EDQM SYMPOSIUM

Blood Supply Management

1 October 2012
Strasbourg, France

Session 2
Different Approaches to BSM
Blood Supply Management in Finland

Jarno Alén
Finnish Red Cross Blood Service

EDQM SYMPOSIUM Blood Supply Management 1-2 October 2012, Strasbourg, France

We create potential for saving lives

- Blood components to hospitals
- Clinical laboratory services
- Antenatal blood group determination
- Tissue compatibility tests
- Stem cell transplants
- Tissue services
- Pharmaceutical distribution
- Research and development

Only national supplier with over 60 years history

Blood Service in Brief
- 540 employees
- 18 permanent locations and mobile services
- A non-profit organisation
- 70 million euros in turnover

154,000 donors > 269,000 blood donations > 55,000 patients

www.bloodservice.fi
General organisation of Blood Supply Management

Present model

Long term planning
- Past 5 years RBC use (total)
- Annual collection program
- By operational units (collection sites) incl. mobile units
- Daily
- Weekly
- Monthly

Annual marketing program

Short term adjusting
- Rolling 5 weeks distribution by ABO and R = RBC target stock
- Monday meetings short term collection adjustment: SMS, Ads, Radio etc

Products and donations 1984-2011

- WB
- RBC
- Platelets (units)
- FFP
- WB donations
- Apheresis
Planning and maintain of RBC inventory

- RBC inventory aim is based to 5 weeks average distribution. Aim is 7 days distribution per blood group
  - Monday minimum = 2 days distribution

- Every Monday blood situation meeting is placed where plans for following week are made. In meeting blood collection, production / distribution and communication are present. Minutes are distributed widely in organization.

- To get overall situation from RBC stock we use simple excel sheet where whole RBC situation is collected (manually filled)

<table>
<thead>
<tr>
<th>RBC sufficiency in days</th>
<th>In stock</th>
<th>In production</th>
<th>Aim</th>
<th>Over / under sufficiency</th>
<th>RBC distribution yesterday / site</th>
<th>Yesterdays blood collection</th>
<th>Whole weeks data</th>
</tr>
</thead>
</table>
Strenghts

- Centralized blood collection management, forecasting and planning
- Strong routine to forecast distribution in different time frames
- Strong invitation process with SMS’s, Post cards, emails, news letters, questionnaires and donor letters, facebook
- Modern tools to follow and segment blood donation actions with corporate management tools but (weakness)
- Centralized blood inventory-, production management and centralized ordering Centre which covers all customers in blood and pharmacy products
- Access to hospital inventories (covers 60% of hospitals)
- Automated replenishment process to hospitals in RBC and Octaplas products (60%) \(\rightarrow\) equalize days
- Strong, fast and cost-effective logistic system which covers whole country (in WB and component transportation)
Automated hospital inventory reports

Estimated duration of RBC stock in average usage and current size of RBC inventory. Access to data is via Intranet.

Weaknesses

- CPM tool → we can segment easily but at the moment no automated system to contact wanted donor segments
- Commitment of blood donors to donate two times per year → on going project
- Not very flexible process to balance collection in monthly and daily level in consumption spikes ones collection plans are made
  - Fluctuation in yearly and monthly level is not so high but daily distribution fluctuation is quite significant (platelets)
Threats

- Changes in operational environment in hospitals will be seen in blood establishment on delay
- Too much visibility in media → donors will be saturated to blood service messages
- Donation motivation of new generation donors
- Finnish population is getting older. Consumption will rise? At the moment getting down.
- Immigration → challenges to get rare donors and rare blood
- New social medias → ad hoc donor happenings

Opportunities

- Lots of data from past. In developing projects opportunity to develop lighter processes with smaller risk
- Blood group based automated (pushing) donor contact system → right donor on right time
- Opportunity to develop ABO based blood collection → at the moment result are known after blood collection sessions
- Electronic web ordering tool for hospitals → more automated processes
General organisation of blood supply management

Conclusions

- Highly centralized system in all BSM areas
- Automated replenishment system for most customers
- Access to most customers RBC levels
- RBC and platelet future consumption tendency unsure in Finland
BLOOD SUPPLY MANAGEMENT IN ROMANIA

