Notice to reader

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30 April 2013

Steering Committee
Canadian Blood Services Performance Review

Dear Steering Committee Member:

**Report on the Performance review of Canadian Blood Services**

We have now completed the engagement mentioned above and are pleased to present our report for your consideration. We trust the report will meet with your requirements and needs.

We would like to thank you, the Working Committee and Canadian Blood Services personnel for the cooperation and the assistance provided to us during the course of our work, and the courtesy extended to all our colleagues who worked on the project.

If you have questions or need additional information, please do not hesitate to contact us at the phone or e-mail addresses listed below.

Yours very truly,

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Many acronyms are used throughout this report to facilitate its reading. A list of acronyms and their definition is provided below.

This review resulted in a number of recommendations. A list of these recommendations is provided in Appendix L.

Also, amounts, statistics and other figures discussed in the report refer to the year 2011-12, unless otherwise stated.

Acronym list

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<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>ABO</td>
<td>Alliance of Blood Operators</td>
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| ASAP/STAT | As soon as possible/  
|          | Short turn-around time                           |
| ARCBS   | Australian Red Cross Blood Service              |
| CBS     | Canadian Blood Services                         |
| CBSI    | CBS Insurance Corporation                       |
| CAGR    | Compound Annual Growth Rate                     |
| CCDT    | Canadian Council for Donation and Transplantation |
| CDM     | Conference of Deputy Ministers                  |
| CMWG    | Cost Model Working Group                        |
| CRM     | Customer Relationship Management                |
| CTR     | Canadian Transplant Registry                    |
| ERM     | Enterprise Risk Management                      |
| EMT     | Executive Management Team                       |
| FDA     | US Food and Drug Administration                 |
| FTE     | Full-time Equivalent                            |
| HLA     | Human Leukocyte Antigen                         |
| HSP     | Highly-Sensitized Patient                       |
| Ig      | Immunoglobulin                                  |
| KPI     | Key Performance Indicator                       |
| LDPE    | Living Donor Paired Exchange                    |
| LHIN    | Local Health Integration Network                |
| LHU     | Labour Hours per Unit                           |
| LIS     | Laboratory Information System                   |
| LOI     | Letter of Intent                                |
| LVP     | Large Volume Platelet                           |
| MSRA    | Medical, Scientific and Research Affairs        |
| MOU     | Memorandum of Understanding                     |
| NBA     | National Blood Authority                        |
| NCC     | National Contact Centre                         |
| NFRP    | National Facilities Redevelopment Program       |
| NHSBT   | National Health Service Blood and Transplant    |
| NNCD    | National Non-Conformance Database               |
| NOW     | National Organ Waitlist                         |
| OTDT    | Organ and Tissue Donation and Transplantation   |
| PPP     | Plasma Protein Products business line           |
| PEP     | Productivity and Efficiency Program             |
| PPE     | Property, Plant and Equipment                   |
| PTBLC   | Provincial and Territorial Blood Liaison Committee |
| PT      | Provincial and Territorial                      |
| QSS     | Quality System Support                          |
| RA      | Regulatory Affairs                              |
| RBAP    | Risk-Based Audit Plan                           |
| RFI     | Request for Information                         |
| RFP     | Request for Proposal                            |
| RFQ     | Request for Quotation                           |
| R&D     | Research and Development                        |
| SLA     | Service Level Agreement                         |
| SQuIPP | Safety, Quality, Identity, Purity and Potency   |
| SRM     | Supplier Relationship Management                |
| SSEC    | Safety, Science, & Ethics Committee             |
| UK      | United Kingdom                                  |
| WMDA    | World Marrow Donor Association                  |
CBS is a not-for-profit corporation with the mandate to operate Canada's blood system. A MOU between the federal government and provincial and territorial health ministries, with the exception of Québec, is the foundational document for CBS. The MOU describes the roles and responsibilities of the various parties and provides the overarching governance structure and organizing principles that support Canada's blood system.

CBS assumed management responsibility of the national blood system from the Canadian Red Cross Society in 1998 after the Krever Commission's report on the contaminated blood scandal called for the creation of a new blood services organization to restore public trust in the safety and quality of Canada's blood supply.

To fulfill its mandate, CBS manages four main business lines (Transfusable Products, PPP, Diagnostic Services and Stem Cells) that are largely funded by provincial and territorial health ministers (referred to as “the Members”). The federal government provides financial contributions for R&D activities. In recent years, CBS has also assumed responsibility for two strategic initiatives: OTDT funded by the federal, provincial and territorial governments and a cord blood bank funded by provincial and territorial governments.

CBS inherited a fragmented and decentralized blood system that suffered from an absence of trust, safety gaps and supply shortages. CBS has successfully:

- Regained public trust in the blood supply system: 82% of survey respondents indicated it is safe to receive blood; 90% indicated it is safe to donate blood. 94% of respondents believe that CBS is doing a somewhat good to very good job in the management of Canada's blood system
- Earned stakeholder trust: overall satisfaction with CBS by Canadian hospitals has remained consistently high with 99% of survey respondents being satisfied
- Implemented and enforced several safety procedures and tests resulting in a blood system where safety aligns with international leading practices
- Restructured operations to improve the consistency of supply
- Increased stakeholder engagement and transparency through open Board meetings, national and regional liaison committees
- Transformed operations into a national, blood system through standardization and consolidation of processes, services and functions
- Adopted progressive management and governance structures: Balanced Scorecard, focus on Board governance
During the past four years, from an efficiency perspective, CBS has successfully:

- Realized over $70 million of efficiencies in Transfusable Products
- Achieved significant price savings on its plasma protein products
- Held member contributions flat for Transfusable Products since 2010-11 with plans to continue to maintain these at the same level until 2015-16

This performance review was requested by CBS and agreed to by the provinces and territories with the objective of assessing how CBS delivers on its mandate in terms of effectiveness and efficiency. The terms of reference for the review included an assessment of CBS’ governance model, an evaluation of financial and fiscal matters, an assessment of CBS’ ability to meet customer safety and supply needs, an assessment of strategic initiatives and a review of performance indicators and risk management approaches. A summary of the key findings and recommendations are provided below.

**Governance**

CBS’ governance structure is multi-jurisdictional and multi-layered. The Members comprise CBS’ corporate membership; representatives from participating provincial and territorial governments participate on the PTBLC and are responsible for advising their respective Ministers and Deputy Ministers of Health on matters related to CBS and the national blood system. The Board of Directors, who are selected by Members, oversee the strategic direction and management of CBS’ activities and finances. Reporting to the Board of Directors is the National Liaison Committee, which represents interested parties such as consumers, hospitals, and medical and patient associations, as well as several other committees. CBS’ EMT includes the Chief Executive Officer (who is also a non-voting ex-officio Board member), Chief Operating Officer, and six Vice Presidents.

The MOU offers a high-level overview of the roles and responsibilities of both CBS and the Members. Members are responsible and accountable for the national blood supply program; CBS owns and operates the blood supply system. The MOU indicates that CBS is not an agent of any government and must be able to exercise complete management discretion over all operational blood system decisions. While CBS possesses financial decision making autonomy over operational funding received from participating Members, the Members are responsible for approving CBS’ annual budget and are ultimately accountable for the use of the public funds that fund the national blood system.

**Contractual framework**

*There is a lack of clarity with regards to roles and responsibilities among the parties*

Currently, there is no formal agreement between the Members and CBS outlining their respective roles and responsibilities; the MOU is an agreement between the federal government and Members only. In the absence of a clear delineation of who is responsible for what, differences in viewpoint between Members and CBS have emerged. There is no agreement on decisions that fall under the responsibilities of CBS, those who are Members’ responsibilities, and the decisions that should be taken jointly by the parties.

*The MOU does not define the frequency or the nature of reporting – from both an operational and financial perspective required to be provided by CBS to the Members*

During the course of this review, various parties noted that decisions on major items requiring provincial and territorial input are becoming harder to achieve in a timely fashion. While CBS asserts that it will and does provide the Members with any information they request, the Members believe that CBS is not sufficiently proactive in providing them with the information they need in a timely manner to achieve the necessary fiscal accountability with regards to the funding they provide to CBS, and to assist them with decision-making as it relates to future funding.

*The concept of arm’s length needs to be better defined*

Although CBS owns and operates the national blood supply system, the Members are ultimately accountable for the national blood supply. Provincial and territorial representatives interviewed over the course of this review indicated a perception that CBS sometimes denies information requests on the basis that the requests are operational in nature and, as such, are subject to “arm’s length” status.

*The MOU provides limited direction on the funding approach and model*

CBS’ current funding approach is based on practices that have evolved since its creation in 1998 and is a hybrid model using annual contributions from provincial and territorial governments and a fee-for-service. The MOU does not define how budgetary surpluses or deficits should be treated; it simply states that CBS is to report significant deviations from the approved budget to the Members. CBS’ net asset balance, which is the cumulative excess of annual funding over costs, has been increasing each year since 2000 and currently amounts to $38 million at 31 March 2012. In recent years, Members have begun questioning the current practice that results in CBS retaining the annual excess of funding over expenses to use at its discretion. Other blood services organizations reviewed have formal and more comprehensive funding approaches.
There is a need for CBS and the Members to work together to develop a formal, national contractual agreement. It is recommended that this agreement define:

- The concept of “arm’s length”, including what types of decisions should be at CBS’ sole discretion, which ones might be shared between CBS and its Members and those that should be made by Members.
- Respective roles and responsibilities of the parties, including ownership for specific decision making.
- Specific operational and financial performance metrics that CBS is required to measure and report against.
- Frequency with which CBS is required to provide operational and financial reporting to the Members, the required content of those reports, as well as the timelines they are expected to adhere to in providing it.
- Streamlined decision framework for overall business planning, including who must be consulted, the extent to which they must be consulted, and at what point(s) in the process they must be consulted.
- Appropriate funding level of contingency fund, what it can and cannot be used for, as well as a replenishment plan.
- Funding models for working capital, investments in PPE and other assets.
- How excess of annual funding over costs is to be used, minimum levels and release/approval process.
- Provisions for operational audits/reviews.
- Dispute resolution procedures.
- Term during which the agreement is in effect and procedures for amending the agreement.

**A national agreement is required to increase accountability.**

The success of a publicly-funded organization often depends on the organization having a good relationship with its stakeholders and meeting their expectations. Several of CBS’ funders have developed accountability legislation and/or frameworks which apply to the entities that they fund. At the request of the province of Ontario, CBS is currently working with Ontario representatives to finalize an accountability agreement by 31 March 2013 in an effort to meet Ontario’s Transfer Payment Accountability Directive. In an effort to increase the transparency with which it operates and meet the accountability expectations of the provinces and territories, CBS agrees that there is a need for a national agreement and will work collaboratively with all the provinces and territories (except Québec) to develop one. It is recommended that CBS continue to work with the provinces and territories to develop a single, national accountability agreement under which it will operate and that meets the legislative requirements of the provincial and territorial governments.

**PTBLC**

*There is no common role description for PT representatives.*

The PTBLC is the primary mechanism for operationalizing CBS’ relationship with the Members. There are notable variations in the level of seniority of the PT representatives, their knowledge of CBS, their financial and business skill sets and their authority to make decisions and convey the views of the governments they represent.

It is recommended that the Members establish role descriptions for the PTBLC representatives, including skill set requirements and their decision-making authority.

**Board of Directors**

*The Board of Directors possesses the required competencies and experience.*

The primary responsibility of the Board is to provide effective governance over CBS’ affairs for the benefit of its funders and to balance the interests of its diverse stakeholders across Canada. The current Board is comprised of 13 directors, including the Chair, regional representatives, consumer representatives and business, scientific, medical and public health representatives. The current directors are independent of management and possess the requisite skills and experience to perform their roles. A governance assessment revealed a high level of performance by the Board across all five areas assessed. Board responsibilities are clear, there is a consistent understanding and respect for the distinction between the role of the Board and the role of executive management, and the Board focuses primarily on strategic issues. Board meeting attendance is good and director turnover is low. Steps that could further strengthen the Board include:

- Revisiting the frequency and duration of Board and committee meetings.
- Developing and implementing a formal review process for evaluating director performance.
- Expanding the role of the Board in the nomination and selection process for new directors.
- Reviewing the rotation approach to facilitate a more gradual turnover of directors.
- Ensuring director compensation is in alignment with comparable publicly funded entities.
Management Team

CBS possesses a strong and stable leadership team. With some minor exceptions, the EMT has remained intact during the period covered by this review.

Current management span of control is low compared to other organizations

CBS’ span of control of staff per manager is relatively low compared to industry standards. A recent study, PEP\(^1\), identified opportunities to reorganize support functions, adjust the scale of support functions and re-examine the service delivery model of select support functions. It is recommended that CBS should continue the review of its organizational structure and implement recommended changes to realize efficiencies.

CBS is changing its governance approach to executive compensation to better align it with leading practices

CBS’ executive compensation plan incorporates a blend of fixed compensation, performance-based compensation, and pension benefits and other perquisites. CBS’ executive performance-based variable pay ranges from 20% to 25% of fixed compensation, which is in line with current leading practices that call for an increasing portion of total compensation to be variable and linked to performance.

In terms of executive performance review, CBS has a formal process in place, as well as processes to support their continuous professional development. However, the review of the process found that there is a lack of clarity in how and which performance indicators and outcomes are linked to executive management compensation.

In 2010, the Talent Management Committee of the Board of Directors began to enhance its governance and processes to better align with leading practices. These changes will also enable the Board of Directors to better fulfill its leadership responsibility in setting the direction for executive compensation. It is recommended that CBS’ executive management continue to implement changes to its governance approach to executive compensation in order to further CBS’ progress in ensuring this approach better aligns to leading practices.

Compensation of CBS' leadership team is positioned at the high end or exceeds the range against other comparable national publicly funded organizations

The review team assessed the overall positioning of CBS’ executive compensation relative to a group of relevant organizations using a low-high range. The team did not, however, determine the fairness of executive compensation for individual executives. The low end of the range was calculated using base salary plus allowances for each position used in the analysis. The high end of the range was estimated using base salary plus allowances plus maximum bonus. The analysis found that the low end of CBS’ executive compensation is positioned slightly higher than the average for comparators, while its high end is 20% to 30% higher than comparators.

CBS has a process in place to regularly review its executive compensation, and it uses comparative analyses conducted by a firm specializing in compensation to inform these reviews. The most recent study compared total compensation with a comparator group comprised primarily of large, publicly traded companies in “general industry” and did not include not-for-profit or other publicly funded entities similar to CBS. The review team believes that CBS is a less complex entity than most companies included in the study and that the results might have been different had it used publicly funded organizations as comparators.

It is recommended that management formulate and document a clear executive compensation strategy and framework for approval by the Board of Directors. The framework should include selection of comparators, mix of fixed and variable pay components, and disclosure protocol.

Financial and operational review

At an aggregate level, CBS’ revenues and expenses have grown moderately over the four year review period, with values peaking in 2009-10. Expenses increased $71.4 million from 2008-09 to $989.1 million in 2011-12, a CAGR of 2.5%. This CAGR is only slightly greater than the average inflationary growth rate during this time period of 1.9%, 2% for health care. CBS currently employs approximately 3,800 FTEs across its four business lines. The total number of FTEs supporting CBS decreased at a CAGR of -0.8% over the four year review period. The majority (92%) of total FTEs are reported under the Transfusuble Products business line, where FTEs decreased by 4.6% over the review period.

At an aggregate level, CBS’ expenses are projected to increase gradually over the next several years at a higher rate than historically. Historical and projected expense growth was driven primarily by assumptions around increasing material costs in the PPP business line.

\(^1\) PEP is CBS’ program to identify and deliver productivity and efficiency improvements
Transfusable Products

Transfusable Products accounted for 47-50% of total CBS expenses during the period under review. Total expenses grew at a CAGR of 1.5%, increasing $20.2 million from 2008-09 to $473.8 million in 2011-12. The majority of expenses (60% in 2011-12) relate to staff costs, which have increased at a CAGR of 1.5%. Expense growth has been maintained below the rate of inflation, in general, and below union settlements during the period under review. The containment of the growth has been achieved through a 4.6% decrease in FTEs since 2008-09.

This business line is currently funded from Members’ contributions based on the budget negotiated during the annual corporate planning process. Members are charged a percentage of the business line expenses based on their proportion of red blood cell shipments to total red blood cell shipments. Member contributions have not increased since 2010-11 and are not forecasted to increase until 2015-16. CBS has been successful in keeping their budget to actual variances for the period under review within appropriate thresholds.

CBS’ business processes (supply chain, logistics and support services) were examined in terms of historical performance, performance against relevant comparatives and future initiatives to improve performance with associated costs and benefits. A high-level summary of this review is discussed below; a more detailed analysis for each business process is included in Section 4 of this report.

An internal review conducted in 2012 identified productivity and efficiency opportunities of $20 million to $25 million in CBS’ supply chain

Expenses related to the supply chain (recruitment, collections, testing, production and distribution processes) accounted for 56-58% of total Transfusable Products expenses during the period under review. Total supply chain expenses increased $6.8 million from 2008-09 to $266.5 million in 2011-12, a CAGR of 0.9%. Supply chain processes represent approximately 65% of Transfusable Products FTEs.

The review team compared CBS’ supply chain performance across centres/locations and to three blood services organizations. This analysis indicated that while CBS has improved its productivity, measured by labour hours per unit, by 5% since 2008-09 within the supply chain:

- CBS remains less productive than comparable blood services organizations in donor recruitment and production and distribution processes
- Opportunities exist to further standardize productivity across collection clinics and manufacturing centres
- Higher staff costs account for most of the difference in whole blood clinic costs compared to two out of the three other blood service organizations reviewed. Approximately 75% of CBS employees are unionized; CBS pattern-bargains labour rates with what provinces and territories pay their employees
- CBS has a higher deferral rate (where donor is deemed ineligible to donate) than comparable blood services organizations
- CBS has an opportunity to reduce their discard rates
- CBS has an opportunity to further decrease apheresis platelet costs through increasing its LVP split rate

A total of eight supply chain initiatives were identified by the internal review commissioned by CBS in 2012 that could save $20 to $25 million a year when implemented, in addition to the approximate savings of $5 million per year from the Halifax testing lab closure and Brampton and Dartmouth manufacturing centre consolidation. It is recommended that CBS undertakes to implement these efficiencies.

An internal review identified productivity and efficiency opportunities of $9 million to $15 million in support services

Support services accounted for 27-28% of total Transfusable Products expenses during the period under review. Total support services expenses increased $7.8 million from 2008-09 to $131.9 million, a CAGR of 2.1%. Support services represent approximately 22% of the total FTEs within the entire CBS organization.
Ernst & Young compared CBS’ spend on support services with three blood services organizations and with cross-industry benchmarks. This analysis indicates that:

- CBS’ corporate services costs are comparable with other blood services organizations; talent management and finance spend at CBS are close to being best performers, while IT and other corporate functions are the second most expensive of the peer group.
- Blood services organizations appear to have corporate structures and operations that make their talent management and IT costs higher than other industries, as the cross-industry benchmark places CBS below bottom performance in both of these categories.

The internal review commissioned by CBS identified thirteen productivity and efficiency opportunities related to support services that could save $9 million to $15 million annually. It is recommended that CBS consider implementing some of the opportunities identified to increase efficiency, in particular those related to IT and other corporate services functions.

**The costs versus performance of the NCC appear high.**

The NCC located in Sudbury, Ontario is responsible for booking whole blood clinic appointments, appointment reminders, some plasma appointment bookings and responding to any eligibility questions. The NCC books approximately 40% of whole blood clinic appointments. CBS recently announced plans to open a secondary contact centre in Saint John, New Brunswick for business continuity reasons. The cost per booked appointment of the NCC has been increasing at a CAGR of 5.5%. Comparison to other blood services organizations and to health care and cross-industry benchmarks suggests that there is significant room for improvement in CBS’ contact centre operations. It is recommended that CBS closely monitor the cost-effectiveness of its contact centres in terms of costs versus performance and that CBS identify relevant metrics and track and report on these on an ongoing basis. Additionally, CBS should explore opportunities to decrease contact centre costs per appointment including investigating the viability of outsourcing.

**Management and overhead costs are not decreasing in line with operational costs.**

The relative percentage of management and administration FTEs and associated costs within the supply chain has increased over the past four years as efficiency improvements have been focused at the operational level. While it is understood that management plays an important role during periods of transformation, there is an opportunity to re-examine staff roles and responsibilities at various levels to lower the cost structure. As part of its organizational redesign, CBS should reconsider the optimal mix of management across its supply chain processes.

**CBS’ National Fundraising Office should be run as a standalone entity.**

CBS’ National Fundraising Office is responsible for engaging individuals and organizations to financially support the goals and objectives of CBS. Although the National Fundraising Office’s activities have been limited to date, expenses related to the Office have increased over the last two years, as CBS increased its fundraising efforts to raise the $12.5 million to support the cord blood bank. CBS has been operating and funding its National Fundraising Office as part of its Transfusable Products line of business, financing the offices operations mainly from Members’ contributions. Between 2008-09 and 2011-12 the National Fundraising Office has collected $3.6 million in donations ($2.3 million accounted for as revenue and $1.3 million deferred) and cost CBS almost $4 million. As of 31 March 2013, CBS has also received pledges regarding Cord Blood fundraising for an additional $3.6 million.

**Protein Plasma Products**

PPP business line accounted for 46-49% of total CBS expenses during the period under review. Total PPP expenses increased $35.9 million from 2008-09 to $462.4 million in 2011-12, at a CAGR of 2.7%. The majority of expenses (99% in 2011-12) relate to product costs, which increased at a CAGR of 1.2%.

The Members are charged for the actual cost of the products used by hospitals in their jurisdictions and an allocation of administration costs. This business line is responsible for the purchase of commercial plasma-derived and recombinant products for distribution to hospitals and the manufacturing of Canadian plasma into derivative products through contract fractionation services. The key cost drivers are product demand and unit costs. PPP is also influenced by exchange rates, as most products are purchased in US dollars.
Increased utilization of plasma protein products impacted costs by $50 million over the period under review

Higher product costs are largely a function of increased volume. The volume impact was $50 million from 2008-09 to 2011-12. Demand for plasma protein products varies by product and province and has been consistently increasing; utilization of the product is driven by provincial, national and global clinical practices.

CBS is able to manage the product unit cost through contract negotiations and streamlined administration costs and has been successful in developing a competitive market for their contract fractionation and commercial product purchases. The price impact from 2008-09 to 2011-12 was $25 million; the CAGR of product prices for the top two products in terms of expense (Ig and rFVIII) were maintained at well below the rate of inflation. Provincial and territorial governments have benefitted from a positive exchange rate over the past number of years, which decreased the potential cost increase by an estimated $39 million.

It is recommended that Members develop guidelines and mechanisms to promote appropriate usage of plasma products; CBS, using its unique expertise, should play a leadership role in exploring ways to achieve this optimization.

Pricing for procedures varies significantly by province and has increased at a greater rate than volume

The prices charged to each province for the same procedure - red cell serology - varied by 9% to 64% based on differences in test volumes, labour costs and hours of work. It is recommended that the provincial and territorial governments work with CBS to investigate opportunities to decrease costs, which may be achieved through centralization of testing or divesting testing services performed by CBS to local hospitals.

Stem Cells

Stem Cells accounted for 2.9% of total CBS expenses during the period under review. Expenses increased $10.6 million from 2008-09 to $28.6 million in 2011-12, a CAGR of 16.6%. The majority of expenses (62% in 2011-12) are related to general and administration costs, which include fees paid to international registries for matches related to Canadian recipients, followed by staff costs (25% in 2011-12). The Stem Cells business line consists of the OneMatch Stem Cell and Marrow Network, supported by the HLA Laboratory. The OneMatch Network is dedicated to recruiting and locating compatible, unrelated stem cell donors for patients in Canada and internationally. The Stem Cells business line is in a growth phase with patient demand increasing year over year.

The gap between patient needs and transplantations completed has remained at a similar level throughout the period under review

Over the last six years, the gap between patient need and total transplants has remained the same. The total number of Canadian transplants is influenced by multiple factors, including the transplant centre capacity and inability to find a match from a donor. To effectively meet demand, there is a need to continue to change the composition of the donor network to include younger donors and improve ethnic diversity. CBS is focusing on using North American and international studies to determine the optimal size and ethnic composition of the network. It is recommended that CBS continue to build on existing efforts to improve the donor base and continue to develop and foster partnerships with customers, stakeholders and international communities, such as the WMDA.
Policies and practices

The current planning process is lengthy and requires a fair amount of effort on the part of CBS and the Members

CBS prepares a three year Corporate Plan, containing a budget request for the first year and a directional forecast for years two and three on an annual basis. CBS begins with a “top-down” approach to obtain approved budget targets, at which point detailed budgeting is performed by the various business functions. This process commences at the beginning of the fiscal year for the following year’s budget. The Corporate Plan is submitted to provinces and territories by the beginning of August. CBS meets with PTBLC in October and November to present the plan, negotiate and finalize the budget. The provincial and territorial governments are not always provided with timely information (e.g., current year results, expense forecasts) that could streamline the process. The budget for Transfusable Products is a fixed amount of funding that is tied directly to the red blood cell shipments to hospitals. To improve efficiency and reduce time and effort, it is recommended that:

- CBS and the Members work together to redefine information requirements to streamline the process
- CBS provide both year to date actual and forecasted expenses for the current year during the budgeting and planning process
- CBS implement a costing system to present fixed and variable cost components for budgeted, actual and forecasted spend to enable greater transparency of resource utilization

CBS’ costing system does not have the sophistication to provide accurate product costing information

CBS does not have a robust costing system. As a result, the cost used in the determination of the funding for different products and services may not properly reflect the actual cost of the product or service. The review of other blood services organizations suggested they have implemented sophisticated costing systems that allow for a reasonably complete estimation of the cost of products and services. CBS would benefit from conducting an assessment to determine the costs and benefits of implementing a more robust costing system to enable the calculation of complete costs for its different products and services.

CBS’ use of qualitative and experience-based methods for inventory is possibly driving excess inventory levels across the supply chain

The inventory for plasma protein products and medical supplies for Transfusable Products are managed by three different groups at CBS who use different inventory management techniques. CBS currently does not use standard inventory models to determine the inventory levels required to mitigate stock outs. In 2011-12, CBS had, on average, $92 million in working capital tied to inventory. Based on work conducted by the review team, it is estimated that CBS may be carrying approximately $35 million of excess inventory. A more in-depth analysis would be required to confirm the exact amount. One of the techniques that CBS employs to mitigate supply risks is to contractually mandate its suppliers to carry inventory in Canada (in addition to that held by CBS at its own facilities); as a result, the system as a whole may carry an even more significant amount of excess inventory. It is recommended that:

- CBS adopt standard inventory models to calculate its inventory requirements; for strategic stock, CBS should quantify risks to assign an inventory value
- CBS broaden the number of inventory metrics monitored

CBS’ in-house transportation fleet and drivers have low utilization

Transportation logistics is a core competency requirement for CBS. The Logistics function is responsible for the safe and timely movement of fresh products (collected blood, blood products) nationwide – from collection sites through to distribution to hospitals. In addition, Logistics also moves medical supplies, collection staff and donors to and between collection sites and processing centres. To fulfill the transportation requirement, CBS uses a hybrid of private fleet and third party carriers. As of April 2012, CBS had a fleet of approximately 250 vehicles and employed 207 driver FTEs. The relatively large CBS fleet size, and low asset and driver utilization, is a function of the almost 7,000 annual mobile clinic events supported, which require multiple vehicles and drivers. CBS’ Logistics function lacks the technological sophistication and use of metrics to track asset and driver utilization found in organizations that consider transportation to be a core competency. It is recommended that CBS implement processes and tools to track asset and driver utilization, and regularly assess its fleet size and opportunities for outsourcing to commercial logistics providers.
**CBS Purchasing Policy and practices should encourage greater competition and consider open competitive processes for high value solicitations**

CBS has a centralized procurement function, supported by a formalized purchasing policy that is robust and incorporates many principles common to publicly funded organizations. CBS’ policy requires that bids be solicited through a competitive process when the value of goods or services exceeds $50,000. An RFQ process is often used instead of a full RFP when products or services purchased are well defined. It is currently common practice for CBS’ purchasing team, in collaboration with business owners and other relevant CBS employees, to identify specific bidders for invitational bid solicitations. This occurs through a process that has not been formalized within the current policy and may limit the potential number of proposals as well as cause the organization to miss out on savings opportunities for high-value solicitations. It is recommended that CBS revise its Purchasing Policy to incorporate greater transparency in the bid invitation process for high value and high risk solicitations by implementing a formal process for selecting vendors for bid solicitation, considering open public tendering, and introducing clear restrictions around the use of RFQs for high value and high risk solicitations.

**Increasing strategic sourcing could help reduce costs and supply risks**

CBS has demonstrated effective strategic sourcing practices to manage costs. It has achieved these significant cost savings through increasing competition, aggregation of costs and taking advantage of trends in the marketplace. Steps that could further strengthen CBS’ sourcing practices include:

- Expanding its supplier relationship management strategy to drive further cost reduction through dedicated resources and activities, thorough understanding of cost drivers (internal and external suppliers), and regular market and contract reviews
- Increasing the maturity of its procurement processes to focus on high value strategic sourcing
- Continuing to look for partnership arrangements with other buying groups to save time on lower priority sourcing areas

**While CBS has robust policies and practices to govern travel expenses, some requirements remain open to interpretation**

CBS’ Travel and Expense Policies and practices are largely aligned to those of publicly funded organizations in Canada and incorporate a number of leading practices. Employee and Board travel and expenses have been subject to a number of recent reviews by Internal Audit, and any recommendations noted through the audits have been addressed by management. CBS should incorporate additional details to its travel policies to minimize room for interpretation. In particular, it should clarify the definition of “valid business purpose” and define maximum spending thresholds for business meals, conferences/meetings and other hospitality.

**CBS spends significantly more on professional services as a percentage of total expense, than other comparable blood services organizations**

CBS appears to have a higher reliance on external professional firms than other comparable blood operators. It is recommended that CBS review its use of professional services and develop and implement guidelines on utilization of professional services, together with a management and approval approach.

**Demand planning, logistics, sourcing and inventory management activities are fragmented, inhibiting process maturity and focus on reducing costs**

CBS’ core supply chain responsibilities are fragmented across different business lines (Transfusable Products and PPP) and the Corporate Services division. Fragmentation inhibits the evolution of process maturity and staff expertise. The supply chain represents the biggest expense and asset class for CBS and, therefore, requires a structure that drives a proportionate focus on cost control and process standardization, while maintaining customer service performance. In addition, CBS has identified a number of supply chain initiatives to take costs out of the system. Several of these are long term transformational projects that require significant leadership, implementation effort and sustained focus. An integrated supply chain organization structure may assist with increased and faster benefit realization by providing the required focus and prioritization for CBS. Secondary research indicates that several other blood services organizations operate a structure where these activities are grouped under a single point of accountability, often with a direct reporting relationship to the CEO. CBS should look to restructure the supply chain organization for cost control and process excellence and appoint a single executive in charge of all core demand planning, logistics, purchasing and inventory management functions.
Efficiency
CBS has committed to delivering on significant and sustainable operational efficiencies. Between 2008-09 and 2011-12, CBS improved its efficiency and reduced cumulative costs by over $70 million. These results were achieved by developing and implementing specific initiatives such as process improvements in donor clinics, reduction in discretionary spending, consolidation of donor testing and a new human resources service delivery approach. CBS has committed to achieving cost efficiencies of $31.3 million in 2012-13 and $53.6 million in 2013-14.

In the summer of 2012, CBS decided that it needed a more formal approach to manage and measure its productivity and efficiency improvements. CBS hired a consulting firm to identify efficiency and productivity improvements. The August 2012 report identified annual savings opportunities totalling $68 to $93 million when proposed changes are fully implemented in 2015-16. Thirty-two projects were proposed to CBS’ EMT in June 2012. The EMT endorsed the overall direction of the PEP, including a portfolio of nine projects for Wave 1, project prioritization (i.e., key win projects and priority in-flight projects), and rough-cut sequencing and timing of the projects. CBS established a PEP management office in June 2012 to coordinate the program, prepare and monitor the plan, and ensure that consistent project methodologies are utilized.

CBS has not developed a comprehensive funding plan or change management plan
The PEP report suggests CBS will need to invest at least $60 million to achieve its initial target of $50 million in operational annual savings and between $76 and $96 million over the next four years to achieve the overall target of $68 to $93 million in annual savings. CBS plans to use the surplus generated by its subsidiary, CBSI, to fund its PEP investments. The review team was unable to assess this proposed funding approach since there was no PEP investment timeline available at the time of the review. It is recommended that CBS develop investment and funding plans to finance its overall PEP as soon as possible, to avoid any delays in the execution of the project. This funding plan should include a schedule of PEP funding requirements to ensure CBSI surplus funds will be available when required. The funding plan should also consider the need to fund subsequent waves of PEP.

The proposed PEP is ambitious. The program calls for changes in almost all aspects of Transfusable Products operations, as well as in corporate functions. At this time, the program has limited resources and visibility within the organization outside the EMT and project teams. It is recommended that CBS clearly identify PEP as a strategic priority and communicate it to the overall organization as soon as ready. All executives should publicly support the program, appropriate levels of resources should be deployed to support the program, and a formal and complete change management plan should be developed and implemented prior to beginning the deployment of specific projects.

The PEP management office should have a longer planning horizon and use a portfolio management approach
The current PEP planning horizon is focused on the current Corporate Plan (2013-14 to 2015-16) and is only focusing on a limited number of cost productivity and efficiency initiatives. Additional projects, delivering $15 million in annual operational savings, must be identified to deliver the current $50 million PEP objective. Furthermore, to achieve the total savings opportunity of $68 to $93 million, projects realizing an additional $33 to $58 million in overall savings must be delivered.

It is recommended that a PEP portfolio management approach be adopted, which includes managing and reporting on initiatives at different stages (e.g., idea, concept, assessment, execution, and benefit realization). This approach would provide a longer term view of the PEP and improve likelihood of success. In addition, the office should maintain management-level reporting of the PEP portfolio as a whole, especially the overall spending and savings expectations, to all executives, committees and the EMT. The PEP management office should ensure project teams prepare project planning documentation that describes KPIs and cost-benefit details.

Customer safety and supply
The ability to meet patient needs for safe blood and blood-related products are key guiding principles of CBS as set out in its MOU. Blood products are regulated under the Food and Drugs Act. As a result, CBS operates in a regulatory environment overseen by Health Canada and set largely through standard operating procedures, provincial regulations, and bio-pharmacological rules established by accreditation and standard-setting bodies.
Since CBS took full responsibility for operations of the blood system in September 1998, it has implemented and enforced several safety procedures and tests to make the blood supply safer in Canada. The World Health Organization has stated that Canada's blood system is among the safest in the world. Canadians have confidence in services provided by CBS. Canadians trust that CBS acts in the best interests of the public remains high, as more than 80% of respondents believe it is safe to receive blood and more than 90% believe it is safe to donate blood. CBS also maintains very positive customer satisfaction scores with the hospitals it serves, with 99%-100% of respondents being either totally satisfied or somewhat satisfied. CBS also performs very well on detailed demand-specific questions relating to their ability to meet requirements for blood and blood components and turnaround time for urgent orders of blood and blood components.

**Improved visibility into hospital demand, inventory requirements and utilization could reduce costs**

There is currently a lack of data outlining utilization and movement of products within and between hospitals. CBS forecasts system demand and required customer shipments based on historical information, estimating what its customers will order and planning its operations accordingly, using buffer inventory to compensate for variations between orders. Meanwhile, hospitals also carry their own inventory to fulfill demand over the order fulfillment lead time and to compensate for possible supply shortfalls from CBS. Increased order fulfillment lead times and compensation for variability in demand and supply result in increased (and potentially excessive) inventory requirements. The upstream impact is excess collections, processing and distribution activity by CBS, with the excess blood ultimately translating into outdates downstream and higher system-wide costs for the blood supply chain. It is in the short term (daily/weekly product demand by hospitals) that significant operational challenges materialize, which is reflected by the high number of routine and ASAP/STAT deliveries. Analysis confirmed anecdotal information that approximately 40% of all deliveries are conducted on an ASAP/STAT basis (which requires expedited freight) versus the industry norm of less than 10%. There is potential annual benefit to CBS and hospitals of approximately $5.3 million from improved inventory management across the system. It is recommended that CBS work with hospitals to develop standardized data collection and reporting mechanisms for hospital demand and utilization to enable better monitoring and management of system-wide outdates and costs.

In addition, given that hospitals have indicated an interest in partnering with CBS to address system inventory management issues, CBS and the Members should consider working together with major hospitals to develop a blueprint for improved collaboration across the extended blood supply chain. In its role, CBS could outline cost and benefit estimates as well as determine the technology considerations, reports and controls that would be required to sustain and monitor enhanced collaboration.

**CBS has procedures and processes in place to manage blood safety and report on its performance**

CBS has been successful at actively managing safety issues that require attention and is involved in studies that examine the impact of certain policies on the security of the blood supply. CBS has been consistent in its safety performance. Testing and quality control programs appear to be effective in reducing residual risk of several diseases over time.

To monitor safety, CBS reports on key safety indicators to its SSEC on a quarterly basis.

**Safety indicators focus primarily on the number of incidents and events rather than performance of safety efforts and outcomes/impacts to the system**

The review team noted that indicators reported to the SSEC focus primarily on the number of incidents and events rather than performance of safety efforts and outcomes/impacts to the system and that, other than reports to SSEC, the communication of safety indicators to other stakeholders is limited. In addition, there is a lack of descriptive indicators regarding severity, causes and measures taken to address the adverse events for all stakeholders. It is recommended that CBS improve disclosure of safety incidents by modifying safety indicators and the corresponding quarterly targets to reflect the cause and impact of the event, and potential impacts to the system.
**CBS uses multiple information systems for the management of its safety operations, which could be better integrated**

The review of the information systems indicates that both manual and automated interfacing processes exchange and consolidate information on safety from multiple systems within CBS, as well as systems of CBS' partners. As information systems become more sophisticated, there is an opportunity to streamline processes by reducing manual information exchange and interfacing data from various systems housed within CBS as well as with its partners. This may lead to reduced risks of errors in reporting during process handoffs and manual steps. Utilization of system interfaces improves data accessibility and reduces the effort and risk associated with manual processes and interfaces. CBS should investigate opportunities to integrate and interface information systems within the organization, as well as with those of its partners.

