies for BSM during holidays
Hungary	The Hungarian National Blood Transfusion Service tries to improve the connection with the Red Cross and own donor organisation process (e.g.e-mail, sms,etc.). Our service has based a special group of the staff, who coordinate the younger and first time VN
Ireland	National Transfusion Committee to be established, blood management program to be rolled out, clinical transfusion guidelines to be set up. usage reduction targets established
Italy	National Blood Programme issued every year by law
Latvia	-
Lithuania	- Strengthen collaboration between BE, hospitals and donors association. - Install IT
Luxembourg	- A new service for the management of the donors - A new IT - Decrease the blood products expired - Perhaps, if it's necessary have the possibility donor give blood until 70 years

	Major decisions / actions taken to improve BSM effectiveness and efficiency
Malta	N/A
Moldova, Republic of	Further actions at the national level by developing and promoting voluntary blood donation
Montenegro	Implementation of the National Blood Supply Programme in collaboration with Red Cross
Netherlands	Introduction of extra software to: - monitor supply/need in hospitals by Sanquin - monitor and manage BE-stock to lower outdating without deficiencies
New Zealand	The current focus is on reducing collection levels to reflect reduced use of red cell components due to active patient blood management initiatives taking place in the hospitals. Key actions are to ensure all sites collect to target and to improve short
Poland	Ministry of Health Programme called "Optimization of use of blood and blood components for years 2009-2014"
Portugal	- National monitoring of blood use - Adequate collection according blood use - Forecast blood storage by blood group
Romania	- Increase in % of processed WB - Increase of blood collection - Strengthen the monitoring of blood use
Russia	Government blood programme
Serbia	National coordinated service, implementation of information system, new guidelines, education and training
Slovak Republic	Centralisation of National transfusion service of SR
Spain	Implementation of Optimal Use Programmes (as encouraged by the EU), spreading information and methods to each hospital.
Sweden	No major national decisions taken, BEs work on regional level
Switzerland	- Rolling 12 months period planning - Measures in case of outdated RBC-units > 1% - Measures in case of supply stock <4 days
Turkey	- EU project of Technical Assistance on Strengthening the Blood Supply System is started in February for 24 months of period: This project is realised by making a systematic and detailed analysis of the gap between the current legislation in Turkey and EU and preparing the additional legislation accordingly; collecting and analysing data by reviewing the existing system at province and district level; developing a reorganisation plan for the bloodbanking and transfusion system; developing a national guidelines for blood banking and transfusion, clinical use of blood and inspection of blood establishments; delivering training to staff and professionals; producing data sets for the application software which will be developed in the supply component. - EU project of Blood Establishments Management Systems: The subject of this project is the provision of IT equipment (servers, storage and backup units) and their related application software required for the Ministry of Health (MoH) in developing Blood Establishments Management System.
United Kingdom	- Major programme being piloted on Integrated Transfusion Service in which Blood Establishment has responsibility for managing and replenishing stock in hospital blood banks. - Training of nurses to prescribe blood. - Implementation of new BE and hospital IT systems which will interface to provide more data and control.
USA	Industry Task Forces

Part G. Ethical issues

G1. Do you have ethical guidelines regarding blood supply management at the national level?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria		X
Belgium	X	
Bulgaria		X
Canada	X	
Croatia		X
Cyprus	X	
Czech Republic	X	
Denmark		X
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland	X	
Italy	X	
Latvia		X
Lithuania		X
Luxembourg	X	
Malta		X
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand		X
Poland		X
Portugal	X	
Romania	X	
Russia		X
Serbia	X	
Slovak Republic		X
Slovenia		X
Spain		X
Sweden	X	
Switzerland		X
Turkey		X
United Kingdom	X	
USA	X	
TOTAL	**21 (53.8%)**	**18 (46.2%)**

G1a. Please define the main principles of these ethical guidelines.

NB: This question was answered only by the countries that answered „yes" to question G1 (= countries that have ethical guidelines regarding blood supply management at the national level).