Assist. Prof. Olivia Ligia Burta MD PhD, Blood Transfusion Center, Oradea, Romania

EDQM SYMPOSIUM Blood Supply Management
1-2 October 2012, Strasbourg, France

General Organization of Transfusion Network

Romanian Ministry of Health (RoMH)


- BEs (41) + BE of Armed Forces
- Public system
- 100% VNRD
- "Performance competition" (RoMH proposes 3 categories of BE, according to performance criteria)
- Non-accredited (SOPs implemented; Eubis)
- 6 BEs (20%) possess personalized software

- 228 (of 463) hospitals perform transfusion activity:
  - 58 Emergency Hospitals
  - Mainly state system (no reimbursement of blood and blood components use)
  - Private system (payment for blood and blood products use)
- Most on-going accreditation, few accredited (all with SOPs implemented)
- ~ 60% possess computer network (most do not cover the HBB)
### The Actors and Reported Data in Transfusion Field; year of reference 2011

<table>
<thead>
<tr>
<th>Health Status (blood donors/BEs)</th>
<th>RBC donated units: 392,730</th>
<th>21 million people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different Pathologies (transfusion recipients)</td>
<td>570,516 units requested</td>
<td>377,170 units delivered</td>
</tr>
<tr>
<td></td>
<td>15,562 (3.8%) discarded</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>total no of donated units</th>
<th>398,993</th>
<th>19%</th>
</tr>
</thead>
<tbody>
<tr>
<td>no of supplied RBC</td>
<td>377,170</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>RBC</th>
<th>Platelets</th>
<th>FFP</th>
<th>Factor VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet of demand</td>
<td>66%</td>
<td>52.0%</td>
<td>96.0%</td>
<td>41%</td>
</tr>
</tbody>
</table>

### General Organization of Blood Supply Management; the No-computerized System

#### Blood Donation Management (86% of BEs)

- **Daily Reports**
- **Monthly Reports**
- **Semester Reports**
- **Annual Reports**

#### Initial Flow-work

1. Daily manual registration
2. Transferred into excel program
3. Sent to a secure e-mail address (regulations)

#### Hospital Blood Management (~70% of the H)

- **H**
- **HBB**
- **Annual Reports**
- **Semester Reports**
- **Monthly Reports**
General Organization of Blood Supply Management; No-computerized System
Blood Donation Management

- National Center for Public Health Statistics and Informatics
- National Institute for Statistics and Informatics
- BEs Internal documents
- National Institute of TM
- Public Health Authority

**BEs**
- Medical reports [0]
- Input/output reports [0]
- Financial reports [0]

- Activity reports to [1] forecast - National tender secure mails
- Medical reports to [1] secure mail

Daily stock (3:00 pm) to [1] (secure e-mail: www.transfuzia.com → raportari → livrarects+countycode)

- Annual Reports
- Semester Reports
- Trimester Reports
- Medical reports to [1] secure mail

On the web-sites of [1], [2], [3], [4] - no information about transfusion data reported


- *on-going up-date of medical report skeleton

General Organization of Blood Supply Management; Blood Hospital Management
the No-computerized System, often in Computerized System, as well

- Input/output rec. [0]
- Delivered nº of RBC rec. [0]
- Delivered RBC volumes rec. [0]

- Medical rep. (standardized) to [4] → [5] → [6] secure mail

- HBB*
- Annual Reports
- Monthly Reports

- HBB Internal Documents
- Hospital Statistic Department
- Hospital Financial Department
- Blood Transfusion Establishment

- Public Health Authority
- National Center for Public Health Statistics and Informatics
- National Institute for Statistics and Informatics

*The reports are the Hospital Transfusion and Hemovigilance Coordinator’s responsibility
Institutions/departments | Basic documents
---|---
National Institute for Statistics and Informatics | BEs Internal docs
National Center for Public Health Statistics and Informatics (RoMH) | Daily stock (3:00 pm)
National Institute of TM (NIMT) | Medical rep. - NITM
Public Health Authority (PHA) | Medical rep. - PHA
Blood Transfusion Establishment | Activity rep. – NITM
Hospital Financial/Statistics Dept. | forecast - National tender