**CBS is playing a leadership role in the development of an international risk-based decision-making framework for blood safety**

CBS currently follows a multi-layer approach to safety starting with donor screening, followed by multiple tests performed on blood and blood products. This approach has resulted in a consistent reduction in residual risk of diseases. The current decision-making process for a new safety initiative or solution for an issue involves multiple CBS entities and external committees. Based on the documented process reviewed, it appears that the decision-making process for the management of safety initiatives implemented at CBS is robust, thorough and formalized.

**Strategic initiatives**

The objective of the strategic initiative review is to understand how effectively CBS is delivering and managing OTDT, Cord Blood and NFRP initiatives.

**National Facility Redevelopment Program**

The NFRP is a multi-year program to upgrade CBS' facility infrastructure to better meet current and future business requirements. New facilities would allow for standardization of processes and generate efficiencies. In March 2008, CBS received approval from the provincial and territorial governments for a $121 million investment to implement CBS' Functional Program at Phase I regions and sites. The funding request of $118 million for the NFRP Phase I was approved by the Members through a formal business case and established the funding baseline for the project. Subsequent to the approval of the business case for funding, location specific Project Plans were initiated to further detail costs, scope and schedule expectations. The funding approval in 2008 was based on an anticipated functional benefits and annual operating cost savings of $3.5 million per year at the NFRP Phase I maturity.

**Most NFRP Phase I deliverables have experienced a two-year delay relative to the funding plan and did not use a formal change control process**

Phase I of the NFRP is currently still in progress in both the Southern Ontario and the Maritimes regions. Four of the six initially planned deliverables were, or are forecasted to be, late by two years or more, and one deliverable, the 67 College upgrade, has an undefined deadline for completion as CBS is currently working on a plan for this facility. The review of project documentation indicated that plans and forecasts were modified and updated regularly without using an established change control process. As a result, it is difficult to understand the various changes in scope that took place and their impact on costs and timelines. The review also found a lack of program-level monitoring of project schedules relative to initial plans. It is recommended that CBS implement a formal change control process that would include a clear set of baseline expectations, as well as a formal change request and decision record.

**The documentation produced for the NFRP did not always follow CBS’ standard Project Governance Methodology and tools and templates**

The review team performed a high-level review of CBS' Project Governance Methodology, which indicated a substantially thorough process for planning and execution of projects. The methodology includes a structured review and approval process as well as standard tools and templates for planning and delivery. However, utilization and adherence to this methodology is at the discretion of the project's management team. It was also found that NFRP project plans varied by site in terms of quality, completeness and content. In general, project plans included descriptions of scope and deliverables, but did not include sufficient financial estimates and assumptions, schedule details, operational and financial performance metrics and/or description of operating and financial benefits to be achieved, and how they would be tracked and measured. CBS should require that all NFRP projects use the established Project Governance Methodology. Program and project benefits should be described in a manner such that they can be measured and evaluated post implementation to assess performance against desired outcomes.
CBS has not used a formal process to manage NFRP reserve or contingency funds; funds were simply allocated based on forecasted costs

It is recommended that CBS implement a formal process for budgeting and accessing contingency and reserve funds to ensure they are used judiciously and for the intended purpose. This process would promote planning and delivery in line with project requirements, rather than budget.

Project and program expenditures are not consistently reported relative to funding baseline

The review of NFRP project documentation indicated that the CBS has not been tracking and reporting project costs consistent with the business case. Reports do not compare the actual costs with a baseline; the only number tracked and reported on regularly since the beginning of the project is total funding available. As a result, it is difficult to monitor project performance and clearly appreciate the progress and changes made to the initial plans. It is also difficult to understand changes in costs and related scope changes, if applicable. Finally, this approach makes it almost impossible to determine how contingency funds have been utilized. It is recommended that financial reporting for projects be enhanced to present actual spending against a formal baseline and forecasted spend in addition to the baseline and actual spending. Such an approach facilitates an understanding of changes and adjustments to the plan that have an impact on the scope, schedule and overall budget.

Organ and Tissue Donation and Transplantation

To continue the development of a national OTDT system, the federal, provincial (except Québec) and territorial governments jointly funded a national OTDT mandate for CBS. Effective 1 April 2008, CBS assumed the mandate of CCDT for five years. The objectives of the OTDT mandate are to increase donation rates, improve access to transplantation and improve health outcomes for living donors and transplant recipients. The initiatives associated with the OTDT mandate include strategic plan development and implementation, support leading practices/public awareness and education, system performance and the development of three national patient registries. The provinces and territories, in a LOI, committed to provide CBS with $3.6 million annually for five years. In addition, Health Canada signed a contribution agreement to also provide CBS with $3.6 million annually for five years.

Most deliverables related to OTDT were late by one to two years

CBS developed a high level, five-year work plan (2008-13) at the beginning of the project, but basically managed the initiative on an annual basis. CBS had to manage its activities within the fixed funding amount. For the patient registries, there were several delays and changes in the implementation plan, when comparing the current status to the original plan. Project delays and supporting rationale were outlined in documentation for OTDT initiatives; however, project management approaches to manage potential delays are not evident. Reasons offered to explain delays in OTDT deliverables included: Change of strategy for registries’ development, time required for reviews of the registries’ Privacy Impact Assessment and finalization of Data Sharing Agreements, delays in development of data feeds with some provinces, time required to secure and develop expertise and requisite skills, and the task was more complex than anticipated.

It is recommended that CBS:

- Perform a thorough assessment of project requirements prior to assume new responsibilities to determine if it possesses the capabilities (e.g., knowledge, people, processes and technology) to fulfil the mandate
- Establish a project management function for key strategic initiatives. Once an initiative has received approval, details related to the execution of the project should be clearly documented in a project plan/charter, including roles, responsibilities, project goals, key strategic partnerships, deliverables, detailed budget, deadlines, and reporting cycles. A project manager should monitor scope, deliverables and schedule and report variances and reasons for variances
- Include, as part of its project management process, a formal assessment of opportunities to leverage third parties for projects involving the development of IT solutions
Expenditures for OTDT program and individual initiatives were not clearly and consistently reported

To ensure complete separation of the OTDT mandate from the blood program, CBS has separately tracked funding received from Health Canada and the provincial and territorial governments for OTDT, as well as separately tracking expenses across various documented sources. Timing of activities and corresponding spending changed significantly as a result of adjustments in implementation plans, system decisions and schedules. These changes caused CBS to regularly update its business plan and forecasts. As a result of changes in its plan, CBS received funding from federal, provincial and territorial governments ahead of need. Project documentation inconsistently outlines variances in project expenditures for OTDT. Furthermore, the documentation does not clearly quantify the factors for the expenditure variances in terms of impacts to the project. It is recommended that CBS track and report on its project costs in a way that is consistent with its project plan. Variances of actual expenditures from planned and forecasted expenditures should be clearly outlined and explained.

Cord Blood

In March 2011, the Members committed to invest $48 million for the creation of a national public umbilical cord blood bank. To help meet the total cost, CBS agreed to lead a $12.5 million community fundraising effort. CBS was asked to manage this project because of in-house expertise developed through its OneMatch Stem Cell and Marrow Network and the organization’s existing national presence and success as a trusted health care partner.

The initiative is progressing according to plan

There are three phases of this project: fully operational public cord blood bank in Ottawa by April 2013 (Phase I), operational cord blood banks in Toronto, Vancouver and Edmonton by mid-2014 (Phase II) and the $12.5 million fundraising initiative. At the time of the review, the project was proceeding as planned.

Other

Key performance indicators

To track and monitor its performance, CBS applies the Kaplan Norton Strategy Focused Organization methodology to align strategic objectives with relevant performance measures. In 2007, CBS was recognized as a leading practice organization for achieving “breakthrough performance results” through the implementation of the balanced scorecard framework. Business unit reports, corporate reports, and reports to the Board are each aligned to the corporate strategy map and related objectives. The review team found that internal reporting mechanisms at CBS consistently align with the organization’s corporate strategy and that CBS has established performance targets for its KPIs.

Many of the corporate KPIs have simple targets and performance ratings, which measure progress of a planned corporate initiative, rather than reporting on quantitative outputs and outcomes related to their implementation. Conversely, KPIs at the business unit level are predominantly based on quantifiable outputs of operational activity. The review team also observed performance indicators without clear targets or ratings, making it difficult to objectively assess performance on certain KPIs. The structure of reports to the Members is based on the objectives outlined in the corporate strategy, and reports on progress of all CBS strategic objectives. In reviewing the reports, the review team were unable to link operational metrics to associated performance objectives.

Steps that could further strengthen CBS’ performance management include:

► Ensuring corporate indicators are objective and quantifiable. A balance should be achieved between reporting on outputs and on the achievement of outcomes in relation to its corporate strategy and organizational mandate
► Reviewing its approach to public reporting and disclosure practices on performance related to its key mandates of safety, system integration, national self-sufficiency, supply management, and cost-effectiveness of the blood system with a goal of increasing transparency
► Incorporating more outcome-based and financial metrics
► Considering the development of value-based performance indicators to outline the value for money delivered to CBS’ funders and the public
Enterprise Risk Management

CBS began developing and implementing its ERM framework in 2007. In June 2012, CBS’ Internal Audit function delivered a report on its review of the implementation of ERM framework and program. The review team found that the level of maturity of the ERM framework and program is progressing relative to CBS’ ERM Change Agenda timeline. Furthermore, CBS has taken steps to reflect elements of leading practices in its ERM framework and program. The review team also found that the current state of the ERM program is relatively immature compared to the end state envisioned by the Change Agenda. The review recommended that CBS:

- Promote a risk-sensitive culture by cascading CBS’ ERM framework and principles throughout the organization and raising awareness and understanding of CBS’ Change Agenda
- Provide additional and/or more specific guidance to help drive this development of a risk-intelligent culture
- Implement an integrated risk and control framework

In its response to the ERM review, CBS management developed a series of action items and an implementation plan to address most of the recommendations from the review. The review team analyzed the proposed implementation plan and identified the following additional improvements. CBS should:

- Create a mechanism that allows its employees to provide feedback on CBS’ enterprise risk management program and enablers
- Develop guidance to support the consistent and efficient integration of ERM principles into existing activities, as well as develop standardized risk management procedural guidelines to guide employees at all levels on how to integrate risk management into their day-to-day activities
- Implement the ERM review’s recommendation that it leverage risk tolerance limits and cost/benefit analyses to support risk management decisions
- Develop training on ERM for its Board Members

Internal Audit

CBS’ Internal Audit function is one of many assurance providers for the organization. Federal regulations require routine Health Canada inspections of CBS facilities and operations. Legislative or accreditation rules also necessitate that CBS participate in third party audits. Quality and supplier audits round out the assurance space and include a wide-range of compliance-based assessments. Internal Audit complements these assurance-related engagements (inspections and audits) performed through CBS’ quality assurance program through its audit responsibility for all corporate processes. The Internal Audit function within CBS functionally reports to the Board of Directors and administratively to the CEO, consistent with IIA standards.

**Internal Audit has historically been compliance-oriented and could play a greater role in the future by increasing its scope to strategic value audits**

While the Internal Audit function at CBS has historically been compliance-oriented, it has recently conducted engagements that have the potential to generate strategic value for the organization. It is recommended that CBS’ Internal Audit function continue to drive strategic value by further broadening the scope of the services that it offers and the nature of the engagements that it conducts so that its focus is not strictly on assessing compliance, but value-for-money, performance, efficiency of operations, etc.

**Internal Audit has relied primarily on internal input when preparing its annual audit plans and would benefit by broadening the scope of the consultations**

Despite the wide range of risk exposures facing the organization, the review team found that CBS’ Internal Audit function does not conduct extensive consultations with external stakeholders when developing its risk-based audit plan. Internal Audit consults with CBS’ EMT, as well as with the Chair and Vice-Chair of the Board of Directors and the Chairs of the Finance and Audit Committee, Talent Management Committee, SSEC, and Governance Committee during the risk assessment process. Internal Audit also occasionally consults with the Co-Chairs of the National Liaison Committee. However, it does not routinely consult with the provinces and territories. It is recommended that CBS’ Internal Audit function should consult with the PT representatives to capture a more fulsome view of the risk environment facing the organization and develop a more comprehensive audit plan.

A summary of all recommendations is included in Appendix A.
1.1 Canadian Blood Services

CBS is an independent, not-for-profit corporation with the mission of operating Canada’s blood supply in a manner that gains the trust, commitment and confidence of all Canadians by providing a safe, secure, cost-effective, affordable and accessible supply of quality blood, blood products and their alternatives. CBS succeeded the Canadian Red Cross Society and the Canadian Blood Agency after the Krever Commission’s report on the contaminated blood scandal called for the creation of a new blood services organization to restore public trust in the safety and quality of Canada’s blood supply. Participating provincial and territorial health ministers (referred to as “the Members”) constitute CBS’ corporate membership and are responsible for appointing Board members and funding the organization’s operational budget. The federal government also provides financial contributions to CBS for R&D activities related to blood services and maintains regulatory oversight over the national blood system by virtue of the Food and Drugs Act. Blood and blood products are classified as biological drugs in the Act.

In recent years, CBS has been given increased responsibilities reaching beyond the provision of blood and blood products. It now oversees the implementation of Canada’s national cord blood bank and has been responsible for the Unrelated Bone Marrow Donor Registry since 1998. As of 2008, it has also assumed some responsibilities related to organ and tissue donation and transplantation activities and receives funding from the federal, provincial and territorial governments for this mandate.

A MOU between the federal government, provincial and territorial health ministries, with the exception of Québec, describes the roles and responsibilities of the various parties and provides the overarching governance structure and organizing principles that support Canada’s blood system. The MOU reiterates the 11 key principles recommended by the Krever Commission:

- The safety of the blood supply is paramount - blood, components and plasma fractions
- A fully integrated approach is essential
- Accountabilities must be clear
- The renewed blood supply system must be transparent
- Voluntary donations should be maintained and protected
- National self-sufficiency in blood and plasma collection should be encouraged
- Adequacy and security of supply of all needed blood, components and plasma fractions for Canadians should be encouraged
- The gratuity of all blood, components and plasma fractions to recipients within the insured health services of Canada should be maintained
- A cost-effective and cost-efficient blood supply program for Canadians should be encouraged
- A national blood supply program should be maintained

The MOU also indicates that CBS is not an agent of any government and must be able to exercise complete management discretion over all operational blood system decisions.

Since its creation in 1998, CBS has successfully restored and maintained the confidence of Canadians in the blood system. Surveys conducted by CBS in 2011-12 indicate that a majority of Canadians (over 8 out of 10) believe it is safe to receive blood products and to donate blood (over 9 out of 10). Hospitals are also satisfied with services received from CBS with satisfaction a level over 90% in 2011-12. Although CBS has focussed on the quality of blood products over the last 14 years, it also made efforts to manage its activities in a cost-effective and cost-efficient manner. Since 2008-09, it has increased its focus on efficiencies. It created a formal productivity and efficiency program in 2012-13 with the view to improve its financial performance while maintaining the quality and safety of blood products, stem cell products and OTDT services.

Given its success in delivering safe blood products across Canada (with the exception of Québec), the federal, provincial and territorial governments asked CBS to assume additional responsibilities in recent years. CBS is now implementing a National Cord Blood bank and has developed and managed various organ and human tissues registries. It has also developed a plan for an integrated OTDT program.

In 2011-12, CBS achieved the following results:

- Collected over one million units of blood
- Recruited over 165,000 new and reinstated blood donors
- Registered over 42,000 potential donors with OneMatch Stem Cell and Marrow Network
- Facilitated 57 kidney transplants using its registry

1.2 Engagement overview

1.2.1 Purpose and objectives

The last entity-wide performance review of CBS was conducted in 2002. The review concluded with a final consultation report issued in October 2002. CBS responded with an action plan and presented a final report on the implementation of the recommendations to Members in May 2004. More than a decade has passed since the last review and during that period, CBS has been asked by the federal government and the Members to undertake activities in areas such as OTDT and Cord Blood. The Members and CBS leadership agreed that a fulsome review covering CBS’ current operations and performance would be timely, relevant and valuable as the organization deepens its role as a trusted partner in Canadian healthcare.

CBS and its Members have contracted Ernst & Young to conduct a performance review of CBS’ governance, financial, and fiscal matters, quality and safety, supply chain, and strategic initiatives. The review also analyzes CBS’ performance measurement practices and enterprise risk management.

The objectives of the engagement, as described in the RFP, were to:

1. Assess the governance model of CBS in relation to its founding documents to ensure the current governance structure, decision making processes, accountabilities and funding models are relevant and functioning as intended
2. Evaluate financial and fiscal matters including:
   - Review scope and definition of core operations as identified in the MOU and LOI
   - Assessment of costs of current non-core functions and services and relevance of the functions of the business lines and the corporation
   - Assessment of current financial conditions to ensure public funds are used economically, efficiently and effectively
   - Assessment of financial operations and quality indicators
   - Assessment of risk financing (e.g., capacity to meet the objectives of the Krever inquiry and MOU in terms of emerging threats)
   - Review of business practices related to procurement activities, use of consultants, travel expenses and other costs
   - Assessment of corporate policies and practices with respect to the acquisition, protection and use of all its resources involving personnel, goods and services and assets
   - Review of the opportunities for sustainable efficiencies that would result in cost savings and include the necessary investments to achieve those savings
   - Review of current and future revenue and expenditures, considering cost drivers, CBS' current efficiencies journey and future opportunities for further sustainable efficiencies

3. Assess CBS’ ability to meet customer safety and supply needs across all business lines

4. Assess strategic initiatives (NFRP Phase 1, Cord Blood, and OTDT) in relation to program structure, costs, personnel, infrastructure, oversight, third party involvement, reporting and potential improvements

5. Perform other activities:
   - Conduct comparative performance analysis
   - Review performance indicators
   - Review risk management approach, including the ERM framework

1.2.2 Scope

The RFP issued for this review described the scope for this project. Ernst & Young further clarified specific expectations during a series of interviews and consultations with provincial and territorial government representatives and Steering Committee Members. CBS activities covered by the review include the following:

- All governance aspects: MOU, by-laws, Letters of Intent and other governance documents
- Four main business lines: Transfusable Products, PPP, Diagnostic Services and Stem Cells
- All corporate functions currently funded under Transfusable Products, such as Talent Management, Information Technology, Public Affairs, Finance, Supply Management, General Counsel, Operational Support, Corporate Strategy and QSS, RA & Quality Assurance, and MSRA
- Three strategic initiatives: NFRP Phase 1, OTDT and Cord Blood
- Financial period: Actual results from 1 April 2008 to 31 March 2012; budget, forecast and actual (as applicable) for the fiscal year ending 31 March 2013; and plans for fiscal years 2013-2016 with an emphasis on 2013

The following activities were beyond the scope of the engagement:

- Future phases of the NFRP
- CBS’ captive insurance corporations, CBSI and CBSE
- R&D activities
- Review of blood product-related activities in hospitals
- Detailed review of progress against recommendations from the previous performance report (2002)
- Development and update of the MOU
- Development of a detailed implementation plan of Ernst & Young recommendations
1.2.3 Approach and methodology

Team structure
The work to be conducted for this review was organized into five work streams: governance structure and decision making, financial performance, customer needs and safety, strategic initiatives, and other elements (ERM and performance measurement strategies chief among them). This approach allowed the team to break the work by area of knowledge and assign experienced advisors for each work stream. The team was managed by a partner and a project director who also had access to Ernst & Young's global resources with experience with blood systems. In addition, a Medical and Industry Advisory Panel comprised of five members advised the team throughout the review. Panel members were mainly doctors with experience in hematology, patient care and safety and performance management. Two panel members occupy leadership positions at a blood services provider in another international jurisdiction. Figure 1.1 above provides an overview of the team structure.

Overall approach
Ernst & Young's overall approach included five steps grouping distinctive activities: Detailed Planning, Preliminary Assessment, Lines of Inquiry, Detailed Assessment and Reporting. Figure 1.2 below summarizes these five steps and related key activities.

Planning phase Interviews: Seventeen interviews were conducted with representatives from provincial and territorial governments, Working Committee members, and Steering Committee members.

Medical and Industry Panel: Three meetings took place via conference call. The first discussion was held during the detailed planning phase for the purpose of providing Ernst & Young with views on CBS and the blood system to assist with the detailed planning efforts. The second meeting focussed on lines of inquiry and provided Ernst & Young with the views of the Panel members on the topics, identified or those that were not identified but considered important. Finally, during the third meeting, Panel members provided their views on the observations and recommendations to be presented in the draft report.
**Comparative analysis:** Taking into consideration comments received during the planning phase interviews and the first Medical and Industry Panel meeting, Ernst & Young identified three comparable blood services organizations from other jurisdictions to be included in the comparative analysis. The approach for the comparative analysis consisted of selecting a small number of relevant blood services organizations, but performing a more detailed analysis than had previously been undertaken, including a discussion with key executives in each organization. A request for specific data was sent to the organizations and Ernst & Young used this data to calculate various operational and performance metrics. Ernst & Young also performed specific comparative analyses using information publicly available from the same blood services organizations and from a benchmarking organization. For the two organizations Ernst & Young selected as comparators, a significant amount of information was available in reports from the ABO, an international body of which CBS is a member.

**Interviews with CBS personnel:** Ernst & Young conducted a number of interviews with employees and executives of CBS to obtain information on CBS’ operations, discuss specific issues, and review documents and information.

**Document review:** Ernst & Young obtained from CBS and public sources hundreds of documents, reports and notes for the conduct of this review.

**Analyses:** Ernst & Young performed numerous analyses throughout this engagement and these results, in support of observations and recommendations, are presented in this report.

### 1.2.4 Limitations
As previously stated, the purpose of this review was to assess the performance of CBS’ governance, financial and fiscal matters, quality and safety, supply chain, and strategic initiatives, as well as to analyze CBS’ performance measurement practices and ERM.

This review was not a financial audit of CBS, nor was it a safety inspection or a regulatory audit. It was not a detailed examination of all operational and management practices, processes and systems in place at CBS. Furthermore, this review was not intended to identify and assess all risks facing CBS. Finally, Ernst & Young did not express an opinion on the quality of the blood products and the blood system or the quality of CBS’ operations and activities.

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**Figure 1.2 – Project approach summary**

- **November**
  - Interviews with project working Committee
  - Interviews with Steering Committee
  - Kick-off meeting with CBS management
  - Review of various key documents
  - Validation of requirements, confirmation of scope and development of a detailed plan

- **Mid-November and December**
  - Review of key information and document: governance, financial, processes, etc.
  - Interviews with key CBS personnel
  - Site visits
  - Development of key analyses
  - Identification of key metrics for comparative analysis
  - Contact initiation with other blood services selected for the comparative analysis

- **2-15 January**
  - Identification of potential issues and opportunities and development of lines of inquiry
  - Review of lines of inquiry with project Working Committee
  - Review of lines of inquiry with CBS management
  - Discuss lines of inquiry with Medical and Industry Panel
  - Adjustments to the lines of inquiry based on comments

- **16 January 50 15 February**
  - Additional review of documentation and interviews with CBS personnel
  - Performance of various detailed analyses
  - Request for data and completion of the comparative analysis
  - Identification of observations and recommendations
  - Review of observations and recommendations with the Working Committee and CBS

- **Draft - 25 February Final - 21 March**
  - Preparation of the draft report
  - Review of the draft report with project Working Committee
  - Review of the draft report with project Steering Committee
  - Preparation of the final report
2.1 Organization

CBS coordinates and manages the supply of blood and blood products in all provinces and territories with the exception of Québec. It was founded in 1998 as an independent, not-for-profit entity, incorporated under Part II of the Canadian Corporations Act. Blood products are regulated under The Food and Drugs Act. As a result, CBS operates in a regulatory environment overseen by Health Canada and set largely through standard operating procedures, provincial regulations, and biopharmacological rules established by accreditation and standard-setting bodies.

In pursuit of its mission, CBS employs approximately 3,800 FTEs across its four business lines:

- Transfusable Products (3,509 FTEs) is responsible for the manufacturing and distribution of blood products such as whole blood for transfusion, red blood cells, platelets and plasma for transfusion. Activities include all aspects of the supply chain: donor recruitment, testing, collections, production and distribution, in addition to the corporate costs of the organization (e.g., HR, IT, Finance)
- PPP (26 FTEs) acquires and distributes plasma protein products, obtained through plasma fractionation and commercial purchases
- Diagnostic Services (137 FTEs) provides testing services (e.g., prenatal testing, therapeutic apheresis and compatibility testing) in five testing locations
- Stem Cells (85 FTEs) consists of the OneMatch Stem Cell and Marrow Network, as well as a new initiative to develop an umbilical cord blood bank

Each CBS business line is further described in Section 2.2.

CBS’ operating budget in 2011-12 was almost $1 billion, predominantly funded by grants and contributions from its Members. The Transfusable Products and PPP business lines made up the majority (95%) of CBS expenses. A financial overview of CBS is provided in Section 2.4.
2.1.1 Governance

CBS' governance structure is multi-jurisdictional and multi-layered. The MOU, which was signed by federal, provincial and territorial authorities in 1997 but to which CBS is not a party, remains the foundational document for CBS and continues to define the entity’s core operating functions and guiding principles. The MOU lays out a two-tiered governance structure. The Members comprise CBS’ corporate membership and the first layer of governance. Unlike its predecessor, the Canadian Red Cross Society, CBS possesses financial decision-making autonomy over operational funding received from participating Members. However, the Members are responsible for approving CBS’ annual budget.

Letters Patent and the corporation’s bylaws define the second layer of the organization’s governance. At various points in time, CBS has also signed LOIs and contribution agreements with the federal, provincial and territorial governments for specific mandates of funding.

The PTBLC is comprised of representatives from the participating provincial and territorial governments; these representatives are responsible for advising their respective ministers and deputy ministers of health on matters related to CBS and the national blood system. The PTBLC liaises with CBS to facilitate the collective governance approach required for the system.

A Board of Directors oversees the strategic direction and management of CBS’ activities and finances. The Members are responsible for electing individuals to the Board of Directors. Reporting to the Board of Directors is the National Liaison Committee, which represents interested parties such as consumers, hospitals, and associations.

CBS’ EMT includes the Chief Executive Officer (also a non-voting ex-officio Board member), Chief Operating Officer, and six Vice Presidents. Business performance councils support the EMT and are aligned with CBS’ four business lines. These councils oversee business line objectives and promote congruence between business objectives and corporate strategy.

CBS is supported by several advisory committees. The seven Regional Liaison Committees are responsible for providing CBS with the perspective of Canadians on matters, issues and opinions related to CBS’ activities. The Scientific and Research Advisory Committee is responsible for providing advice on safety issues related to the blood system.

2.2 Business lines

CBS has organized its activities around four main operating business lines: Transfusable Products, PPP, Diagnostic Services, and Stem Cells. Business lines included in the scope of this review are discussed in the following sections.

2.2.1 Transfusable Products

As stated in the MOU, CBS is responsible for managing all aspects of the blood system, which is largely accomplished through the Transfusable Products business line. Donor recruitment, testing and universal donor screening, plasma collection, blood product distribution, and supply management of blood product demand from hospitals and clinics across Canada are the primary functions covered under this business line. In order to accomplish this, CBS operates 42 collection sites, 3 bloodmobiles, 10 manufacturing sites, and 2 blood testing facilities. In 2011-12, CBS held 22,000 donor clinics, collected over one million units of whole blood from 410,000 donors, and supplied over 460 hospitals and health facilities in 12 provinces and territories with whole blood, plasma, and platelets products. CBS’ largest business line by total expenses in 2011-12 at approximately $475 million, Transfusable Products accounted for 48% of CBS’ total expenses (89% when excluding expenses related to plasma protein products).

To fulfill its mandate of providing safe blood products to meet the needs of Canadians, CBS’ supply chain for Transfusable Products starts with the recruitment of donors and ends when blood products are delivered to hospitals. It includes five major categories of operating activities as shown in Figure 2.1.

The Transfusable Products business line is supported by 2,300 FTEs along its supply chain. These employees include donor service representatives, nurses and phlebotomists, laboratory technologists and assistants, and production and distribution staff, among many others. Collectively, these employees:

► Recruit and retain donors
► Book appointments for donation
► Collect whole blood, apheresis plasma and apheresis platelets from donors
► Test quality and safety of donations
► Process whole blood collections into components
► Label and package transfusable products for distribution

Complicating the supply chain is the time-sensitive nature of each of the processes. From the point of donation, the shelf-life of the products is:

- Platelets: Five days at 22 degrees celsius
- Red blood cells: 42 days at four degrees celsius
- Frozen plasma products: One year at a temperature lower than -18 degrees celsius

Thus, a reliable and efficient supply chain with strong enabling services is key to allowing CBS to fulfill its mandate. Transfusable Products supply chain activities are supported by logistics and support services teams (totalling over 1,100 FTEs). Together, these teams:

- Manage blood product inventory and delivery to hospitals, ensuring that the right product is delivered at the right time to the right place
- Manage facilities across the country that range in size from small collection sites to larger manufacturing and testing labs
- Deliver internal services, including HR, Finance and IT, across the organization

It is important to note that support functions are part of the Transfusable business line, but they also provide services to all other lines of business and strategic initiatives.

2.2.2 Plasma Protein Products

CBS’ second largest business line is PPP with just over $460 million in revenue and related costs. This business line consists of procurement and distribution of approximately 35 different products to Canadian healthcare providers. There are three ways CBS obtains plasma protein products:

- CBS sends the plasma collected from its donors to one of its fractionators that transforms it into specific products. CBS collects roughly 202,000 litres of whole blood-derived and apheresis plasma per year for fractionation purposes
- CBS purchases recovered plasma from an American blood services organization and has it fractionated
- CBS purchases plasma protein products already manufactured

Fractionation is a complex process and there are a limited number of companies world-wide that possess the capacity to manufacture plasma protein products. CBS currently uses two fractionators to meet the needs of Canadian health care institutions.

For the PPP business line, CBS receives funding from each Member based on the units of each product shipped to health institutions in their province or territory. CBS does not generate profit from the sale of plasma protein products since it is reimbursed for its costs.
Plasma protein products are expensive products and CBS must maintain an inventory to meet demands from health institutions. The inventory at the end of October 2012 amounted to approximately $88 million.

2.2.3 Diagnostic Services
Diagnostic Services, performed in five CBS regional laboratories and in other clinical settings, include blood-related serological, immunological, and prenatal testing. Core services under this business line are performed mainly in Canada’s western provinces. Although it is primarily focused on red cell serology testing, the Diagnostic Services business line also conducts autologous collections. Services provided under this business line account for less than 2% of CBS’ total revenue and expenses at $17 million.

2.2.4 Stem Cells
Activities performed under the Stem Cells business line amount to a small fraction of CBS’ overall operations, with a budget of only $29 million in 2011-12, representing 3% of total revenue and expenses. The OneMatch Stem Cell and Marrow Network, genetic matching through HLA typing, and efforts to bolster CBS’ stem cell donor network all fall under this business line. Under the auspices of this business line, CBS also manages the supply and distribution of stem cell units derived from bone marrow, peripheral blood and umbilical cord blood to health care providers across Canada. With 336,887 Canadians registered with OneMatch as of December 2012, the registry is the ninth largest of its kind in the world.

2.3 Strategic initiatives

2.3.1 Organ and tissue donation and transplantation
Federal, provincial, and territorial government representatives approached CBS management in 2007 to seek its interest in addressing performance lags relative to other international delivery models. Low donation rates, inadequate supply of organs to meet demand, unequal access across regions, OTDT program fragmentation and a heavy (more than 80%) reliance on imports of human tissue products were some of the key challenges facing Canadian service delivery. At the time of this review, OTDT existed at CBS has two major initiatives (Organs and Tissues) specifically funded by the federal, provincial and territorial governments under two separate agreements.

The mandate issued by the federal government relates to the development of a national strategic plan for OTDT, supporting the development and dissemination of leading practices in OTDT, increasing public awareness and contributing to system performance. The CCDT transferred responsibilities to CBS in 2008 as part of the agreement with the federal government. For their part, provincial and territorial governments (except Québec) provided funding to CBS to support the national system work outlined above and also asked CBS to develop and implement three patient registries to facilitate organ donation and transplantation. Québec has signed a separate agreement with CBS for participation in the three patient registries. The funding from each level of government was $3.6 million per year starting in 2008-09 and ending in 2012-13. However, the federal and the provincial and territorial governments (except Québec) recently agreed to extend their respective funding for an additional year while they decide on a long term approach to OTDT.

2.3.2 Cord blood bank
On 14 March 2011, the Members mandated CBS to establish Canada’s first national public cord blood bank. Part of CBS’ OneMatch Stem Cell and Marrow Network, Phase 1 of the national cord blood bank will establish cord blood collections in an Ottawa hospital, as well as complete renovations in CBS’ Ottawa stem cell manufacturing site to allow for one of two cord blood manufacturing and storage locations. Phase 2 will establish cord blood collections in hospitals in Toronto, Edmonton and Vancouver, as well as renovate CBS’ Edmonton stem cell manufacturing site for the second manufacturing and storage location. Through this initiative, CBS aims to generate 20,000 cord blood units by 31 March 2019.

2.3.3 National Facility Redevelopment Program
The NFRP is a multi-year project to upgrade CBS facility infrastructure to better meet current and future business requirements. The project is funded specifically by CBS members and has three main stated objectives:
- Replace or upgrade inadequate existing facilities to consistently operate in an environment which meets Good Manufacturing Practices
- Reduce operational risks pertaining to insufficient and inappropriate space
- Optimize business strategies to become more cost effective and efficient

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The Members approved funding of $118 million for NFRP Phase I in March 2008. This phase consists in the implementation of the prototype facility design for Collection, Component Production, and Donor Testing facilities in the Southern Ontario and Maritimes regions.

2.4 Financial overview

As discussed above, CBS organizes its operating activities across four business lines:

- Transfusable Products
- PPP
- Diagnostic Services
- Stem Cells

In addition, CBS has incurred expenses related to the OTDT initiative. Each business line receives dedicated funding from Members, which makes up the majority of total revenue. Federal contributions and deferred contributions also contribute to total business line revenue. Revenues across each business line have trended (and are projected to trend) in unique directions, in accordance with CBS' strategic direction.

Expenses across CBS' business lines have undergone various fluctuations in previous years. These fluctuations are projected to continue. CBS is undertaking measures to decrease expenses across several of its business lines, while seeking to expand service offerings in other areas. Overall expense trends at an aggregate level are discussed below. A detailed financial review of performance is discussed in Section 4 for each business line.

2.4.1 Historical trend

At an aggregate level, CBS' revenues and expenses have grown moderately over the four year review period, with values peaking in 2009-10. The CAGR of 2.5% in expenses is only slightly greater than the average inflationary growth rate during this time period of 1.9%, 2% for health care.

An overview of CBS' historical revenue and expenses across its four business lines is provided in Table 2.1 below. Note that this table excludes results of the NFRP, as this program is supported under separate funding, and excluded from CBS' operational business lines in the 2013-16 Corporate Plan.

<table>
<thead>
<tr>
<th>$ millions</th>
<th>08-09</th>
<th>09-10</th>
<th>10-11</th>
<th>11-12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>919.9</td>
<td>997.8</td>
<td>977.1</td>
<td>995.8</td>
<td>2.7%</td>
</tr>
<tr>
<td>Expenses</td>
<td>917.7</td>
<td>996.4</td>
<td>972.3</td>
<td>989.1</td>
<td>2.5%</td>
</tr>
<tr>
<td>Transfusable Products&lt;sup&gt;6&lt;/sup&gt;</td>
<td>453.6</td>
<td>463.4</td>
<td>461.4</td>
<td>473.8</td>
<td>1.5%</td>
</tr>
<tr>
<td>PPP</td>
<td>426.5</td>
<td>489.1</td>
<td>463.4</td>
<td>462.4</td>
<td>2.7%</td>
</tr>
<tr>
<td>Diagnostic Services</td>
<td>15.0</td>
<td>16.8</td>
<td>17.7</td>
<td>16.6</td>
<td>3.4%</td>
</tr>
<tr>
<td>Stem Cells</td>
<td>18.0</td>
<td>19.7</td>
<td>21.0</td>
<td>28.6</td>
<td>16.6%</td>
</tr>
</tbody>
</table>

<sup>6</sup> Excludes results of NFRP and consolidation entries.
Increasing expenses across all CBS business lines contributed to CBS’ expense growth to varying extents over the historical review period:

- The Transfusable Products business line accounted for 47-49% of total expenses over the review period. Within this business line, expenses grew at a CAGR of 1.5%, well below the rate of inflation.
- PPP made up 47-49% of total expenses. Expenses within this business line grew at a CAGR of 2.7%.
- Expenses in the Diagnostic Services business line grew slightly above inflation (CAGR of 3.4%) during the review period, but had minimal influence on CBS’ overall expense trends, as the business line makes up about 2% of total costs.
- Expenses for Stem Cells and OTDT represented only 3.6% of CBS’ total expenses in 2011-12. Increase in Stem Cells is mainly due to the Cord Blood strategic initiative, the development and implementation of a new information system and the increase in activities. It is worth noting that the expenses associated with increased activities are mostly related to payments to international registries for stem cells and cord blood products that are charged back to hospitals (flow though expenses).

Total revenue growth over this period exceeded total expense growth, resulting in increases in CBS’ net asset and cash balances.

CBS currently employs approximately 3,800 FTEs across its four business lines and its strategic initiatives. As illustrated in the table below, the total number of FTEs supporting CBS decreased at a CAGR of (0.8%) over the four year review period. The majority (92%) of total FTEs are reported under the Transfusable Products business line, where FTEs decreased by 4.6% over the review period. FTEs supporting the Stem Cells business line and the OTDT strategic initiative grew over the review period due to the projects previously mentioned and the activities related to OTDT registries, respectively.

2.4.2 Forecasts

At an aggregate level, CBS’ expenses are projected to increase gradually over the next several years. To demonstrate the long-term trend, a summary of CBS’ total historical and projected expenses is provided in Figure 2.2 below.

As noted in Section 4.10, the budget submitted in the Corporate Plan for approval is for the 2013-14 fiscal year. At this time, CBS also presents figures for the following two years, but these are notional values only, which get reviewed and refined in the next corporate planning cycle. It should be noted that CBS’ 2013-16 Corporate Plan estimates do not incorporate the long-term projected results of its PEP as CBS is in the process of scoping, sizing and prioritizing specific projects as discussed in Section 8. They also do not reflect the impacts of the recent prices negotiated for plasma protein products discussed later in the report. The figures presented below for 2012-13 are based on the forecasts provided at the end of Q2. A further discussion of 2012-13 forecasts is in Section 4.