	Main principles of ethical guidelines
Australia	- Equity of access - Safety and Quality
Belgium	100 % voluntary unpaid donation by law since 1960
Canada	Code of Conduct The Code of Conduct is a set of principles that supports ethical behaviour and guides decision making at Canadian Blood Services. The Code can be summarized as follows: - it is expected that we act in a way that preserves and enhances Canadian Blood Services' reputation, so that the trust of Canadians is retained - we will treat our donors, customers and work colleagues with fairness and respect in accordance with our values - our honesty, fairness and impartiality should never be in doubt. We should avoid situations that put us in a conflict of interest - we have the responsibility to safeguard the privacy, confidentiality and security of all proprietary corprote information about Canadian Blood Services and/or personal and non-personal confidential information, and to protect and restrict its disclosure - we have an obligation to use the corporate assets (such as phones, computers, etc) of Canadian Blood Servcies in accordance with policies and procedures - we will foster and maintain an environment of open disclosure that encourages employees, who know of improper activities, such as violations of Canadian Blood Services policies, to report them without fear of reprisal or discrimination We are responsible to become familiar with the Code of Conduct, comply with the ethical and legal standards of conduct it describes, and to lead by example in the workplace Furthermore: 1. Voluntary non-remunerated blood donors/donations based program (100%) 2. Self-sufficiency, safety and quality of the blood products 3. Efficiently-managed sustainable programmes 4. Safety/security of the blood donors 5. Accessibility for everyone (blood transfusions/products) free of charge for the patient 6. Confidentiality
Cyprus	We are planning to prepare and issue
Czech Republic	- VNRBD for whole blood donations - free choice of donation site / time - obligatory information about donation procedure (requirements, lab tests performed, blood collection procedures, risks and hazards to blood donor ...) - the right to ask
Finland	- Safety of donors and patients - Information of donors
France	In France, 3 main principles have been implemented regardless of the type of donation: voluntary donation, anonymity between donor and recipient and non-remunerated donor.
Germany	Following the ISBT code of ethics.
Greece	- ISBT Code of Ethics - EU Directives - CoE Res (2008)5
Hungary	Establishment of a nationally-coordinated blood transfusion service in Collection of blood only from voluntary non-remunerated blood donors from low-risk populations. Testing of all donated blood, including screening for transfusion-transmissible infections
Ireland	WHO, CoE and EU blood directive guidance
Italy	- VNRBD - Commercialization of blood and plasma is prohibited (only cost recovery is allowed) - No charge to patients for transfusion of labile and stable blood products
Luxembourg	A national directive, from European directives, describes the requirements for donations (volume, frequencies, ...)
Moldova, Republic of	information about the need for transfusion of blood transfusion to the patient consent for medical care incurred in the process of blood transfusion
Netherlands	All based on international guidelines. Both Sanquin and (all) hospitals have Ethical Committees
Portugal	Equitity
Romania	It is not exactly a specific document, but principles stated in legislation - VNRBD - distributed to hospitals without profit for suppliers - national priority - equivalent quality and safety along the country

	Main principles of ethical guidelines
	- anonymity
Serbia	Unpaid, voluntary, anonymous, altruistic donors
Sweden	We do not have specific guidelines but we however do have a law that refers to the EU directive about safety and quality of blood products. The law text says that blood products need to be safe for patients and blood donation needs to be safe for a donor.
United Kingdom	We must ensure that the best use is made of the donor's gift, and support the hospitals in providing the best clinical care. The ethical guidelines are not written down in a single document. They are based on the principles of VNRBD established in the UK over the last 70 years. Reference is made to relevant guidelines e.g. CoE when required by the BE. The UK Red Book guidelines are mandatory in the UK for BEs and include Legal restrictions based on safety for the donor and patient, the robustness of collection, processing and testing. These guidelines overlap with ethical considerations e.g. frequency of donation. Professional judgement is applied by Bes and hospitals to ensure appropriate requesting and this is reinforced by Transfusion Practitioners employed by BEs and hospitals.
USA	Maintain quality and safety of transfusion

G1b. On which guidelines are these ethical guidelines based?

NB: This question was answered only by the countries that answered „yes" to question G1 (= countries that have ethical guidelines regarding blood supply management at the national level).

	Oviedo convention	AABB guidelines (American Association of Blood Banks)	CoE guidelines (Council of Europe)	WHO guidelines (World Health Organization)	ISBT guidelines (International Society of Blood Transfusion)	Donor Management Manual (DOMAINE project)	Other*
Australia							X
Belgium			X				
Canada		X			X		X
Cyprus					X		
Czech Republic	X		X				
Finland			X	X		X	X
France			X	X	X	X	
Germany			X	X	X		
Greece			X		X		
Hungary			X	X		X	
Ireland			X	X		X	
Italy	X		X	X			X
Luxembourg							X
Moldova, Republic of		X	X	X			
Netherlands	X		X	X	X	X	
Portugal			X			X	
Romania				X			X
Serbia	X	X	X	X	X	X	
Sweden			X				X
United Kingdom							X
USA		X		X	X		
TOTAL	**4 (19.0%)**	**4 (19.0%)**	**14 (66.7%)**	**11 (52.4%)**	**8 (38.1%)**	**7 (33.3%)**	**8 (38.1%)**

* A specification can be found on the next page.