1. Sagital approach (overlap)

2. Lateral approach
**7.11 Blood collecting and preserving, in the units with state majority ownership**

<table>
<thead>
<tr>
<th>Years</th>
<th>Blood transfusion centers (number)</th>
<th>Collected blood (volume)</th>
<th>Transfused patients (number)</th>
<th>Transfused patients blood and plasma (liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>41</td>
<td>180960</td>
<td>200132</td>
<td>144235</td>
</tr>
<tr>
<td>2006</td>
<td>41</td>
<td>144736</td>
<td>193456</td>
<td>139671</td>
</tr>
<tr>
<td>2007</td>
<td>41</td>
<td>157775</td>
<td>195304</td>
<td>148421</td>
</tr>
<tr>
<td>2008</td>
<td>41</td>
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<td>146846</td>
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<td>2009</td>
<td>41</td>
<td>193919</td>
<td>199000</td>
<td>168881</td>
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<tr>
<td>2010</td>
<td>41</td>
<td>184116</td>
<td>211621</td>
<td>153390</td>
</tr>
</tbody>
</table>

**Weaknesses**

- Lack of National Computerized Network at BEs level
- No “e” interface: HBB/BEs
- Gap between the 2 main “actors”: pre-hospital & hospital
- Limited Promotional of Transfusion field, due to insufficient information displayed on professional websites
- Limited uniformity/complementarity in reported data by the “actors”
- Degree of influence
- The hospitals should increase the level of quality in transfusion medicine


Total number of pages: 656 pages
23 Chapters
Chapter 7: Health (19 pages)

About transfusion activity, the following information:

- About the hospitals, the following information:
  - The hospitals should increase the level of quality in transfusion medicine
Inadequate number/category of medical staff (no Transfusion Medicine specialization)

Under-financing the transfusion network

Limited efficiency in collaboration/coordination between interested stakeholders

Lack of medium and long-term strategic vision in both “actors”

A continuous overload of job description → increase the risk of human errors

Incacity to get to European Standards in BSM and hemovigilence system

Degree of influence

opportunities

European funds for IT-system (on-going an application for 4 BEs)

Post-graduate Quality Management in Transfusion training program (CME) for each “actor” according to level of involvement, organized by medical universities/professional bodies/experts

Editing specific manuals/guides/regulations (on-going the Ethical Guide in Transfusion Medicine conception-ready for publishing in March 2013)

To use the information from activity report for national tender, as a basic tool for BSM

threats

30/10/2012
Conclusions. In order to achieve the National Policy objectives, about the assurance of an equivalent level of quality and safety, at each stage along transfusion medicine:

- To be established the thresholds in each type of transfusion product in both pre-hospital and hospital level (regulations)

To get political support in order to find financial resources to achieve the European Standards in IT-based BSM & Hemovigilence System, to implement NAT platforms, to develop plasma-fractionation activity

- All experts and stakeholders to be active parts in national commissions, permanent involved for developing the medium and long term strategy in transfusion medicine, in alignment of Romanian legislation to European one [e.g. authorization of documents for transfusion network reorganization based on performance criteria, import/export of transfusion products (on going procedure)]

To enlarge the reporting data in order a have a more complete and realistic view about general population health status (e.g. RBC inventory days/ RBC destined to autotransfusion, reasons of donors’ rejection...)

Acknowledgements

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**Simona Parvu** - Romanian Ministry of Health
Thank you!
Blood Supply Management
In Spain

MIGUEL ANGEL VESGA CARASA
Centro Vasco de Transfusión y Tejidos Humanos. Bilbao

EDQM SYMPOSIUM Blood Supply Management
1-2 October 2012, Strasbourg, France

SPANISH BLOOD TRANSFUSION ORGANIZATION

BLOOD LAW 1088/2005
Competent Authority
Regional Governments (Regional Blood Transfusion Organisation)

Regional Health Service (17)
Blood Establishment (22)
Hospital Blood Transfusion Unit (381)

BLOOD ESTABLISHMENT: Health establishment where each activity related to collection, qualification, processing, storage and distribution of blood and blood components are carried out no matter their final destination. The Director of a BE has to be a doctor specialized in Haematology and Blood Transfusion and a minimum experience of two years in a BE or Hospital Transfusion Service is required.