Table 2.2 - Summary of total FTEs by business line over the four-year review period

<table>
<thead>
<tr>
<th>FTEs</th>
<th>08-09</th>
<th>09-10</th>
<th>10-11</th>
<th>11-12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfusable Products</td>
<td>3,680.0</td>
<td>3,695.5</td>
<td>3,604.6</td>
<td>3,509.3</td>
<td>1.6%</td>
</tr>
<tr>
<td>PPP</td>
<td>25.6</td>
<td>26.9</td>
<td>25.3</td>
<td>26.1</td>
<td>0.6%</td>
</tr>
<tr>
<td>Diagnostic Services</td>
<td>131.0</td>
<td>133.8</td>
<td>142.0</td>
<td>136.8</td>
<td>1.5%</td>
</tr>
<tr>
<td>Stem Cells</td>
<td>47.3</td>
<td>50.2</td>
<td>61.4</td>
<td>84.5</td>
<td>21.3%</td>
</tr>
<tr>
<td>OTDT (strategic initiative)</td>
<td>47.3</td>
<td>50.2</td>
<td>61.4</td>
<td>84.5</td>
<td>21.3%</td>
</tr>
<tr>
<td>Total(^{7})</td>
<td>3,899.0</td>
<td>3,938.8</td>
<td>3,885.3</td>
<td>3,809.0</td>
<td>(0.8%)</td>
</tr>
</tbody>
</table>

\(^{7}\) Excludes FTEs supporting NFRP
Total expenses are projected to grow more rapidly in the forecasted period compared to the historical period. Total expenses increased with a CAGR of 2.5% over the four year historical review period. Significant expense increases were reported in 2008-09 (4.8%) and 2009-10 (8.6%), followed by a decrease in 2010-11 (2.4%) and modest growth in 2011-12 (1.7%). Total CBS expenses were projected to increase with a CAGR of 3.3% from 2012-13 through 2015-16. On a year-over-year basis, expenses were projected to increase by 3.7% in 2012-13, followed by near stabilization (0.2% growth) in 2013-14, and subsequent increases of 4.8% and 5.0% in 2014-15 and 2015-16 respectively.

Historical and projected expense growth was driven primarily by increased demand for plasma protein products and assumptions around increasing material costs in the PPP business line. While Transfusable Products costs are projected to decrease slightly in 2013-14, moderate growth of Transfusable Product expenses in subsequent years, as well as increasing Stem Cells expenses, further contribute to the projected total expense growth.

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Excludes expenses associated with the NFRP.
3.1 Objective

The objective of the review of CBS’ national system structure, decision-making and funding was to assess if governance, accountabilities, decision-making processes and funding models are functioning as intended, and to identify opportunities for improvement. It included an assessment of CBS’ performance against the roles, functions and responsibilities defined in the MOU discussed below, and examined accountabilities, decision-making processes and funding from the perspective of both CBS and the Members as funders.

3.2 Scope

The scope of the review included an examination of CBS’ governance structure, including the:

- MOU, by-laws, and all related documents that serve as the basis upon which CBS’ governance structure has been built
- Board of Directors and its committee structure
- Relationships and communications with Members, including Ministers of Health, Deputy Ministers of Health and the PTBLC

3.3 Context

CBS’ governance structure is multi-jurisdictional and multi-layered.

Figure 3.1 - CBS’ governance structure
Key aspects of CBS’ governance structure include:

- The MOU signed in 1997 is the agreement between the federal and the provincial and territorial governments (except Québec; the provincial and territorial governments are referred to as Members or funding Members) that confirms Member understanding and commitment, as well as that of the federal Minister of Health. The MOU describes roles and responsibilities in a renewed national blood system, including their future relationships with CBS and its function and structure.

- An independent Board of Directors, elected by the Members for a term of four years, represents stakeholder interests. The Board is comprised of 13 Directors:
  - The Chair
  - Four regional representatives, one representing each of the following regions:
    - Ontario
    - Atlantic Canada: New-Brunswick, Prince Edward Island, Nova-Scotia and Newfoundland and Labrador
    - Alberta, Saskatchewan, Manitoba, Northwest Territories and Nunavut
    - British Columbia and Yukon
  - Two consumer interest representatives
  - A total of six representatives from the medical, scientific, technical, business and public health spaces
  - Expert advisory committees that support the Board of Directors:
    - National Liaison Committee
    - Finance and Audit Committee
    - Safety, Science and Ethics Committee
    - Governance Committee
    - Talent Management Committee
  - A PTBLC through which CBS maintains regular contact with the provinces and territories

3.4 Observations and recommendations

3.4.1 Contractual framework

A contractual agreement between CBS and the Members is required to clarify responsibilities and expectations. The provincial and territorial Health Ministers are responsible and accountable for the national blood supply program. The roles and responsibilities of the provincial and territorial governments, as defined in the MOU, include:

- Funding
- Establishing broad health policy objectives
- Serving as Members of CBS
- Ensuring the overall integrity of the blood system
- Exercising their ongoing powers and responsibilities as Ministers under existing health legislation

The mandate of CBS is “to be responsible for a national blood supply system which assures access to a safe, secure and affordable supply of blood, blood products and their alternatives, and supports their appropriate use.” CBS owns and operates the blood supply system, and “must be able to exercise complete management discretion over all operational blood system decisions”. Its responsibilities, as defined in the MOU, include:

- Recruiting blood donors and managing blood donation
- Collecting whole blood, plasma and platelets
- Testing and laboratory work
- Processing, storage, distribution and inventory management
- Developing and implementing quality assurance / quality control standards
- Coordinating a national program in R&D for blood, blood products and transfusion medicine
- Establishing public and professional educational programs directed at appropriate utilization of blood and blood products
- Surveillance and monitoring
- Health risk management

Underpinning these roles, responsibilities and functions are the principles upon which the common policy objective for the national blood system is to be based, which are listed in Section 1.1.
The MOU only offers a high-level overview of the roles and responsibilities of both CBS and the Members. There is currently no formal agreement between the Members and CBS outlining their respective roles and responsibilities; the MOU is an agreement between the federal government and the Members only. In the absence of a clear delineation of who is responsible for what, the relationship between the Members and CBS has experienced some strain. The review team observed very differing points of view on the appropriate nature and level of engagement of the Members. There is no description of decisions that fall under the responsibilities of CBS, those that are Members’ responsibilities and decisions that should be taken jointly by the parties. For example, there is no clear understanding of who should make decisions regarding the level of self-sufficiency for plasma products. CBS believe it is responsible to make this operational decision, but some provinces believe this is a policy decision that Members should make.

PT representatives, CBS personnel, and members of CBS’ Board of Directors that were interviewed during the course of this review noted that decisions on major items requiring provincial and territorial input are becoming harder to achieve in a timely fashion. Interviewees noted that both CBS’ internal decision-making framework and the decision-making framework between CBS and the Members regarding matters relating to CBS are unnecessarily cumbersome, and that the delay in finalizing decisions may pose a risk to CBS’ operations.

The MOU does not define the frequency or the nature of reporting – from both an operational and financial perspective - required to be provided by CBS to the Members; specific operational and financial measures to measure CBS’ performance; a decision framework for business planning at a global level; or provisions governing CBS’ contingency fund (e.g., the appropriate funding level, specifically what it can and cannot be used for, how it is to be replenished).

The Members have stated that they are not always provided with the information that they need to execute their responsibilities and information provision by CBS has turned into a lengthy, iterative process. While CBS asserts that it will and does provide the Members with any information they request, the Members believe that CBS is not sufficiently proactive in providing them with the information they need to achieve the necessary fiscal accountability with regards to the funding they provide to CBS, and to assist them with decision-making as it relates to future funding. There are numerous ad hoc requests issued by PTBLC members, as well as lengthy dialogue between them and CBS. This requires considerable effort on CBS’ part and can slow down the decision-making process. There is currently no formal process through which CBS solicits periodic feedback on the information provided to the provinces and territories or on their information needs. However, CBS does provide regular financial and operational reporting to the provinces and territories, as detailed in the table below.

Table 3.1 - Schedule of financial and operational reporting provided by CBS to the provinces and territories

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
<th>Issue Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding allocation</td>
<td>Updated annual funding allocation by provincial and territorial jurisdiction, based on the annual negotiated budget adjusted for updated red blood cell utilization</td>
<td>April / May</td>
</tr>
<tr>
<td>Audited consolidated financial statements</td>
<td>Audited Consolidated Financial Statements including the results of CBS and its captive insurance operations</td>
<td>By 30 June</td>
</tr>
<tr>
<td>Audited supplementary information</td>
<td>Reconciliation of cash recognized as revenue, schedule of Members’ contributions payable or receivable and contributions due for the fiscal year</td>
<td>By 30 June</td>
</tr>
<tr>
<td>Corporate Plan</td>
<td>A 3 year strategic plan including annual budgets, development of a long range vision, trends analysis, product/services mix, and performance objectives</td>
<td>July / August</td>
</tr>
<tr>
<td>Annual Report to Canadians</td>
<td>Submitted to Corporate Members for approval at the fall Annual General Meeting, prior to its release to the public</td>
<td>Provided as part of AGM meeting binder prior to the AGM, CBS endeavours to provide the report 15 days in advance of the AGM</td>
</tr>
<tr>
<td>Funding forecast</td>
<td>Provides a revised funding forecast to year end based on actuals to date for Transfusable Products, PPP, Diagnostic Services, Stem Cells and other items as appropriate</td>
<td>Several times per year</td>
</tr>
<tr>
<td>Plasma Products /Fresh Blood Shipment Detail</td>
<td>Detailed shipment data by province and territory, product, hospital etc. is posted to the provincial and territorial portal</td>
<td>15th working day after month end</td>
</tr>
<tr>
<td>Monthly provincial receipts</td>
<td>Monthly summary of contributions due and cash received (deposits) by business line by province and territory</td>
<td>15th working day after month end</td>
</tr>
<tr>
<td>Diagnostic services</td>
<td>Summary of year-to-date costing for the program</td>
<td>By end of following month</td>
</tr>
</tbody>
</table>
Quarterly consolidated financial statements are also issued to the provinces and territories. Provision of these statements to Members has historically taken anywhere from three to as much as eight months after the end of the fiscal quarter. However, we observed that, in the last few quarters, CBS has markedly improved the timeliness with which these statements have been provided to the Members.

The 2002 performance review report included several recommendations relating to CBS' reporting to the provinces and territories, including that CBS should report information by functional area and by type of general and administrative expense. The report also recommended that CBS provide the previous fiscal year's actuals as the basis for comparison and report on FTEs per functional area. CBS has not implemented all of these recommendations. Rather, changes to the reporting framework have been adopted through various discussions over the years between CBS and the PTBLC without an overarching, agreed-upon reporting framework in place.

**Recommendation #1:**
The Members should work together, as well as with CBS, to develop a single, formal SLA or similar document between the Members and CBS. As clearly stated in the MOU, the provincial and territorial governments must have appropriate safeguards to ensure fiscal accountability. This agreement should align with the collective nature of the governance structure of the national blood system and define:

- Respective roles and responsibilities of the parties, including ownership for specific decision making
- Term during which the agreement will be in effect
- Frequency with which CBS is required to provide operational and financial reporting to the Members, the required content of those reports as well as the timelines they are expected to adhere to in providing it
- Specific operational and financial performance metrics that CBS will be required to measure and report against
- Streamlined decision framework for overall business planning, including who must be consulted, the extent to which they must be consulted, and at what point(s) in the process they must be consulted
- A process that CBS can use to solicit feedback on the information provided to the provinces and territories
- Appropriate funding level of contingency fund, what it can and cannot be used for, as well as a replenishment plan
- Provisions for audits and/or operational reviews
- Dispute resolution procedures
- Procedures for amending the agreement

The concept of “arm’s length” needs to be better defined

Although CBS owns and operates the national blood supply system, the Members are ultimately accountable for the national blood supply. The common objective of a safe, secure and affordable national blood system necessitates a strong and open working relationship between CBS and the Members, one in which individual interests can be set aside when they may conflict with that shared objective.

Part of the failure of the old system was attributable to the fact that the Canadian Red Cross Society did not have the authority to make financial decisions, but instead had to consult with the provinces and territories; this significantly impaired the Canadian Red Cross Society’s ability to expend funds in response to an emerging issue or for an emergency safety response. To avoid a similar future situation regarding the national blood system, two of the recommendations put forward in the Krever Report were that:

- “The operator of the blood supply system be independent and able to make decisions solely in the best interests of the system”, and that “the operator of the blood supply system must be able to adopt important safety measures without any political interference”
- “Members of the corporation appoint an independent Board of Directors to supervise the management of the service and that the members of the Board carry out their duties at arm's length from the government”

As stated in the MOU, the Members agreed to put into place “a new NBA to operate at arm's length from all governments and to be responsible for managing all aspects of an accountable and fully integrated blood system”. The parties to the MOU agreed that it was not their intention that CBS be an agent of any government, and that CBS “must be able to exercise complete management discretion over all operational blood system decisions.”

CBS executive management frequently reference the concept of “arm's length”, as well as Krever’s tenet that “when creating and operating a blood supply system, the principle of safety must transcend other principles and policies” in support of the decisions that CBS makes, as well as its actions. Members feel CBS is not sufficiently transparent; in the 2011 survey of the PT representatives, it was noted that one of the most important things CBS could do to strengthen its relationship with the PT representatives was to provide information in a timely and transparent way. PT representatives interviewed over the course of this review indicated a perception that CBS sometimes denies information requests on the basis that the requests are operational in nature and, as such, are subject to “arm's length” status.
In light of the current fiscal context, CBS and the Members should re-examine and work together to define the concept of “arm’s length”. Much has changed over the last 15 years, including public expectations around accountability and transparency of publicly-funded organizations.

**Recommendation #2:**
CBS and its Members should work together to define the concept of “arm’s length”, which was an important principle recommended by the Krever Commission. Together, they should determine which types of decisions should be at CBS’ sole discretion, which ones might be shared between CBS and its Members and others that should be made by Members. For example, decisions related to supply and safety of blood products should, as stated in the MOU, be made solely by CBS. Budget decisions, for their part, could be made jointly as is currently the case. The agreement discussed in the first recommendation could include the specific surrounding of the “arm’s length” relationship.

**A national framework is required to increase accountability**
The success of a publicly-funded organization often depends on the organization having a good relationship with its stakeholders and meeting their expectations. This can be especially challenging when expectations and needs vary among stakeholders⁹. To build and maintain a successful working relationship with their stakeholders, publicly-funded organizations must ensure that they understand and support stakeholder expectations.

In today’s era of increased public and fiscal accountability, publicly-funded organizations are increasingly becoming more transparent. Information is becoming more freely shared and available for public consumption than ever before. Several of CBS’ funders have developed accountability legislation and/or frameworks which apply to the entities that they fund. As an organization funded by 12 different provinces and territories, the applicability of these accountability frameworks and legislation to CBS is unclear. However, CBS’ information-sharing practices do not always align to those of other, similar publicly-funded entities.

At the request of the province of Ontario, CBS is currently working with Ontario representatives to finalize an accountability agreement by 31 March 2013 in an effort to develop Ontario’s *Transfer Payment Accountability Directive*. In an effort to increase the transparency with which it operates and meet the accountability expectations of the provinces and territories, CBS agrees that there is a need for a national agreement and will work collaboratively with all the provinces and territories (except Québec) to develop one. It is impractical to envision that CBS could operate under different accountability agreements with each province. A national accountability agreement would assist both CBS and the Members in terms of clarifying and reinforcing public stewardship.

**Recommendation #3:**
CBS should continue to work with the provinces and territories to develop a single, national accountability agreement under which it will operate and that meets legislative requirements of the provincial and territorial governments. As effective public accountability requires a shift from compliance to collaboration¹⁰, CBS and the Members should be working together early and often to ensure that each side understands the other’s operating context so the needs of their respective stakeholders can be met.

There is no common role description for PT representatives
The PTBLC, which meets on a monthly basis, is the primary mechanism for operationalizing CBS’ relationship with the Members. PT representatives are Health ministry-appointed representatives for CBS’ corporate members. The PT representatives:

- Provide advice and insight to the provincial and territorial Deputy Ministers and Ministers of Health on issues affecting the blood system, organ and tissue donation and transplantation
- Identify and review issues related to safety, security, availability, access and cost effectiveness of the blood system
- Represent the provincial and territorial position for budget negotiations

The PT representatives are the first point of contact in the Members’ relationship with CBS. Despite the importance of this role, there is no common role description for the PT representatives. There are notable variations in the level of seniority of the PT representatives, their knowledge of CBS, their financial and business skill sets and their authority to make decisions and convey the views of the governments they represent. The individuals who fulfill this role are generally Policy Analysts or Research Analysts, as opposed to being individuals in senior level positions with a broad perspective on the health care system. Deputy Ministers and Ministers may only be briefed at a summary level, yet the context in which they operate enables them to have a broader understanding of how CBS fits into the health care agenda.

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⁹ Chartered Accountants of Canada – 20 Questions Directors of Not-for-Profit Organizations Should Ask About Governance – p. 9
¹⁰ Deloitte – A new age of public accountability – Implications for directors – p. 25
Recommendation #4:
In order to facilitate a national, collective, and consistent approach, the Members should establish role descriptions for the PTBLC representatives, including skill set requirements and the decision-making authority of the representatives and those of other senior levels within the Health ministries.

Additional agreements to specifically govern CBS' new business lines will be required in the near future
The MOU defines CBS' mandate and sets out the roles and responsibilities of CBS, the Members, the Government of Canada, and the Board of Directors with respect to national blood operations. Despite the many changes to CBS' operating environment, the MOU has not changed since it was developed. It meets the basic needs of both the Members and CBS, but there are areas not covered that should be addressed to clarify responsibilities and expectations, and to account for and accommodate CBS' evolving mandate.

The MOU confers upon CBS responsibility for “a national blood supply system which assures access to a safe, secure and affordable supply of blood, blood products and their alternatives, supports their appropriate use and carries out such other functions as the parties may agree upon from time to time”. However, in recent years, CBS' mandate has evolved to include new scopes such as cord blood and specific responsibilities with respect to organ and tissue donation registries. Given that these products and services were not contemplated at the time the MOU was developed, the MOU does not define specific roles and responsibilities as it relates to them. Over the course of the review, it became apparent that the existing MOU, as well as CBS' governance model, may not sufficiently address CBS' current context.

Recommendation #5:
The Members and CBS should work together to develop terms and conditions governing new business lines. These should clearly and specifically outline the respective roles and responsibilities of CBS and the Members, as well as define a funding framework for the new business lines. They should be incorporated in the SLA discussed in Recommendation #1.

Operational audits/reviews should take place on a regular basis
The MOU states that Members have the authority to require direct external audits and targeted special audits of CBS at their discretion. Prior to this review, which was requested by CBS, the last audit was conducted 10 years ago. Many provincial and territorial governments as well as the federal government have their agencies reviewed on a periodic basis, usually every five to seven years. These reviews are part of good governance practices.

Recommendation #6:
The Members should establish a practice to require regular operational audits/reviews of CBS and incorporate it into the document discussed in Recommendation #1.

3.4.2 Board of Directors
The Board of Directors possesses the required competencies and experience and performs at a high level
The primary responsibility of the Board is to provide effective governance over CBS' affairs for the benefit of its funders and to balance the interests of its diverse stakeholders across Canada, including clients, employees, volunteers, suppliers, blood recipients, donors and local communities.

The current Board is comprised of 13 directors, including the Chair, regional representatives (4 Directors), consumer representatives (2 Directors) and business, scientific, medical and public health representatives (6 Directors). Directors are appointed for a four year term, staggered such that one half of the directors’ terms expire in one year, and the other half’s terms expires in the following year.

The four regional representatives are direct appointments by the Members in their particular regions (BC/Yukon, Prairies, Ontario and Atlantic). Ideally, regional representatives are known to those governments, both at the Ministerial and bureaucratic levels. Experience at a senior level within the public sector, either in government or the Health sector, is an asset. They are expected to possess a mix of competencies, skills and attributes identified as overall requirements for the Board. Note that current employees of government are prohibited by CBS’ by-laws from being directors.

There are eight appointees at-large. Currently, the appointees at-large comprise: two consumer representatives, one lawyer (one consumer representative is also a lawyer), one Chartered Accountant (one regional representative is also a Chartered Accountant), one director with senior experience in business and the public sector, one academic with experience in risk management, and three (including the Chair) individuals who have relevant knowledge in the scientific, medical, technical and public health areas. The directors are generally satisfied with the mix and balance of the current Board membership.
### Table 3.2 - Board of Directors organizational chart as of 31 December 2012

<table>
<thead>
<tr>
<th>Director name</th>
<th>Role</th>
<th>Skill set</th>
<th>Background</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leah Hollins*</td>
<td>Chair of the Board of Directors</td>
<td>Public administration; government (former DM Health); healthcare leadership; board governance; policy</td>
<td>Former Deputy Minister of Health, British Columbia</td>
<td>British Columbia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Former Chair, Board of Directors, CCDT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Former Member, Board of Directors, Canadian Institute of Health Information</td>
<td></td>
</tr>
<tr>
<td>Robert H. Teskey</td>
<td>Consumer Interest Co-Chair of the National Liaison Committee</td>
<td>Legal; governance; corporate; risk management; Recipient</td>
<td>Member of Board of Governors, University of Alberta</td>
<td>Alberta</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fourth Transplant Recipient, Clinical Islet Cell Transplant Program - University of Alberta</td>
<td></td>
</tr>
<tr>
<td>Rabbi Dr. Reuven P. Bulka</td>
<td>Consumer Interest Co-Chair of the National Liaison Committee</td>
<td>Stakeholder relations; interfaith; blood donation; OTDT; governance; community</td>
<td>Rabbi, Congregation Machzikei Hadas, Ottawa - 1967 to Present</td>
<td>Ontario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chair, Trillium Gift of Life Network</td>
<td></td>
</tr>
<tr>
<td>Dr. Christopher Carruthers</td>
<td>Medical, Scientific, Technical, Business and Public Health Chair of the Talent Management Committee</td>
<td>Medical practice; surgery; health leadership; board governance; health system reform</td>
<td>Former Chief of Staff, The Ottawa Hospital</td>
<td>Ontario</td>
</tr>
<tr>
<td>Frank D. Jones - No longer on the Board as of November 2012</td>
<td>Medical, Scientific, Technical, Business and Public Health Chair of the Finance and Audit Committee</td>
<td>Legal; academia; corporate; tax; risk management</td>
<td>Professor and former Dean of Law, University of Alberta</td>
<td>Alberta</td>
</tr>
<tr>
<td>R. Wayne Gladstone</td>
<td>Medical, Scientific, Technical, Business and Public Health Chair of the Finance and Audit Committee</td>
<td>Finance; corporate; governance; health administration; audit; pension; accounting</td>
<td>Board Member and Chair of the Audit Committee, Healthcare of Ontario Pension Plan (HOOPP)</td>
<td>Ontario</td>
</tr>
<tr>
<td>Dr. Gary Glavin</td>
<td>Medical, Scientific, Technical, Business and Public Health Chair of the SSEC</td>
<td>Public health; science; research; infectious diseases; academia</td>
<td>Associate Vice-President (Medical), University of Manitoba</td>
<td>Manitoba</td>
</tr>
<tr>
<td>Shirley Raab</td>
<td>Medical, Scientific, Technical, Business and Public Health</td>
<td>Insurance; corporate; finance; accounting</td>
<td>President and CEO, Group Medical Services &amp; GMS Insurance Inc.</td>
<td>Saskatchewan</td>
</tr>
<tr>
<td>Thomas Warner</td>
<td>Vice Chair of the Board of Directors Medical, Scientific, Technical, Business and Public Health</td>
<td>Finance; administration; stakeholder matters</td>
<td>Former Ontario Human Rights Commissioner</td>
<td>Ontario</td>
</tr>
<tr>
<td>Henry J. Pankratz</td>
<td>Regional Representative Chair of the Governance Committee</td>
<td>Finance; corporate; leadership; governance; fund raising; audit; accounting</td>
<td>Board Member, Northumberland Hills Hospital</td>
<td>Ontario</td>
</tr>
<tr>
<td>The Honourable Denis Losier</td>
<td>Regional Representative</td>
<td>Corporate; insurance; governance; provincial administration / government; finance; pension; accounting</td>
<td>President, Chief Executive Officer, Assumption Mutual Life Insurance Company</td>
<td>Atlantic</td>
</tr>
<tr>
<td>Marilyn Robinson - No longer on the Board as of Sept 2012</td>
<td>Regional Representative</td>
<td>Health administration; health policy</td>
<td>Chair, Manitoba Chapter, Canadian Deafblind and Rubella Association</td>
<td>Alberta, Saskatchewan, Northwest Territories and Nunavut</td>
</tr>
<tr>
<td>Joy Illington</td>
<td>Regional Representative</td>
<td>Public policy; governance; government</td>
<td>Former Deputy Minister of Cabinet Operations, British Columbia</td>
<td>British Columbia and Yukon</td>
</tr>
</tbody>
</table>

* Leah Hollins’ term expires in September 2013
It is thought that the consumer representatives are expected to have a broad knowledge of the blood system and, ideally, at least one is sought to be an actual user of blood products while the other should have some direct link with patient/recipient groups. Knowledge of the OneMatch Stem Cell and Marrow Network and the blood donor process is preferred. They must also have the appropriate skill sets to effectively manage the National Liaison Committee process. It is also thought that, as CBS is entering the organs and tissues field, familiarity with OTDT will become a desired competency.

The General Representative category is generally split into two sub-categories as follows:

- **Scientific, Medical, Technical and Public Health:** There are a variety of opinions about the needed requirements in this area, with the balance being a combination of transfusion and transplantation clinical expertise, ethical, public health and research expertise. The right number seems to be three such people, clearly calling for some doubling up of skills or cross-mixing with, say, regional representation. It was noted that there is a need for continuing strong scientific expertise. These are scarce resources and yet it is important to find such people who can devote the needed time.

- **Business:** This is a broad description for a range of skills. Directors in this category are expected to possess financial literacy knowledge appropriate to a non-accounting professional serving on a large public, private or not-for-profit Board. At least one director sought should be an experienced Chartered Accountant. Legal input was seen to be appropriate. Some general manufacturing, risk management and human resources experience, preferably at the senior management or executive level, was seen to be desirable.

The individual filling the role of Chair is expected to have knowledge of the not-for-profit Health sector and have demonstrated experience at chairing an active Board of Directors. The other combination of skills and expertise required for the Board generally can be augmented by the particular skills of the Chair.

The current composition of the Board satisfies the skill and background requirements described above. Its directors are independent of management and appear to possess the requisite skills and experience to perform their roles as directors.

The recent governance assessment conducted on the Board of Directors indicated a high level of performance across all five areas assessed - responsibilities and mandate, structure and organization, processes and information, performance assessment and accountability, and governance culture - as well as a very strong Board chair. Our review found that Board responsibilities are clear, there is a consistent understanding and respect for the distinction between the role of the Board and the role of executive management, and the Board focuses primarily on strategic issues, as opposed to technical and tactical issues. Board meeting attendance is good and director turnover is low.

CBS has developed a comprehensive Board induction program to provide new directors with a solid foundation of its business.

**The frequency of the Board of Directors meetings should be increased**

Formal meetings of the Board of Directors are held on a quarterly basis to coincide with CBS’ quarterly reporting cycle. In addition to these four meetings, the Board participates in conference calls on an as-needed basis. Committee meetings are held during the days immediately preceding the quarterly Board meeting. Two Board meetings are open to the general public. The limited frequency of Board meetings was identified as a cause for financial information being provided to the PTBLC relatively late, as results and forecasts can only be approved quarterly.

A review of the frequency of Board meetings for other blood services organizations indicates a pattern of more frequent Board meetings of shorter duration; committee meetings were held throughout the year, and were not necessarily scheduled immediately preceding Board meetings. While this approach may result in additional travel costs for CBS, the scheduling of committee meetings based on need rather than convenience may facilitate more timely discussion of issues.

**Recommendation #7:**

CBS’ Board and Chair should re-assess whether the timing, frequency and duration of Board and committee meetings are adequate to effectively discharge the Board’s responsibilities.
There should be a formal evaluation process for members of the Board of Directors

CBS has appropriate management committee and governance structures, plans and processes in place to enable the information and reporting needs to be met. This includes processes to ensure that the Board of Directors would be able to report with accuracy and timeliness on factors relating to the discharge of its oversight responsibilities in relation to governance. Examples include: oversight of progression against plan, financial service and operational performance, risk management and legislative compliance.

Board (and Committee) documentation has been developed, including: charter / terms of reference, meeting schedules and protocols (e.g., chair responsibilities, quorum, voting). Periodically, the Board conducts formal assessments of its overall performance, with the most recent assessment conducted by a third party consultant in 2012. No formal processes have been established for evaluating the performance of individual directors. Such reviews are important to identify director knowledge and skill gaps, training needs and address any performance shortfalls on a timely and proactive basis.

**Recommendation #8:**
The Chair of the Board of Directors should undertake the development and implementation of a formal review process for evaluating director performance.

The selection and nomination process for members of the Board of Directors could be enhanced

One of the Board’s most important responsibilities is identifying, evaluating and selecting candidates for the Board of Directors. CBS’ current director selection process is solely within the discretion of the Members. The Board composition criteria previously described provides an overview of the required skill sets and outlines regional representation parameters. The nomination process is conducted with the assistance of a third party recruitment consultant. While the Board Chair co-chairs the search committee, the other directors have limited involvement with director selection beyond making initial recommendations to the Member-led selection committee on skill sets required for ongoing Board functioning. The current Board selection and nomination process could be enhanced through greater involvement by the current Board in the nomination process.

**Recommendation #9:**
CBS Members should expand the role of the Board of Directors in the selection and nomination process for new directors.

The current nomination approach results in one half of the directors’ terms expiring in one year, and the other half’s terms expiring in the following year. This current rotation approach could result in a fairly significant turnover of directors every four years over a short two year time frame. For example, the terms of 7 of the current 13 directors expire in September 2013, including that of the Chair. Some directors expressed concern about the potential loss of knowledge over a short time period, and expressed the desire for a more gradual approach to rotation. Introducing one extra year between the rotation cycles may well address any potential risk and concern in this area.

**Recommendation #10:**
Members should review the director rotation approach and make changes to facilitate a more gradual turnover of directors.

Compensation for members of the Board of Directors has not been reviewed since CBS’ inception

Total compensation paid to directors from 2010 to 2012 was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>CBS Total</th>
<th>Comparators Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>$306,125</td>
<td>Not Available</td>
</tr>
<tr>
<td>2011</td>
<td>$352,875</td>
<td>$714,000</td>
</tr>
<tr>
<td>2010</td>
<td>$254,375</td>
<td>$615,550</td>
</tr>
<tr>
<td>Average</td>
<td>$304,458</td>
<td>$664,775</td>
</tr>
</tbody>
</table>
Director compensation was established in 1998 by the Members, and has remained unchanged since that time. The remuneration is established as follows:

- **Annual retainer for the Chair:** $15,000 per annum
- **Meeting honorarium:** $750 per diem
- **Meeting preparation honorarium:** two days for Chair at $500 per day; 1.5 days for Committee Chairs at $500 per day; and one day for Directors at $500 per day
- **Travel to meetings:** Up to two days (depending on origin and destination) per meeting at $500 per day
- **Days on business honorarium:** $500 per diem (for events such as meetings on behalf of CBS, etc.)
- **Travel:** Travel costs according to CBS expense policy

A sample review of available information related to director compensation indicates that CBS’ Board compensation is generally lower than comparable entities both in Canada and internationally. The Government of Canada recently published a revised schedule of fees for Board of Directors of Crown corporations that might be useful to assess current national practices. The revised schedule grouped the federal Crown corporations into 10 groups. Based on its size, complexity, and scale of operations, CBS would likely be considered as part of Group 9 of federal Crown corporations. For directors of Group 9 corporations, the revised schedule of fees suggests a per diem range of $565 to $665 for directors and Chairs, and annual retainer ranges of $7,300 to $8,600 for directors and $14,500 to $17,100 for Chairs.

**Recommendation #11:**

The Members should undertake a review of the honorarium rates for members of CBS’ Board of Directors for 2013-14, with a view to ensuring compensation alignment with comparable publicly-funded entities. A process for future periodic reviews should also be established.

### 3.4.3 Management team

**CBS has an established and experienced leadership team**

CBS possesses a strong and stable leadership team. With some minor exceptions, the EMT has remained intact during the period covered by this review, with most key positions held by the incumbents for the entire review period. There are two exceptions: the VP Public Affairs position created in 2009 and held by the current VP since then; and the VP Talent Management and Corporate Strategy held by the current VP since 2011. The EMT has clear accountabilities, meets regularly and manages the performance of the CBS. The chart below depicts the top layer of management at CBS, referred to as the EMT.

There has been some realignment of Executive Management responsibilities over the course of the past five years, with the most significant change being the addition of the VP Public Affairs position. The new position was created to enable CBS to better address its expanding mandate (OTDT and cord blood) and, in part, to facilitate management and coordination of the various external stakeholder groups, including the provincial and territorial ministries and their representatives. Several existing CBS functions were realigned under this new position, including regional communications staff.

**Figure 3.2 - Summary of executive management team and executive office structure**
Current management span of control is low compared to other organizations

As noted in CBS’ PEP report¹¹, CBS’ span of control at 3.7 staff per manager is relatively low compared to industry standards of six to eight staff per manager across the support functions. The PEP report identified opportunities to:

- Reorganize the support functions to ensure that the appropriate structure is in place to support CBS and to realize efficiencies
- Adjust the support functions to an appropriate scale (in terms of FTEs and operational expenditures) based on workload and productivity expectations
- Examine the service delivery model of select support functions

In the past, CBS has given the title “Manager” to Program Managers who have no direct reports, which may have skewed the span of control figures downwards. CBS is currently in the process of changing this practice; however, opportunities may still exist to further improve span of control.

Recommendation #12:

CBS should continue the review of its organizational structure and realign the service delivery model for support functions with a view to improving span of control and reducing managerial overhead.

CBS is making changes to its governance approach to executive compensation to better align it with leading practices

An organization’s performance management system should align with its corporate culture, values, organizational goals and business strategy and be consistent across the entire organization. Compensation should be linked to the performance management system and aligned with pre-determined performance outcomes, and performance measures and goals should be well-defined and documented in performance appraisals.

Most executive compensation packages involve a balance between fixed and incentive pay, reflecting short- and long-term objectives appropriate to the organization’s circumstances and goals. Pension benefits and other perquisites round out the compensation package.

- Fixed compensation: This should be reasonable and fair, taking into account an organization’s legal and operational obligations and labour market conditions, and should be relative to the scale of business. It should reflect core performance requirements and expectations
- Performance-based compensation: Performance-based compensation linked to clearly specified performance targets can be an effective tool in promoting the interests of the organization and shareholders. Incentive schemes should be designed around appropriate performance benchmarks that measure relative performance and provide rewards for materially improved organizational performance
- Pension benefits and other perquisites: For public sector organizations, this normally includes a defined benefit pension plan and may include car allowances

CBS’ executive compensation plan incorporates all of the above elements of compensation.

¹¹ Productivity and Efficiency Program, August 2012
The review team noted that CBS’ executive performance-based variable pay ranges from 20% to 25% of fixed compensation. A study commissioned by CBS indicates that it is not uncommon for variable pay rates of comparable organizations to represent more than 20% of fixed compensation, and our review team noted that the pay at risk for federal assistant deputy ministers and deputy ministers varies between 20% and 35%. It should be noted that these levels for variable pay are those recommended by a Blue Ribbon Panel of distinguished Canadians from both the profit and not-for-profit communities with firsthand experience with effective compensation strategies. Accordingly, CBS’ at risk pay component is aligned with current leading practices that call for an increasing portion of total compensation to be variable and linked to performance.

In terms of executive performance review, CBS has a formal process in place as well as processes to support their continuous professional development. However, our review of the process found that there is a lack of clarity in how and which performance indicators and outcomes are linked to executive management compensation. In 2010, the Talent Management Committee of the Board enhanced its governance and processes to better align with leading practices. The table below depicts the impact of the changes and proposed transition plan. These changes came into full effect (the “Final State” in the chart) in June 2012 and will be put to the test this fiscal year. Since 2009, CBS has disclosed the salaries of all employees earning more than $100,000, which is a practice adopted by many publicly-funded organizations such as CBS. However, at this time, the annual disclosure approach for future years is still under review.

The above-noted changes are a significant step to ensure that CBS’ executive compensation approach aligns with leading practices. These changes will also enable the Board of Directors to better fulfill its leadership responsibility in setting the direction for executive compensation.

**Recommendation #13:**
Management should continue to implement the changes noted above in order to further CBS’ progress in ensuring that its compensation approach better aligns to leading practices.

Compensation of CBS’ leadership team is positioned at the high end or exceeds the range against other comparable national publicly-funded organizations. It is always difficult to assess the appropriateness of compensation levels and to determine fair comparators for

**Table 3.4 - Summary of CBS’ governance practices for executive compensation**

<table>
<thead>
<tr>
<th>Executive Compensation Governance Element</th>
<th>Current State</th>
<th>Transition</th>
<th>Final State</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CEO Comp</td>
<td>VP &amp; COO Comp</td>
<td>CEO Comp</td>
</tr>
<tr>
<td>Competitive data provided by an external firm</td>
<td>To Talent Management Committee (The Committee)</td>
<td>To VP Talent Management &amp; CEO</td>
<td>To Committee</td>
</tr>
<tr>
<td>Performance Reviews conducted by</td>
<td>Committee</td>
<td>CEO</td>
<td>Committee</td>
</tr>
<tr>
<td>Salary and bonus recommendations</td>
<td>Determined by Committee</td>
<td>Made by CEO</td>
<td>Determined by Committee</td>
</tr>
<tr>
<td>Salary and bonus approved by</td>
<td>The Board</td>
<td>The CEO</td>
<td>The Board</td>
</tr>
<tr>
<td>Full Board advised</td>
<td>Yes</td>
<td>Yes, Limited</td>
<td>Yes</td>
</tr>
<tr>
<td>Annual report disclosure</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
organizations like CBS that have a unique mandate. Industry practices, job complexity and risks are only some of the factors that can guide the selection of fair comparators. Some others include talent acquisition and retention strategies, location, experience, public perception and ability to pay. The review team assessed the overall positioning of CBS’ executive compensation compared to a group of relevant organizations. The team did not, however, determine the fairness of executive compensation for individual executives.

The review team reviewed publicly-disclosed compensation of executive teams of large-scale health care organizations in Ontario and British Columbia, each with annual budgets greater than $1 billion and with thousands of employees and volunteers as they were deemed to be the best and most relevant comparators. Ontario was selected because most of CBS’ operations are concentrated in Ontario, while British Columbia was deemed by the review team as a fair comparator for a national organization. Combined, these two provinces represent approximately 67% of the population served by CBS.