Specification of other guidelines used as a basis for ethical guidelines

Australia	Government ethical framework
Canada	Héma Québec: our ethical guidelines are inshrined in law such as the Québec Civil Code, the Héma-Québec and hemovigilence committee law, Social Services and Public Health Services Provincial law, etc.
Finland	EU legislation
Italy	National legislation on blood and blood products
Luxembourg	European directives and CD-P-TS and EDQM
Romania	No clear connection
Sweden	EU legislation
United Kingdom	- NHSBT strategy - The ethical guidelines are not written down in a single document. They are based on the principles of VNRBD established in the UK over the last 70 years. Reference is made to relevant guidelines e.g. CoE when required by the BE. The UK Red Book guidelines are mandatory in the UK for BEs and include Legal restrictions based on safety for the donor and patient, the robustness of collection, processing and testing. These guidelines overlap with ethical considerations e.g. frequency of donation. Professional judgement is applied by Bes and hospitals to ensure appropriate requesting and this is reinforced by Transfusion Practitioners employed by BEs and hospitals.

G2. Do you have ethical committee(s) / advisory board(s) dealing with principles of blood supply management?

	Yes	No
Armenia, Republic of		X
Australia	X	
Austria	X	
Belgium	X	
Bulgaria	X	
Canada		X
Croatia		X
Cyprus		X
Czech Republic	X	
Denmark	X	
Estonia		X
Finland	X	
France	X	
Germany	X	
Greece	X	
Hungary	X	
Ireland		X
Italy	X	
Latvia		X
Lithuania		X
Luxembourg		X
Malta		X
Moldova, Republic of	X	
Montenegro		X
Netherlands	X	
New Zealand		X
Poland		X
Portugal		X
Romania		X
Russia		X
Serbia	X	
Slovak Republic	X	
Slovenia		X
Spain	X	
Sweden	X	
Switzerland		X
Turkey	X	
United Kingdom		X
USA		X
TOTAL	**19 (48.7%)**	**20 (51.3%)**

G2a. On what level(s) do these ethical committee(s) / advisory board(s) operate?

NB: This question was answered only by the countries that answered „yes" to question G2 (= countries that have ethical committee(s) / advisory board(s) dealing with principles of blood supply management).

	National level	Regional/local level	Hospital level
Australia	X		
Austria	X	X	X
Belgium		X	X
Bulgaria			X
Czech Republic	X		X
Denmark	X		
Finland	X		X
France	X		
Germany		X	X
Greece			X
Hungary	X		X
Italy	X		X
Moldova, Republic of	X	X	X
Netherlands	X		X
Serbia	X		X
Slovak Republic	X		
Spain	X	X	X
Sweden			X
Turkey	X		
TOTAL	**14 (73.7%)**	**5 (26.3%)**	**14 (73.7%)**

Part H. Research objectives

H1. Is your country involved in clinical studies on optimal use of blood?

	Yes, as a leader	Yes, as a participant	No
Armenia, Republic of			X
Australia	X		
Austria	X		
Belgium			X
Bulgaria			X
Canada		X	
Croatia			X
Cyprus			X
Czech Republic		X	
Denmark	X		
Estonia			X
Finland			X
France		X	
Germany	X		
Greece	X		
Hungary			X
Ireland			X
Italy			X
Latvia			X
Lithuania			X
Luxembourg			X
Malta			X
Moldova, Republic of			X
Montenegro			X
Netherlands	X		
New Zealand		X	
Poland		X	
Portugal			X
Romania		X	
Russia			X
Serbia			X
Slovak Republic			X
Slovenia			X
Spain			X
Sweden			X
Switzerland	X		
Turkey			X
United Kingdom	X		
USA		X	
TOTAL	**8 (20.5%)**	**7 (17.9%)**	**24 (61.5%)**

H1a. Please give more information on the research (where available please quote published studies).

NB: This question was answered only by the countries that answered „yes" to question H1 (= countries that are involved in clinical studies on optimal blood use).