HOSPITAL TRANSFUSION UNIT: Healthcare unit inside a Hospital Center Bond to a Blood Establishment, where, under the responsibility of a doctor specialized in Haematology and Blood Transfusion, blood components intended for transfusion are stored and hospital transfusion activities are organised and monitored.
SPANISH BLOOD TRANSFUSION ORGANIZATION
2012

1.803.765 voluntary and non remunerated blood donations

SPANISH BSM. STRENGTHS (1,2,5)
- RED CELLS PRODUCED
- RED CELLS TRANSFUSED

Red Cells Self-Sufficiency : 100%
SPANISH BSM. STRENGTHS: 2,4

Red Cells Self-Sufficiency :100%

SPAINISH NETWORK OF BLOOD
ESTABLISHMENTS AND HOSPITAL
TRANSFUSION SERVICES

SPANISH BSM. STRENGTHS: 5

- Hospital Blood Banks were transformed into Regional Blood Establishments (most of B.E. were built inside or close to important hospital areas). A significant part of the HBB personnel moved to the new organizations. The hospital transfusion activities are organised and monitored by the Departments of Haematology-Haemotherapy

- B.E. have maintained an evident clinical environment and atmosphere

BLOOD LAW 1088/2005

- BE and HTS have to be licensed by the Competent Authority
- Binding Solidarity
- Common Objectives
- Reciprocity
- Public Service
- National Blood Care and Sufficiency

Blood Components Regional movement (2010):
- Red Cells: 35,899
  (2% of Red Cells production)
SPANISH BSM. STRENGTHS: 5

OPTIMAL USE

ACREDITATION PROGRAMME FOR B.E. AND H.T.S.

INSPECTION OF B.E. AND H.T.S. / 2 YEARS.

SPANISH BSM. STRENGTHS: 3

• REGULAR DONORS
• NEW DONORS

VNRBD (Blood Law)
SPANISH BSM. STRENGTHS: 3

monthly collections profile

SPANISH BSM. STRENGTHS: RED CELLS INVENTORY WEEKLY MANAGEMENT AND SECURITY LEVELS
INFORMATION SYSTEMS (Blood Establishments):

• PROGESA: 43%
• e-DELPHYN: 24%
• HEMATOS: 19%
• NET-BANK GOLD: 14%

Regional Transfusion Network Models

BASQUE COUNTRY, RIOJA, ARAGÓN, GALICIA:
• Transfusion Network (B.E. + HBS) sharing a Common Information System (Real Time) managed by the B.E.
• Benefits: Unique inventories management, patients relevant information and haemovigilance records are easily available, haemovigilance records, management of transfusion practices monitorisation......

CATALUÑA:
• Hospital transfusion staff belong to the B.E. Personnel structure
SPANISH BSM. WEAKNESSES
SPANISH BSM. WEAKNESSES :4

EXPRESSED RED CELLS: BE AND HOSPITALS

Red Cells Rh (-) Patients Rh (+) Red Cells Rh (+) Patients Rh (-)

2012

2005
SPANISH BSM. WEAKNESSES: 4

Threats

ECONOMIC CRISIS: It might delay the strategies to implement new information technologies aimed to improve B.E. and H.T.S relationships.

Opportunities

ECONOMIC CRISIS: It might speed up further centralization activities between different regional organizations.
SPANISH BLOOD SYSTEM:
Red Cells Supply Management. Conclusions

1. REGIONAL AND NATIONAL RED CELLS SELF-SUFFICIENCY BASED ON VOLUNTARY AND NON REMUNERATED BLOOD DONATION

2. NATIONAL NETWORK OF BE AND HOSPITAL TRANSFUSION UNITS (PART OF THE NATIONAL HEALTH SERVICE) SHARING GOALS, WORK METHODS AND PRIORITIES

3. REGIONAL NETWORKS TREND: COMMON INFORMATION SYSTEMS INTENDED TO OPTIMISING THE BLOOD SUPPLY PROCESS, THE SAFETY OF RECIPIENTS AND STOCKS MANAGEMENT.
Blood Supply Management In Ireland