CBS’ executive compensation plan incorporates attributes normally expected for an organization of its size and complexity: base salary, performance-based compensation (variable), pension and other benefits. The review team compared CBS executive compensation with other publicly-funded organizations using a low-high range. The organizations selected for comparative analysis were the Ottawa Hospital, St. Michael's Hospital, Sunnybrook Hospital and Vancouver Coastal Health. The low end of the range was calculated using base salary plus allowances for each position used in the analysis. The high end of the range was estimated using base salary plus allowances plus maximum bonus. The actual amount paid to the executives selected for the analysis is somewhere within the range, as performance pay varies. The analysis found that the low end of CBS’ executive compensation is positioned slightly higher than the average for comparators, while its high end is 20% to 30% higher than comparators. Table 3.5 provides a summary of the comparative analysis.

CBS has a process in place to regularly review its executive compensation. As do many other organizations, it uses comparative analyses conducted by a firm specializing in compensation to inform these reviews. Our review team was provided with the last three analyses commissioned by CBS. The most recent analysis was conducted in early 2012 and included the six Vice-President positions:

- Chief Operating Officer
- Vice-President, Corporate Services and Chief Financial Officer
- Vice-President, MSRA
- Vice-President, General Counsel and Corporate Secretary
- Vice-President, Public Affairs
- Vice-President, Quality and Regulatory Affairs

Table 3.5 - Summary of total Executive salary comparison with other publicly funded organizations

<table>
<thead>
<tr>
<th>Total Compensation*</th>
<th>CBS**</th>
<th>Comparable publicly funded organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOW – Base salary and allowances</td>
<td>HIGH – Salary, allowance and maximum bonus</td>
</tr>
<tr>
<td>President/CEO</td>
<td>$578,000</td>
<td>$718,000</td>
</tr>
<tr>
<td>CFO</td>
<td>$352,238</td>
<td>$420,685</td>
</tr>
<tr>
<td>COO</td>
<td>$345,304</td>
<td>$420,747</td>
</tr>
<tr>
<td>VP Communications / Public Relations</td>
<td>$312,588</td>
<td>$373,106</td>
</tr>
<tr>
<td>VP Human Resources</td>
<td>$302,000</td>
<td>$358,400</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>$378,026</td>
<td>$458,188</td>
</tr>
</tbody>
</table>

*Excludes VP - General Counsel and VP Quality and Regulatory Affairs as compensation for these roles was not available for all comparators
**Source: CBS 2011-12 annual report
The study compared total compensation with a comparator group comprised primarily of large, publicly traded companies in “general industry”. The study did not include not-for-profit or other publicly-funded entities similar to CBS. The review team believes that CBS is a less complex entity than most companies included in the study in several fundamental ways: CBS operates within a defined geography, has no revenue risk, no investor requirements, no capital markets complexity, no tax planning requirements, and limited foreign exchange considerations. Accordingly, the results of this study might have been different if it had used publicly-funded organizations as comparators. Other studies commissioned by CBS in 2007 and 2009 also predominantly included large, public companies as the comparator group.

**Recommendation #14:**

Management should formulate and document a clear executive compensation strategy and framework for approval by the Board of Directors. The framework should include selection of comparators, mix of fixed and variable pay components, and disclosure protocol that are relevant to a publicly funded organization.

### 3.4.4 Funding

The funding model is an important component of the governance framework for a public organization like CBS, as it impacts how the organization interacts with its stakeholders and also influences the level of scrutiny clients and funders exercise on its financial affairs.

In its report, the Krever Commission recommended that the national blood system be funded from payments by hospitals for the blood products received from the national blood system. The following are extracts from the Krever report:

- The national blood service should be funded by payments from hospitals for the blood components and blood products supplied to them by the blood service
- The provinces and territories, no longer bound to finance the blood supply system by making grants to CBS, increase the budgets of hospitals using blood components and blood products by amounts that will enable them to pay the national blood service for these components and products without affecting their other programs and services

The funding approach chosen by the Members for CBS’ Transfusable Products is different from the recommendation made by the Krever Commission. Members chose to fund CBS directly using grants and contributions. The MOU, which is the main legal document that establishes governance requirements for CBS, provides limited direction on the funding approach and model, yet stipulates that provincial and territorial governments will provide operating funding to CBS in the form of grants and contributions. The following are extracts from the MOU relevant to the funding of CBS:

- **Section 7.2.1:** The provincial and territorial Ministers will provide the operational budgets of the NBA, including measures to ensure that appropriate arrangements exist to indemnify the NBA, its officers and directors and members of advisory bodies for uninsured liabilities and approved borrowing, and to maintain a capacity within the NBA to respond in a timely manner to health and safety emergencies
- **Section 7.2.2:** For the purpose of calculating their respective financial contributions, the Provincial and Territorial Ministers will rely upon the annual utilization of blood products within their respective jurisdictions based on the volume of products delivered to health facilities within the province or territory
- **Section 7.2.3:** The Minister of Health (Canada) will make available for the NBA R&D funds in the amount of $5 million annually starting in 2000-01
- **Annex B:** Canada’s Provincial and Territorial Health Ministers will be responsible and accountable for the national blood supply, including funding
- **Annex B:** NBA will be funded through grants and contributions from participating governments (Members); therefore, governments must have appropriate safeguards to ensure fiscal accountability
- **Annex B:** The Provincial and Territorial Ministers are responsible for funding requirements of the NBA as approved by Members

There are currently no established models to fund CBS working capital, investments in PPE and other assets and replenishment of the Contingency Fund. CBS’ current funding approach is a hybrid model using block funding and a fee-for-service, and has remained essentially unchanged since the organization was created. Members provide annual funding to CBS based on CBS’ multi-year Corporate Plan, which includes a one-year budget and two-year forecasts. Distinct funding is allocated and approved for each of CBS’ four main business lines (Transfusable Products, PPP, Diagnostic Services, and Stem Cells). R&D is specifically funded through federal, provincial and territorial contributions.
as well as external grants. The payment schedule varies greatly between Members, with some provinces providing funds on a bi-weekly basis while others make one payment for their entire annual allocation.

There are no documents formalizing funding models for CBS. Current models are based on practices that have evolved since its creation in 1998. The MOU is the only official document providing details on the funding models, although there are specific agreements for one time funding such as the OTDT strategy and registries. Practices have developed on the funding of products and services, specific initiatives and investments in PPE. The funding models for each of these aspects are summarized below:

### Table 3.6 - Summary of funding models at CBS

<table>
<thead>
<tr>
<th>Component</th>
<th>2011-12</th>
<th>Funding approach</th>
</tr>
</thead>
</table>
| Transfusable Products (includes corporate costs) | $479 million | - Grants/contributions from Members calculated with reference to volume of red blood cells shipped to hospitals  
- Grants from federal government for R&D  
- CBS retains the excess of funding over actual costs incurred |
| PPP | $467 million | - Cost recovery approach where Members reimburse CBS based on consumption by hospitals and actual product-related costs incurred, including product testing, administration costs and foreign exchange costs |
| Diagnostic Services | $16 million | - Fee for service model where Members pay for services received by their institutions |
| Stem Cells and Cord Blood initiative | $13 million from sales + $9 million from Grants | - Members provide grants/contributions to cover the administrative costs of the Stem Cell program, the HLA testing laboratory costs and, for Canadian patients, the costs associated with any international donors (flow through). Costs for specific services are paid by Transplant Centres. For international patients, revenue for services provided is paid by international registries |
| OTDT | $7 million | - Specific grants from the federal government and Members. The initial agreement terminates 31 March 2013. Governments have indicated they will extend existing funding agreements through 31 March 2014 |
| PPE and other assets | $55 million received $49 million incurred | - Generally funded as part of the grants/contributions for Transfusable Products but not always specifically identified  
- Specific grants/contributions from Members for the NFRP discussed in Section 10.4 |
| Working capital[^13] | $30 million | - No formal funding model  
- Initial funding provided when CBS was created  
- Additional working capital requirements funded from the grants/contributions for Transfusable Products |
| Replenishment of the Contingency Fund | None | - No formal funding model  
- Initially funded by grants/contributions from Members |
| Fundraising office | $1.7 million | - No formal funding model  
- In the past four years these activities were included in corporate costs and were indirectly funded from the grants/contributions for Transfusable Products |

[^13]: Working capital is defined as current assets, excluding cash and cash equivalent, less current liabilities

Other blood services organizations reviewed have formal and more comprehensive funding approaches

The team examined the funding approaches and models for the three jurisdictions identified as good comparators to CBS: Québec, Australia and the UK using publicly available information. Héma-Québec and the ARCBS are funded with approaches and models similar to that of CBS, with a mix of grants/contributions from governments. However, Héma-Québec invoices individual hospitals for the products and services they receive and payment is made by the Ministry of Health and Social Services. In the UK, the NHSBT invoices hospitals and other customers and receives payment directly from them. They also receive some government grants/contributions for specific initiatives.
Héma-Québec

Héma-Québec generates revenue from both the sale of its products and services and receives grants and contributions from the provincial government. Transfusable products are sold at rates approved by a government health agency and are invoiced directly to hospitals and health institutions. Payments are made to Héma-Québec by the Ministry of Health and Social Services on behalf of hospitals. Héma-Québec receives a monthly advance from the government to fund its operations. A similar approach is in place for plasma protein products, but prices are based on actual costs paid by Héma-Québec including the impact of currency exchanges. Héma-Québec has to return operating surpluses to the government, but has to absorb any deficit. Other business lines are funded primarily through grants and contributions obtained from the provincial government.

Héma-Québec does not receive any money to fund working capital, acquisition of fixed assets or other operational and management initiatives. It borrows money from the provincial government or financial institutions to fund these activities. Interest on loans and debt repayment costs are included in its product pricing to customers.

From a financial perspective, Héma-Québec operates similarly to the private sector, except that it does not retain profits.

ARCBS

The ARCBS is funded through a hybrid model that includes block funding and an output-based (similar to fee-for-service) model. The cost of blood and plasma products delivered to the hospitals is invoiced to the Australian NBA. It obtains block funding for R&D, distribution costs of fractionated recombinant products and incremental costs from the Australian government. Special development projects are specifically funded.

Fees for blood products are based upon volume and product prices, which are established each year and indexed at 4.1%, net of cost reduction efforts. ARCBS uses an activity-based costing methodology to calculate its costs for each product. Product prices include a charge for capital expenditures equal to 10% of total annual funding. ARCBS is required to refund the NBA when it generates a surplus, but can seek permission to retain up to Au$5 million.

In order to ensure it has adequate funds for infrastructure and unforeseen events, the ARCBS has various contingencies in place:

- Allocation of $1.5 million as a risk reserve pool
- Negotiation with its funders for $17.5 million in corporate risk reserve funding from current and future budgetary surpluses
- Ability to seek additional funds when unforeseen events and national disasters occur

- Ability to seek reimbursement from its funders in the event of a deficit of $1.5 million per year or $4.5 million over three years

With respect to working capital, the ARCBS was provided with an interest-free government cash advance of $57.8 million relating to a working capital advance from the Australian government when the organization recently switched its costing model. The organization has unencumbered use of funds in the general reserve, while amounts transferred from the general to special reserve enable subsequent expenditures on specific initiatives.

The ARCBS budgets for a small annual surplus ($3 to $5 million) and can roll over any unspent capital for three years. Surpluses exceeding $3 to $5 million are returned to the Australian government.

NHSBT

The NHSBT is an arm’s length body of the UK’s Department of Health. However, it is subject to ministerial direction. The majority of its revenue is received from the recovery of costs through the sale of blood components and services to National Health Service hospitals. As a Special Health Authority of the UK’s National Health Service, the NHSBT is required to plan for a balanced budget. The NHSBT provides credits to its customers when actual revenue exceeds actual costs.

The NHSBT’s revenue for blood components and much of tissues and diagnostic services comes from the sale of these products and services to hospitals and other health organizations. Prices are set to recover costs and are based on volume assumptions for the products and services provided in the year ahead. Prices are agreed to via a national commissioning process. The NHSBT receives grants/contributions from the Department of Health for research and organ donation and transplantation services.

Strategic investments are funded through additional funding requests to the Department of Health and must be supported by a business case that clearly demonstrates the benefits of the investment in terms of patient outcomes, efficiencies and other beneficial impacts. These business cases include the investment requirements, as well as the impact to operational costs and the base funding budget.

Unplanned expenditures such as unexpected donor testing costs are first expected to be absorbed in the operational budget. If this cannot be achieved, the NHSBT will submit a separate revenue development bid or ask to attain funding for the unplanned event.

The following table summarizes the approach for the three organizations.
Table 3.7 - Summary of funding models for comparators (All figures in $CAD unless otherwise indicated)

<table>
<thead>
<tr>
<th>Component</th>
<th>Héma-Québec(^{14})</th>
<th>UK’s NHSBT(^{15})</th>
<th>ARCBS(^{16})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4 Transfusable Products</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>$130 million (estimate)</td>
<td>$499 million</td>
<td>$493 million</td>
</tr>
<tr>
<td>Funding model</td>
<td>Cost recovery for products purchased by hospitals; Hospitals are invoiced but the Ministry of Health and Social Services pays for hospital costs centrally</td>
<td>Amounts paid by the hospitals and other organizations based on quantities supplied at pre-determined prices approved by the National Commissioning Group for Blood</td>
<td>Amounts paid by the Commonwealth, state and territory governments via the NBA based on quantities supplied at pre-determined price; ARCBS has to refund the NBA when it generates a surplus but can asked permission to retain up to Au$5 million</td>
</tr>
<tr>
<td><strong>Plasma Protein Products</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>$180 million (estimate)</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Funding model</td>
<td>Same as Transfusable Products</td>
<td>NHSBT is not responsible for distribution of fractionated products</td>
<td>ARCBS is not responsible for distribution of fractionated products</td>
</tr>
<tr>
<td><strong>Diagnostic Services</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>Not applicable</td>
<td>$36.4 million</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Funding model</td>
<td>Not applicable</td>
<td>Revenue for services provided</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Stem cells and Cord blood initiative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>Not applicable</td>
<td>$19 million from sales + $7.94 million from Grants</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Funding model</td>
<td>Grants from the Government of Québec</td>
<td>Revenue for products and services provided and Grants/contributions from the UK Health Departments</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>OTDT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>Not available</td>
<td>$23.8 million</td>
<td>Not available</td>
</tr>
<tr>
<td>Funding model</td>
<td>Grants from the Government of Québec</td>
<td>Revenue for products and services provided</td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Purchases of Property, Plant and Equipment and other assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>$4 million</td>
<td>$9.5 million</td>
<td>$52 million</td>
</tr>
<tr>
<td>Funding model</td>
<td>Debt authorized by the Minister of Health and Social Services</td>
<td>Specific contributions by UK Health Departments</td>
<td>Specific contributions by governments, provisions representing 10% of annual main operating budget funded by the Commonwealth, state and territory governments and bank loans</td>
</tr>
<tr>
<td><strong>Working capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value (2011-12)</td>
<td>$7 million</td>
<td>$39.6 million</td>
<td>$20.7 million</td>
</tr>
<tr>
<td>Funding model</td>
<td>Leverage accounts payable with very low accounts receivable; remaining financed with debt authorized by the Minister of Health and Social Services</td>
<td>Information not obtained</td>
<td>Funded separately and presented as Prepaid funds in financial statements</td>
</tr>
<tr>
<td><strong>Replenishment of the Contingency Fund</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding model</td>
<td>No contingency funding available</td>
<td>Information not available</td>
<td>Legislation allows the government to provide contingency funding</td>
</tr>
<tr>
<td><strong>Fundraising office</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding model</td>
<td>Separate entity</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

\(^{14}\) Annual report  
\(^{15}\) Annual report  
\(^{16}\) Annual report
CBS initiated a review of its existing revenue models in December 2011. It contracted an external firm on 1 December 2011 to assist with this review. The objective of the review was to examine alternate funding models that could be used in CBS’ business lines in order to enhance efficiency, transparency, accountability and value to its funding Members.

The study concluded that “a significant shift from CBS’ current revenue model and practices are not necessary in order for the organization to achieve the four objectives noted above. The research and analysis indicates that certain behaviours and processes within CBS could be modified to help the organization achieve its objectives (listed above), with less disruption and cost to CBS and its Members.”

Recommendation #15:
CBS and its Members should work together to revisit funding models for working capital, investments in PPE and other assets and replenishment of the Contingency Fund. These funding models should be formalized and incorporated in official documentation, such as an SLA, as discussed in the first recommendation. Approaches and practices used by other blood services organizations could provide valuable suggestions.

Recommendation #16:
CBS and its Members should assess the opportunity to provide hospitals and health institutions with details on volumes and costs for the transfusable products they receive, similar to what exists for plasma protein products. Providing this information would partly meet the Krever Commission’s recommendation on billing hospitals. It would help hospitals in understanding the costs associated with their use of blood products. Héma-Québec, the NHSBT and the ARCBS all provide this type of information, even when the payment comes from a central payer. Since there would be additional costs associated with this practice, a cost-benefit assessment should be completed prior to making a decision.

Recommendation #17:
CBS should perform a cost-benefit assessment to determine the opportunity to implement a more robust costing system to enable the calculation of complete costs for its different products and services. This analysis should take into consideration the cost of implementing and operating such a system, the funding models agreed with its Members, and its current and future business lines.

3.4.5 Net assets (cumulative excess of annual funding over costs)
The MOU does not define how budgetary surpluses or deficits should be treated; it simply states that CBS is to report significant deviations from the approved budget to the Members. CBS’ net assets balance, which is the cumulative excess of annual funding over costs, has been increasing each year since 2000 and currently sits at $38 million. Over the last four years, it has grown at a CAGR of 20%, given larger annual surpluses. Figures 3.3 and 3.4 display these trends over time:

17 Revenue model review - Canadian Blood Services, 4 May 2012, Section 1.4
In recent years, Members have begun questioning the current practice that results in CBS retaining the annual excess of funding over expenses (referred to as “net asset” by CBS), when applicable. CBS has recently developed a “Net Asset Policy” to provide itself with a framework to determine the level of financial resources required to support operations, to review the adequacy of provisions and to communicate its approach to net assets to stakeholders. In general, CBS feels that net asset provides a hedge against general business risks and working capital needs, particularly for inventory.

There is a lack of clarity around “ownership” of “net assets” and how they should be utilized

There is no formally and mutually agreed upon and documented ownership for CBS’ excess (shortfall) of annual funding over costs and approach on how to use it. CBS and its Members determine on an annual basis the budgeted surplus, which is typically $1 million to $2 million, through the annual corporate planning process, but there is no framework to determine what happens when the annual surplus is higher than the budgeted amount agreed upon by the parties. Recently, CBS developed its Net Asset Policy and presented it to the Members. This policy goes beyond the question of how to use the excess of annual funding over costs, since it is advocating a minimum net asset balance, which could only be achieved by generating excess of annual funding over costs.

Héma-Québec and the NHSBT return their annual excess of funding over expenses to their clients or funders, while the ARCBS can retain a maximum of $5 million with approval from the NBA.

A similar issue exists with respect to surplus generated by CBS’ subsidiary, CBS Insurance Company.

**Recommendation #18:**

PT governments, together with CBS, should develop a mutually acceptable written agreement that defines in specific detail how excess of annual funding over costs are to be used. A governance framework should be developed and documented to address the following: Use of these funds, minimum levels and release/approval process. These principles should be included in the SLA discussed in Recommendation #1.

### 3.4.6 Cash on hand and deferred contributions

Over the years, CBS has accumulated significant cash. As of 31 March 2012, CBS had almost $200 million in cash and cash equivalents\(^\text{18}\). Of this amount, $20 million was set aside for the contingency fund, and approximately $70 million was money received for NFRP, OTDT, Cord Blood and R&D, as well as prepaid provincial and territorial contributions and less than $0.3 million was restricted for captive insurance operations. The remaining $110 million represented “uncommitted” funds, even though CBS relates them to specific items: funding received from Members to finance inventories (plasma protein products, blood products and medical supplies) and “net assets” as discussed in Section 3.4.5. Excluding the “net assets”, the remaining amount is presented in the financial statement under deferred contributions.

There is no formal mechanism to determine the amount of cash CBS should maintain

Although there has been recent discussion between members and CBS about “net assets”, the amount of cash on hand does not seem to have attracted the same attention. Considering CBS’ annual budget of approximately $1 billion a cash position of $200 million, which represents two and a half month of expenses, is relatively high. Unrestricted cash of $110 million represents over one month of spending.

There seems to be two reasons to explain the accumulation of cash by CBS: 1) The focus put on annual operating budget rather than the overall financial situation of CBS; and 2) The lack of specific funding models, as previously discussed. Over time, CBS has received funds to finance inventories estimated at approximately $100 million based on information received from CBS. At the end of the last fiscal year this amount was almost $70 million higher than CBS’ working capital requirement. In other words, CBS received more money to finance its short term assets, including inventory, than it needed. During the last four years, CBS’ working capital requirements varied between $30 million and $50 million.

**Recommendation #19:**

CBS and its Members should develop an approach to determine the level of cash CBS should have available to fulfill its responsibilities. This approach should be documented in the SLA discussed in the first recommendation and consider CBS funding models. Members and CBS should develop a plan on how to best use CBS excess cash balance, if applicable.

\(^{18}\) CBS 2011-12 annual report
4.1 Objective

The main objective of the financial review was to assess how successful CBS has been in managing its activities and funding received by Members with respect to economy, efficiency and effectiveness. In addition, the review assessed financial performance indicators used by CBS and assessed the cost of all support functions and their contribution to the business lines. Finally, the review identified opportunities for improvement and cost reduction.

4.2 Scope

The scope of the financial review included:

• Historical financial performance (fiscal years 2008-09 to 2012-13) for all business lines and support functions, excluding strategic initiatives, which are discussed in a later section

• Forecasted financial performance as per the 2013-16 Corporate Plan, excluding strategic initiatives

• Financial performance indicators

4.3 Transfusable products

4.3.1 Context

Revenues for the Transfusable Products business line consists of Member contributions, which make up the majority of total revenue (95-100%), as well as federal contributions, deferred contributions and interest revenue. Member contributions have grown at a CAGR of 1.6% over the review period; these contributions have not increased since 2010-11 and are not forecasted to increase until 2015-16.

Figure 4.1 demonstrates the trends in total revenues and expenses over the historical review period and the period covered in the 2013-16 Corporate Plan. As noted in Section 2.4, the estimates for 2014-2015 and 2015-2016 are notional values at this time, and will be refined during the following year’s planning cycle.
Note that the figure below includes 2012-13 budgeted data. At the time of this review, results to date as of Q3, and a corresponding updated forecast, were not available since they had not been reviewed and approved by CBS’ Finance and Audit Committee. The review team was provided with a 2012-13 forecast at the end of Q2; however, based on actual results at Q3, the use of the Q2 forecast data was not considered to be an accurate reflection of the likely results for 2012-13. During 2012-13, CBS was able to realize efficiency savings from the implementation of operational and cost reduction initiatives ahead of schedule and/or to a greater degree than forecast at the end of Q2. Accordingly, the detailed financial review for each business process is conducted only for the historical period and not for 2012-13 for the reasons stated above. This review is also not conducted for years beyond 2012-13, as budgeting had not been completed at the detailed business process level at the time of the review.

Cost drivers
The key cost drivers for Transfusable Products include:

Product Demand
Product demand for red blood cells, platelets and plasma is the key cost driver; hospital demand (shipments) is forecasted based on a number of factors (e.g., historical trends, hospital input). The demand trends vary across regions and blood groups, which adds complexity to CBS operations to ensure that the right products are available when needed. This demand drives collection activity, with targets being set nationally and assigned to regions in order to meet forecasted demand. The numbers of donors to target and units that need to be collected are impacted by CBS’ deferral rates and discard rates. As seen in the chart below, whole blood collections are down marginally over the past four years (CAGR of -0.3%); these are forecasted to continue to decrease gradually (0.1%) in 2012-13 and 2013-14.

![Figure 4.1 - Summary of historical and forecasted revenues and expenses for Transfusable Products](image)

Staff costs
Staff costs account for 60% of Transfusable Product costs. These costs are a function of the following three factors:

- **Salary costs:** Approximately 75% of the workforce is unionized. As noted below, CBS pattern-bargains rates, making it difficult to influence labour rates for the majority of their workforce
- **Number of staff:** Much of CBS’ cost reduction efforts have been directed at making processes more efficient through decreasing its LHU
- **Staff mix:** The mix of staff employed within certain processes (e.g., nurses, clinic assistants, lab assistants, laboratory technologists, management) has an impact on the average staff costs for certain activities. CBS does have the ability to optimize staff mix for certain processes; for a number of processes, the staff mix is constrained by regulatory requirements

CBS’ labour relations process for their unionized and non-unionized environment is summarized below.

Union
As an employer, CBS is regulated provincially. Salary increases are negotiated separately with each of its 33 different bargaining units. Bargaining units generally exist for four types of employees: nurses, medical lab technologists, clinical staff and support staff. CBS’ philosophy has been to pattern-bargain collective agreement increases with the acute health care sector in the province in which it operates. These agreements are usually for a two to three year time period. Generally, unions will bargain their provincial rates first and then negotiate with CBS, which may result in a time lag. CBS’ unionized increases are an established process that CBS’ EMT regularly reviews, but is generally satisfied with.
Non-union
CBS is committed to maintaining a competitive compensation program for its non-unionized workforce. It adopted a new compensation program in 2010-11 to more closely link pay with performance and to align with current market trends. The new compensation program, based on the Hay Method, looked at job classifications and aligned total targeted cash payouts (salary plus bonus) to the broader Public Sector.

CBS is aiming for:
- Base salary at the 75th percentile which reflects the pressure exerted from increases to unionized rates
- Performance bonus at the 50th percentile
- Total cash position at approximately the 66th percentile

According to CBS, the target payment is 70% of the performance bonus opportunity. The bonus opportunity payments were phased in over a period of three years: 15% was included in the 2010-11 budget, 67% in the 2011-12 budget and 100% in 2012-13. CBS also factors in the fiscal environment in which it and its funders operate. The 2013-14 Corporate Plan factored in no increase for non-union salaries or bonuses.

Regulatory requirements and safety
CBS’ operations are impacted by the regulatory environment in which it operates; there are certain requirements for tests and/or staff that may not exist for other blood services organizations. CBS’ risk framework related to safety also impacts their cost structure. A full discussion of CBS’ regulatory environment and decision-making around safety decisions is discussed in Section 9.

Historical trend
Transfusable Products account for 47-50% of total CBS expenses. As discussed in Section 3.4.4, this business line is currently block-funded, based on the budget negotiated during the annual Corporate Planning Process.

Table 4.1 - Summary of historical budget-to-actual variance

<table>
<thead>
<tr>
<th>Budget-actual variance</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Transfusable Products</td>
<td>(1.4%)</td>
<td>(2.0%)</td>
<td>(3.1%)</td>
<td>(1.7%)</td>
</tr>
</tbody>
</table>

As shown in Table 4.1 above, CBS’ budget-to-actual variances for the period under review are well within appropriate thresholds, generally considered to be 5%, with the greatest variance occurring in 2010-11.
Table 4.2 below provides a summary of historical business line expenses, by high-level business process as described in Section 2.2.1 and shown in the graphic to the right.

Total expenses grew at a CAGR of 1.5%. Within Transfusable Products, expenses related to the supply chain (recruitment, collections, testing, production and distribution) made up the majority (56-58%) of total expenses, with support services making up the next largest portion (27-28%). Logistics accounted for 6.8% of total expenses in 2011-12.

Table 4.2 - Summary of historical expenses for Transfusable Products by high-level business process

<table>
<thead>
<tr>
<th>$ millions</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain</td>
<td>259.7</td>
<td>268.5</td>
<td>264.9</td>
<td>266.5</td>
<td>0.9%</td>
</tr>
<tr>
<td>Logistics</td>
<td>29.7</td>
<td>30.3</td>
<td>30.4</td>
<td>32.5</td>
<td>3.0%</td>
</tr>
<tr>
<td>Support Services</td>
<td>124.1</td>
<td>125.2</td>
<td>127.0</td>
<td>131.9</td>
<td>2.1%</td>
</tr>
<tr>
<td><strong>Total Core Blood Operations</strong></td>
<td><strong>413.5</strong></td>
<td><strong>424.0</strong></td>
<td><strong>422.3</strong></td>
<td><strong>430.9</strong></td>
<td><strong>1.4%</strong></td>
</tr>
<tr>
<td>Other Corporate&lt;sup&gt;19&lt;/sup&gt;</td>
<td>40.2</td>
<td>39.5</td>
<td>39.1</td>
<td>42.9</td>
<td>2.2%</td>
</tr>
<tr>
<td><strong>Total Transfusable Products</strong></td>
<td><strong>453.6</strong></td>
<td><strong>463.4</strong></td>
<td><strong>461.4</strong></td>
<td><strong>473.8</strong></td>
<td><strong>1.5%</strong></td>
</tr>
<tr>
<td>LHU</td>
<td>7.08</td>
<td>7.09</td>
<td>7.13</td>
<td>6.86</td>
<td>(1.0%)</td>
</tr>
<tr>
<td>Cost per collection unit</td>
<td>$447.40</td>
<td>$456.23</td>
<td>$468.09</td>
<td>$474.98</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

In aggregate, as shown in the table below, expense increases have been largely driven by increasing staff costs, which have risen at a CAGR of 1.5%. This increase is well below inflationary rates in general and below the union settlements during the period under review. This has been achieved through decreases in FTEs of 4.6% since 2008-09 as noted in Table 4.4.

Table 4.3 - Summary of historical expenses for Transfusable Products by type

<table>
<thead>
<tr>
<th>$ millions</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Costs</td>
<td>271.9</td>
<td>275.0</td>
<td>278.2</td>
<td>284.2</td>
<td>1.5%</td>
</tr>
<tr>
<td>Medical Supply Costs</td>
<td>78.8</td>
<td>78.6</td>
<td>78.6</td>
<td>81.2</td>
<td>1.0%</td>
</tr>
<tr>
<td>General and Administrative Costs</td>
<td>86.0</td>
<td>91.4</td>
<td>86.6</td>
<td>89.4</td>
<td>1.3%</td>
</tr>
<tr>
<td>Depreciation and Amortization</td>
<td>17.0</td>
<td>18.3</td>
<td>17.9</td>
<td>18.9</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>453.6</strong></td>
<td><strong>463.4</strong></td>
<td><strong>461.4</strong></td>
<td><strong>473.8</strong></td>
<td><strong>1.5%</strong></td>
</tr>
</tbody>
</table>

<sup>19</sup> Includes costs related to R&D, projects, corporate costs and inventory adjustment
FTE reductions have largely been concentrated in the supply chain; support services decreased FTEs mainly within the quality assurance function in the field, while logistics services FTEs increased during the period under review.

Table 4.4 - Summary of Transfusable Products historical FTEs by high-level business process

<table>
<thead>
<tr>
<th>FTEs</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Chain</td>
<td>2,423.8</td>
<td>2,467.6</td>
<td>2,375.6</td>
<td>2,268.7</td>
<td>(2.2%)</td>
</tr>
<tr>
<td>Logistics</td>
<td>304.0</td>
<td>313.8</td>
<td>318.6</td>
<td>337.3</td>
<td>3.5%</td>
</tr>
<tr>
<td>Support Services</td>
<td>840.5</td>
<td>829.2</td>
<td>839.5</td>
<td>828.3</td>
<td>(0.5%)</td>
</tr>
<tr>
<td><strong>Total Core Blood Operations</strong></td>
<td><strong>3,568.3</strong></td>
<td><strong>3,610.6</strong></td>
<td><strong>3,533.7</strong></td>
<td><strong>3,434.3</strong></td>
<td><strong>(1.3%)</strong></td>
</tr>
<tr>
<td>Other Corporate^2</td>
<td>111.5</td>
<td>84.9</td>
<td>70.9</td>
<td>75.0</td>
<td>(12.4%)</td>
</tr>
<tr>
<td><strong>Total Transfusable Products</strong></td>
<td><strong>3,679.8</strong></td>
<td><strong>3,695.5</strong></td>
<td><strong>3,604.6</strong></td>
<td><strong>3,509.3</strong></td>
<td><strong>(1.6%)</strong></td>
</tr>
</tbody>
</table>

General and administrative costs for the Transfusable Products business line increased at a CAGR of 1.3% over the historical review period, as shown in Table 4.3. As demonstrated in Figure 4.3, property expenses, professional services, and operating expenses are the main components of general and administrative expenses for the Transfusable Products business line. Equipment and purchased services also contribute significantly to expenses in this area. Travel and professional services accounted for 25% of total general and administrative expenses in 2011-12 ($22.9 million); these expenses are up $2.4 million (CAGR of 3.8%) from 2008-09. A detailed review of policies and practices related to spending on travel and professional services can be found in Sections 6 and 7. For a definition of the items included in each of the general and administrative expense categories, please refer to Appendix B.

Comparative analysis
CBS has been successful in keeping its overall cost growth at less than the rate of inflation due to a focus on productivity and efficiency driven, in part, by the current fiscal environment. Other blood services organizations face similar funding pressures and are also looking to streamline processes and realize efficiencies. Based on recent annual reports and strategic plans, blood services organizations in other jurisdictions have each strived for greater efficiency in their Transfusable Product operations over the period under review.

^2 Includes FTEs related to R&D, projects and corporate
For example:

- Héma-Québec revised business processes in donation centres and implemented a computerized call centre management system, resulting in improved rates of call distribution and collection efficiency.\(^{21}\)
- NHSBT invested significant efforts in removing over-capacity along its blood supply chain, and has achieved a 10% reduction in red blood cell cost per unit since 2008-09.\(^{22}\)
- ARCBS decreased the proportion of discards due to red cell deferrals to less than 2%, which contributed to a nearly 7% improvement in red cell yield in 2011-12. In addition, efficiencies were achieved in donor clinics through increased training and work flows, as well as the use of nursing assistants.\(^{23}\)

Throughout this section, the key sources of comparative analysis will be the annual ABO benchmarking study and the ABO Cost Model findings. While this section of the report focuses on productivity and cost efficiencies, it is also valuable to benchmark where CBS compares on safety initiatives, donor measures and donor and hospital satisfaction for a full picture on how CBS is delivering on its mandate. It is important to realize that differences between organizations may be a reflection of factors outside of the control of respective organizations including: regulatory requirements, staff salaries and benefits dictated by legislation and union agreements and geography. Automation also has a significant impact on productivity; increases in automation, however, require investment. Comparative analysis should be viewed as providing directional indication of areas of success and potential opportunities for savings, and not as absolute measures of potential performance.

The ABO CMWG was established in 2010 and consists of CBS and several other blood service organizations. The primary purpose of this group is to develop a high level cost model for principal blood products to facilitate effective cost benchmarking. It is important to note that the cost model is not complete at this point; deep dives are being conducted for each cost area to uncover the factors that drive cost discrepancies and better understand results. In some cases, organizations may be including different cost elements than others. Understanding the impact of these differences is necessary to fully quantify efficiency opportunities. CBS has been actively involved with this group and recognizes the potential operational benefits that this exercise can deliver. CBS has visited with one of the operators and has an upcoming visit from representatives from another operator to share knowledge and identify reasons for differences. Unit costs for these analyses are presented using the Organization for Economic Cooperation and Development purchasing power parity as the currency conversion factor to attempt to make them more comparable.

Within the following sections, CBS’ main business processes are examined in terms of:

- Historical performance
- Performance against relevant comparatives
- Future initiatives planned to improve performance with associated costs and benefits

For four key business processes; donor services, whole blood collection, manufacturing and donor testing, the drivers of cost differences between CBS and comparators are examined.

### 4.3.2 Observations and recommendations

#### 4.3.2.1 Recruitment

Donor recruitment is responsible for all activities associated with the attraction/recruitment of donors and booking of appointments for whole blood, plasma and platelet donations. Included in this category are the following business processes:

- Marketing and donor recruitment: Research, analytics, sales and donor systems support; oversight and execution of national advertising programs, promotions and campaigns (12 FTEs)
- NCC: Contact Centre (about 230 FTEs) located in Sudbury Ontario is responsible for booking whole blood clinic appointments, appointment reminders, some plasma appointment bookings and responding to any eligibility questions
- Donor Services: Approximately 220 FTEs responsible for the facilitation, planning and execution of donor and clinic events. They book mobile clinic locations, perform in-clinic re-bookings, plan and implement local donor recruitment campaigns and recruit and manage regional partners

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\(^{21}\) Héma-Québec 2011-12 Annual Report  
\(^{22}\) NHSBT Strategic Plan 2012-17  
\(^{23}\) ARCBS 2011-12 Annual Report
Historical trend

As seen in Table 4.5 below, from 2008-09 to 2011-12, donor recruitment expenses increased by $2.8 million, a CAGR of 2.6%, due to higher staff costs and general and administration expenses:

- Overall staff costs increased by $1.4 million (1.8% CAGR) due to increases in the NCC staff cost per hour resulting from the pay equity settlement, offset by a reduction of 8.8% in the number of FTEs, mainly in the donor services function.
- General and administration expenses increased by $1.3 million, largely due to increases in spending on professional services for advertising campaigns and promotions. The key categories of spending were $5 million (49%) on professional services for advertising and $3 million (29%) on operating expenses, mainly within donor services for donor food and recognition events.

Table 4.5 - Summary of historical expenses for Donor recruitment

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>34.9</td>
<td>36.3</td>
<td>38.0</td>
<td>37.7</td>
<td>2.6%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>26.0</td>
<td>27.1</td>
<td>28.5</td>
<td>27.4</td>
<td>1.8%</td>
</tr>
<tr>
<td>Medical supplies</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>8.8</td>
<td>9.1</td>
<td>9.5</td>
<td>10.1</td>
<td>5.0%</td>
</tr>
<tr>
<td>FTEs</td>
<td>510.1</td>
<td>496.9</td>
<td>496.1</td>
<td>465.0</td>
<td>(3.0%)</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$26.15</td>
<td>$27.94</td>
<td>$29.41</td>
<td>$30.26</td>
<td>5.0%</td>
</tr>
<tr>
<td>LHU</td>
<td>0.98</td>
<td>0.95</td>
<td>0.98</td>
<td>0.91</td>
<td>(2.5%)</td>
</tr>
<tr>
<td>Cost per collection unit</td>
<td>$34.38</td>
<td>$35.73</td>
<td>$38.58</td>
<td>$37.79</td>
<td>3.2%</td>
</tr>
</tbody>
</table>
The NCC books approximately 40% of whole blood clinic appointments. In-clinic rebooking of donors represents 55% of donor appointments. These appointments are handled by donor service representatives who attend clinics and are responsible for meeting and greeting donors, “checking in” donors through entry into the appointment management system, managing the donor stream into the clinic and rebooking donors to future clinics. These donor service representatives represent approximately 35% of the donor services staff. Note that at registration, donors are registered again by the Clinic Services staff into a system called Progesa to set up the Record of Donation and begin the donation process. Only 4-5% of bookings are currently web-based, according to CBS management.