	Information on research
Australia	A number of publications - further information can be provided if required
Austria	Transfusion 2007=47:1468 - 1480
Canada	- Canada has led key studies of the clinical effectiveness of reduced tranfusion triggers (TRICC trial) and the impact of pre-storage leukoreduction (Hebert et al). Curently interest is focused on tha age of blood with the recently completed ARIPI study in neonates and the ongoing ABLE trial, as well as on blood product use in critical care. - Many studies on the epidemiology of transfusions. Among the studies published: "Transfusion strategies for patients in pediatric intensive care units." New England Journal of Medecine, 2007 Apr 19; 356(16): 1609-19. "Survey of transfusion policies at US and Canadian Children"s Hospitals in 2008 and 2009." Tranfusion 2010, Nov;50(11):2328-35
Czech Republic	EU project "Optimal Use of Blood"
Denmark	Annals of Surgery, volume 254,november 2,august 2011 p. 194-200 and p.201-202 Johansson PL. The blood bank: from provider to partner in treatment of massively bleeding patients. Transfusion.2007=47(2 Supply):1765-1835
France	ABLE Trial in the Resuscitation of Critically III Patients, a randomized multicentric double-blinded clinical trial.
Germany	Seifried E et al. Vox Sang. 2011 Jan=100(1):10-21. http://www.pei.de/cln_170/nn_156158/DE/infos/21tfg/aktuelles/
Greece	Enquiry on Quality Indicators for monitoring clinical use of blood -TS048
Netherlands	- PROTON Study - Several HTA-studies on the use of RBC
New Zealand	NZBS supports New Zealand hospitals in a range of research projects. These are mainly related to studies undertaken by ANZICS (Australian and New Zealand Intensive Care Society)
Poland	Manual of Blood Optimal Use published on website www.optimalblooduse.eu
Romania	EBA WG
Switzerland	Sorry, not available
USA	Medical Journals
United Kingdom	The Better Blood Transfusion Team of the Welsh Blood Service BE actively researches, audits and promotes better blood use. It has a specialist interest in the use of cell salvage methodology, which is partly funded by the BE. The team employs two (part-tart-time) medical consultants and a number of transfusion practitioners. International presentations were given regarding cell salvage incidents in NATA and EHN in 2009. Some examples available on the web can be found in 1. http://www.e-lfh.org.uk/projects/learnbloodtransfusion/team.html 2. http://transfusionguidelines.org.uk/index.asp?Publication=BB&Section=22&pageid=1291 3. http://www.1000livesplus.wales.nhs.uk/sitesplus/documents/1011/Transfusion%20Chart.ppt#261,14,Our journey… 4. http://nhshelp.learnprouk.com/HelpDesks?NHSWalesHelpDesk.aspx 5. http://ww.bcshguidelines.com/documents/Admin_blood_components_bcsh_05012010.pdf

H2. Is your country involved in research in the field of blood supply management?

	Yes, as a leader	Yes, as a participant	No
Armenia, Republic of			X
Australia			X
Austria			X
Belgium		X	
Bulgaria			X
Canada	X		
Croatia		X	
Cyprus			X
Czech Republic			X
Denmark		X	
Estonia			X
Finland			X
France			X
Germany	X		
Greece		X	
Hungary		X	
Ireland		X	
Italy			X
Latvia			X
Lithuania			X
Luxembourg			X
Malta			X
Moldova, Republic of			X
Montenegro			X
Netherlands	X		
New Zealand			X
Poland			X
Portugal			X
Romania			X
Russia			X
Serbia			X
Slovak Republic			X
Slovenia			X
Spain			X
Sweden			X
Switzerland			X
Turkey			X
United Kingdom		X	
USA		X	
TOTAL	**3 (7.7%)**	**8 (20.5%)**	**28 (71.8%)**

H2a. Please give more information on the research (where available please quote published studies).

NB: This question was answered only by the countries that answered „yes" to question H2 (= countries that are involved in research in the field of blood supply management).

	Information on research
Belgium	EBA study
Canada	As a leader: CBS has established a quality monitoring program for the specific purpose of generating data that can be used to inform aspects of the quality management of blood products. This program has published a number of papers recently with more in the review process. Examples include: - Levin E, Jenkins C, Culibrk B, Gyongyossy-Issa M, Serrano K, Devine DV. Development of a quality monitroing program for platelet components: a report of the first four years' experience at Canadian Blood Services, Transfusion 2012; 52:810-8 - Sheffield WP, Bhakta V, Jenkins C, Devine DV. Conversion to the buffy coat method and quality of frozen plasma derived from whole blood donations in Canada. Transfusion, 2010;50:1043-1049. In addition, recent investigations have included modelling studies of the impact of a shortening of RBC shelf life should the age of blood issue prove to require changes in inventory management practices. As a participant: Multiple studies on blood transfusion and age of RBC. "The Age of Blood Evaluation (ABLE) randomized controlled trial: study design." Transfusion Med. Rev., 2011 Jul;25(3): 197-205. Epub 2011 May 6. "Association between length of storage of transfused red blood cells and multiple organ dysfunction syndrome in pediatric intensive care patients." Transfusion 2010, Sept;50(9):1902-13
Croatia	PATH Project Quality indicators on optimal blood use
Denmark	BSM to reduce the demand of RBC
Germany	http://www.pei.de/cln_170/nn_156158/DE/infos/21tfg/aktuelles/ Seifried E et al. Vox Sang. 2011 Jan=100(1):10-21
Greece	DOMAINE – Donor Management in Europe
Hungary	-
Ireland	None available yet
Netherlands	Research on platelet inventory, published in Transfusion 2011 (De Kort et al.)
United Kingdom	Looking at AIM software
USA	Medical Journals

H3. Is your country involved in research in the field of VNRBD / paid donations / replacement donors?