Paddy Bowler – Irish Blood Transfusion Service

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Reminder: the BSM Process Model

1. Assess past hospital RBC use for patients
2. Establish Forecast for overall annual supply (for BEs) and use (for hospitals)
3. BEs: Establish annual Blood Collection/Donor base/Supply Programme
4. Weekly balancing WB/RBC use (demand) and supply in BE(s)/RBC supplier(s) and Hospitals
   – Monitoring inventories: Use, Collection outcomes, Estimated losses
   – Acting to maintain / replenish inventories at adequate levels
   – Preventing shortage / excess if inventories predicted “out of range”
5. Assessing and updating the patients’ RBC needs and their satisfaction (self-sufficiency / partial sufficiency / oversufficiency) from VNRBD (%)
   – Acting when partial sufficiency / oversufficiency / < 100% VNRBD
Strengths: steps 1 - 4

- National BE: 100% supplier, with 5 yrs historical data of demand by hospital by component – 140,000 red cells issued p.a.
- Forecasting process (BE) fully automated
- Good interaction BSM – donor management
- Good collections prediction accuracy at blood group level (3-5% per week)
- Losses by category well understood
- BE stock levels by component accurate and easy to access
A simple forecasting tool (Excel)
Balancing Demand/Supply—5 components

1. Stock at the start of a forecasting period
2. Estimated demand
3. Collections’ plan: Donor attendance & expected units / types collected
4. Estimated losses
5. Stock at the end of a forecasting period

Forecasting Model – from information available within the BE

A - CURRENT STOCK = ?
B - ISSUES THIS WEEK = ?
C - COLLECTION TARGET THIS WEEK = ?
D – LOSSES % (collection, process, test, quality) = ?
E - STOCK NEXT MONDAY = ?

\[ E = (A + (C \times (1 - D))) - B \]
IBTS Forecasting Process Output

Interaction BSM – donor management: supply levers

- **SMS to donors**
  - Partnership with Vodafone since 2004 including free SMS - 1.2M p.a.
  - Irish are among highest users of SMS per capita world – 2800 /person/week
  - Donors receive collection session SMS
  - Additional text messaging used to switch on/off at blood group level
  - Telerecruitment where necessary on Rhesus negative
- **Group Specific Text MessageTemplates (Max - 162 characters)**
  - You are 1 of 35 A - donors in Tipperary. We URGENTLY need at least 25 A - donations in Tipperary tonight to increase stocks of A- blood. Thanks from IBTS.
  - Your blood group is AB+ As AB+ stock is currently 10 days please skip donating in Limerick this time & we hope to see you there next time. Thank you IBTS
Impact of SMS on Blood Supply

November 2006 O Positive Text Analysis

Weaknesses: steps 4 - 5

- Poor visibility of hospital stocks
- Hospitals have a weak view of their own demand drivers
- Lack of a formal hospital liaison function
**Threats: steps 1 - 5**

- Lose visibility at hospital level as new trusts are established in a restructured Irish health system
- Restructured health system will promote competition – money follows patient
- Donor messaging fatigue – O neg
- Donor base attrition as donor wellness agenda develops

**Opportunities: steps 2 - 4**

- Interaction BSM - Donor management
  - Introduce donor appointments to assist collection projections
  - Collecting donor e-mail addresses for more targeted marketing
  - “Blood Buddies” marketing campaign to raise donor’s awareness of their blood group
- Establish a hospital liaison function
- Using a web based system to allow hospitals order – allows IBTS capture true demand and develop service performance metrics
Conclusions

- Highly automated & validated forecasting process with good level of organisational confidence
- Well proven supply levers – Rhesus negative particularly
- Poor visibility of hospital stock levels
Blood Supply Management
In Portugal

Mario Muon
Portuguese Blood and Transplantation Institute

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1-2 October 2012, Strasbourg, France

Blood Transfusion System in Portugal - I

- Portugal has a mixed Blood Transfusion System based on the Portuguese Blood and Transplantation Institute (national blood policy) and Hospital Blood Transfusion Services