Key performance measures identified by CBS and related to donor recruitment include:

- Size of the donor base: decreased by 1.5% since 2008-09. CBS has the objective of increasing donor base to 500,000 by 2015
- New donor retention: decreased from 50.7% in 2008-09 to 47.4% in 2011-12
- LHU: decrease of 7% since 2008-09
- Appointment to collections ratio: 1.664; impacted by donor cancellations, no-shows and CBS’ deferral rates at clinics

While CBS has improved its productivity by 7% since 2008-09, it remains less productive than comparable blood services organizations.

The term “Donor Services” as defined in this exercise includes all functions that result in bringing blood donors to clinic events (marketing, advertising, clinic planning, calling donors, booking appointments). CBS includes the costs of their NCC and Donor Services group, but not the cost of their marketing function. Given that the participants have not yet conducted a deep-dive into the data below, and different blood services organizations may have different structures and philosophies around donor recruitment (e.g., appeal based), these figures should be interpreted with some caution.

Key points to note include:

- Total cost per collection unit for donor services is the highest for CBS
- The driver of higher costs appears to be lower productivity. CBS spends 2-4 times more LHU on donor recruitment than the other operators
- During 2011-12, CBS reduced its LHU from that shown below by 8.5% to 0.88

For every 10% that CBS is able to reduce its LHU within donor services, labour costs could be decreased by over $2.5 million.

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Table 4.6 - Summary of Donor services costs 2010-11 - ABO CMWG

<table>
<thead>
<tr>
<th></th>
<th>Staff</th>
<th>Medical supplies</th>
<th>Other costs</th>
<th>Total</th>
<th>LHU</th>
<th>Staff cost per labour hour (purchasing power parity $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBS</td>
<td>22.95</td>
<td>0.10</td>
<td>3.43</td>
<td>26.47</td>
<td>0.97</td>
<td>23.73</td>
</tr>
<tr>
<td>Operator A</td>
<td>8.55</td>
<td>0.00</td>
<td>5.90</td>
<td>14.45</td>
<td>0.36</td>
<td>23.95</td>
</tr>
<tr>
<td>Operator B</td>
<td>7.45</td>
<td>0.02</td>
<td>10.68</td>
<td>18.15</td>
<td>0.23</td>
<td>31.71</td>
</tr>
<tr>
<td>Operator C</td>
<td>11.58</td>
<td>0.20</td>
<td>4.79</td>
<td>16.57</td>
<td>0.50</td>
<td>23.39</td>
</tr>
</tbody>
</table>
**Recommendation #20:**
CBS should implement efficiencies identified to reduce the overall costs of this business process by $4 to $6 million a year by 2014-15.

CBS has identified donor recruitment as an area where opportunities exist to streamline processes and reduce costs. A number of potential initiatives have been identified as part of its productivity and efficiency review.

Some of these projects have been scoped and prioritized and are scheduled to be implemented in 2012-13 or 2013-14 as part of the efficiency improvements identified. Others have a longer lead time due to dependencies on other projects, consultation required with stakeholders and/or scoping/prioritization to be performed.

Key opportunities identified include further efficiencies in appointment booking, simplification of processes and further redefinition of roles and responsibilities.

Total potential savings identified for these projects from 2012-13 to 2015-16 range from $15 to $22 million. Implementation costs were estimated at $4.5 to $5.5 million for total net benefits of $10 to $16 million by 2015-16.

The costs vs. performance of the contact centre appear high
As shown in Table 4.7 below, the cost/booked appointment has been increasing at a CAGR of 5.5% per year to $19.50. While the labour hours per booked appointment have decreased marginally over the period, the staff cost has increased at a high rate.

CBS has also recently announced plans to open a secondary contact centre in Saint John, New Brunswick. Based on discussions with CBS, this investment is necessary from a business continuity standpoint. The business plan and respective project budget are still being developed. CBS has confirmed that once the new contact centre is operational, it does not anticipate an increase in the costs of contact centres.

Comparisons to other blood services organizations suggest that there is significant room for improvement in CBS’ contact centre operations. CBS’ performance in terms of cost per booked appointment is aligned to that of Operator C ($21.81). However, CBS’ cost per booked appointment is over six times greater than that of Operator A, and triple that of Operator B. A similar trend exists for labour hours per booked appointment, wherein CBS’ metric is, in order of magnitude, greater than both Operator A and Operator B metrics of 0.11 and 0.02 respectively. These differences can be explained by outsourcing of contact centre activities in both countries, which allows them to achieve greater performance at lower cost.

An additional factor that influences CBS’ contact centre costs is the labour mix and, more specifically, the proportion of supervisory employees. In comparison to health care and cross-industry benchmarks of 12 to 13 contact centre operators to supervisors, CBS’ ratio of 7.9 (based on 2011-12 data) is relatively low.

It is understood that CBS has not conducted benchmarking into NCC metrics. Currently, CBS’ contract centre labour costs per hour are high relative to the value of the service being provided. Since many contact centre services do not require specialized medical knowledge, CBS has an opportunity to improve performance and decrease staff cost per hour by outsourcing components of its contact centre operations.

**Recommendation #21:**
CBS should closely monitor the cost-effectiveness of its contact centre in terms of costs versus performance. CBS has discussed contact centre solutions with Operator B, and plans to discuss contact centre metrics with Operator A in March. CBS should identify relevant metrics in terms of performance and cost, and track and report on these on an ongoing basis.

CBS should explore opportunities to decrease contact centre costs per appointment, including investigating the viability of outsourcing. This initiative will allow CBS to focus on areas that provide greater direct value to the organization.

### Table 4.7 - Summary of historical NCC cost/booked appointments indicators

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointments booked</td>
<td>660,845</td>
<td>666,853</td>
<td>666,224</td>
<td>680,434</td>
<td>1.0%</td>
</tr>
<tr>
<td>Total cost/booked appointment</td>
<td>$16.63</td>
<td>$18.27</td>
<td>$19.68</td>
<td>$19.50</td>
<td>5.5%</td>
</tr>
<tr>
<td>Total labour hours/booked appointment</td>
<td>0.67</td>
<td>0.70</td>
<td>0.70</td>
<td>0.66</td>
<td>(0.6%)</td>
</tr>
</tbody>
</table>

4.3.2.2 Collections

Collections are all activities associated with determining the eligibility of donors and collecting donations in permanent and mobile blood donor clinics. Included in this category are the following business processes:

- Whole blood collections: 790 FTEs, 86% of total expenses
- Apheresis plasma collections: 51 FTEs, 5% of total expenses
- Apheresis platelet collections: 50 FTEs, 10% of total expenses

**Historical trend**

Collections are the largest area of spending within Transfusable Products; of the $111 million in expenses in 2011-12, staff costs accounted for 66%, medical supplies 31% and general and administration expenses 3%.

### Table 4.8 - Summary of historical whole blood, plasma and platelet collections

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>110.7</td>
<td>113.1</td>
<td>111.7</td>
<td>111.0</td>
<td>0.1%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>71.5</td>
<td>74.5</td>
<td>73.6</td>
<td>72.9</td>
<td>0.7%</td>
</tr>
<tr>
<td>Medical supplies</td>
<td>35.5</td>
<td>35.0</td>
<td>34.9</td>
<td>35.0</td>
<td>(0.5%)</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>3.7</td>
<td>3.6</td>
<td>3.2</td>
<td>3.0</td>
<td>(6.9%)</td>
</tr>
<tr>
<td>FTEs</td>
<td>980.6</td>
<td>973.7</td>
<td>936.6</td>
<td>890.9</td>
<td>(3.1%)</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$37.39</td>
<td>$39.24</td>
<td>$40.29</td>
<td>$41.98</td>
<td>3.9%</td>
</tr>
<tr>
<td>LHU</td>
<td>1.89</td>
<td>1.87</td>
<td>1.85</td>
<td>1.74</td>
<td>(2.6%)</td>
</tr>
<tr>
<td>Cost per collection unit</td>
<td>$109.22</td>
<td>$111.31</td>
<td>$113.30</td>
<td>$111.23</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
As seen in Table 4.8 above, from 2008-09 to 2011-12 collection costs were essentially flat. Key points to note:

- **Staff costs increased by $1.4 million (CAGR of 0.7%)** during the period. As Figure 4.4 below indicates, this increase was a function of increases in labour rates, increases in costs due to a more expensive staff mix and decreases in costs from FTE reductions.

**Figure 4.4 • Summary of historical staff cost variance**

![Chart showing staff cost variance](image)

- **Medical supplies decreased by $0.5 million (CAGR of -0.5%)** during the period, which is tied to decreases in collections during the period.

- **General and administration costs decreased by $0.7 million (CAGR of -6.9%)** largely due to reductions in costs for donor food, mobile costs and travel through standardization of supplies and bulk purchases.

Beginning in 2009-10, CBS began looking at pure productivity, in terms of LHU, at the clinic level to identify opportunities to decrease costs. Up to this point, each clinic managed their budgets by linking them to collections (e.g., an increase in collections would mean an increase in hours). Changing the focus to LHU was a significant shift in mindset. Efforts over the last four years in collections have included:

- **People:** CBS began looking at the staff mix employed in the clinics. Within the clinics, there are three key roles: Nurses, Clinic Assistants and Phlebotomists. Based on research into practices of other blood services organizations, investigation into where bottlenecks occur within their clinics and identification of risks (e.g., resource shortages, turnover), CBS identified an opportunity to introduce a Donor Care Associate role that would perform a number of tasks (donor screening, venipuncture, prep table work) to provide greater flexibility. Obtaining approval from Health Canada, recently granted, was a lengthy process. During the period under review, CBS also introduced a Supervisor position in the clinics.

- **Process:** When CBS began looking at LHU per clinic, it became clear that there were large variances across regions and types of clinics. Generally, “distant” mobile clinics are more expensive on a per unit basis. CBS also began looking at moving clinics closer to areas of demand (Vancouver, Toronto) in order to reduce distribution costs. CBS has also introduced standardization in terms of clinic models (number of beds, staffing) for mobile and permanent clinics in 2011-12 based on work conducted over a number of years. Prior to standardization, these decisions were made by each manager independently. The introduction of these standard models, as well as the technology (Clinic Planning Tool) to do clinic planning, has enhanced CBS’ ability to standardize clinic decisions, establish targets for each clinic (collections, costs) based on past performance and to track/report on performance.

- **Technology:** Introduction of LVP collection to increase efficiencies in terms of output and new shakers to reduce the number of labeling errors and low weight units (reduce discards).

As a result of these efforts, CBS has gained the ability to plan, track and report on clinic performance at the regional and head office levels. The clinic deployment plan is revisited each year as part of the annual operational planning process.

Key performance measures identified by CBS in their operational plan and related to collections include:

- Donor satisfaction
- Percentage reduction in low weights, under weights
- Collections - by site, by region
- LHU
- LVP split rate

There are opportunities to further standardize productivity across collection clinics

Over the past number of years, a key focus of the efficiency review has been clinic optimization and standardization, which has consisted of a number of elements including modifications to staffing mix, clinic models and technologies. These changes have led to notable LHU performance improvement, particularly during 2011-12 where the labour hours per unit decreased by 6% from 2010-11. Nonetheless, the range in LHU data points for whole blood collections in 2011-12 (1.56 to 1.94) still indicates an opportunity for improvement.

As noted in CBS’ program and efficiency review, two regions have yet to implement standard models due to collective agreements.
Recommendation #22:
CBS should implement efficiencies identified to reduce overall costs by $8 to $9 million a year by 2014-15.

CBS has plans to continue to streamline its collection processes. The overarching initiative, identified as part of the productivity and efficiency review, includes full implementation of standard models, removal of certain managerial functions, increasing the number of LVP collections and implementation of new shakers.

The total potential savings identified for this initiative from 2012-13 to 2015-16 range from $33 to $35 million. Implementation costs were estimated at $7 million for net benefits of $26 to $28 million by 2015-16.

Higher staff costs account for most of the difference in whole blood clinic costs compared to other blood services organizations
Table 4.9 below displays the whole blood clinic costs per collection unit. Key points to note include:
• CBS' productivity, in terms of LHU, is generally in line with Operator A and Operator B
• CBS' costs appear to be almost 25% higher than operators A and B, on a per collection unit basis, due to higher costs per labour hour and higher costs for medical supplies
• CBS' labour cost per hour is 35% more than Operator A, 45% more than Operator B and 28% more than Operator C. The two key variables that affect labour costs are staff mix and salary cost. As explained in Section 4.3.1, CBS pattern-bargains rates with its unions, paying rates that are consistent with other providers in the acute health care sector. There appear to be opportunities to decrease labour costs in the mix of staff utilized. Figure 4.4 illustrates that staff mix changes across the three clinics during the period under review actually increased costs
• CBS' medical supplies are 1.2 to 1.6 times more costly than those paid by the other operators; as described in Section 5.4, CBS is continuing to focus on strategic sourcing of key supplies to lower costs and has identified potential future savings
• During 2011-12, CBS further reduced its LHU from that shown below by 6.4% to 1.69

Table 4.9 - Summary of whole blood clinic costs 2010-11 - ABO CMWG

<table>
<thead>
<tr>
<th></th>
<th>Cost per collection unit (purchasing power parity $)</th>
<th>Staff cost per labour hour (purchasing power parity $)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff</td>
<td>Medical supplies</td>
</tr>
<tr>
<td>CBS</td>
<td>58.98</td>
<td>25.47</td>
</tr>
<tr>
<td>Operator A</td>
<td>42.11</td>
<td>16.35</td>
</tr>
<tr>
<td>Operator B</td>
<td>39.67</td>
<td>19.36</td>
</tr>
<tr>
<td>Operator C</td>
<td>61.33</td>
<td>22.00</td>
</tr>
</tbody>
</table>
Based on 2010-11 data, a staff mix change to drive a 1% reduction of cost per labour hour could result in annual cost savings of $0.6 million in the whole blood collection process.

In 2011-12, nurses made up 40% of CBS’ labour mix for all collection activities. Relative to Operator C (47% nurses), CBS is making use of more non-nurse resources for collection activities. Nonetheless, CBS has a higher staff cost per labour hour, which suggests that CBS’ higher staff cost per hour may be influenced by higher rates for non-nurse employees (e.g., supervisors, phlebotomists). In Operator A, nurses made up 54% of total collection staff in the most recent fiscal year, while in Operator B, nurses made up only 17%.

**Recommendation #23:**
CBS should continue to explore opportunities to optimize staff mix through implementing the use of donor care associates.

CBS has a higher deferral rate than comparable blood services organizations

Blood collection efficiency, as shown in Figure 4.5 below, measures the number of complete whole blood donations obtained from the number of whole blood attending donors. Results are driven by recruitment practices, deferrals\(^{25}\) and clinic practices (e.g., wait times).

\(^{25}\) Refer to occasions in which a donor books an appointment, but is deemed ineligible to donate at the time of the appointment, resulting in the donor being deferred from donating, either temporarily or permanently, as specified by CBS eligibility requirements.

CBS’ financial and operating results are negatively impacted by higher deferral rates, which average close to 18%. In comparison, Operator B’s rate is 13% and Operator A’s is 7%. Higher deferral rates impact CBS’ recruitment costs, as more donors are needed for every whole blood collection. They also impact collection costs, as donors may have begun/completed the donor eligibility process.
CBS has identified opportunities to streamline its front-end processes at the clinics, which should decrease donor wait times and improve its whole blood collection efficiency. CBS is also working on improving instructions to increase clarity on deferrals.

**Recommendation #24:**

CBS should continue to explore opportunities to decrease deferral rates without affecting safety of blood products.

**CBS has an opportunity to reduce its discard rates**

CBS’ discard rates are currently around 8%; the following graph illustrates the discard rate for red blood cells, along with the reasons for the discards as of Q3 2012-13:

![Figure 4.7 - Summary of red blood cell and whole blood discards](image)

Low weight and underweight units accounted for almost 50% of total discards. Discards impact costs throughout the supply chain, as more collection units are required to meet customer demand.

**Recommendation #25:**

CBS should implement the end-to-end discard reduction efficiency initiative identified that could reduce overall costs by $1.3 to $2.2 million a year by 2015-16. These savings would be realized throughout the supply chain.

**CBS has an opportunity to further decrease the cost of platelet apheresis**

An area of savings for CBS has been the introduction of LVP collections, which has reduced the number of collections needed to achieve the same output, resulting in decreases in labour hours and medical supplies. The cost of platelet apheresis clinics has decreased by $2.4 million a year; on an equivalent unit basis, CBS has decreased overall costs by 22% since 2008-09.

**Table 4.10 - Summary of the historical impact of LVP collections**

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total expenses apheresis platelet collections ($ millions)</td>
<td>13.3</td>
<td>11.9</td>
<td>11.3</td>
<td>10.9</td>
<td>(6.3%)</td>
</tr>
<tr>
<td>FTEs</td>
<td>65.9</td>
<td>53.7</td>
<td>51.4</td>
<td>49.5</td>
<td>(9.1%)</td>
</tr>
<tr>
<td>LVP split</td>
<td>3.1%</td>
<td>24.4%</td>
<td>30.2%</td>
<td>35.8%</td>
<td></td>
</tr>
<tr>
<td>Total cost per equivalent unit collected</td>
<td>$324.76</td>
<td>$278.24</td>
<td>$261.81</td>
<td>$253.38</td>
<td>(7.9%)</td>
</tr>
</tbody>
</table>
The ABO Cost Model Group benchmarking study indicates that there is still room for improvement. CBS clinic costs for apheresis platelets are 1.5 to 2 times higher than those of Operator A and Operator B. A key factor in this cost difference is the percentage of LVP. During 2010-11, the LVP percentage was 30% for CBS, 53% for Operator A and 100% for Operator B.

**Recommendation #26:**

CBS should increase its LVP split rate to 70% by 2014-15, largely through moving to single technology across all regions, to reduce overall costs by an estimated $2.8 million a year by 2014-15.

### 4.3.2.3 Testing

The donor testing group tests samples from each and every donation for ABO & Rh, Antibody Screening, Syphilis, anti-HCV, anti-HIV, anti-HBC, HTLV I/II and HBsAg by serological method. Also, HBV, HIV, HCV and West Nile Virus are conducted by Nucleic Acid testing. In addition, CBS performs selective testing for Chagas, Cytomegalovirus (CMV), Red Cell Antibody Identification and Red Cell Donor Phenotype testing. Bacterial testing is performed within production. Medical supplies are the largest expense of this business process, accounting for 67% of total costs in 2011-12.

#### Historical trend

As demonstrated in Table 4.11 below, donor testing expenses decreased by $1.2 million between 2008-09 and 2011-12 for a CAGR of -0.7%. This rate of decrease was higher than the 0.5% diminution in testing volume (collections) resulting in an overall lower cost per collection. The key factors that contributed to this improvement were:

- Decrease in FTEs due to the closing of the Halifax lab and the replacement of the old platform for nucleic acid testing, which was more manual
- Better utilization of reagents and consumables and a reduction of cytomegalovirus testing from 100% to 45% increased medical supply efficiencies
Productivity was relatively consistent until 2011-12 when it improved by over 10% largely due to the closing of the Halifax lab.

**Table 4.11 - Summary of historical performance relating to donor testing**

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>54.5</td>
<td>54.4</td>
<td>53.5</td>
<td>53.3</td>
<td>(0.7%)</td>
</tr>
<tr>
<td>Staff costs</td>
<td>15.4</td>
<td>16.1</td>
<td>16.5</td>
<td>15.6</td>
<td>0.5%</td>
</tr>
<tr>
<td>Medical supplies</td>
<td>37.0</td>
<td>36.1</td>
<td>34.9</td>
<td>35.9</td>
<td>(1.0%)</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
<td>1.9</td>
<td>(3.6%)</td>
</tr>
<tr>
<td>FTEs</td>
<td>192.9</td>
<td>194.4</td>
<td>192.7</td>
<td>174.2</td>
<td>(3.3%)</td>
</tr>
<tr>
<td>Cost per collection</td>
<td>$53.70</td>
<td>$53.54</td>
<td>$54.28</td>
<td>$53.46</td>
<td>(0.1%)</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$40.83</td>
<td>$42.35</td>
<td>$43.94</td>
<td>$45.83</td>
<td>3.9%</td>
</tr>
<tr>
<td>LHU</td>
<td>0.37</td>
<td>0.37</td>
<td>0.38</td>
<td>0.34</td>
<td>(2.8%)</td>
</tr>
</tbody>
</table>

Key performance measures identified by CBS related to testing include:

- Productivity (LHU)
- Cost per sample tested

**CBS’ medical costs per collection unit drives 70% of the cost differential for donor testing with Operator A**

The table below highlights that, while in alignment with Operator C, CBS is almost 1.5 times more costly, on a per unit basis, than Operator A for donor testing and almost 3 times more than as Operator B. Key points to note from this analysis are:

- CBS’ productivity (LHU) is in alignment with Operator A with both countries significantly lagging behind Operator B; productivity is largely influenced by consolidation of facilities and automation of processes in addition to geographical and demographic differences between blood operations
- On a per unit basis, the cost of medical supplies is much higher in Canada. This delta is a function of purchasing power efficiencies, sourcing strategies as well as medical costs for any test not conducted by other blood services organizations. CBS’ decision-making process around safety and differences between organizations in terms of medical tests performed is reviewed in a later section; the review of CBS’ strategic sourcing capabilities is in Section 5.4
Table 4.12 - Summary of donor testing costs 2010-11 - ABO CMWG

<table>
<thead>
<tr>
<th></th>
<th>Cost per collection unit (purchasing power parity $)</th>
<th>Staff cost per labour hour (purchasing power parity $)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff</td>
<td>Medical supplies</td>
</tr>
<tr>
<td>CBS</td>
<td>13.71</td>
<td>28.93</td>
</tr>
<tr>
<td>Operator A</td>
<td>10.83</td>
<td>19.11</td>
</tr>
<tr>
<td>Operator B</td>
<td>4.51</td>
<td>11.30</td>
</tr>
<tr>
<td>Operator C</td>
<td>13.94</td>
<td>30.89</td>
</tr>
</tbody>
</table>

CBS has engaged with Operator B and Operator A as a result of these various benchmarking exercises to understand more fully the reasons for differences in order to drive future efficiencies within its operating model. CBS’ benchmarking team members have toured Operator B’s testing facilities and identified some of the reasons for differences in cost noted above:

- CBS included senior management costs, as well as other costs for equipment services that were not included in Operator B data
- Differences in testing performed; different pooling sizes for samples
- CBS does not have the same volume purchasing power as Operator B. Other operators may have the ability to be part of large purchasing groups

**Recommendation:**
Refer to Recommendation #44.

**4.3.2.4 Production and distribution**
Production includes all activities for the processing of whole blood into various components (red blood cells, plasma, platelets and cryoprecipitate). Distribution includes all the activities for processing hospital orders (end labelling, data entry into Progesa, shipment packing) as well as inventory management.
Historical trend

Until 2010-11, production and distribution activities were not tracked separately. They are grouped together for this analysis to show a proper trend analysis. Production activities represented 69% of total combined costs in 2011-12.

As demonstrated in Table 4.13 below, from 2008-09 to 2011-12 production and distribution expenses increased by $0.2 million, a CAGR of 0.2%. The major costs were staff costs, which accounted for 83% of total costs in 2011-12, and medical supplies which accounted for 16%.

- Overall staff costs increased nominally during the period under review due to a decrease of 42 FTEs (9% of the 2008-09 workforce) which was offset by increases in the average staff cost per hour (CAGR of 3.6%)
- The increase in medical supplies costs is largely due to the implementation of in-house bacterial/sterility testing in 2009-10, previously outsourced, with costs captured under Quality and Regulatory Affairs

Table 4.13 - Summary of historical components processed/distributed by labour hour

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>30.5</td>
<td>32.2</td>
<td>31.4</td>
<td>30.7</td>
<td>0.2%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>25.5</td>
<td>27.0</td>
<td>26.5</td>
<td>25.5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Medical supplies</td>
<td>3.9</td>
<td>4.7</td>
<td>4.7</td>
<td>5.0</td>
<td>8.6%</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>1.1</td>
<td>0.6</td>
<td>0.1</td>
<td>0.1</td>
<td>(51.6%)</td>
</tr>
<tr>
<td>FTEs</td>
<td>419.7</td>
<td>424.9</td>
<td>404.7</td>
<td>377.6</td>
<td>(3.5%)</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$31.16</td>
<td>$32.54</td>
<td>$33.59</td>
<td>$34.69</td>
<td>3.6%</td>
</tr>
<tr>
<td>Components processed per labour hour</td>
<td>2.94</td>
<td>2.95</td>
<td>3.01</td>
<td>3.30</td>
<td>3.9%</td>
</tr>
<tr>
<td>Cost/component</td>
<td>$12.68</td>
<td>$13.21</td>
<td>$13.20</td>
<td>$12.62</td>
<td>(0.2%)</td>
</tr>
</tbody>
</table>

Within these business processes, productivity, as measured by components processed per labour hour, has improved by 12% over the period (CAGR of 3.9%) due to the Buffy coat production method and improvements within the production process due to standardization.

Key performance measures identified by CBS and related to production include:
- Productivity measured by components processed per labour hour
- Yield efficiency

Additional performance measures identified by CBS and related to distribution include:
- Hospital satisfaction
- Order fill rate
There are opportunities to further standardize productivity across manufacturing centres

As shown in Table 4.14 below, CBS has increased productivity (components processed/distributed per labour hour) significantly between 2010-11 and 2011-12:

- Production productivity improved by 15% with a further 7% improvement targeted in 2012-13 to 3.1
- Distribution productivity improved by 10% with a further 5% improvement targeted in 2012-13 to 8.5

While there have been decreases in the variability between high-performing locations and lower performing locations, there are still opportunities for improvement, particularly within distribution.

Table 4.14 - Summary of historical productivity (components processed/distributed per labour hour) by manufacturing centre

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10/11</td>
<td>11/12</td>
</tr>
<tr>
<td>BC AND YUKON</td>
<td>2.80</td>
<td>3.04</td>
</tr>
<tr>
<td>CALGARY</td>
<td>2.83</td>
<td>2.88</td>
</tr>
<tr>
<td>EDMONTON</td>
<td>2.30</td>
<td>3.33</td>
</tr>
<tr>
<td>HALIFAX</td>
<td>2.54</td>
<td>3.24</td>
</tr>
<tr>
<td>HAMILTON</td>
<td>2.37</td>
<td>2.73</td>
</tr>
<tr>
<td>LONDON</td>
<td>2.65</td>
<td>3.24</td>
</tr>
<tr>
<td>NEW BRUNSWICK</td>
<td>2.41</td>
<td>2.65</td>
</tr>
<tr>
<td>NEWFOUNDLAND AND LABRADOR</td>
<td>1.92</td>
<td>2.78</td>
</tr>
<tr>
<td>OTTAWA</td>
<td>2.64</td>
<td>3.10</td>
</tr>
<tr>
<td>SASKATCHEWAN</td>
<td>2.58</td>
<td>3.16</td>
</tr>
<tr>
<td>TORONTO</td>
<td>2.38</td>
<td>2.97</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>2.84</td>
<td>3.20</td>
</tr>
<tr>
<td>NATIONAL</td>
<td>2.52</td>
<td>2.90</td>
</tr>
</tbody>
</table>

CBS can save a further $1.2 million in labour costs annually for every 5% increase in components processed per labour hour.
While CBS has improved its productivity by 12% since 2008-09, it remains less productive than comparable blood services organizations.

Table 4.15 below displays the manufacturing costs per collection unit for each comparable blood services organization. Manufacturing is defined as including all processes involved in the manufacturing of blood products including end labelling. CBS includes all of its production, distribution and management oversight costs. It appears that Operator A and Operator B may not be including all of these processes in their results. A deep dive is currently being conducted on this area to confirm the basis of comparison. Key points to note include:

- CBS’ cost per collection for these business processes is the highest of the three organizations
- The driver of higher costs appears to be lower productivity (LHU). CBS spends three times more LHU than Operator A and Operator B and 1.7 times more LHU than Operator C; even if the LHU were adjusted to remove management and all distribution activities, the LHU for CBS would still be 1.7 times greater than that of Operator A and B. CBS’ productivity is also low in relation to Operator C
- During 2011-12, CBS reduced its LHU from that shown below by 7% to 0.86
- The differences in the number of ASAP/STAT deliveries may have a significant influence on results. As discussed in Section 4.8, CBS has a much higher percentage of ASAP/STAT deliveries than comparable blood service organizations, which results in more orders/shipments to process and impacts CBS distribution costs in particular

Table 4.15 - Summary of manufacturing costs 2010-11 - ABO CMWG

<table>
<thead>
<tr>
<th></th>
<th>Cost per collection unit (purchasing power parity $)</th>
<th>Staff cost</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff</td>
<td>Medical supplies</td>
<td>Other costs</td>
</tr>
<tr>
<td>CBS</td>
<td>26.78</td>
<td>3.95</td>
<td>0.70</td>
</tr>
<tr>
<td>Operator A</td>
<td>6.59</td>
<td>3.21</td>
<td>0.16</td>
</tr>
<tr>
<td>Operator B</td>
<td>8.11</td>
<td>3.17</td>
<td>1.88</td>
</tr>
<tr>
<td>Operator C</td>
<td>11.68</td>
<td>2.72</td>
<td>0.40</td>
</tr>
</tbody>
</table>
The South Central Ontario and Dartmouth facility consolidation savings per year are estimated at $3.9 million with 75% of the estimated labour savings, in terms of reductions in FTEs, estimated in the production and distribution business processes.

Two additional initiatives were identified as part of a productivity and efficiency review. One of these projects has been scoped and prioritized and is scheduled to be implemented in 2012-13 or 2013-14, as part of the efficiency improvements identified by CBS, while the other may have a longer lead time due to dependencies on other projects, consultation required with stakeholders and/or scoping/prioritization to be performed.

Key opportunities identified include:

- Production workflow improvements to reduce non-critical procedures and non-value added steps (includes impact of reduction of paperwork which has dependencies on eProgesa implementation)
- Further optimization of production distribution to align productivity per site

The total potential savings identified for these two additional initiatives from 2012-13 to 2015-16 range from $8 to $11 million. Implementation costs were estimated at $6 to $7 million for net benefits of $2 to $4 million by 2015-16.

Recommendation #27:
CBS should work to implement efficiencies identified that could further reduce the overall costs of this business process by $3 to $4 million a year by 2015-16.

The potential benefits from order/policy improvement due to a decrease in ASAP/STAT routine deliveries are separately discussed in Section 4.7.

4.3.2.5 Management and overhead

There are specific cost centres for management and overhead within the recruitment and collections, production and distribution business processes. These cost centres include:

- Clinic services overhead: regional management of the collection side of the clinics including clinic supervision (56 FTEs)
- Regional Donor and Clinic Services directors: regional direction, regional volunteer coordination, regional training and regional clerical support (219 FTEs)
- Head office directors and support clinic services: national direction, national support for clinic operations, national training programs, national donor experience, national volunteer program management (20 FTEs)
- Product and hospital services head office and regional overhead: management for production and distribution activities (62 FTEs)
These costs are further broken down in the two tables below to better illustrate the percentage of total FTEs within these business processes dedicated to management activities.

**Historical trend**

As seen in Table 4.16 below, from 2008-09 to 2011-12, management and overhead expenses related to the recruitment and collections business processes (Donor and Clinic Services) increased by $3 million, a CAGR of 4.2%. This increase is due to higher staff costs and was largely a function of an addition of over 37 FTEs. According to CBS, there was a realignment of roles and responsibilities within many of the Donor and Clinic Services groups in the last five years, resulting in the movement of certain staff (administration and trainers) from donor and clinic services to the regional directors and support cost centre.

**Table 4.16 - Summary of historical management and overhead recruitment and collection services**

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>22.5</td>
<td>25.2</td>
<td>22.7</td>
<td>25.5</td>
<td>4.2%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>19.6</td>
<td>23.0</td>
<td>21.1</td>
<td>23.6</td>
<td>6.4%</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>2.9</td>
<td>2.1</td>
<td>1.6</td>
<td>1.8</td>
<td>(14.6%)</td>
</tr>
<tr>
<td>FTEs</td>
<td>257.0</td>
<td>310.5</td>
<td>276.5</td>
<td>294.6</td>
<td>4.7%</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$39.09</td>
<td>$38.02</td>
<td>$39.17</td>
<td>$41.12</td>
<td>1.7%</td>
</tr>
<tr>
<td>LHU</td>
<td>0.49</td>
<td>0.60</td>
<td>0.55</td>
<td>0.58</td>
<td>5.2%</td>
</tr>
<tr>
<td>% of total recruitment and collections costs</td>
<td>13%</td>
<td>14%</td>
<td>13%</td>
<td>15%</td>
<td>-</td>
</tr>
<tr>
<td>% of total recruitment and collections FTEs</td>
<td>15%</td>
<td>17%</td>
<td>16%</td>
<td>18%</td>
<td>-</td>
</tr>
</tbody>
</table>
As seen in Table 4.17 below, head office and regional overhead expenses related to production and distribution business processes increased $0.7 million (CAGR of 3.3%) from 2008-09 to 2011-12, due solely to staff cost increases that averaged 4% a year. The number of FTEs within this function remained constant.

Table 4.17 - Summary of historical management and administration production and distribution services

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>5.9</td>
<td>6.4</td>
<td>6.5</td>
<td>6.6</td>
<td>3.3%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>5.2</td>
<td>5.6</td>
<td>5.7</td>
<td>5.8</td>
<td>4.0%</td>
</tr>
<tr>
<td>Medical supplies</td>
<td>-</td>
<td>0.1</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>-</td>
</tr>
<tr>
<td>FTEs</td>
<td>62.0</td>
<td>62.1</td>
<td>63.5</td>
<td>62.1</td>
<td>0.1%</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$42.77</td>
<td>$46.44</td>
<td>$46.40</td>
<td>$48.06</td>
<td>4.0%</td>
</tr>
<tr>
<td>LHU</td>
<td>0.12</td>
<td>0.12</td>
<td>0.13</td>
<td>0.12</td>
<td>0.6%</td>
</tr>
<tr>
<td>% of total production and distribution costs</td>
<td>16%</td>
<td>17%</td>
<td>17%</td>
<td>18%</td>
<td>-</td>
</tr>
</tbody>
</table>

Management and overhead costs are not decreasing in line with operational costs

The relative percentage of management and administration FTEs and associated costs within the recruitment, collections, production and distribution business processes has increased over the past four years as efficiency improvements have been focused at the operational level. Management and overhead within recruitment/collections and production/distribution are the only business processes that either had an increase or no reduction in FTEs during the period under review. While it is understood that management plays an important role during periods of transformation, there is an opportunity to re-examine staff roles and responsibilities at various levels to lower the cost structure.

CBS has plans in place to continue to re-align its organizational structure. The current structure is aligned nationally and regionally by vertical function, which may have resulted in additional layers of management and overhead. At this time, these plans are under review and are expected to be approved within the upcoming months. The potential benefits of an integrated supply chain are further explored in Section 4.9.

Recommendation #28:
As part of its organizational redesign, CBS should reconsider the optimal mix of management across its supply chain processes.
Business line financial review

4.3.2.6 Logistics

Logistics are all activities associated with the safe and timely movement of fresh product (collected blood, blood products) nationwide.

Historical trend

Logistic expenses increased $2.8 million (CAGR of 3.0%) over the period.

Table 4.18 - Summary of historical indicators regarding logistics

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>29.7</td>
<td>30.3</td>
<td>30.4</td>
<td>32.5</td>
<td>3.0%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>16.4</td>
<td>17.9</td>
<td>18.4</td>
<td>19.6</td>
<td>6.2%</td>
</tr>
<tr>
<td>Medical supplies</td>
<td>0.3</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>6.4%</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>10.2</td>
<td>9.3</td>
<td>9.2</td>
<td>9.9</td>
<td>(1.0%)</td>
</tr>
<tr>
<td>Other general and administration</td>
<td>2.8</td>
<td>2.6</td>
<td>2.4</td>
<td>2.6</td>
<td>(2.4%)</td>
</tr>
<tr>
<td>FTEs</td>
<td>304.0</td>
<td>313.8</td>
<td>318.6</td>
<td>337.3</td>
<td>3.5%</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$27.66</td>
<td>$29.24</td>
<td>$29.58</td>
<td>$29.82</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
Staff costs are the largest expense within this business process representing 60% of total costs in 2011-12. Key points include:

- Operating expenses decreased by $0.3 million; this expense includes vehicle maintenance and operating costs, freight and courier costs and third party delivery costs
- The majority of general and administration costs in 2011-12 are related to bio medical waste removal
- Staff costs increased $3.2 million (CAGR of 6.2%) largely due to an increase of 33 FTEs (11%) as well as an increase in the average annual staff cost per hour of 2.5%. According to CBS management, the increase in FTEs is tied to an increase in the number of clinic events supported, while the increased logistic requirements are due to the South Central Ontario consolidation as well as decisions to in-source more of the logistics activities

Please refer to Section 4.8 for a complete review of the effectiveness of CBS’ transportation operations and opportunities for improvement.

4.3.2.7 Support services

CBS’ support services costs totalled $132 million in 2011-12, representing 25% of total expenses, excluding the cost of plasma protein products. Support services represent approximately 22% (830) of the total FTEs within the entire organization. CBS’ support services are comprised of the following key functions:

- Facilities Management
- Quality Assurance and Quality Control
- Talent Management
- Information Technology
- MSRA
- QSS, RA and Quality Audits
- Public Affairs
- Finance
- Supply Management
- General Counsel
- National Fundraising Office
- Corporate Strategy
- Operations Support
- CEO Office

The following expenses are excluded from support services: expenses related to R&D, projects, corporate costs (which includes costs relating to long-term disability benefits, maternity leave top-ups, post-employment/post-retirement benefits, interest expense, and gains or losses on foreign exchange), loss or gain on disposal of assets, and amortization.
Historical trend

As shown in Table 4.19, overall support services expenses have grown by $7.8 million, a CAGR of 2.1% between 2008-09 and 2011-12. Each of these functions is discussed separately below.