	Yes, as a leader	Yes, as a participant	No
Armenia, Republic of			X
Australia			X
Austria			X
Belgium		X	
Bulgaria			X
Canada	X		
Croatia			X
Cyprus			X
Czech Republic		X	
Denmark			X
Estonia			X
Finland			X
France			X
Germany	X		
Greece		X	
Hungary			X
Ireland		X	
Italy			X
Latvia			X
Lithuania			X
Luxembourg			X
Malta			X
Moldova, Republic of		X	
Montenegro			X
Netherlands	X		
New Zealand			X
Poland			X
Portugal		X	
Romania			X
Russia			X
Serbia			X
Slovak Republic			X
Slovenia			X
Spain			X
Sweden			X
Switzerland			X
Turkey			X
United Kingdom			X
USA		X	
TOTAL	**3 (7.7%)**	**7 (17.9%)**	**29 (74.4%)**

H3a. Please give more information on the research (where available please quote published studies).

NB: This question was answered only by the countries that answered „yes" to question H3 (= countries that are involved in research in the field of VNRBD / paid donations / replacement donors).

	Information on research
Belgium	EBA study= review literature= evidence based medicine approach (AGREE method)
Canada	- "Determinants of repeated blood donation among new and experienced blood donors." Transfusion, 2007 Sep;47(9):1607-15. - "Factors explaining the intention to giveblood among the general population.", Vox Sanguinis, 2005 Oct;89(3): 140-9. - "Efficiency of interventions promoting blood donation, a systematic review", Transfusion Med. Rev., 2012 Jul;28(3);224-37. - "The effect of a phone call prompt on a subsequent blood donation among first time donors." Transfuion 2011 Dec 51(12); 2720-8. - "Which survey questions change behavior ? Randomized controlled trial of mere measurement interventions.", Health Psychol. 2010 Nov;29(6);636-44. - "Regional variation in the modeling of donation frequency: the case of Héma-Québec,canada.", Transfusion 2012 Mar 13. An many more...
Czech Republic	DOMAINE project (introductory part)
Ireland	None published
Germany	Van der Poel CL, Seifried E, Schaasberg WP. Vox Sang. 2002 Nov=83(4):285-93
Greece	O. Marantidou, L. Loukopoulou, E.Zervou, G. Martinis, A. Egglezou, P. Fountouli, P. Dimoxenous, M. Parara, M. Gavalaki, A. Maniatis. Factors that motivate and hinder blood donation in Greece; Transfusion Medicine 2007;17;pag 443-450
Moldova, Republic of	National published studies
Netherlands	Sanquin is the chair in an European Blood Alliance working group on VNRBD
Portugal	EBA donor management
USA	Medical Journals

H4. Do you have suggestions for subjects of research in the field of blood supply management / self-sufficiency of RBC from VNRBD?

	Yes	No
Armenia, Republic of		X
Australia		X
Austria	X	
Belgium		X
Bulgaria		X
Canada	X	
Croatia		X
Cyprus		X
Czech Republic		X
Denmark		X
Estonia		X
Finland		X
France		X
Germany	X	
Greece	X	
Hungary		X
Ireland		X
Italy	X	
Latvia		X
Lithuania	X	
Luxembourg		X
Malta		X
Moldova, Republic of	X	
Montenegro	X	
Netherlands	X	
New Zealand		X
Poland		X
Portugal		X
Romania	X	
Russia		X
Serbia	X	
Slovak Republic		X
Slovenia		X
Spain		X
Sweden		X
Switzerland		X
Turkey		X
United Kingdom	X	
USA		X
TOTAL	**12 (30.8%)**	**27 (69.2%)**

H4a. Please specify your suggestions for research in the field of blood supply management / self-sufficiency of RBC from VNRBD.

NB: This question was answered only by the countries that answered „yes" to question 43 (= countries that have suggestions for research in the field of blood supply management / self-sufficiency of RBC from VNRBD).