- 2/3 of the blood collection, testing, processing, storage and distribution are performed by the three Blood and Transplantation Centers: Lisbon, Porto and Coimbra
Blood Transfusion System in Portugal - II

- There are 80 hospital transfusion services.
- 23 are also blood establishments as they collect, test, process and store blood and blood components.
- The majority of these BE/Transfusion Services (20) are not self-sufficient and receive blood components from Blood Centers.

the BSM Process Model

1. Assess past hospital RBC use for patients
2. Establish Forecast for overall annual supply (for BEs) and use (for hospitals)
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5. Assessing and updating the patients’ RBC needs and their satisfaction (self-sufficiency / partial sufficiency / oversufficiency) from VNRBD (%)
   - Acting when partial sufficiency / oversufficiency / < 100% VNRBD
General organisation of blood supply management - Portugal

1. Assess past hospital RBC use for patients
2. Establish Forecast for overall annual supply
3. Establish annual Blood Collection/Donor base/Supply Programme

BSM Process Model in Portugal - I

<table>
<thead>
<tr>
<th>Date</th>
<th>Used</th>
<th>Supplied</th>
<th>Supplied (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct-10</td>
<td>30796</td>
<td>18625</td>
<td>60.98%</td>
</tr>
<tr>
<td>Nov-10</td>
<td>19281</td>
<td>18539</td>
<td>60.08%</td>
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<tr>
<td>Dec-10</td>
<td>29541</td>
<td>17529</td>
<td>59.36%</td>
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<tr>
<td>Jan-11</td>
<td>30765</td>
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<td>Feb-11</td>
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<tr>
<td>Mar-11</td>
<td>32608</td>
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<tr>
<td>Jun-11</td>
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<td>Jul-11</td>
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<td>Aug-11</td>
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<tr>
<td>Sep-11</td>
<td>28375</td>
<td>17254</td>
<td>60.20%</td>
</tr>
</tbody>
</table>
BSM Process Model in Portugal - II

4. Daily web based monitoring RBC use and inventories in BE(s)/RBC supplier(s) and Hospitals
   – Monitoring inventories: Use, inventories and Collection outcomes
   – Acting to maintain / replenish inventories at adequate levels
   – Preventing shortage / excess if inventories predicted “out of range”

BSM Process Model in Portugal - III

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**BE inventory**

- **Existências por centro regional de sangue**

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**Hospitals inventory**

- **Existências por instituição**
BSM Process Model in Portugal - IV

BSM Process Model in Portugal - V

Instituto Português do Sangue e da Transplantação, IP
Previsão de dias de reserva de concentrado de eritrócitos em 11/09/2012

RBC stock prediction for x days use

<table>
<thead>
<tr>
<th>ABO Rh</th>
<th>Existência Média</th>
<th>Consumo Médio (90 dias)</th>
<th>Consumo Médio Semanal</th>
<th>Dias previsão</th>
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</thead>
<tbody>
<tr>
<td>A</td>
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<td>302</td>
<td>347</td>
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<td>A</td>
<td>805</td>
<td>59</td>
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<td>56</td>
<td>73</td>
<td>21</td>
</tr>
</tbody>
</table>
Strengths: steps 4 & 5

• BE s+ Hospitals inventory /supply/use web based Monitor system Bes and Hospitals access
• National average and minimum inventories established
• Hospitals BS audits

Weaknesses: steps 4 & 5

• Blood request/Blood supply/Blood use not clear
• Lack of Tx specialists/Tx committee/guidelines in BS for best practice
• Private clinics not in the monitor system
Threats: steps 3 & 5

- Public administration restructure
  Health Ministry Blood Policy uncertainty
- Private blood suppliers
- Private blood collectors
- No pluriannual human resources planning due to law

Opportunities: steps 3 & 5

- Centralized promoting service for all country
- Centralized processing, testing and supply
- Unique identification number implementaion/consolidation
Conclusions

**Recommendation as good practice in BSM**
- Monitoring system BE + Hospitals
- Centralised Processing + testing + distribution and promotion planning
- Unique identification number implementation
- Hospitals average and minimum stock needs established

**Not recommend as good practice in BSM**
- Absence of annual planning
- Hospitals over stockage