Table 4.19 - Summary of historical spending for support services

<table>
<thead>
<tr>
<th>$ millions</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Management</td>
<td>27.7</td>
<td>28.5</td>
<td>30.0</td>
<td>31.5</td>
<td>4.4%</td>
</tr>
<tr>
<td>Information Technology</td>
<td>23.2</td>
<td>23.9</td>
<td>26.4</td>
<td>28.1</td>
<td>6.6%</td>
</tr>
<tr>
<td>MSRA</td>
<td>14.2</td>
<td>13.4</td>
<td>13.5</td>
<td>13.7</td>
<td>(1.4%)</td>
</tr>
<tr>
<td>Quality Assurance and Quality Control</td>
<td>14.5</td>
<td>13.1</td>
<td>12.2</td>
<td>12.2</td>
<td>(5.7%)</td>
</tr>
<tr>
<td>Talent Management</td>
<td>10.0</td>
<td>10.4</td>
<td>10.2</td>
<td>10.2</td>
<td>0.7%</td>
</tr>
<tr>
<td>QSS, RA and Quality Audits</td>
<td>6.8</td>
<td>7.0</td>
<td>6.8</td>
<td>6.7</td>
<td>(0.3%)</td>
</tr>
<tr>
<td>Finance</td>
<td>6.2</td>
<td>7.1</td>
<td>6.1</td>
<td>6.4</td>
<td>0.6%</td>
</tr>
<tr>
<td>General Counsel</td>
<td>5.4</td>
<td>5.8</td>
<td>5.5</td>
<td>6.3</td>
<td>5.0%</td>
</tr>
<tr>
<td>CEO Office</td>
<td>5.1</td>
<td>4.9</td>
<td>5.3</td>
<td>5.3</td>
<td>1.6%</td>
</tr>
<tr>
<td>Public Affairs</td>
<td>0.7</td>
<td>3.0</td>
<td>3.4</td>
<td>4.2</td>
<td>79.2%</td>
</tr>
<tr>
<td>Operations Support</td>
<td>0.3</td>
<td>2.5</td>
<td>2.5</td>
<td>2.8</td>
<td>123.1%</td>
</tr>
<tr>
<td>Supply Management</td>
<td>1.8</td>
<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
<td>0.5%</td>
</tr>
<tr>
<td>National Fundraising Office</td>
<td>3.1</td>
<td>0.9</td>
<td>1.1</td>
<td>1.7</td>
<td>(17.9%)</td>
</tr>
<tr>
<td>Corporate Strategy</td>
<td>2.0</td>
<td>1.9</td>
<td>1.5</td>
<td>1.1</td>
<td>(18.5%)</td>
</tr>
<tr>
<td>Business Planning &amp; Operational Support</td>
<td>3.0</td>
<td>1.1</td>
<td>0.9</td>
<td>0</td>
<td>(95.3%)</td>
</tr>
<tr>
<td><strong>Total Support Services</strong></td>
<td>124.1</td>
<td>125.2</td>
<td>127.0</td>
<td>131.9</td>
<td>2.1%</td>
</tr>
</tbody>
</table>
Facilities Management is responsible for driving and contributing to optimal business results by leveraging infrastructure, planning improvements and meeting future resource needs in collaboration with business partners. In 2011-12, Facilities Management accounted for 41% of field support services. As seen in Table 4.19 above, expenses increased between 2008-09 and 2011-12 at a CAGR of 4.4%, with the majority of growth occurring in property expenses ($2.1 million) and equipment ($0.5 million). Staff costs also increased over the period by $1.1 million, which was a function of:

- Increases in staff costs per hour of 1.9%
- An increase in the number of FTEs (9.6). Some of this growth (3 FTEs) has been due to the South Central Ontario consolidation

Information Technology Operations is responsible for providing and managing the information technology solutions necessary for CBS to perform its activities. As shown in Table 4.19 above, Information Technology Operations’ expenses increased between 2008-09 and 2011-12 at a CAGR of 6.6%. This increase is primarily attributable to a $3.3 million increase in staff costs over that period, as the number of FTEs grew from 122.5 in 2008-09 to 153.7 in 2011-12 (representing a 25.5% increase). This increase in staff costs is linked to CBS’ realignment of field-based IT support, infrastructure redevelopment, increased operational support for systems such as the appointment management system and SAP CRM.

MSRA is responsible for transfusion medicine, medical support and expertise, emerging pathogens and infectious diseases, and surveillance and epidemiology across all of CBS’ business lines. As indicated in Table 4.19 above, MSRA expenses declined slightly between 2008-09 and 2011-12, decreasing at a CAGR of 1.4%.

Quality Assurance and Quality Control is responsible for the activities put in place within CBS to ensure the necessary level of confidence that all of CBS’ manufactured products and services meet operational needs and satisfy all applicable legislative, regulatory, and standard requirements. In 2011-12, Quality Assurance accounted for 16% of field support services. As seen in Table 4.19 above, expenses decreased between 2008-09 and 2011-12 at a CAGR of 5.7%. The majority of expenses within quality assurance are staff costs (93% in 2011-12). The decrease in overall expenses is largely due to FTE reductions of 18% (28.6). Further streamlining is anticipated in future years as CBS looks to consolidate its 10 quality control laboratories into 2 in 2012-13. The role of Quality Assurance within the safety framework at CBS is discussed in a later section.

Talent Management is responsible for strategic workforce planning, organizational development, and strategic performance management. As demonstrated in Table 4.19 above, Talent Management expenses remained relatively flat between 2008-09 and 2011-12.

QSS, RA and Head Office Quality Assurance are responsible for CBS’ management system, process management, head office quality assurance, quality audits and interactions with regulatory agencies across all of CBS’ business lines. As demonstrated in Table 4.19 above, QSS, RA & Quality Audits expenses remained essentially flat between 2008-09 and 2011-12.

Finance is responsible for financial strategies, financial management and business and financial planning across all of CBS’ business lines. As per Table 4.19, Finance expenses remained relatively flat between 2008-09 and 2011-12.

General Counsel is responsible for legal services, governance, privacy, records and information management, and loss and claims management. As indicated in Table 4.19, General Counsel expenses increased between 2008-09 and 2011-12 at a CAGR of 5.0%. This is primarily attributable to an increase in staff costs, as three FTEs were added to the unit between 2008-09 and 2011-12, (a 16% increase), with the remaining due to an increase in professional services fees and insurance premiums.

Public Affairs is responsible for government and stakeholder relations, external communications, media relations, translation, and internal communications across all of CBS’ business lines. As demonstrated in Table 4.19 above, Public Affairs expenses increased $3.5 million between 2008-09 and 2011-12, mainly due to the transfer of communications and translation in 2009-10.

Supply Management is responsible for purchasing goods and services, negotiating and managing contracts for goods and services, developing and maintaining supplier relations, developing and maintaining internal customer relations, managing the supply chain, promoting standardization, and managing inventories across all of CBS’ business lines. As demonstrated in Table 4.19 above, Supply Management expenses remained essentially flat between 2008-09 and 2011-12.
The National Fundraising Office is responsible for engaging individuals and organizations to financially support the goals and objectives of CBS. As demonstrated in Table 4.19, National Fundraising Office expenses have fluctuated significantly between 2008-09 and 2011-12. These fluctuations were primarily attributable to:

- An organizational realignment that took place in 2009-2010, when most of the staff in the Marketing and Communications group, representing $2.9 million was moved to Operations and Public Affairs.
- An increase in resources from 2010-11 to 2011-12 to support the new cord blood fundraising program.

Changes to Business Planning & Operational Support and Corporate Strategy and Operations Support are all due to internal organizational restructuring that took place within CBS.

Future plans

CBS’ Corporate Plan presents total general and administrative expenses in aggregate for each of the business lines, but does not provide forecasts specific to corporate services. Therefore, we have not performed a review of forecasted costs for corporate services.

An internal review conducted in 2012 identified productivity and efficiency opportunities of $9 million to $15 million.

In 2012, CBS commissioned a diagnostic review to assess CBS’ current state and to develop options for achieving efficiencies and productivity improvements. The study identified 13 productivity and efficiency opportunities related to support services. Potential savings from implementing the initiatives are summarized in the table below.

As summarized above, significant savings relating to support services were identified by CBS in the summer of 2012. However, the only support services-related initiatives that are currently underway are consolidation of quality control testing and the support services redesign, which is being undertaken as part of an overall review of CBS’ organizational structure. CBS has indicated that none of the other support services initiatives identified as part of this diagnostic review have been selected for Wave 1 of its PEP for implementation.

The review team performed two comparative analyses: The first analysis compared CBS with the three blood services organizations previously mentioned, while the second analysis compared CBS with cross-industry benchmarks. The analyses looked at:

- The overall corporate services cost as a percentage of total costs, excluding the cost of plasma protein products purchased.
- Total cost for each of Finance Talent Management/Human Resources, Information Technology Operations costs as a percentage of total costs, excluding the cost of plasma protein products purchased.

---

Table 4.20 - Summary of potential support services savings by function

<table>
<thead>
<tr>
<th>$ millions</th>
<th>Potential savings (low end)</th>
<th>Potential savings (high end)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Technology Operations</td>
<td>1.9</td>
<td>2.3</td>
</tr>
<tr>
<td>Talent Management</td>
<td>1.2</td>
<td>2.3</td>
</tr>
<tr>
<td>QSS, RA &amp; Quality Audits</td>
<td>1.5</td>
<td>2.3</td>
</tr>
<tr>
<td>MSRA</td>
<td>0.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Facilities Management</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Finance</td>
<td>0.7</td>
<td>1.3</td>
</tr>
<tr>
<td>Public Affairs</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Quality Assurance and Quality Control Consolidation</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Operations Support</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Supply Management</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>General Counsel</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Corporate Strategy</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Total Corporate Support Services</strong></td>
<td><strong>9.0</strong></td>
<td><strong>15.2</strong></td>
</tr>
</tbody>
</table>

---

26 Diagnostic Phase, August 2012
The results shown in Tables 4.21 and 4.22 below indicate:

- CBS’ corporate services costs are comparable with other blood services organizations
- Talent Management/Human Resources and Finance at CBS are close to being best performers
- Information Technology at CBS is the second most expensive of the peer group and costs for other corporate functions are higher than two operators and only 0.2% lower than the third one
- Blood services organizations, in general, seem to have corporate structure and operations that make their HR, Finance and Information Technology costs higher than other industries

**Table 4.21 - Summary of key corporate functions’ costs 2011-12**

<table>
<thead>
<tr>
<th></th>
<th>CBS</th>
<th>Operator A</th>
<th>Operator B</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>1.9%</td>
<td>2.3%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Finance</td>
<td>1.2%</td>
<td>2.4%</td>
<td>1.7%</td>
</tr>
<tr>
<td>IT</td>
<td>5.3%</td>
<td>5.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>All other Corporate services</td>
<td>16.6%</td>
<td>15.5%</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

*Excludes costs related to plasma protein products
Green denotes the best performer
Differences in activities performed by the different functions may vary between organizations and may impact the actual ratios

**Table 4.22 - Comparison of CBS support services to APQC cross-industry benchmarks**

<table>
<thead>
<tr>
<th>Key metrics for support services</th>
<th>CBS</th>
<th>Top Performer</th>
<th>Median</th>
<th>Bottom Performer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information Technology Operations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total IT cost per $1,000 revenue</td>
<td>$52</td>
<td>$8</td>
<td>$15</td>
<td>$34</td>
</tr>
<tr>
<td>Total IT budget per FTE</td>
<td>$7,378</td>
<td>$1,798</td>
<td>$3,377</td>
<td>$7,429</td>
</tr>
<tr>
<td><strong>Talent Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs of the HR function per $1,000 revenue</td>
<td>$19</td>
<td>$4</td>
<td>$8</td>
<td>$13</td>
</tr>
<tr>
<td>Total costs of the HR function per employee</td>
<td>$2,669</td>
<td>$883</td>
<td>$1,772</td>
<td>$3,049</td>
</tr>
<tr>
<td><strong>Finance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cost of the finance function per $1,000 revenue</td>
<td>$12</td>
<td>$8</td>
<td>$14</td>
<td>$25</td>
</tr>
</tbody>
</table>

27 APQC cross-industry benchmarks were filtered to exclude organizations with greater than $1 billion revenue from the sample.
CBS revenue values used for benchmarking are net of costs of plasma protein products - 2012
In addition, an independent benchmarking exercise conducted by a consulting firm in 2009 found that CBS’ total information technology costs were 4% greater than the amounts peer groups would spend to support a similar workload, and total staffing was 11% greater than the level peers would require to support the same efforts. The study found that CBS’ personnel and transmission costs were greater than its peer groups’, while costs in all other areas examined (hardware and software, occupancy, and disaster recovery) were lower than CBS’ peer groups. It was noted that higher personnel costs were driven in part by the high cost of contractors that CBS was using, and that higher transmission costs were driven by three separate factors: Business requirements for redundancy and diversity; Geography factors for network coverage; and Managed services from vendors (vendor-owned Wide Area Network hardware that cannot be separated from transmission costs)\(^{28}\). Since this benchmarking study was conducted, CBS information technology-related expenses, including personnel costs, have further increased.

As previously mentioned, CBS has already identified productivity and efficiency for its corporate services:

- Talent Management: $1.2 to $2.3 million
- Information Technology Operations: $1.9 to $2.3 million
- Finance: $0.7 to $1.4 million
- Others: $5.2 to $9.3 million

The implementation of these opportunities would close some of the gaps for Information Technology and other corporate services and move CBS from the bottom to the middle of the performance scale as shown in the table below.

### Table 4.23 - Summary of key corporate functions’ costs 2011-12

<table>
<thead>
<tr>
<th></th>
<th>Annual cost as a % of total costs* for 2011-12</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HR</td>
<td>Finance</td>
</tr>
<tr>
<td>CBS</td>
<td>1.6%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Other performer</td>
<td>1.9%-3.0%</td>
<td>1.7%-3.5%</td>
</tr>
</tbody>
</table>

*Excludes costs related to plasma protein products

Green denotes the best performer

Differences in activities performed by the different functions may vary between organizations and may impact the actual ratios

**Recommendation #29:**

CBS should implement some of the productivity and efficiency opportunities identified for its Information Technology and other corporate services functions. Improvements for Talent Management and Finance should not be considered a priority at this time.

\(^{28}\) Gartner – Canadian Blood Services IT Overview Benchmark Final Report – 14 July 2009
CBS’ National Fundraising Office should be run as a standalone entity

CBS’ National Fundraising Office is responsible for engaging individuals and organizations to financially support the goals and objectives of CBS. Although the National Fundraising Office’s activities have been limited to date, expenses related to the Office have increased over the last two years, as CBS increased its fundraising efforts to raise $12.5 million to support Cord Blood bank initiatives. Of this amount, CBS estimates it will cost $2.5 million in administrative expenses.

The review team noted that CBS has been operating and funding its National Fundraising Office as part of its Transfusable Products line of business. Organizations typically operate their charity operations as a separate legal entity, usually paying their fundraising and administration costs from the donations received. In the case of CBS, it has been financing 80% of its National Fundraising Office operations from its Members’ contributions. Between 2008-09 and 2011-12, expenses of the National Fundraising Office amounted to almost $4 million, including $0.4 million in services received in lieu of donation. During the same period, CBS received $3.6 million in donation and had deferred $1.3 million as of 31 March 2012. At the time of this report, CBS has also received pledges for an additional $3.4 million.

**Recommendation #30:**

CBS should establish its National Fundraising Office as a standalone entity rather than being a corporate function under Transfusable Products. The independent National Fundraising Office should finance its activities from donations received, as is the normal practice. CBS should develop a long term strategic plan for its fundraising activities and assess the effectiveness and cost-efficiency of its National Fundraising Office.

### 4.4 Plasma Protein Products

#### 4.4.1 Context

PPP accounted for 46-49% of total CBS expenses during the period under review. Members are charged for the actual cost of the products used by hospitals in their jurisdictions and an allocation of administration costs based on the dollar value of the product that is used.

This business line is responsible for the following key functions:

- Purchase of commercial plasma derived and recombinant products for distribution to hospitals
- Manufacturing of Canadian plasma into derivative products through contract fractionation services. The plasma shipped for contract fractionation is a combination of plasma from whole blood donations and apheresis collections and plasma purchased from the US. According to CBS, this meets about 30% of their Ig requirements and 100% of their Albumin requirements. CBS has worked to grow a competitive market for their contract fractionation and commercial product purchases through the development of a second fractionation and multiple sources of commercial products where available

The key cost drivers are product demand and unit costs. PPP is also influenced by exchange rates, as most products are purchased in US dollars. Demand for plasma protein products varies by product and province and has been consistently increasing.
While CBS is able to affect the product unit cost through contract negotiations and streamlined administration costs, utilization of the product is being driven by provincial, national and global clinical practices.

**Historical trend**

As shown in Table 4.24 below, total PPP expenses increased $35.9 million from 2008-09 to 2011-12, at a CAGR of 2.7%. The majority of expenses (99% in 2011-12) relate to product costs which increased at a CAGR of 1.2%.

**Table 4.24 - Summary of historical performance of Plasma Protein Products**

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product costs</td>
<td>441.3</td>
<td>464.3</td>
<td>454.3</td>
<td>458.1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Staff costs</td>
<td>2.0</td>
<td>2.2</td>
<td>2.1</td>
<td>2.2</td>
<td>4.2%</td>
</tr>
<tr>
<td>Medical supply costs</td>
<td>1.1</td>
<td>1.2</td>
<td>1.1</td>
<td>1.0</td>
<td>(2.9)%</td>
</tr>
<tr>
<td>General and administration</td>
<td>2.5</td>
<td>5.1</td>
<td>4.3</td>
<td>4.2</td>
<td>20.0%</td>
</tr>
<tr>
<td>Foreign exchange gains/(losses)</td>
<td>(20.3)</td>
<td>16.4</td>
<td>1.6</td>
<td>(3.1)</td>
<td></td>
</tr>
<tr>
<td>Total FTEs</td>
<td>25.6</td>
<td>26.9</td>
<td>25.3</td>
<td>26.1</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

In terms of spending to manage this business line:

- Staff costs have increased at a CAGR of 4.2% due to wage increases; the number of FTEs has remained constant.

- General and administration expenses in 2011-12 largely consisted of other purchased services (B19 supplies and testing which is billed separately for product sent for fractionation) of $1.6 million and freight of $1.6 million. The expense for general and administration expenses in 2008-09 is misleading as a cash discount of $2.3 million from the purchase of plasma inventory was posted to this account; in subsequent years the discount has been posted to inventory.
4.4.2 Observations and recommendations

Increased utilization of plasma protein products impacted costs by $50 million over the period under review.

Product costs increased at a CAGR of 1.2% over the period. As shown in the figure below, higher product costs are largely a function of increased volume:

- Volume impact, due to higher product utilization, was $50 million from 2008-09 to 2011-12
- Price impact during this period was $25 million
- Provincial and territorial governments benefitted from a positive exchange rate over the past number of years, which decreased the potential cost increase by $39 million

As shown in Appendix C, the CAGR of product prices for the top two products in terms of expense, Ig and Recombinant factor VIII (rFVIII), has been 1.9% and 1.2% respectively, well below the rate of inflation.

Figure 4.8 - Summary of PPP cost variance

*Incorporates results from the top five plasma protein products that accounted for 84% of total product costs in 2011-12: Ig, rFVIII, Recombinant Factor Vila, Recombinant Factor IX, Starches

CBS has been actively pursuing approaches to reduce the cost of plasma protein products. During 2012-13, CBS successfully negotiated significant cost reductions for rFVIII. CBS also recently completed an RFP for the rest of its commercial plasma protein products and contract fractionation prices, which is expected to result in further price reductions. Observations and recommendations around CBS’ approach and the results of contract negotiations are discussed in Section 5.
While the newly negotiated rates for plasma protein products will reduce per unit costs on a go-forward basis, the other driver of PPP expenses is product utilization. The average annual volume growth for the period under review was 7.9% for Ig and 5.0% for rFVIII. Plasma protein product utilization can negate savings being realized through contract negotiation.

**Recommendation #31:**
Members should develop guidelines and mechanisms to promote appropriate usage of plasma products; CBS, using its unique expertise, should play a leadership role in exploring ways to achieve this objective.

### 4.5 Diagnostic Services

#### 4.5.1 Context
Diagnostic Services accounted for 2% of total CBS expenses during the period under review. Diagnostic Services are provided for patients and hospitals across Western Canada and in some parts of Ontario. The activities differ from one province to another based on customer requirements. The Diagnostic Services budget is prepared on a cost-recovery basis. Members are charged on a per-procedure basis, which includes direct costs as well as overhead.

#### Historical trend
As shown in Table 4.25 below, total Diagnostic Service expenses increased $1.6 million from 2008-09 to 2011-12, at a CAGR of 3.4%. The majority of expenses (73% in 2011-12) are related to staff costs.

- Overall staff costs increased by $1.2 million during the period under review, which is a function of an increase in FTEs of 5.8 and in the average staff cost per hour of 1.9% per year. These staff increases were a result of acquiring prenatal testing, including existing hospital staff in one province, as well as succession planning positions to prepare for retirement of employees in critical positions in the near future.

#### Table 4.25 - Summary of historical performance of Diagnostic Services

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Costs</td>
<td>11.0</td>
<td>10.8</td>
<td>11.6</td>
<td>12.1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Medical Supply Costs</td>
<td>2.3</td>
<td>2.6</td>
<td>2.8</td>
<td>2.8</td>
<td>6.8%</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>1.8</td>
<td>3.4</td>
<td>3.3</td>
<td>1.7</td>
<td>(1.7%)</td>
</tr>
<tr>
<td>Total FTEs</td>
<td>131.0</td>
<td>133.8</td>
<td>142.0</td>
<td>136.8</td>
<td>1.5%</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$42.93</td>
<td>$41.52</td>
<td>$41.85</td>
<td>$45.49</td>
<td>1.9%</td>
</tr>
</tbody>
</table>
4.5.2 Observations and recommendations

Pricing for procedures varies significantly by province and has increased at a greater rate than volume.
The prices charged to each province for the same procedure vary based on differences in:

- Test volumes
- Labour costs as defined by provincial collective agreements
- Hours of work: The Manitoba site is required to have staff available on site 24/7 to support the two tertiary hospitals and four community hospitals in Winnipeg. Alberta and Saskatchewan provide the same services to small 50-bed hospitals Monday to Friday with on call coverage. Coverage outside of day shift hours requires the payment of premiums.

Table 4.26 below shows the per unit difference in price in 2011-12 for red cell serology, which ranges from $31 to $51. Table 4.27 shows the relationship between price and volume increases for red cell serology procedures.

<table>
<thead>
<tr>
<th>$ millions</th>
<th>Price per procedure</th>
<th>% difference from BC rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>$31.31</td>
<td>-</td>
</tr>
<tr>
<td>Alberta</td>
<td>$34.04</td>
<td>9%</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>$51.38</td>
<td>64%</td>
</tr>
<tr>
<td>Manitoba</td>
<td>$43.57</td>
<td>39%</td>
</tr>
</tbody>
</table>

Table 4.27 - Summary of historical price and volume growth in red cell serology procedures

<table>
<thead>
<tr>
<th></th>
<th>Price CAGR 2008/09 -2011/12</th>
<th>Volume CAGR 2008/09 - 2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>4.1%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Alberta</td>
<td>5.1%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>10.0%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Manitoba</td>
<td>5.4%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Productivity is monitored and measured against a benchmark.

CBS’ productivity (number of types and screens, products distributed per FTE) as measured against a Clinical Laboratory benchmark demonstrated that three of its four laboratories exceeded the benchmark median of 3,000 procedures per paid FTE:

**Figure 4.9 - Summary of Diagnostic Services productivity by lab**
Recommendation #32:
The provincial and territorial governments should work with CBS to investigate opportunities to decrease costs.

Decreasing costs may be achieved through centralization of testing or divesting testing services performed by CBS to local hospitals. Centralization may be possible for prenatal testing, which represents the majority of red cell serology procedures. Platelet immunology testing was centralized in the Winnipeg site and, during the period under review, the cost per unit for this procedure decreased by 6%, demonstrating the potential cost benefits of centralization. A centralization strategy may need to be led by CBS with the approval and collaboration of the provincial and territorial governments using the service.

4.6 Stem cells

4.6.1 Context
The Stem Cells business line consists of the OneMatch Stem Cell and Marrow Network, supported by the HLALaboratory. The OneMatch Network is dedicated to recruiting and locating compatible, unrelated stem cell donors for patients in Canada and internationally. The Stem Cells business line is in a growth phase, with patient demand increasing year over year. As of 2011, Canada is currently only meeting stem cell patient needs 50-60% of the time. A top priority in the coming years is to continue to build a high performing national network of potential donors, products and services and to be an active member of the international community, which will benefit patients in need of stem cell transplants. Stem Cells accounted for 2.9% of total CBS expenses during the period under review. The three existing sources of stem cells are bone marrow, peripheral blood and cord blood. Consistent with the worldwide trend, OneMatch continues to see a significant shift in demand for products away from bone marrow stem cells towards peripheral blood and cord blood stem cells.

Figure 4.10 below shows the number of new patient search requests quarterly vs. the number of transplants occurring in Canada. Approximately 50% of the Canadian patients, for which a search is started, get a transplant. Ideally, the gap between the line for new Canadian patient searches and the line for total Canadian transplants should get smaller over time.
Historical trend
As shown in Table 4.28 below, Stem Cells expenses increased $28.6 million from 2008-09 to 2011-12, a CAGR of 16.6%.

Table 4.28 - Summary of the historical performance of Stem Cells

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses ($ millions)</td>
<td>18.0</td>
<td>19.7</td>
<td>21.0</td>
<td>28.6</td>
<td>16.6%</td>
</tr>
<tr>
<td>Staff Costs</td>
<td>3.9</td>
<td>4.2</td>
<td>5.1</td>
<td>7.1</td>
<td>22.0%</td>
</tr>
<tr>
<td>Medical Supply Costs</td>
<td>2.2</td>
<td>2.2</td>
<td>3.5</td>
<td>3.8</td>
<td>20.1%</td>
</tr>
<tr>
<td>General &amp; administration</td>
<td>11.9</td>
<td>13.3</td>
<td>12.4</td>
<td>17.7</td>
<td>14.1%</td>
</tr>
<tr>
<td>Total FTEs</td>
<td>47.3</td>
<td>50.2</td>
<td>61.4</td>
<td>84.5</td>
<td>21.3%</td>
</tr>
<tr>
<td>Staff cost/hour</td>
<td>$42.40</td>
<td>$43.20</td>
<td>$42.81</td>
<td>$43.10</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

The majority of expenses (62% in 2011-12) are related to general and administrative costs, followed by staff costs (25% in 2011-12). The Stem Cells business line costs have increased as result of growth activities.

CBS has undertaken several strategic and operational initiatives for the Stem Cells business line, which would further add to the operational costs. Some of these initiatives include:

- Cord Blood: This program includes building a national, public umbilical cord blood bank. The initiative also includes a fundraising initiative, which began at the end of 2010-11 and will continue for an additional three years
- New Registrant Typing Strategy initiative: New registrant HLA-C intermediate resolution and DRB1 high resolution typings
- Research and programs to increase system effectiveness through stakeholder/transplant centre engagement and patient campaigns
- Continuing to support International Registries with continuing recruitment of young, ethnic donors and expanded HLA typing

CBS is undertaking an initiative to actively manage costs by focusing on drivers, expanding access to national and international markets, and managing costs effectively.

CBS’ OneMatch donor composition is compared to the WMDA, an international association that enables international collaboration to facilitate the exchange of high quality hematopoietic stem cells for clinical transplantation worldwide. A comparison of the age of CBS’ OneMatch donors with WMDA, which includes 76 international registries, shows that OneMatch has a higher proportion of donors in higher age groups, as shown in the figure below:

Figure 4.11 - Summary of OneMatch donor comparison with WMDA
DcornerMatch donor base for CBS has close to 50% of the donors in the 45 and above age group. Some of these donors will be retiring from the registry in the next few years; as a result, the attrition rate due to overage is expected to be approximately 7,000 per year.

Presently, Canadian donations account for less than 20% of all transplants performed. While the total transplants are expected to increase, the percentage from Canadian donations is expected to remain at less than 20%. Various factors such as age, gender and ethnic background affect the degree of matching. The figure below presents the actual and planned transplants.

Figure 4.12 - Summary of historical Canadian transplants and donors

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Budget</th>
<th>Plan</th>
<th>Plan</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>257</td>
<td>266</td>
<td>264</td>
<td>281</td>
<td>309</td>
</tr>
<tr>
<td>2009-2010</td>
<td>283</td>
<td>266</td>
<td>264</td>
<td>281</td>
<td>309</td>
</tr>
<tr>
<td>2010-2011</td>
<td>53</td>
<td>53</td>
<td>61</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>2011-2012</td>
<td>48</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012-2013</td>
<td>53</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-2014</td>
<td>61</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-2015</td>
<td>70</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.6.2 Observations and recommendations

The gap between patient needs and transplantation completed has remained at similar levels during the period under review.

Over the last six years, the gap between patient need and total transplants has remained the same. The total number of Canadian transplants is influenced by multiple factors, including the transplant centre capacity and the inability to find a match from a donor.

To effectively meet demand, there is a need to continue to change the composition of the donor network to include younger donors and improve ethnic diversity. CBS is focusing on using North American and international studies to determine the optimal size and ethnic composition of the network. This will enable it to refine its recruitment strategy to meet patient needs.

Recommendation #33:

CBS should continue to build on existing effort to improve the donor base. Savings can be generated by increasing the use of Canadian donations for transplants.

CBS should also continue to develop and foster partnerships with customers, stakeholders and international communities, such as the WMDA. These collaborations may result in matching Canadian patients to international donors.

4.7 Inventory management practices

CBS is the essential service provider of transfusable products and plasma protein products and, hence, must carry sufficient inventory to account for various supply risks such as product withdrawals, global shortages, production disruptions and defects and delivery delays. Mitigating risks of stock outs is vital for CBS as unavailability of stock could lead to life threatening situations. One of the techniques that CBS employs to mitigate supply risks is to contractually mandate its suppliers to carry inventory in Canada, in addition to that held by CBS at its own facilities.

In 2011-12, CBS had, on average, $92 million in working capital tied to inventory, $85 million in plasma protein products and $7 million in medical supplies for Transfusable Products. The average inventory turns was 5.4 for plasma protein products and 12.7 for blood bags. A comparative analysis indicated that CBS' inventory turnover performance was better than ARCBS, which turns its inventory only four times a year. However, Héma-Québec inventory performance was better, with inventory turns of 7.3 for plasma protein products and 21.1 for blood bags.

There are three major categories of inventoried products at CBS:

- Plasma protein products
- Medical supplies for Transfusable Products
- Testing supplies, including testing reagents and testing consumables

29 $5.3 million for Transfusable Products medical supplies (excluding testing reagents and consumables), $1.7 million for testing reagents (based on $1 million inventory held in Toronto)
CBS’ use of qualitative and experience-based methods for inventory is possibly driving excess inventory levels across the supply chain

The inventory for plasma protein products and medical supplies for Transfusable Products are managed by three different groups at CBS using different inventory management techniques. However, these techniques are predominantly qualitative and experience-based in nature and not statistically derived. A subjective derivation of inventory levels makes it difficult to model the impact of levers that control inventory performance; for example, if supplier lead times are reduced or forecasting accuracy improves, then less safety stock is required.

The review team conducted a quantitative exercise to determine the size of the safety and cycle stock requirements for the four most important (by spend) plasma protein products and blood bags. The following four plasma protein products were selected, as they accounted for approximately 80% of the plasma protein products costs in 2011-12: Ig, Recombinant FVIII (rFVIII), Recombinant FVIIa (rFVIIa) and Recombinant FIX (rFIX) plasma protein products.

The purpose of this analysis was to estimate the cycle stock and safety stock component for each of the four plasma protein products and compare it with the amount of inventory CBS carries. The definitions of the various components of the inventory are highlighted in the figure above. Cycle stock is determined by calculating the average inventory required to fulfill demand between replenishment from the supplier. The safety stock is calculated using the following formula:

\[ \text{Safety Stock} = \text{Safety Factor} \times \sqrt{(\text{Demand Variability}^2 + \text{Lead Time Variability}^2)} \]

The safety stock formula provides a mathematical approach for calculating inventory to carry for mitigating stock outs. This accounts for the variability in demand as well as the variability in supply.

Breaking CBS’ inventory down into the cycle and safety stock components defined in the figure above and comparing against average inventory levels indicates a delta of $36 million for plasma protein products and $1 million for blood bags between actual and theoretical values. However, the review team did not calculate the strategic stock component of the inventory model, which may be significant given CBS’s status as the sole source distributor for several life saving therapies in Canada. Therefore, the entire delta between the theoretical and actual values cannot be attributed to excess inventory. It does, however, serve as an indicator for CBS to rigorously calculate for all inventory components, particularly strategic stock. While CBS does not formally use the term or calculate for strategic stock, interviews indicated that CBS personnel responsible for inventory management account for this concept in a qualitative manner. (The delta highlighted above are based on average pricing over the past 12 months and do not reflect unit price savings achieved through a recent plasma protein products sourcing exercise)

<table>
<thead>
<tr>
<th>Key Components</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess &amp; Obsolete</td>
<td>Excess, expired or no longer used inventory.</td>
</tr>
<tr>
<td>Strategic Stock</td>
<td>Inventory required to withstand long hold ups or scarcity due to natural disasters and catastrophic events, major disruptions to supplier operations, product recalls etc.</td>
</tr>
<tr>
<td>In-Transit</td>
<td>Inventory being loaded, unloaded or transported.</td>
</tr>
<tr>
<td>Safety Stock</td>
<td>Inventory required to cover demand uncertainty (forecast error) and supply uncertainty during lead time.</td>
</tr>
<tr>
<td>Cycle Stock</td>
<td>Inventory required to cover periods between replenishment from the supplier.</td>
</tr>
</tbody>
</table>
However, it should be noted that CBS also contractually mandates its suppliers to carry four to six weeks of inventory on hand for CBS. Even if the entire delta calculated above is hypothetically attributed to strategic stock requirements, then this supplier stock indicates that the system as a whole is possibly carrying significant amounts of excess inventory. Costs for inventory carried by the suppliers are likely assumed by CBS, since suppliers generally pass on the cost of holding inventory on behalf of their customers.

Plasma protein products

Plasma protein products inventory levels are set based on the Plasma Protein Product Inventory Target Levels Report. As documented in the report, target inventory levels are determined by analyzing the supply chain risk for each product provided by a unique supplier.

The analysis considers:

- Production and batch characteristics
- Terms within supply agreements that provide supply protection for CBS
- Terms within supply agreements that may limit CBS’ ability to procure additional product, if required
- Degree of difficulty in forecasting demand of the product
- Product supply history and, where applicable, individual product suppliers’ availability of alternate licensed products and CBS’ product supply diversity for the product

A risk score is calculated using the factors identified above. The final score is divided by eight to determine the number of weeks of inventory CBS should carry. Although CBS has used this model for many years and has reviewed it with a consulting firm in the past, CBS should consider the following:

- The model was last reviewed in April 2009. Since then, risk factors or weighting may have changed. One of the weaknesses of this model is, it does not account for changing risk considerations due to market condition changes
- The risk score is divided by eight to derive the weeks of supply to carry at CBS. Eight was selected based on historical experience on supply disruptions with Ig and Recombinant FVIII. Dividing the risk score of Ig with eight yields approximately nine and a half weeks of supply that should be carried at CBS. This, combined with six weeks of supply at the supplier, equals approximately four months of total supply. Four months is also the approximate time it would take CBS to obtain a new supply of Ig (from existing its supplier or alternate sources in the event of major supplier disruptions from a specific supplier, or for that manufacturer to resolve its issues and resume a near normal level of production output). As dividing the risk score by eight gives approximately the right coverage for CBS, it has been used for other plasma protein products as well. While dividing the risk score by eight may work for Ig, this score may not work for other plasma products. This method to calculate inventory levels has not been previously observed by the review team at organizations where inventory management is considered a leading practice

Figure 4.14, 4.15 and 4.16 display two columns. The first column indicates the current inventory on hand, which equals approximately eight weeks of supply. The column to the right displays the theoretical cycle stock (in yellow) and safety stock (in grey) estimated by the review team. The values in the chart were calculated using CBS historical data and applying it to the standard inventory models. The standard inventory models indicate CBS should carry approximately four weeks of cycle and safety stock on hand for Ig.

The following risks identified in the PPP Inventory Target Levels Reports are accounted for in the safety stock:

- Degree of difficulty in forecasting demand of the product
- The supply history of the product and, where applicable, the individual suppliers of the product

The safety stock formula provides CBS with a mathematical way to calculate inventory to hold to mitigate some of the risks identified in the Plasma Protein Product Inventory Target Levels Report.

As displayed in each of the charts, the theoretical inventory levels CBS should carry to service a stable base of operations is lower than the current levels. However, as previously explained, the review team has not accounted for strategic stock requirements. The difference in the inventory levels displays the potential size of the opportunity and not necessarily the magnitude of excess that CBS is currently carrying. Based on the analysis conducted, CBS has an opportunity to address $36 million in inventory ($15 million of rFVIII, $14 million of Ig, $4.6 million of rFVIIa and $2 million of rFIX) by first determining the size of the strategic stock components and then addressing the remaining excess.

30 Documented from Page 7 of Plasma Protein Product Inventory Target Levels – Final Version
In the absence of any formal calculations or documents, the review team was unable to make a determination of the strategic stock component. Furthermore, calculating the theoretical strategic stock would require a comprehensive analytical exercise that was not within the scope of this review.

Again it is important to note that the inventory values identified in the charts are not meant to display the exact amount of inventory CBS should carry. These charts point to the potential opportunity available for reduction in inventory.

Transfusable products medical supplies
The medical supplies inventory for the Transfusable Products business line is managed by the Supply Management department (except for testing reagents and consumables). The major expense category managed by this team is blood bags. CBS manages this inventory using the forecast to stock model. The team uses an Excel spreadsheet and targets carrying between one and a half and four weeks at each warehouse. The suppliers with warehouses located in Canada are also contractually required to hold two months of inventory.

Figure 4.17 compares the actual inventory on hand with the theoretical value. CBS typically carries three to five weeks’ worth of inventory of blood bags across the supply chain. Interviews with the process manager indicate that CBS would need to carry two weeks of blood bag inventory, depending on the site. The theoretical models suggest that CBS should carry three to five weeks’ worth of blood bags supplies (assuming one week of strategic stock). As mentioned in the PPP analysis above, the strategic stock inventory should be calculated.