	Suggestions for research
Austria	Pure research in - social platforms/networks - society and blood transfusion - research on motives/donor relationship management - marketing and donor response - recovery of blood donors
Canada	- We need to do a better job of managing donors in order to ensure the best possible raw material for retention of product quality. This requires research into donor factors that influence the storage characteristics of blood products. This is likely to become more important as pathogen reduction technologies become more widespread - We need more research conducted in the psycho-social aspects of blood donation and this research should be conducted by properly trained scientists in this field - We need development of models that can be used across blood systems to understand the impact of changes in current inventory management practices. For example, the impact of changing the maximum storage period for some, or all, RBCs, modifying the first in/first out traditional way of managing blood stocks Other subjects: 1.International Benchmarking on: -Age of products delivered vs age of products transfused. -Fresh blood vs Old Blood: definition and perspectives. -Establishing cost per unit: best practices. 2. Is there a corrolation between products loss rate (time expired) and products substitution rate?
Germany	- Donor safety associated with less restricted exclusion criteria (age). - Automated donation systems. - Effective donor recruitment (changes in motivation and behaviour of young donors). - Effectivity of optimal blood use programs. - Changes of blood demand with new medical proceedures (Tyrosine kinase inhibitors, low intensity chemotherapy regimens, minimal invasive surgery...).
Greece	Impact of the recent influx of immigrants in the blood supply management
Italy	International benchmarking
Lithuania	Donors association input in VNRBD recruitment
Moldova, Republic of	Informing the general public on the importance of VNRBD and providing with units of blood from this source
Montenegro	- Testing of the population awareness of the importance of providing sufficient quantities of safe blood= - Testing of familiarity of citizens to the term "safe blood"= - Testing of familiarity of citizens to the term "self-sufficiency"= - Assessing the reasons for the insufficient number of voluntary blood donors, people"s views „for" and „against" - The effect of access and different types of promotional material to raise awareness of citizens.
Netherlands	- Modelling research on supply management: operations research (=mathematical logistics modelling) - Research on the effect of costs refund and gifts to donors on TTI incidence
Romania	-Assessment of knowledge level on blood use (current national regulation, principles, triggers, etc)in hospitals
Serbia	To include as a part on rational use of blood
United Kingdom	1. Is the difference in transfusion rates in Europe(high in Germany, low in France) attributable to different transfusion triggers applied at the bedside? 2. Is there evidence that modest compensation of blood donors either financially or otherwise is linked to increased incidence of known disease markers or increased deferrals?

If you have any comments or suggestions (regarding this questionnaire or otherwise), please specify below.

	Comments or suggestions
Austria	- Give some questions beside y/n an additional chance to answer, i.e. with a field to explain special situations. Not all countries run a uniform nationwide blood supply system. - Allow to control and save parts of the filled out quest freely before you have to press the „send"button.
Montenegro	We think that this questionnaire is very useful for establishing the foundations and the development and harmonization of documents in the field of providing sufficient quantities of safe blood, particularly for countries that expect the process of harmonization with EU countries.
Romania	If possible, provide an example of method to estimate the average/limits stocks in a BE/hospital= if available, especially for institutions /systems where IT application is not available for monitoring data
Serbia	Precise guidelines per branch of medicine

Appendix. Additional information on countries with hospital-based blood establishments

Definition 'hospital-based blood establishment':
a hospital unit which is responsible for the collection of homologous blood, testing for transfusion-transmissible infections and blood group, processing into blood components and storage.

According to the DOMAINE study on European practices on blood donor management in 2007, the following countries have hospital-based blood establishments: Austria, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Germany, Hungary, Italy, Latvia, Lithuania, Montenegro, Portugal, Serbia, Slovak Republic, Sweden and Switzerland. Additional information on these hospital-based blood establishments is available for the countries stated below.

Austria

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	5
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	no data
What percentage of blood/RBC supply is provided by the respective systems?	65% non hospital based; 35% hospital-based
Is there a national coordination of all systems?	Inofficial

Croatia

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	2011: 10 2012: 8
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	Yes, Croatian Institute of Transfusion Medicine
What percentage of blood/RBC supply is provided by the respective systems?	2011: Croatian Institute of Transfusion Medicine 55%, hospital based blood establishments 48%
Is there a national coordination of all systems?	Yes, CA

Czech Republic

The structure of Blood Services in Czech Republic is rather complex: blood components comes to patients / hospitals from informal network of Czech BTS. Currently the network consists of:

- 53 Blood Establishments (BE) who collect blood and process it into blood components. 50 of them are "hospital based" (eg. they work within a given hospital), another three BE´s are independent (covering less than 8 % of national production) – these independent BE´s support regional hospitals by a contract. Apart of "full-scope Blood Establishments" we have another 15 "blood collecting centers" and 14 "autologeous blood collecting centers", located in smaller hospitals – these centers only collect blood (homogeous or autologeous) and send it to "full-scope BE´s" for testing and processing (circa 20 % of blood is collected / processed this way). Blood components processed by Blood Establishments are used within a given hospital (in local Blood Bank) or distributed to Blood Banks of other hospital.

- 127 Blood Banks (BB) perform cross-matching and issue blood components to clinical wards. BB´s are either a part of hospital BE (if there is a BE within a given hospital = eg. we have 50 of such BB´s), either they work jointly with "Blood Collection Center" of a giver hospital (another 29 BB´s) either stay as an independent department of a hospital (another 48 BB´s). Only the smallest hospitals do not have their own Blood Bank – they are usually supported by BB of the nearest bigger hospital on contract.

National coordination is indirect. We have:
- common rules and principals (law, decree of MoH, recommendation)
- common system of financing (cost of health care incl. blood is covered by general insurance). Cost of blood component is compensated by Health Insurance Company to the hospital, which use the component. Blood Establishment (e.g. producer of blood components) charge the hospital / hospital Blood Bank by blood components delivered/ distributed by not-for-profit price (which is usually very closed to the price covered by Health Insurance)
- it is a responsibility of individual BB to have on stock, what they need. And it is a responsibility of regional BE, to have everything what regional BB´s ask for.

Denmark

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	7
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	No
What percentage of blood/RBC supply is provided by the respective systems?	N/A
Is there a national coordination of all systems?	N/A

Estonia

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	4
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	No
What percentage of blood/RBC supply is provided by the respective systems?	N/A
Is there a national coordination of all systems?	N/A

Germany

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	According to 2009 reporting [1], Germany has got a total of 55 federal, municipal and hospital-based blood establishments, five German Red Cross Blood Services (organized by Federal state, but several GRC Blood Services have merged), 13 private for-profit blood establishments, plus the German military which operates its own blood establishment. In addition, over 300 hospitals generate autologous blood or directed stem cell products for transplantation. 1 Henseler O, Heiden M, Haschberger B, Hesse J, Seitz R (2010) Bericht zur Meldung nach § 21 TFG für die Jahre 2008 und 2009 [Report on reporting according to §21 German Transfusion Act for 2008 and 2009] Bundesgesundheitsbl 53:1089–1103
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	Idem.
What percentage of blood/RBC supply is provided by the respective systems?	Data released by the federal supervising agency, the Paul Ehrlich Institute do not distinguish blood production by hospital-based from federal or municipal establishments. Therefore, precise numbers for homologous blood production by hospital-based blood establishments are not available. However, it is not unreasonable to consider all of these “hospital based” according to the definition from DOMAIN, since most municipal blood services will be operating from municipal hospitals and serve predominantly those hospitals. 0,36 million, 0,97 million and 3,43 million units of homologous blood are generated by private for-profit, federal/municipal/hospital-based and German Red Cross blood establishments, i.e. 20% of all homologous blood is produced by federal, municipal and hospital-base blood establishments combined. Close to 80% stem from the German Red Cross blood services (all data are 2009 data [1]).
Is there a national coordination of all systems?	There is no formal national coordination of the three pillars of blood production, except that all blood establishments must register their activities annually with the federal agency according to §21 of the German Transfusion Act, which reports the data biennially [1].

Italy

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	In 2011: 318 hospital-based BEs. No other organizations are in place at hospital level (e.g. hospital blood banks). Overall n. of hospitals in Italy: 1,300. In most Regions hospital-based BEs are organized in Blood Departments including 2 to "n" single BEs. Blood component production and especially testing is being increasingly merged in departmental/regional laboratories. Hospital-based BEs are exclusively public and are the only structures allowed to manage the blood process.
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	In each of the 21 Regions there exists - by law - a Regional Blood Centre (CRS), which does not perform technical activities but coordinates - at the regional level - blood supply management, blood and blood product self-sufficiency, plasma delivery to industry, haemovigilance, quality systems, information system, cord blood banking (wherever existing). The National Blood Centre (CNS) functions as national competent authority on behalf of the Ministry of Health of which is an expert "technical arm". At the same time it coordinates the 21 Regional Blood Centres as concerns national blood and blood product self-sufficiency (including plasma-derived medicinal products), blood supply management, haemovigilance, information system. It provides quality and safety guidelines, education and training for blood inspectors; it manages the national list of blood inspectors used by the regional health authorities for BE accreditation. It coordinates the Italian Cord Blood Network with the support of the National Transplant Centre. For blood supply management the role of blood donor associations is fundamental, as they are entrusted by law with donor recruitment and retention in collaboration and under the supervision of BEs (locally), CRSs (regionally) and CNS (nationally). By law, blood and blood component collection can be outsourced to accredited blood donor associations, under the technical responsibility of the relevant public BEs.
What percentage of blood/RBC supply is provided by the respective systems?	
Is there a national coordination of all systems?	