The difference between the inventory on hand and theoretical values indicates that CBS is potentially carrying excess product of about $1 million, on average. As with plasma protein products, strategic risk factors are not accounted for in this calculation of theoretical excess.

Testing supplies
The medical supplies costs for Donor Testing in 2011-12 were $35.6 million. The majority of expenses were from testing reagents. CBS currently holds one month of inventory at both the Toronto and Calgary testing centres, and contractually requires its suppliers to hold one month of inventory. This amount corresponds to one month of inventory was determined based on historical usage. Anecdotal evidence suggests that CBS may be carrying excess inventory and of testing supplies. However, data analysis could not be conducted as data for testing supplies, such as supplier delivery history, historical inventory on hand and usage information was not readily accessible.
Recommendation #34:
CBS should formalize the use of standard inventory models to calculate inventory requirements. It should examine its inventory and use inventory models to determine the amount of inventory to carry. The cycle and safety stock components of the inventory can be calculated using standard inventory models. To determine the strategic stock component, CBS should quantify the risks and assign an inventory value (similar to the risk based approach used to calculate overall inventory levels). This methodology might allow CBS to reduce and justify the amount of inventory carried in the system.

Recommendation #35:
CBS should create a centralized inventory management function. Inventory management of plasma protein products and medical supplies for Transfusable Products should be centralized in one group.

This reorganization would enable standardization of inventory management processes across CBS. An added advantage of centralizing this function is to build capability within one group and share leading practices across different products. Once the function is centralized, CBS should monitor inventory using appropriate metrics and set improvement targets.

Recommendation #36:
CBS should also broaden the number of inventory metrics it currently monitors. Suggestions include measuring turns (backward looking) in addition to a forward looking Days of Supply metric, inventory accuracy and others. In addition, performance of inventory levers such as forecast accuracy, service levels and supply reliability should also be concurrently measured.

4.8 Transportation operations

The Logistics function fulfills an important role within CBS operations as it is responsible for the safe and timely movement of fresh products (collected blood, blood products) nationwide - from collection sites through to distribution to hospitals. In addition, Logistics also moves medical supplies, collection staff and donors to and between collection sites and processing centres. The high level transportation network schematic in Appendix D depicts the different products moved by the Logistics function to the various CBS facilities and customers across Canada. As displayed in this diagram, there are numerous transportation lanes and multiple types of products which have varying temperature requirements and limited shelf lives. Therefore, transportation logistics is a core competency requirement for CBS.

To fulfill the transportation requirement, CBS uses a hybrid of private fleet and third party carriers. As of April 2012, CBS had a fleet of approximately 250 vehicles, as noted in Appendix E. The relatively large CBS fleet size (ARCBS has a fleet of 151) can be attributed to the almost 7,000 annual mobile clinic events supported by the Logistics function and the geographic spread of Canada. To drive the fleet, CBS employed 207 driver FTEs as of April 2012. Staff costs were the single largest expense for the Logistics department, accounting for $19.6 million of the $32.5 million in 2011-12.

Figure 4.18 - Summary of logistics costs 2011-12 ($ millions)

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP Freight</td>
<td>$1.6</td>
<td>5%</td>
</tr>
<tr>
<td>3PL</td>
<td>$3.9</td>
<td>11%</td>
</tr>
<tr>
<td>General &amp; Admin (excl. 3PL)</td>
<td>$9.1</td>
<td>26%</td>
</tr>
<tr>
<td>Medical Supplies</td>
<td>$0.4</td>
<td>1%</td>
</tr>
<tr>
<td>Staff</td>
<td>$19.6</td>
<td>57%</td>
</tr>
</tbody>
</table>

The Logistics department has implemented some technology solutions, but lacks the level of sophistication normally found in most organizations that consider transportation to be a core competency. The department is currently using MapPoint for asset route optimization and a Fleet Management System for tracking cost by assets. CBS is also in the process of implementing a Shipping Management System, which has been piloted in the Brampton processing centre. The Shipping Management System will allow CBS to prepare shipping documentation, track deliveries to hospitals, and review and analyze the ordering patterns of hospitals.

31 Data obtained from Transfusable Products and Plasma Protein Products Financial Management Report for 12 months ending March 31, 2012
The private fleet and drivers are essentially required to support mobile clinic events resulting in low driver and asset utilization.

CBS collects blood through a combination of mobile and permanent clinic events. In 2011-12, CBS held a nearly equal number of permanent (excluding clinics co-located with productions site) and mobile clinic events as depicted in the chart below.

Collections through mobile clinics are challenging for Logistics for the following reasons:

- Multiple vehicles and drivers (typically 3 to 4) are required to support such a clinic
- Scheduling depends on the preference of external partners and availability to host the event
- Collection productivity is skewed towards certain days of the week

During these events, vehicles are utilized at the start and end of the clinic to move staff, equipment and blood products. However, during the event, many of the vehicles can be idle if the vehicle is not required to transport donors or transport blood products. At the mobile clinic operations, the idle drivers are responsible for set-up/tear down and working the Prep Table. This activity also allows drivers to be better utilized at mobile clinics, since drivers would otherwise be idle between the start and end of the mobile clinic event. In comparison, ARCBS operates a smaller private fleet and outsources more of their transportation requirements to third parties.

CBS does not have metrics to track asset and driver utilization. Such tracking is standard practice for most private fleet operators. The Logistics department uses only the cost per km metric to track performance, as noted in the CBS Annual Transportation Review Report.

The project team performed a high level estimation of the fleet utilization by asset type for two sites (BC/Yukon and Ottawa/Kingston) based on proposed activities. Figure 4.20 displays the asset utilization of the different types of assets (in grey) and the overall asset utilization for BC/Yukon and Ottawa/Kingston (in yellow). The asset utilization was estimated to be 49% for BC/Yukon and 68% for Ottawa/Kingston. Many of the assets below are used for mobile clinics and, even though considered 100% utilized, may be idle for most of the day as the vehicle is only used for driving equipment, supplies or staff to and from the clinic. In the case of Equipment Trucks, they are also used for storage of equipment rather than unloading the truck at night. On that basis, fleet utilization for CBS is likely dramatically lower than what the review team has calculated.

The low utilization can be attributed to the high number of vehicles required to support mobile clinics. Many of these vehicles are not used every day, resulting in lower asset utilization.

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32 Data obtained from presentation “Logistics Presentation (National) October 2012”, provided by Gilles Rancourt

33 Utilization calculated using the Vehicle Requirement Review for BC/Yukon and Ottawa/Kingston
Recommendation #37:
CBS should implement processes and tools to track asset and driver utilization, and regularly assess its fleet size and opportunities for outsourcing to commercial logistics providers in, for example, regions sparsely populated.

4.9 Supply chain organizational design

CBS’ core supply chain responsibilities are fragmented across different business lines (Transfusable Products and PPP) and the Corporate Services division. Because this fragmented structure enables the supply chain to be highly responsive to the unique needs of each business line, it has worked well for a young organization such as CBS for whom restoring customer confidence has been a key priority since inception.

However, with customer confidence having been restored, and a healthcare system facing significant funding pressures, a maturing CBS is well positioned to revisit its supply chain organizational structure. Fragmentation inhibits the evolution of process maturity and staff expertise. The supply chain represents the biggest expense and asset class for CBS and, therefore, requires a structure that drives a proportionate focus on cost control and process standardization while maintaining customer service performance.

In addition, CBS has identified a number of supply chain initiatives to take costs out of the system. Several of these are long term transformational projects that require significant leadership, implementation effort and sustained focus. An integrated supply chain organization structure may assist with increased/faster benefit realization by providing the required focus and prioritization for CBS.

Demand planning, logistics, sourcing and inventory management activities are fragmented, inhibiting process maturity and focus on reducing costs

CBS’ supply chain operations are fragmented across different business lines (Transfusable Products and PPP) and the Corporate Services division. For instance:

- Manufacturing assets and blood inventory are the responsibility of the Transfusable Products business line, plasma protein products inventory responsibilities rest with the PPP business line; transportation assets and inventory for medical and some operational supplies are controlled by the Corporate Services department

- Fragmentation was similarly observed for key supply chain functional processes (e.g., different management techniques and tools used to manage plasma protein products, testing reagents, blood bags and medical supplies inventory)

- Donor and Clinic Services staff manage both inventory levels and the replenishment of medical supplies at the various permanent locations

- Donor and Clinic Services are also responsible for demand forecasting and determining collection targets

- Donor Testing personnel manage both inventory levels and the replenishment of testing reagents and medical supplies

- Product and Hospital Services have responsibility for:
  - Blood and blood product inventory levels
  - Management of finished product storage
  - Scheduling production operations
  - Preparation of supplies for blood pickups
  - Customer order management

- PPP business line is responsible for managing plasma protein products inventory levels, the largest inventory category for CBS

- All four groups managing inventory use disparate tools and techniques

- Logistics group within Corporate Services is responsible for:
  - Warehouse operations for all medical and non-medical supplies
  - Order fulfillment
  - Inbound and outbound distribution operations for blood and blood products. For certain facilities, shipping responsibilities are divided between Product and Hospital Services and Logistics

- Supply Management group within Corporate Services is responsible for establishing and managing contracts with key suppliers and for determining inventory levels at the various storage locations for medical supplies such as blood containers

- Sourcing, procurement and contract management are also carried out by the Supply Management group with Corporate Services
This fragmentation may have contributed to several of the observations included in this report, for example, high inventory levels, disparate inventory management techniques, low asset utilization, immature sourcing practices and limited supply chain performance measurement systems.

CBS has over $600 million in annual expenses, $47 million labour (staff for Logistics, Supply Management, Production and Distribution), $542 million materials (PPP and Medical Supplies), $14 million general and administrative (Logistics, Supply Management, Production and Distribution) and PPP freight, $92 million in average inventory, 10 processing facilities, 250 vehicle private fleet and approximately 800 FTEs across core functions. Most comparatively-sized organizations would have a single executive in charge of these activities to ensure that the assets and expenses are optimized across the organization, rather than within business lines.

Secondary research indicates that several other blood services organizations (NHSBT, ARCBS and Héma-Québec) operate a structure where these activities are grouped under a single point of accountability, often with a direct reporting relationship to the chief executive. Figure 4.21 shows the organizational chart of the ARCBS. The figure clearly demonstrates how core functions of demand planning, manufacturing, logistics and customer service are grouped together and report through to a single executive. The review team validated this information in a telephone conversation.

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34 Supply chain cost was calculated by totaling cost of Medical Supplies, PPP, Staff and general and administrative for Logistics, Supply Management, Production and Distributions for 2011-12
The NHSBT has all core supply chain assets and infrastructure (manufacturing, transport and warehousing) and associated functions reporting through to an Estate and Logistics directorate, while at Héma-Québec they fall under the responsibility of the VP Operations, who has a direct reporting line to the CEO. Note that the examples for NHSBT and Héma-Québec are based on secondary research and have not been directly verified with either organization. Therefore, there may be some fragmentation of supply chain responsibilities within those organizations that were not detected during the secondary research process.

From a supply chain perspective, the following considerations are important in the design of an effective organizational model for supply chain:

- **Commonality between Transfusable Products and PPP**: A greater degree of commonality across business lines and geographies increases the potential benefits from centralizing the function. In the case of CBS, the customer bases across both lines of business are the same and are served by a common order fulfillment and distribution process.

- **Commonality between the products and the manufacturing processes and materials across the business lines**: Again, increasing commonality benefits centralization through economies of scale. For CBS, source plasma for fractionated PPP is a by-product of transfusable operations and apheresis plasma collection processes are similar to whole blood collection and platelepheresis.

- **Commonality of warehousing and distribution operations between Transfusable Products and PPP**: Today, plasma protein products orders are fulfilled using the same blood transportation vehicles carrying blood products to the hospitals, while plasma collection and supply to the head office is outsourced to a third party carrier. The most unique aspect is the Ottawa based central plasma protein products storage facility that has a large inventory value and associated risks. However, with the upcoming relocation of this facility to the Brampton processing centre, the commonality in physical assets between the product lines would increase further.

- **Standardization between supply chain processes and enabling technology**: Currently, the two business lines have disparate processes (e.g., for inventory management) but are still relatively immature in their evolution and not enabled by unique technology. They can easily be standardized across CBS as required.

- **Similarity in risk factors between the product lines and business lines**: For both fresh blood products and plasma protein products, the key risk factors are product safety and security of supply. Efficiency opportunities exist if control and risk issues (e.g., strategic stock inventory) can be addressed through a common approach across both business lines.

Based on the above analysis, a supply chain structure that provides for greater cost control and process improvement would look similar to the one illustrated through Figure 4.22. This reporting structure, while vertically reporting to a single executive, would optimize all core supply chain processes horizontally across business lines. For example, the planning department would be responsible for forecasting demand and for managing inventory targets for plasma protein products, fresh blood inventory and medical supplies. Such an end-to-end supply chain management model is a key enabler for system-wide supply-demand matching, efficient use of fixed and fleet assets and inventory management initiatives. Note that this figure is for illustrative purposes only. A more comprehensive study is required for determining the optimum future state model for CBS.

An integrated supply chain management structure similar to the one illustrated in Figure 4.22 has several distinct advantages over the current fragmented structure at CBS. It enables one operational group to own all the major supply chain assets, costs, and service levels and optimize holistically to achieve CBS’ strategies. It allows for greater process standardization among and across business lines, processing centres, testing operations and with customers and suppliers. It enables a single point of accountability for relevant costs and service KPIs, providing the CEO and the Board with the advantages of unity of command. In addition to cost and service performance, a sole executive would also provide the accountability and focus required to succeed in the supply chain strategic initiatives identified through the CBS productivity and efficiency review conducted in 2012 and discussed in Section 8. Centralized and well functioning planning processes would enable better synchronization efforts between CBS operations and key customer requirements. It would give Supply Chain the appropriate importance at the Executive Management level (versus reporting through multiple senior executives). Finally, CBS’ adoption of leading supply chain management models would meet Member expectations for a proportionate focus on improving asset efficiency and reducing costs.
There are some inherent disadvantages to centralization of the supply chain. The new reporting relationship through to a supply chain executive may reduce the sense of urgency that a direct reporting relationship to the business has hitherto provided. Process standardization mandates may trump one-off requirements for certain products/customers and, without the appropriate process integration, tools and metrics, strategies may become divergent between the supply chain and the rest of the business.

In Figure 4.22 above, the accountable Supply Chain leader is shown to report to the COO. Given the size and significance of CBS’ supply chain, it may be prudent for this person to have a direct reporting relationship to the CEO and a seat at the executive table.

**Recommendation #38:**
CBS should restructure the supply chain organization for cost control and process excellence and appoint a single executive in charge of all core demand planning, logistics, purchasing and inventory management functions.

The process of determining a future state supply chain organizational structure for its supply chain is a complicated one that is governed by several organizational design principles.
4.10 Planning and budgeting process

4.10.1 Context

CBS prepares a three year Corporate Plan, on an annual basis, that contains a budget request for the first year and a directional forecast for years two and three. This process commences at the beginning of the fiscal year for the following year’s budget.

CBS begins with a “top-down” approach to obtain approved budget targets, at which point detailed budgeting is performed by the various business functions. The proposed one-year budget uses the current year’s approved budget as a baseline, which then is adjusted for the following anticipated factors impacting costs:

- Exchange rates
- Collections
- Inflation
- Projected salary increases
- Efficiency estimates
- Projects

This process is completed by the end of June; the Corporate Plan is submitted to the provincial and territorial governments by the beginning of August. CBS meets with the PTBLC in October to present the Corporate Plan, review key assumptions and provide any further information requested.

CBS meets with the PTBLC again in November to negotiate and finalize the budget request for the upcoming year. During this meeting, CBS details the changes from the August plan due to changes in assumptions around key cost drivers (e.g., collections, salary increases), efficiencies and projects. An agreement is reached in writing, which is then signed off on by the Lead Province and CBS’ Vice President, Corporate Services and Chief Financial Officer. The Members approve the one-year budget and three-year Corporate Plan in March.

After the March meeting, CBS begins its internal, detailed budgeting process, which typically takes two months. The budget, included as part of the proposed Corporate Plan, is used as the baseline. Donor and Clinic Services prepare their budgets first, based on the collection plan established to meet the forecasted demand, which is then used as the basis upon which CBS’ other functions build their respective budgets.

4.10.2 Observations and recommendations

The current process is well established within CBS and with the provincial and territorial governments. However, there are various ways to improve its efficiency and reduce time and efforts.

Current process:

- The planning process is lengthy and requires much of effort by both sides. The length of the process is largely driven by more than four months of discussion and negotiation that takes place
- Provincial and territorial governments are not in possession of some information that could potentially streamline the process. In particular, results for the current year are not presented by CBS until after the November meeting; during the planning process for 2012-13, the first and second quarter results for 2011-12 were not provided until February 2012 and March 2012 respectively. Additionally,
CBS does not provide expense forecasts to provincial and territorial governments

- For Transfusable Products, the budget is fixed funding that covers operational, project and capital spend, as well as support services; there is no direct correlation of dollars to services, budgeted or received
- For Transfusable Products, the budget includes costs for activities that support other business lines. All corporate costs, field support costs and R&D are included within the Transfusable Products business line. In addition, the costs of collecting plasma that is sent for fractionation for plasma protein products are currently funded through the Transfusable Products business line

**Recommendation #39:**
CBS and Members should work together to redefine information requirements during the budgeting process to streamline the process (see Section 3.4.1).

CBS should provide both year-to-date actual and forecasted expenses for the current year to provincial and territorial governments during the budgeting and planning process.

CBS should implement a costing system to present fixed and variable cost components for budgeted, actual and forecasted spend, to enable greater transparency of resource utilization (see Section 3.4.4).

CBS and the provincial and territorial governments should revisit the allocation of costs related to the collection of plasma that is sent for fractionation to the PPP business line to more appropriately align funding to business line expenses.

### 4.11 Non-core activities

#### 4.11.1 Context

An assessment of non-core activities was required as part of this review to determine their costs and relevance in supporting the business lines. In the previous sections, the financial performance of each line of business and support costs were discussed.

As defined in the MOU, CBS is responsible for managing all aspects of an accountable and fully integrated blood system. Annex A of the MOU describes CBS’ core operational functions as follows:

- Donor recruitment and management
- Whole blood and plasma collection of blood
- Testing and laboratory work
- Processing of blood
- Storage and distribution
- Inventory management

It also states that in support of the above core operational functions, CBS will provide the following key functions:

- Setting standards, policies and guidelines supplementary to any regulatory standards of the federal, PT governments
- Coordinating a national program in R&D for blood, blood products and transfusion medicine
- Surveillance and monitoring
- Professional and public education and information
- Health risk management

#### 4.11.2 Observations and recommendations

CBS activities are all required to deliver its core mandate; however, the Diagnostic Services business line does not have an official mandate

All costs and activities discussed in Section 4.3 and 4.4 are related to the core activities described above.

The Stem Cell business line, the Cord Blood initiative and the OTDT mandate are all non-core activities, but were all assigned to CBS by its Members and the federal government, and all are supported by a LOI or a contribution agreement. Diagnostic Services, for its part, has existed at CBS since CBS’ inception, but is not a core function and does not have a mandate supported by the MOU. However, CBS has contractual agreements or documentation with the provinces that are provided with the services. CBS confirmed that this business line is considered non-core, but Diagnostics Services have been specifically requested, and paid for, by some Members.

The review team assessed the support services discussed in Section 4.3.2.7 to determine if they were required for the delivery of CBS’ core function. Some of these functions, such as QSS, RA & Quality Audits and MSRA, are specific to CBS and are required in the execution of its mandate. The other support services, including General Counsel, Public Affairs and Strategic Planning, are all functions that typically exist in an organization the size and complexity of CBS.

**Recommendation #40:**
CBS and its Members should determine the status of the Diagnostic Services business line.
5.1 Objective

The objective of the procurement review was to assess CBS’ current procurement practices in relation to those of other publicly-funded entities.

5.2 Scope

The scope of the procurement review included:
- CBS’ purchasing policy and procedures
- CBS’ bid invitation practices relating to high-value goods and services

5.3 Context

In 2011-12, CBS purchased $633 million\(^{35}\) in goods and services, with $602 million\(^{36}\) of purchases being managed through its Supply Management department. Reporting to the CFO through the Corporate Controller, this department consists of 22 FTEs that support Contracts and Strategic Procurement, as well as Materials Management activities across the organization. The Contracts and Strategic Management team is responsible for working with business owners to develop procurement strategies, managing the centralized competitive process, contract negotiations and management, and supplier relations. The Materials Management team is mandated to carry out day-to-day procurement activities along with supplier qualification and SAP inventory planning and support.

CBS’ productivity and efficiency review highlighted an opportunity to recognize cost-savings through strategic sourcing of direct and indirect products and services, as well as a potential opportunity to examine the scale of its procurement function as part of a service model redesign initiative\(^{37}\).

\(^{35}\) Estimated based on total CBS expenses less staff costs, depreciation and amortization, R&D grants, travel, inventory adjustments, corporate and miscellaneous costs

\(^{36}\) Per CBS Supply Management presentation delivered to Ernst & Young 18 December 2012

\(^{37}\) Productivity & Efficiency Program - Diagnostic Phase, August 2012
The Supply Management department is the custodian of CBS’ Purchasing Policy and Procedure Manual, which governs procurement across the organization. This manual includes detailed guidance for CBS employees relating to:

- Signing authority for requests for goods and services, purchase orders and other forms of agreement
- Board approval and/or review of significant contracts
- Requests for goods and services
  - Petty cash
  - Corporate cards
  - Approved direct purchases
  - Requisitioning in SAP
  - Relations with suppliers and business owners
- Bid invitations
- Purchase orders and other forms of agreements
- Head office inventory
- Receiving, shipping, returns
- Quality assurance
- Equipment disposal
- Records management

5.4 Observations and recommendations

CBS has a centralized procurement function, supported by a formalized Purchasing Policy.

CBS has a single Purchasing Policy, robust in scope and level of detail, which incorporates many principles common to publicly-funded organizations, such as:

- Use of competitive process (or written single source justification) for solicitations for goods and services in excess of $30,000
- Requirement for at least two quotations for purchases in excess of $30,000
- Use of a formal competitive process for goods and services with a total purchase value in excess of $50,000
- Detailed user guidance, including process flow diagrams
- Requirement for all RFQs and RFPs to go through Purchasing
- Coverage of conflict of interest considerations and transparency requirements
- Governance structure for procurement of capital assets

All contracts for goods and services are processed through the Supply Management group, which allows for central oversight of procurement practices across the department and supports compliance to the Purchasing Policy and Procedure manual.

CBS’ Purchasing Policy and practices have been highly visible to CBS’ leadership by way of Internal Audit. Internal Audit conducted the following audit and reviews related to procurement over the four year historical review period:

- Audit of the Purchasing Policy and Compliance (2010) to assess CBS’ procurement policies against comparable organizations, and to assess compliance with the existing Purchasing Policy and procedures
- IT Procurement Special Review (2011) to investigate specific transactions
- Behaviour and Procurement Review (2012) to investigate employee practices relating to procurement

Management responses to Internal Audit recommendations indicate that CBS has reviewed policies and issued communications to strengthen its procurement controls in response to Internal Audit findings relating to corporate card use and approved direct purchases.

Recommendation:

No recommendation related to this area.

CBS’ Purchasing Policy and procedures should encourage greater competition and consider open competitive processes for high value solicitations.

CBS’ Purchasing Policy and Procedures Manual requires that bids be solicited through a competitive process when the value of goods or services exceeds $50,000. An RFQ process can be used in place of an RFP for any contract, provided the “quantities are known, and specifications are clear and well-defined”, and additional non-price criteria may be added to the RFQ. When an RFQ is used in place of an RFP, the robustness embedded in CBS’ RFP process is circumvented.

The policies of publicly-funded organizations typically restrict the use of RFQs to the purchase of goods, and prohibit the addition of non-price criteria. CBS’ purchasing team rarely adds non-price selection criteria to RFQs, and guides the business owner to use the most appropriate solicitation tool. However, CBS’ Purchasing Policy and Procedures Manual places few restrictions on the use of RFQs as a solicitation mechanism, which leaves the policy open to individual interpretation.
It is currently common practice for CBS' Purchasing Team, in collaboration with business owners and other relevant CBS employees, to identify the specific bidders for invitational bid solicitations. This occurs through a process that has not been formalized within CBS' Purchasing Policy and Procedure Manual. Although the invitational approach is considered cost-effective from an administrative perspective, it limits the potential number of proposals and potentially causes the organization to miss out on savings opportunities for high-value solicitations. Also, the rationale for the selection of vendors invited to bid on RFPs is not documented and the departments requiring the goods and services have a strong influence on the selection of these vendors, which reduces its effectiveness and increases risks of conflict of interest.

It is common practice for publicly-funded organizations to use an electronic tendering platform (e.g., MERX) to procure goods and services of high value (greater than $100,000, depending on the organization) using an open solicitation process. While CBS noted that the Purchasing Policy and Procedure Manual is not restrictive to the use of invitational bidder sourcing, there is a significant variance between CBS' current bid invitation requirements and practices, and those of publicly-funded comparators.

**Recommendation #41:**
CBS should revise its Purchasing Policy to incorporate greater transparency in the bid invitation process for high value and high risk solicitations.

Specifically, CBS should:
- Implement a formal process for selecting vendors for bid solicitation (e.g., selection from a broader pool of vendors on a systematic, rotational basis), including formal documentation of decisions
- Consider using open public tendering. The use of public tendering would most likely increase the level of effort and resources required to assess the proposals received. However, these additional costs may be offset by savings realized on the procurement of goods and services because a competitive process could result in lower prices
- Introduce clear restrictions around the use of RFQs for high value and high risk solicitations

There is no systematic review of the aggregate value of direct purchases to identify potential savings opportunities, and too many transactions are eligible for direct purchases

Following a recommendation from Internal Audit, CBS updated the list of approved direct purchase items included in the Purchasing Policy and Procedure Manual. According to the current policy, approved direct purchase items can be acquired without a formal RFP process, and include taxes, utilities and mobile clinic expenses, as well as HR consulting, courier services, translation expenses, and temporary staff, among other items. The value of approved direct purchases in 2011-12 was estimated at $60 million\(^{38}\), or about 9% of total CBS purchases (including purchases of plasma protein products). Excluding plasma protein products spend and recurring mandatory expenses such as taxes and bank charges, approved direct purchases accounted for 6% to 10% of total CBS spend on goods and services, which may be considered high for a publicly-funded organization. This suggests that there may be opportunities for cost savings if these goods and services were purchased using a competitive process.

CBS' Purchasing Team does not systematically review the cost of approved direct purchases as a proportion of total goods and services procured. Comparative analysis suggests that, while it is leading practice to avoid the administrative burden for small value purchases where possible, the aggregate expenses on each category of small value items should be regularly reviewed to assess whether there is an opportunity for cost savings through negotiations with preferred vendors.

**Recommendation #42:**
CBS should review its practices for direct purchases and reduce the categories of goods and services that could be acquired using this approach.

CBS should also implement a process to regularly review approved direct purchases to seek opportunities for volume discounts by establishing standing offers with preferred vendors.

\(^{38}\) Based on estimated total value of CBS purchased goods and service ($665M) less value of goods and services with purchase orders in place
Increasing strategic sourcing could help reduce costs and supply risks

Based on CBS performance goals and best-in-class strategic sourcing outcomes, there are five relevant strategic sourcing focus areas for CBS:

- Alignment of sourcing to overall CBS corporate strategy to plan and prioritize organizational efforts over a three to five year period
- Minimizing total cost of ownership of supply including reduced purchase price and, lower inventory costs for CBS and its suppliers, as well as lower transactional costs between them
- Ensuring acceptable quality levels in purchased supply
- Managing supply risk to ensure acceptable risk levels for CBS (including meeting customer demand levels)
- Procurement and supply management productivity, to ensure that CBS can effectively manage its supply base while focusing on key strategic priorities

Effective strategic sourcing can lead to supply relationships that are a source of innovative new processes and products/services, including new types of blood supply products or process improvement.

Leading practices in the implementation of strategic sourcing based on people, processes and technology that would enable CBS to achieve the goals outlined above are detailed in Appendix F: Relevant Strategic Sourcing Practices39.

Protein plasma products are a dominant sourcing priority representing over 80% of costs (followed by medical supplies such as blood containers/bags). Services account for an additional $41 million in expenses; the top three services cost categories are information technology ($9.8 million), donor and clinic services ($7.4 million) and facilities ($5.8 million).

Recent procurements

A sourcing focus on plasma protein products is evident in recent procurements developed by CBS:

- RFQ for Factor VIII plasma protein products (issued February 2012)
- RFP for plasma protein fractionated and commercial products (issued October 2012)

These two procurements represent a significant proportion of the plasma protein products supply for CBS. The main focus of these strategic sourcing efforts has been to create a competition for supply during tendering (procurement) of these supplied products. Currently, CBS has two commercial plasma protein products fractionators. In a recent RFP (October 2012), PPP aimed to develop a third fractionator to further increase competition and supply capacity.

39 Leading practices provided are based on Ernst and Young’s proprietary Reference Framework Architecture

40 Data from Supply Management Overview presentation by CBS, December 18, 2012
CBS has achieved significant procurement savings from recent strategic sourcing initiatives
The results from the recent plasma protein products RFP issued in October 2012 demonstrated substantial savings for the Members with an up to 20% net price reduction for certain products. CBS has reported that the recent Factor VIII RFQ issued in February 2012 will deliver similar results. CBS estimates that these two strategic sourcing initiatives will save Members approximately $635 million during the next five years (based on forecasted demand and including the impact of inflation). Based, on interviews with other jurisdictions, it has also been confirmed that recent plasma protein products pricing is trending lower.

As evidenced by these results, CBS has demonstrated effective strategic sourcing practices to manage costs. It has achieved these significant cost savings through the increase of competition, aggregation of costs and taking advantages of trends in the marketplace.

For example, CBS recently discovered that the medical practice has been changing in recent years due to studies showing that more patients can be switched between PPP products without ill effect. This trend has resulted in increased competition between suppliers (due to the higher frequency of substitution between PPP products).

With respect to the planned blood bags procurement, CBS is effectively scanning the marketplace and has identified that increased competition has led to lower prices. In addition, CBS is looking at establishing partnerships for blood bags to leverage costs further.

The approach towards developing partnership relationships with key suppliers is depicted below:

The objectives of a supplier relationship management strategy include:

- Inventory reduction targets across the supply chain (e.g., use of appropriate safety and strategic stocking levels)
- Cost reduction through continuous improvement with strategic suppliers (e.g., commercial and contract plasma protein products suppliers, blood bag suppliers)

Although CBS is actively sharing data with its suppliers to manage the cost of supply, there is not a high degree of process integration between key suppliers and CBS, which could allow for greater synchronization of supply/demand and visibility across the supply chain. This process integration has benefits through lower levels of inventory and better lead-times throughout the supply chain.
A continuous improvement program set targets around quality improvement and process cost reduction. Although CBS is effectively managing supplier quality, a supplier relationship management approach could lead to continuous quality improvements between suppliers and CBS that manage total cost of ownership in the long-term. A program includes use of appropriate process improvement techniques (e.g., Six Sigma) and e-procurement technology to integrate processes with suppliers. Training of staff and re-alignment of certain roles are also required for an effective supplier relationship management.

Recommendation #43:

CBS should expand its supplier relationship management strategy to drive further cost reductions. Key aspects of a supplier relationship management strategy include dedicated resources and activities focused on improved process integration between CBS and its key suppliers, and continuous process improvement.

CBS sourcing processes are not fully aligned with minimizing total cost of ownership

A key sourcing issue to minimize total cost of ownership is having relevant information, including internal costing, to decide what to make versus buy, as well as external market intelligence to proactively respond to the marketplace. Specifically, this issue would include relevant internal costing data to decide the lowest total cost of ownership plasma protein product supply option, and understanding key cost drivers and trends in the external supply marketplace for strategic sourcing planning.

With respect to the external marketplace, CBS does not have enough quality intelligence on the key components of supplier costs. For example, CBS does not have access to intelligence on the key cost drivers for plasma protein product production (e.g., amount of cost attributable to raw materials versus shipping or distribution costs). This information is valuable in executing procurement in areas such as designing an RFP pricing model and negotiating final terms. Although CBS sourcing strategies are generally aligned to corporate strategy, this level of market analysis can provide critical intelligence in justifying optimal sourcing strategy with respect to key strategic sourcing focus areas listed in Appendix E.

Recommendation #44:

CBS should integrate a thorough understanding of cost drivers in its strategic sourcing approach and methodologies. It should understand key cost drivers within its operations, as well as the external supplier marketplace, to effectively optimize its procurement decisions to minimize total cost of ownership.

CBS should also utilize a regular market review process to proactively analyze key cost drivers in its high priority cost areas (e.g., plasma protein products). If a price benchmark is not practical, a cost driver model can be utilized to understand how key supply markets are trending. A cost driver model would allow CBS to determine a supplier’s key costs (e.g., raw materials versus logistics costs), information that could be utilized for procurement design (including what to include in the pricing model), regular contract reviews and negotiations for new procurements.

CBS has varying degrees of procurement process maturity that hinders process productivity

In 2012, CBS completed approximately 50 RFPs, 30 RFQs and 15 RFIs. Although CBS is managing its costs well in terms of FTEs (21 total within the Supply Management group) by total costs, it may not be allocating FTEs in the optimal sourcing areas, given the level of manual processes. This creates an opportunity to automate in focused areas to redeploy resources to higher value added/strategic activities. Key areas for automation or re-prioritization include:

- Procurement processes are manual (e.g., procurement documents are created offline)
- Tendering and bid receiving processes are manual (e.g., paper-based bid receiving)
- Valuable sourcing time on lower priority sourcing items (e.g., travel, paper products).

CBS productivity and efficiency recommended buying partnerships to lower CBS efforts in non-strategic cost areas (e.g., office supplies). In the case of blood bags and plasma protein products, CBS is exploring buying partnerships with other jurisdictions (such as a European-led buying partnership). Since this approach would result in a new relationship for CBS, this should be piloted first or used as a secondary source to ensure it does not increase supply risk for CBS.

Recommendation #45:

CBS should increase the maturity of its procurement processes to increase focus on high value strategic sourcing. It should deploy procurement technology to automate, where practical, and re-deploy sourcing resources to support strategic sourcing goals.

CBS should continue to look for partnership arrangements with other buying groups to save time on lower priority sourcing areas, and redeploy resources to strategic activities.
6.1 Objective
The objective of the review of travel was to assess the alignment of CBS' travel policies and practices to those of other publicly-funded organizations and review the level of travel expenses at CBS.

6.2 Scope
The scope of the review of travel consisted of:
- CBS travel and expense policies
- CBS travel expense practices
- CBS travel expenses from 2008-09 to 2011-12

6.3 Context
Travel expenses make up a significant proportion of CBS' total general and administrative expenses annually. In 2011-12, CBS incurred $6.9 million of travel expenses across its business lines. Three central policies govern travel expenses at CBS:
- Employees Travel and Expense Policy
- VP and CEO Travel and Expense Policy
- Board Travel and Expense Policy

All travel policies are managed by the Manager of Corporate Accounting who reports to CBS' Corporate Controller. Travel is centrally managed, with all bookings taking place through a designated travel agency, and all expenses being processed through CBS' Corporate Expenses and Travel group.
Total travel expenses decreased at a CAGR of 3.4% between 2008-09 and 2011-12. Table 6.1 below summarizes CBS’ total historical travel spend across its four business lines.

Most of the reduction in travel expenses occurred in 2011-12, driven by decreasing travel across the Transfusable Products business line as a result of CBS’ desire to reduce costs and use alternate approaches. Travel expenses in the Stem Cells business line have increased due to a higher level of activity.

### 6.4 Observations and recommendations

CBS has robust policies and oversight mechanisms to govern travel expenses. However, some requirements remain open to interpretation.

CBS’ Travel and Expense Policies and practices are largely aligned to those of publicly-funded organizations in Canada, and incorporate a number of leading practices:

- Consistent utilization of a corporate travel agency
- Requirement for pre-approval of all travel
- Use of an electronic booking system for all travel bookings, in which the use of preferred vendors is promoted
- Requirement to provide explanation if preferred vendors are not selected
- Promotion of car rentals through a preferred rental agency
- Corporate credit card information embedded in travel booking system

- Preferred timeline for pre-booking travel of 21 days in advance
- Daily monitoring of travel bookings and follow-up with individuals who are regularly booking travel below the 21 day threshold
- Use of an electronic expense reporting system for all expenses
- Approval of electronic expense reports at the Department level and verification of all expenses by members of the Corporate Accounting and Travel team
- Cost savings resulting from elimination of nominal storage costs, in addition to transportation costs for the expense reports and pulling costs of reports out of storage for audit purposes
- Exception reporting to the CFO on a monthly basis
- Requirement for pre-approval by the CFO for all purchases of alcohol

Employee and Board travel and expenses have been subject to a number of recent reviews by Internal Audit:

- Review of Corporate Policies – Employee and Board Travel and Expenses (2010) to review the completeness and alignment of key CBS policies relating to travel and expenses against those of benchmark organizations
- Compliance Review of Corporate Policies – Travel and Expense (2010) to assess compliance with the existing travel expense policies
- Audits of EMT and Board Member Travel and Related Expenses (2011 and 2012)

### Table 6.1 - Summary of historical travel spend by business line

<table>
<thead>
<tr>
<th></th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfusable Products</td>
<td>6.8</td>
<td>6.4</td>
<td>6.2</td>
<td>5.7</td>
<td>(5.7%)</td>
</tr>
<tr>
<td>PPP</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>(3.7%)</td>
</tr>
<tr>
<td>Diagnostic Services</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>7.9%</td>
</tr>
<tr>
<td>Stem Cells</td>
<td>0.2</td>
<td>0.3</td>
<td>0.5</td>
<td>0.5</td>
<td>31.8%</td>
</tr>
<tr>
<td>OTDT (strategic initiative)</td>
<td>0.5</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
<td>(0.6%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7.7</strong></td>
<td><strong>7.5</strong></td>
<td><strong>7.5</strong></td>
<td><strong>6.9</strong></td>
<td><strong>(3.4%)</strong></td>
</tr>
</tbody>
</table>

*Excludes travel expenses associated with NFRP*
Each audit concluded that CBS’ processes relating to travel and expenses are functioning as intended, but suggested possible improvements. Recommendations noted through the audits have been addressed by management, and the most recent internal audit identified no control deficiencies.