Lithuania

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	2
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	Yes
What percentage of blood/RBC supply is provided by the respective systems?	The National Blood Center: 70% Hospital based BEs: 30%
Is there a national coordination of all systems?	Yes, the Ministry of Health is responsible for the coordination of blood establishments" activities.

Montenegro

In our country, transfusion work is still being done among the work of nine (9) Hospital based BEs.

Now, we are in a transitional period and we are trying to provide all necessary conditions for the independent functioning. Explanation: at the time, when the DOMAINE study was done, as the completing of RBC Supply Questionnaire, there were 9 BEs that were in the organizational and financial competence of the host hospitals. All mentioned institutions for Blood transfusion were collecting blood, testing, storing and preparing blood units for patients.

In December 2011, the New Public Health Institution at the national level, Institute for Blood Transfusion of Montenegro has been established.

The establishing of this kind of institution is the base of the national coordinated Transfusion Service in Montenegro. That means the complete centralization of processing of collected units of blood (testing, separation of blood components, labelling, storage and distribution to the other organizational parts of the Blood Institute which are located in the Hospitals in Montenegro which use blood for treatments).

Portugal

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	In 2011 there were 23 hospital based blood establishments in Portugal.
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	Yes, the Portuguese Institute of Blood and Transplantation with 3 BE, in Lisbon, Porto and Coimbra.
What percentage of blood/RBC supply is provided by the respective systems?	60% by Portuguese Institute of Blood and transfusion 40% by hospital-based blood establishments
Is there a national coordination of all systems?	Yes, the Portuguese Institute of Blood and Transplantation.

Serbia

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	44
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	Yes - Institute of Blood transfusion of Serbia (based in Belgrade) - Institute of Blood Transfusion of Vojvodina - Institute of Blood Transfusion of Nis
What percentage of blood/RBC supply is provided by the respective systems?	Hospital-based blood establishments: 49% Above-mentioned Institutes of Blood Transfusion: 51%
Is there a national coordination of all systems?	Yes, national coordination from the Direction of Biomedicine – Ministry of Health of Serbia, but this is not very well established yet. Currently all parties involved are working on improving the coordination on the blood transfusion service.

Slovak Republic

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	31
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	Yes, 11 regional blood establishments, which create the National Transfusion Service
What percentage of blood/RBC supply is provided by the respective systems?	The 31 hospital based BEs are small BEs and deliver blood components to theirs hospitals - 29,6 % of blood component production The National Transfusion Service supplies all hospitals in the country, specially big university hospitals - 70,4% of blood component production.
Is there a national coordination of all systems?	Ministry of Health

How many hospital-based blood establishments (processing blood from donors to delivering to patients) have you in your country?	There are total of 29 hospital based organizations responsible for blood establishments in Sweden. In these organizations there are total of 80 blood services. There are no blood establishments that would only process blood. Typically the larger establishments within organization both process blood for all patients within local area and deliver it to own patients and ship it to smaller blood services/hospitals that only deliver blood to patients. The large ones are often referred as regional blood services who have several small hospitals under their umbrella, they serve them with the quality system and expertise as well. But this may differ from region to region and follows the health care system of the country.
Are there other type(s) of blood establishments beside hospital-based blood establishments (e.g. national BE?	No
What percentage of blood/RBC supply is provided by the respective systems?	N/A
Is there a national coordination of all systems?	N/A

Annex 4. Abbreviations for countries used in this report (Internet two-letter country codes)

Country	Abbreviation
ARMENIA	AM
AUSTRALIA	AU
AUSTRIA	AT
BELARUS	BY
BELGIUM	BE
BOSNIA AND HERZEGOVINA	BA
BULGARIA	BG
CANADA	CA
CROATIA	HR
CYPRUS	CY
CZECH REPUBLIC	CZ
DENMARK	DK
ESTONIA	EE
FINLAND	FI
FRANCE	FR
GEORGIA	GE
GERMANY	DE
GREECE	GR
HUNGARY	HU
IRELAND	IE
ITALY	IT
LATVIA	LV
LITHUANIA	LT
LUXEMBOURG	LU
MALTA	MT
MOLDAVIA	MD
MONTENEGRO	ME
NETHERLANDS	NL
NEW ZEALAND	NZ
NORWAY	NO
POLAND	PL
PORTUGAL	PT
ROMANIA	RO
RUSSIAN FEDERATION	RU
SERBIA	RS
SLOVAK REPUBLIC	SK
SLOVENIA	SI
SPAIN	ES
SWEDEN	SE

SWITZERLAND	CH
TURKEY	TR
UKRAINE	UA
UNITED KINGDOM	UK
USA	US