Detailed requirements relating to some discretionary spend categories are absent from CBS’ travel policies. CBS requires that all discretionary spending be accompanied by an explanation of valid business purpose. However, guidance on the definition of “valid business purpose” is lacking, and there are no restrictions on spending thresholds once the business purpose is approved. For example, guidance relating to the number of individuals who can represent CBS at conferences and meetings is not included, nor is guidance on maximum expenditure for approved business meals or hospitality. In relation to publicly-funded comparators, CBS’ travel policy is generally less restrictive in terms of business meals and hospitality.

Recommendation #46:
CBS should incorporate additional details to its travel policies to minimize room for interpretation. More specifically:

- Clarify definition of “valid business purpose"
- Define maximum spending thresholds for business meals, conferences/meetings and other hospitality

The level of travel expenses at CBS is comparable to those of other publicly-funded organizations that have a national mandate.

The review team analyzed CBS’ travel expenses for the period under review. CBS’ total travel expenses as a percentage of staff costs was 2.2% in 2011-12 and similar to prior years. This percentage was comparable with those of other publicly-funded organizations such as the Public Health Agency of Canada, the National Research Council, the Canadian Nuclear Safety Commission, the Canadian Transportation Agency and the Canadian Border Security Agency, whose ratios of travel expenses to total salary expenses ranged between 1% and 5%. The comparison with the other blood services organizations was not appropriate for travel expenses, due to differences in the size of the territory covered by each organization. That being said, CBS and one of the other blood services organizations with similar territory had comparable ratios.

The review team also assessed travel expenses for the top 20 travellers (based on 2011-12 travel spending). This group spent $0.9 million in travel; representing 13.2% of CBS’ total travel expenses. The top five travellers spent an average of $55,000 each, with international travel representing 23% of total travel expenses. No significant issues were noted through this analysis.

Recommendation:
No recommendation related to this area.
7.1 Objective

The objective of the review of professional services was to evaluate CBS’ practices relating to professional services procurement against the practices of other publicly-funded organizations, and to assess the level of expenses at CBS.

7.2 Scope

The scope of the professional services review included the following:
- Bid invitation process for professional services
- CBS professional service expenses from 2008-09 to 2011-12

7.3 Context

CBS defines professional service expenses as costs relating to marketing and advertising services, consulting services, medical consultant fees, and internal and external audits. For the purposes of this review, marketing and advertising have been excluded from the scope of professional services to focus on services related to corporate functions. In 2011-12, CBS spent $16 million on professional services (excluding advertising expenses), which represented approximately 3% of total expenses, excluding costs of plasma protein products. Historical professional service expenses by business line are summarized in Table 7.1.

Table 7.1 - Summary of historical professional services (excluding advertising) expenses by business line

<table>
<thead>
<tr>
<th>$ millions</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfusable Products</td>
<td>10.1</td>
<td>13.3</td>
<td>10.1</td>
<td>12.1</td>
<td>6.2%</td>
</tr>
<tr>
<td>PPP</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>(14.4%)</td>
</tr>
<tr>
<td>Diagnostic Services</td>
<td>0.6</td>
<td>0.6</td>
<td>0.4</td>
<td>0.6</td>
<td>(1.2%)</td>
</tr>
<tr>
<td>Stem Cells</td>
<td>0.1</td>
<td>0.1</td>
<td>0.4</td>
<td>1.6</td>
<td>151.6%</td>
</tr>
<tr>
<td>OTDT (strategic initiative)</td>
<td>2.0</td>
<td>2.8</td>
<td>2.3</td>
<td>1.5</td>
<td>(9.4%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12.9</strong></td>
<td><strong>16.9</strong></td>
<td><strong>13.5</strong></td>
<td><strong>15.9</strong></td>
<td><strong>7.1%</strong></td>
</tr>
</tbody>
</table>

*Excludes professional service purchases associated with NFRP*
Total professional service expenses grew at a CAGR of 7.1% between 2008-09 and 2011-12, with increases being driven by the Transfusable Products and Stem Cells business lines. In 2011-12, CBS contracted consulting firms to assist with many important studies, such as its productivity and efficiency, and revenue model reviews. New initiatives resulted in increased professional service expenses for the Stem Cell business line, while the OTDT strategic initiative reduced its professional services spend as a result of the completion of the work on an OTDT strategy.

As per the scope of work for this review, the team inquired about CBS' spending on lobbying activities and related firms. CBS confirmed that it did not use the services of lobbying firms during the period under review. Information received from comparable blood services organizations revealed that none of them spent money on lobbying firms in the last two years.

7.4 Observations and recommendations

CBS should make greater use of the competitive bidding process for the procurement of professional services. In 2012, CBS used RFPs for only seven (35%) of the top 20 (by dollar value) professional service contracts, including all contracts with a total value of over $1 million. When RFPs were issued, invitations were sent to between 4 and 13 vendors for each contract reviewed. Of the top 20 professional service contracts, 5 contracts (25%) were sourced though RFQs, and the remaining 8 contracts (40%) were single/sole sourced.

The policies of publicly-funded organizations typically restrict the use of RFQs to the purchase of goods, and prohibit the addition of non-price criteria. Thus, there is a gap between CBS' current use of RFQs for professional services and those of publicly-funded comparators.

An open sourcing approach was not used for any of the top 20 professional service contracts in 2012. It is common practice for publicly-funded organizations to use an electronic tendering platform (e.g., MERX) to procure goods and services of high value (greater than $100,000 depending on the organization) using an open solicitation process. Greater usage of a competitive process may result in lower overall costs.

Recommendation #47:
CBS should consider using formal competitive processes for high value professional service contracts more frequently. It should also develop and implement a formal process for selecting vendors for bid solicitations.

CBS spends significantly more on professional services as a percentage of total expenses, excluding plasma protein products, than other comparable blood services organizations.

CBS' professional services expenses, as a percentage of total expenses, excluding plasma protein products expenses, was 3.7% in 2011-12 and similar in prior years. This ratio was the highest of the other blood services organizations used in the comparative analysis, as shown in the table below.

<table>
<thead>
<tr>
<th></th>
<th>Annual professional services expenses as a % of total costs* for 2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBS</td>
<td>3.7%</td>
</tr>
<tr>
<td>Operator A</td>
<td>2.4%</td>
</tr>
<tr>
<td>Operator B</td>
<td>0.2%</td>
</tr>
<tr>
<td>Operator C</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

*Excludes costs related to plasma protein products

Green denotes the best performer

Differences in activities performed by the different functions may vary between organizations and may impact the actual ratios.

Although there are many reasons to explain these differences, CBS seems to have a higher reliance on external professional firms than other blood services organizations.

Recommendation #48:
CBS should review its use of professional services and develop and implement guidelines on utilization of professional services, together with a management and approval approach.

A similar recommendation was included in the productivity and efficiency review conducted by an external firm.

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43 Top 20 professional service contract values ranged from $0.3M to $2.8M
44 Productivity & Efficiency Program - Diagnostic Phase, August 2012
8.1 Objective
The objective of the review of efficiency was to assess how CBS delivers its mandate according to the cost-efficiency principle promoted in the MOU. More specifically, the review focussed on the following elements:
- Determine if CBS’ efficiency initiatives between 2008-09 and 2011-12 have delivered value and reduced costs to its Members and customers
- Review the governance and processes related to CBS’ PEP

8.2 Scope
The scope of the review for efficiency includes:
- CBS’ historical cost reduction and efficiency improvements between 2008-09 and 2011-12
- CBS’ current PEP

8.3 Context
As a recipient of public funding, CBS must ensure it is managing its operations and activities in a cost-effective manner. While the Krever Commission did not make specific reference to cost-efficiency or cost-effectiveness in its report, the MOU clearly articulates the notion of cost-efficiency and effectiveness for CBS operations. It also stipulates that safety decisions have to consider cost, benefits and risk. Following are relevant extracts from the MOU:
- Section 3.0: a cost-effective and cost-efficient blood supply program for Canadians should be encouraged
- Annex B: The domain of management discretion will include matters of health and safety with respect to the blood supply system. Decisions in this regard will be made within a health risk management framework which places the three critical elements of cost, benefit and risk on an equal footing
- Annex B: NBA Board of Directors or staff will be responsible for overall expenditure of public funds by the NBA in delivering the blood program
8.3.1 Historical cost reduction and efficiency improvements

Section 4 provided detailed analyses and comments on CBS financial performance from 2008-09 to the last year covered by the current corporate plan 2015-16. Between 2008-09 and 2011-12, CBS estimates it has improved its efficiency and reduced its cumulative costs by $70 million. These results were achieved by developing and implementing specific initiatives such as process improvements in donor clinics, reductions in discretionary spending, the consolidation of donor testing and a new human resources service delivery approach. The Figure below summarizes the annual savings estimated by CBS.

Figure 8.1 - Summary of historical annual cost savings and efficiency

The review team completed an overall cost analysis comparing annual costs between 2008-09 and 2011-12, taking into consideration changes in volumes, salary increase and inflation. The analysis confirmed the savings of $70 million estimated by CBS.

8.3.2 CBS’ PEP

Efficiencies identified

In the summer of 2012, CBS decided that it needed a more formal approach to manage and measure its productivity and efficiency improvements. CBS had hired a consulting firm in April 2012 to perform a review of the current state and assess options for delivering efficiencies and productivity improvements. The August 2012 report identified annual savings opportunities totaling $68 to $93 million when proposed changes are fully implemented in 2015-16. It is important to note that PEP used 31 March 2011 as a baseline. This amount includes reductions in personnel by 2015-16. To realize the related savings, the consultants estimated CBS will incur implementation costs of between $76 and $96 million over the next four years. Table 8.1 below shows the range of annual savings and the estimated investment required.

From all the potential initiatives identified, 32 projects were proposed to CBS’ EMT on 25 June 2012. The EMT endorsed the overall direction of the PEP, including a portfolio of nine projects for Wave 1, project prioritization (i.e., key win projects and priority in-flight projects), and rough-cut sequencing and timing of the projects. These 32 projects were comprised of both new and existing (i.e., in-flight) initiatives:

- 18 focused on the overall supply chain
- 12 focused on support services
- 2 enabling initiatives to support the supply chain and support services initiatives

<table>
<thead>
<tr>
<th>PEP Project Categories</th>
<th>Annual Savings ($ millions)</th>
<th>Investment Required ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Enterprise and Support Areas</td>
<td>27</td>
<td>41</td>
</tr>
<tr>
<td>Supply Chain</td>
<td>25</td>
<td>31</td>
</tr>
<tr>
<td>Organization Enabling</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Recruitment and Training</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Professional Services and emergency</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68</strong></td>
<td><strong>93</strong></td>
</tr>
</tbody>
</table>

Source: PowerPoint presentation on PEP, CBS, 2013
The consultants also recommended that CBS to implement a formal approach to managing its PEP. As a result, CBS established a PEP management office in June 2012. The office was staffed with one Executive Director at the time of this review. The purpose of the PEP management office is to coordinate the program, prepare and monitor the plan and ensure that consistent project methodologies are utilized. It does not prepare business cases or manage projects, since that is the responsibility of the business/functional leaders. The PEP management office also relies on consultants to assist with some activities.

PEP Wave 1
In November 2012, CBS developed a three to five year plan as the first wave of PEP, which was presented to the PTBLC. The initial wave includes annual cost savings of $50 million in productivity and efficiency when the first wave of projects is fully implemented in 2015-16. Investment requirements were estimated at $60 million over the same period.

Table 8.2 - Summary of PEP initiatives for Wave 1

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Savings ($ millions)</th>
<th>Investments ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price reduction</td>
<td>12.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Production workflow improvements</td>
<td>2.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Clinic workforce optimization</td>
<td>2.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Single automated collection technology</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>New shakers</td>
<td>1.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Consolidation of quality control testing</td>
<td>0.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Organization design</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Supply chain planning</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Paperless supply chain</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td><strong>Total defined</strong></td>
<td><strong>20.8</strong></td>
<td><strong>12.9</strong></td>
</tr>
<tr>
<td>Initial estimates on TBD</td>
<td>14.6</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>Total identified</strong></td>
<td><strong>35.4</strong></td>
<td><strong>46.2</strong></td>
</tr>
<tr>
<td>Total remaining to be identified</td>
<td>14.6</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50.0</strong></td>
<td><strong>60.0</strong></td>
</tr>
</tbody>
</table>
The PEP management office has identified nine projects, which are estimated to require $46 million of investment and deliver $35 million of annual operating savings at maturity. The value of the investments planned in CBS’ 2013-14 Corporate Plan is $8.4 million and the initiatives included are:

- Production workflow improvements
- Single automated collection technology
- New shakers
- Consolidation of quality control testing

In addition to the PEP savings and as discussed in Section 5.4, $40 million per year in cost reduction associated with the procurement of plasma protein products has been identified. Savings in 2013-14 are planned at $14 million in productivity and efficiency, plus $40 million in cost reduction for plasma protein products.

8.4 Observations and recommendations

CBS does not have a formal methodology and process to estimate and track efficiency savings

At the time of this review, CBS did not have a formal approach to estimate and track efficiency savings. The list of historical initiatives provided was based on differences between the Corporate Plan in a given year and the final budget; there was no reference to actual results. The list also included initiatives that would not generally be categorized as efficiency savings, for example, delaying of projects in order to meet commitments for cost per unit. Efficiencies are normally calculated as the difference in expense between years, as this accurately reflects both the savings and potential cost increases from a certain initiative. The list of efficiency targets for 2012-13 and 2013-14 continue to include amounts that are based on changes in assumptions between Corporate Plans and finalized budgets (e.g., change in salary increases, change in collection volumes) or amounts that would more accurately be considered a cost avoidance (e.g., benefits holiday).

Recommendation #49:
CBS should develop, document and implement a formal methodology to estimate efficiency savings. CBS should explain its approach and methodology to members of the PTBLC to facilitate their understanding of the amounts presented in its reports, and to maintain full transparency.

CBS has not developed a comprehensive funding plan for the investments required for its PEP; the rules regarding the use of CBSI’s accumulated surplus are unclear.

The PEP report suggests CBS will need to invest at least $60 million to achieve its initial target of $50 million in operational annual savings, and between $76 and $96 million over the next four years to achieve the overall target of $68 to $93 million in annual savings. CBS will also need to deploy approximately 130 FTEs to manage and deliver the various projects.

The review team discussed with CBS how it plans to fund its PEP investments. CBS stated that it will use the surplus generated by its subsidiary, CBSI, to fund its PEP investments. CBSI is expected to generate an annual surplus of $18 million over the life of the Corporate Plan. However, the funding requirement for PEP Wave I, $60 million, would require all CBSI excess of revenue over costs for the next three years, including the $6.7 million accumulated at 31 March 2012 (included in CBS cash balance of $200 million discussed in Section 3.4.6. As discussed in Section 3.4.4, there is no clear understanding on who of CBS or its Members owns CBSI surplus and how decisions should be made with regard to using these funds. In addition, PEP is expected to launch additional “waves” in future years, which will also required investments and funding.

Recommendation #50:
CBS should develop a funding plan to finance its overall PEP. The funding plan might include a traditional funding approach, such as Members’ grants/contributions, or other alternatives such as debt or capital leases. CBS might also propose to use part of its $110 million in “unrestricted” cash it (balance as of 31 March 2013).

CBS’ use of borrowed money to finance its PEP would reduce funding requirements from Members during the life of the program, estimated by CBS to be next three to five years. After that period, funding would most likely remain relatively stable until CBS has repaid its debt (assumes CBS would use its cost savings to repay its debt and financing costs). Reduction in grants/contributions from Members would only come after CBS’ debt has been substantially paid. This approach to funding PEP would provide an additional incentive to CBS’ management to realize the savings to reimburse the debt. However, it would increase financing costs.
Whether it is grants/contribution from Members, cash on hand or loans, the funding strategy should be identified and confirmed as soon as possible to avoid any delays in the execution of the project. The funding plan should identify the total investment required by year for each of the category of investments:

- In-flight projects
- Projects currently identified in the PEP plan
- Projects remaining to be identified in the PEP plan

The magnitude of the proposed changes will require significant change management efforts and executive management attention

The proposed PEP is ambitious. The program calls for changes in almost all aspects of the Transfusable Products operations, as well as corporate functions including, but not limited to, overall organizational structure and design, Donor and Clinic Services, Donor Testing, Manufacturing, Logistics, Quality and Regulatory Affairs, Talent Management (HR), Finance, Information Technology and MSRA. The initial wave of the program is expected to take place over a minimum of four years. It will reduce costs by approximately 10%\(^46\), require investments of approximately $60 million and the dedication of up to 130 FTEs to manage and deliver the individual projects.

PEP will be one of the largest change initiatives undertaken by CBS since it was created more than 14 years ago. At this time, the program has limited resources and visibility within the organization outside of the leadership group and specific project teams.

Recommendation #51:
CBS should clearly identify PEP as a strategic priority and communicate it to the overall organization as soon as ready. All executives should publicly support the program. Appropriate levels of resources should be deployed to support the Program, including augmenting the PEP management office capabilities with one to two resources dedicated to supporting individual project and site teams with change management planning and execution. A formal and complete change management plan should be developed and implemented prior to beginning the deployment of specific projects.

Standardized project assessment and management methodology and tools should be used for all PEP projects

CBS has a fairly well developed project governance methodology, which includes a structured framework for project selection and delivery, as well as tools and templates for project deliverables. However, a number of CBS initiatives have demonstrated a high degree of customization of the methodology, leading to incomplete project deliverables that may ultimately impact the overall success of the projects.

The review team’s analysis of a sample of PEP projects’ documentation concluded that a project charter has been, or is in the process of being, developed for each project. The project charters were generally well prepared, but demonstrated varying levels of detail and quality. Most of the charters reviewed did not contain a complete discussion on KPIs prior, during and after complete implementation of proposed changes. Also, the charters did not explain how the financial benefits (savings) will be measured once the project is completed.

CBS project assessment and management methodology and tools do not include sufficient details on performance metrics (current and after the project implemented) and benefit measurement.

Recommendation #52:
The PEP management office should ensure project teams prepare project planning documentation that describes KPIs and cost-benefit details. Project plans should include a detailed break-down of cost and benefit factors that were considered, as well as financial assumptions. KPIs (i.e., project objective and measures of success) should describe measurable expected results that directly impact the achievement of benefits.

The PEP management office should have a longer planning horizon and use a portfolio management approach

The current PEP planning horizon is focused on the current Corporate Plan (2013-14 to 2015-16) and is only focusing on a limited number of cost productivity and efficiency initiatives. Additional projects, delivering $15 million in annual operational savings, must be identified to deliver the current $50 million PEP objective. Furthermore, to achieve the total savings opportunity of $68 to $93 million, projects realizing an additional $33 to $58 million in overall savings must be delivered. These projects have largely been identified in the initial diagnostic report, but have not been scheduled for execution by CBS. The table below summarizes the savings opportunities that remain to be planned.

\(^46\) $50 million of $475 million operating budget
Table 8.3 - Summary of the Gap in PEP initiatives

<table>
<thead>
<tr>
<th>($ millions)</th>
<th>Operational Savings</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently identified</td>
<td>35.4</td>
<td>46.2</td>
</tr>
<tr>
<td>Initial Target</td>
<td>50.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Gap remaining (Wave 1)</td>
<td>14.6</td>
<td>13.8</td>
</tr>
<tr>
<td>Overall Target Low Range</td>
<td>68.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Gap remaining to be identified (Overall Low)</td>
<td>32.6</td>
<td>29.8</td>
</tr>
<tr>
<td>Overall Target High Range</td>
<td>93.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Gap remaining to be identified (Overall High)</td>
<td>57.6</td>
<td>49.8</td>
</tr>
</tbody>
</table>

The program management office is structured to effectively manage dependencies, consolidated reporting, and quality reviews across individual projects that make up the PEP portfolio, but does not consistently report on the overall program spend and benefits expectations.

**Recommendation #53:**

A PEP portfolio management approach should be adopted, which includes managing and reporting on initiatives at different stages (e.g., idea, concept, assessment, execution and benefit realization). This approach would provide a longer term view of the PEP and improve chances of success.

In addition, the office should maintain management-level reporting of the PEP portfolio as a whole, especially the overall spending and savings expectations, to all executives, committees and the EMT.
Customer safety and supply needs

9.1 Objective
The objective of the safety review is to understand how effectively CBS is meeting patient needs for safe products, the safety measures undertaken, and the technology used by CBS to ensure safety of the blood supply.

9.2 Scope
The scope of the Safety and supply needs review included:

• Supply and demand management approach and processes
• Approaches, processes and technology related to safety measures to protect donors, recipients and the supply chain
• Related performance indicators

This review did not include reviewing the effectiveness and appropriateness of the various safety measures, including donor testing or assessing compliance with safety procedures.

9.3 Context
CBS considers its ability to meet patient needs for safe blood and blood-related products to be of paramount concern. In order to meet demand in the system, CBS must deliver products to its hospital customers to meet the needs of patients. The needs of patients and the clinical practices and inventory mechanisms at the customer level are all factors that impact utilization of blood and related products.

Safety of blood products has been at the centre of CBS’ operations since it was created. In the 1980s, Canada’s blood system was criticized for its lack of safety, as many Canadians became infected with HIV and HCV during that period through the blood products from Canada’s blood system. However, since CBS took full responsibility for operations of the blood system in September 1998, it has implemented and enforced several safety procedures and tests to make the blood supply safer in Canada. The World Health Organization has stated that Canada’s blood system is among the safest in the world, and CBS is recognized as having high safety standards to prevent distribution of tainted blood. CBS has programs and procedures in place that aim to ensure safety of blood operations. CBS has implemented these programs for all elements that impact the blood supply including staff, equipment and testing platforms, systems, internal and external communications, and testing procedures.
The limited scope of this review did not allow the project team to conduct hospital visits or surveys; however, CBS administers an annual hospital survey and relevant results are outlined. Clinical practices and constraints (such as storage space) that may impact hospital blood bank usage and inventory management and demand were out of scope for this review.

9.4 Observations and recommendations

Demand for blood and blood products has fluctuated over the last several years.

Between 2008-09 and 2010-11, there has been no consistent trend in the number of red cell issues per 1,000 in population for country members of the ABO. While there was a marginal increase in the number of red cells issued in 2009-10 compared to 2008-09, in 2010-11, most countries, including Canada, reduced their usage, which may have been the result of economic considerations and improved clinical practice.

With regards to platelet issues per 1,000 in population, between years 2008-09 and 2010-11 platelet issues continued to grow for most ABO members\(^47\), as demonstrated below.

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\(^{47}\) ABO Benchmarking Report 2010-11
Canadians have confidence in services provided by CBS

CBS conducts general public tracking research on a quarterly basis; the purpose of this research is to identify variations in public opinion regarding the national blood system and CBS. The research tracks public opinion on a variety of measures, including:

- Awareness of the blood system and CBS
- Performance in managing the blood system
- Safety of donating and receiving blood
- Trust that CBS acts in the best interests of the public

The survey is administered online and surveys a nationally representative sample of approximately 1,000 Canadians each wave.

Although awareness of the national blood system has decreased somewhat over the past few research waves, trust by Canadians that CBS acts in the best interests of the public remains high, based on Ipsos Reid data. In the research wave conducted in September 2012, 24% of respondents “strongly agreed” on a 10-point scale that CBS acts in the best interests of the public, down slightly from the June 2012 research wave in which 25% of respondents “strongly agreed” with the same statement. Furthermore, more than 8 in 10 respondents indicated that it is safe to receive blood, with the perception that it is “somewhat safe” (rating of 6, 7, 8, or 9 on the 10-point scale) having increased from 64% to 69% since the last research wave.

From a blood donation perspective, 9 in 10 respondents indicated that it is safe to donate blood, with the perception that it is “somewhat safe” (6, 7, 8, 9) having increased from 53% to 56% since the last research wave.

Belief that CBS is effective in its role of managing the national blood system also remains high. In the September 2012 research wave, 94% of respondents acknowledged that CBS is doing a very good job (38%) or somewhat good job (56%) of managing the blood system in Canada, up from 92% in June 2012.
CBS maintains very positive customer satisfaction scores with the hospitals it serves

CBS measures customer satisfaction on an annual basis; this is a proxy indication of CBS’ ability to meet patient needs and system demand. The survey is sent to 425 hospitals and a 46% response rate was realized in 2011. Overall satisfaction with CBS by Canadian hospitals has remained consistently high, based on Ipsos Reid data (2005-10) and one year of data collected by CBS itself (2011), with 99% of respondents being either totally satisfied (10 - 32%) or somewhat satisfied (7,8,9 - 67%) on a 10 point scale from 2008-11. Overall satisfaction with the safety of blood components and plasma protein products by Canadian hospitals has also remained consistently high, based on Ipsos Reid data and one year of data collected by CBS, with 99%-100% of respondents being either totally satisfied (10 - 50%) or somewhat satisfied (7,8,9 - 50%) on a 10-point scale from 2008-11.

Table 9.1 - Customer satisfaction

<table>
<thead>
<tr>
<th>Satisfaction Metric</th>
<th>Totally satisfied (10)</th>
<th>Somewhat satisfied (7,8,9)</th>
<th>Total satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability of CBS to meet requirements for blood and blood components (2011)</td>
<td>42%</td>
<td>56%</td>
<td>98%</td>
</tr>
<tr>
<td>Ability of CBS to meet requirements for blood and blood components (2010)</td>
<td>42%</td>
<td>57%</td>
<td>99%</td>
</tr>
<tr>
<td>Ability of CBS to meet turnaround time for urgent orders (2011)</td>
<td>35%</td>
<td>63%</td>
<td>97%</td>
</tr>
<tr>
<td>Ability of CBS to meet turnaround time for urgent orders (2010)</td>
<td>34%</td>
<td>64%</td>
<td>98%</td>
</tr>
</tbody>
</table>

Detailed demand-specific questions relate to CBS’ ability to meet requirements for blood and blood components and turnaround time for urgent orders of blood and blood components. CBS maintains high satisfaction scores year over year on these demand satisfaction scores.
Hospitals show an interest in partnering to address system inventory management issues

In addition to measuring customer satisfaction, CBS also evaluates its customers’ willingness to partner with it on a variety of activities. The charts below show the response for each of these questions respectively. Our analysis of the results indicate that there is interest in the system of partnership arrangements with CBS on inventory management and related emergency planning, measuring utilization for blood and plasma protein products, and helping to find process and IT solutions for supply chain issues.

Currently, the Manitoba Health department is piloting a shared Laboratory Information System (LIS) between CBS Diagnostic Services and across three hospitals to improve visibility into blood product usage and inventory levels for those hospitals. The system is expected to deliver several supply chain benefits in addition to clinical ones, including the ability to better forecast demand, reduce discard rates, enable blood product inventory to be pushed into hospital sites where it is required, and a reduction in rush orders leading to potential savings in freight costs.

Recommendation #54:

CBS should undertake an analysis to compare outdates and discards between Manitoba and other Canadian jurisdictions to assess the impact of automated inventory management and centralized blood bank management.

Specifically, CBS should:

- Work with its funders and major hospitals to develop a blueprint for improved collaboration across the extended blood supply chain
- Outline cost and benefit estimates as well as determine the technology considerations, reports and controls that would be required to sustain and monitor enhanced collaboration

Improved visibility into hospital demand, inventory requirements and utilization could reduce costs

There is currently a lack of data outlining utilization and movement of products within and between hospitals. CBS’ operations, and therefore access to consistent operational data, end at the hospital delivery dock. CBS forecasts system demand and the required customer shipments based on historical information, as there is a significant time gap in receiving hospital data on usage. CBS must, therefore, estimate what its customers will order and plan its operations accordingly, using buffer inventory to compensate for variations between orders. Meanwhile, hospitals are also carrying their own inventory to fulfill demand over the order fulfillment lead time and to compensate for possible supply shortfalls from CBS. Increased order fulfillment lead times and compensation for variability in demand and supply result in increased (and potentially excessive) inventory requirements. The upstream impact is excess collections, processing and distribution activity by CBS, with the excess blood ultimately translating into outdates downstream and higher system-wide costs for the blood supply chain. The review team observed that blood and plasma protein products’ utilization data is not readily available and not collected consistently across provincial jurisdictions.

Table 9.2 - Summary of hospital partnership interest

<table>
<thead>
<tr>
<th>Partnership Interest Metric (2010)</th>
<th>Very interested (10)</th>
<th>Somewhat interested (7,8,9)</th>
<th>Total interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory management of blood products or plasma protein products</td>
<td>21%</td>
<td>33%</td>
<td>54%</td>
</tr>
<tr>
<td>Utilization of blood components or plasma protein products</td>
<td>20%</td>
<td>39%</td>
<td>59%</td>
</tr>
<tr>
<td>Contingency plans for the unavailability of blood components or plasma protein products</td>
<td>19%</td>
<td>33%</td>
<td>52%</td>
</tr>
<tr>
<td>Integrating IT systems for blood components or plasma protein products</td>
<td>18%</td>
<td>24%</td>
<td>42%</td>
</tr>
</tbody>
</table>
To compensate for the latency in receiving hospital inventory usage data, CBS resorts to forecasting shipment demand using univariate time series models through a standalone tool called Forecast Pro. The resulting forecast is used to plan collection and production targets. Anecdotally, it was observed that the forecast is fairly accurate at an aggregate point of view (for example, monthly shipment volumes by region), given that hospital demand changes are gradual. However, it is in the short term (daily/weekly product demand by hospital) that significant operational challenges materialize, which is reflected by the high number of routine and ASAP/STAT deliveries. Therefore, a better understanding of short term demand drivers and inventory management protocols at hospitals are required to improve CBS’ forecasting effectiveness. Nevertheless, the current process represents a good start for the organization in the forecasting discipline. Robust use of reporting and alert monitors is helping CBS keep a close eye on performance; however, relative accuracy and bias metrics are still lacking. CBS is looking to enhance its top-down forecast by better liaising with hospitals to conduct some bottom-up reconciliation.

Based on the interviews conducted, there is some evidence that hospitals re-distribute blood product inventory amongst themselves to minimize outdates. However, this movement and handling of this inventory is potentially an additional, unrecognized cost to the health care system; it could also create a distorted demand signal to CBS. This is another indication of how the lack of demand and utilization data and inventory data for hospitals impacts the ability to manage products across the entire system.

The impact of lack of timely demand, inventory requirements and utilization data manifests itself in several areas across CBS and for its customers, three of which are quantified for the purposes of this review: CBS logistics costs, outdates at CBS and at the hospitals, and CBS operational productivity.

Impact on logistics
Analysis of CBS' logistics data for the Brampton facility indicates that approximately 35% of Greater Toronto Area hospitals are receiving more than five shipments per week, with some 15% receiving more than 10 shipments per week. The analysis implies that some hospitals are potentially over-serviced by CBS.

In addition, analysis confirmed anecdotal information that approximately 40% of all deliveries are conducted on an ASAP/STAT basis (which require expedited freight) versus the industry norm of less than 10%. For the Brampton facility alone, this expedited freight translates in additional costs of nearly $1 million annually. Rush deliveries are also carried out by other processing centres; however data unavailability prevented their costs from being quantified during the course of this review. Assuming that improved supply chain collaboration could reduce ASAP/STAT percentages to industry norms of 10%, this 75% reduction would help the Brampton facility realize $750,000 in savings. This savings is in addition to those that will be realized through the reduction of outdates, which is explained in the ‘Impact on system outdates’ section below.

The high percentage of expedited freight and observed delivery frequency is an indication that a significant opportunity exists to improve both blood stock inventory management at the hospitals and order fulfillment practices between CBS and its customers. It is also symptomatic of a supply chain where the customer base has come to expect high levels of customer service without fully considering the total financial repercussions. The hospitals CBS serves are not responsible for transfer payments, while in other jurisdictions reviewed, hospital transfer payments for products received/utilized is the norm. A system in which hospitals pay for blood and related products was also a recommendation of the Krever report.

As previously discussed, the Manitoba Health department is piloting a shared LIS between CBS Diagnostic Services and across three hospitals to improve visibility into blood product usage and inventory levels for those hospitals.

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48 Brampton Expedited Freight cost estimates at $80K/month provided by Gilles Rancourt, Director Logistics at CBS
Impact on system outdates

The ABO reports on a number of metrics at a macro level to outline efforts to promote the appropriate use of blood products and reduce wastage in the system. The table below provides an overview of population demand type data that is tracked by the ABO. The three jurisdictions show similar demand numbers and trends in utilization. All three countries show consistent year-over-year trends for the past three years.

**Table 9.3 - Summary of blood related trends**

<table>
<thead>
<tr>
<th>Metric (10/11)</th>
<th>Canada</th>
<th>Operator A</th>
<th>Operator B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red cell issues per 1,000 population</td>
<td>31.5</td>
<td>35.9</td>
<td>34.7</td>
</tr>
<tr>
<td>Trend in red cell issues per 1,000 population</td>
<td>(1%)</td>
<td>0.7%</td>
<td>(1.5%)</td>
</tr>
<tr>
<td>Platelet issues per 1,000 population</td>
<td>4.4</td>
<td>6.0</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Although the demand environments are similar across the jurisdictions, outdate rates vary widely. Limited data on utilization and demand can impact blood and blood product outdates across the system. The review team conducted data analysis using CBS and hospital discard information to determine the percentage of discards that could be avoided through better synchronization efforts. For purpose of analysis, the data set was isolated to discards related to outdates (time expired products) only. The underlying assumption made was that outdated product is the primary consequence for having excessive inventory of short shelf life products at any location.

The review team’s analysis indicated 46,500 outdates system-wide (at CBS and the hospitals) for 2011-12. Multiplying the number of outdates by the cost per distributed blood bag yields a total cost of $17 million for expired product across the system.

**Figure 9.10 - Red blood cell and platelets outdates and rates**
However, as this $17 million is inclusive of all system outdates - platelets and red blood cells outdates at CBS and hospitals - it is not valid as a cost-savings target in its entirety. Given shelf life constraints (platelets have a five-day shelf life), it is highly unlikely that the same percentage of improvement can be achieved for platelet outdate reduction as that for red blood cells. In addition, red blood cell outdates cannot be completely eliminated either, given their demand characteristics, life-essential requirements, and short shelf life dating. Therefore, to quantify the improvement opportunity, the review team compared these outdates against comparable data from other comparable blood services organizations.

Compared to Operator A, CBS had higher outdates rates for both red blood cells and platelets. Improving CBS' performance to Operator A levels will help realize cost savings of $1.8 million. ABO data indicates that the age of red blood cells issued and the average inventory was also higher at CBS versus that at Operator A, which may have a correlation to the higher percentage of outdates.

Reductions in outdates can also be achieved through reducing discards at hospitals. Hospital data obtained from CBS shows approximately 60% of the red blood cell discards, and 20% of platelet discards, are due to outdates. Comparable benchmarks for hospital discards were not readily available for red blood cell outdates for international hospitals. The estimated cost savings were based on a scenario where hospital red blood cell outdates are reduced by 25% and by 10% for platelets (given their highly limited shelf life). This scenario yields savings of $1.7 million.

Impact on productivity
An external consulting report, commissioned by CBS in 2012, for the PEP identified productivity savings from improved system-wide inventory management. That study estimated a range of $1.3 to $2.2 million in labour savings from reduced collections, processing and distribution as a result of implementing such an initiative. It should be noted that the savings estimate from this report were not independently verified. System-wide inventory management requires a greater degree of consistency in the collection and sharing of utilization data across the system.

The strategies of the two blood services organizations noted above indicate that both organizations have made it a strategic priority to collaborate closely with hospitals on supply chain improvements. Both cite cost savings from improved system-wide blood management as a key motivator to behind their initiatives.

### Table 9.4 - Summary of outdate rates

<table>
<thead>
<tr>
<th>Metric (10/11)</th>
<th>CBS</th>
<th>Operator A</th>
<th>Operator B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red blood cell outdate rates49</td>
<td>0.74%</td>
<td>0.35%</td>
<td>N/A</td>
</tr>
<tr>
<td>Platelet outdate rates</td>
<td>6%</td>
<td>5.4%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

49 Data obtained from ABO Scorecard 2010-2011
Combining the potential savings across all categories and using a midpoint of $1.8 million for the productivity savings, there is potential annual benefit of approximately $5.3 million to CBS and hospitals from improved inventory management across the system.

Recommendation #55:
CBS should work with hospitals to develop standardized data collection and reporting mechanisms for hospital demand and utilization to enable better monitoring and management of system wide outdates and costs.

CBS has procedures and processes in place to manage blood safety and report on its performance

Safety performance
CBS strives to ensure a balance between the safety of the blood system and the availability of blood components for Canadians. The documentation reviewed indicates that CBS effectively manages safety issues, which include infectious disease risks, quality issues, and availability of the blood components. CBS is also involved in studies that examine the impact of certain policies (e.g., Chagas testing) on the safety of the blood supply.

CBS has been consistent in its safety performance. The estimated residual risk of transfusion-transmitted viral infections has decreased as testing of donors for transmissible disease agents has been introduced over time, as shown in the figure below.

![Figure 9.12 - Summary of historical reduction in residual risk of diseases](image)

Good manufacturing practices
The manufacturing environment, from a system perspective, for CBS consists of all processes that directly or indirectly impact product and service safety, quality, identity, purity and potency (SQuIPP). The processes included in the manufacturing environment are defined by good manufacturing practices, accreditation standards and regulations and quality management systems standards (e.g., ISO 9001).

CBS documents, maintains and follows thousands of operating procedures to ensure safety and quality of its products. For quality control a variety of tests are regularly performed on CBS’ products to ensure they meet product specifications. These specifications are documented and communicated to the customers in “Circular of Information” documents.

For the GMP, CBS also has several programs and processes in place to ensure the consistency of product safety and quality. These include, but are not limited to, training and education of staff, document management, deviation management, equipment management, change management, facilities control, non-conformance event reporting, and a quality assurance program (which included quality control).

Testing procedures and technologies
There are numerous regulatory requirements and legislative acts governing the safety, quality and efficacy of products and services offered by CBS (see Appendix G). CBS also works with other organizations, such as the Public Health Agency of Canada, to monitor existing infectious threats (e.g., West Nile Virus) as well as the emergence of new infectious diseases and implement new measures (e.g., Chagas testing) to reduce these potential risks. In addition to testing for disease agents, there are several tests performed to ensure the safety of blood components. Based on the information obtained from CBS documents, the introduction of tests and improvements in testing technologies and platforms over time has resulted in the reduction in disease rates, as previously indicated.

Pathogen Reduction is a strategy to prevent the transfusion of bacterially-contaminated products that is both proactive and broad-spectrum. A number of European jurisdictions have adopted the Mirasol® technology for treatment of platelets and plasma. For example, France, Belgium, Netherlands and Poland have either implemented, or are in the process of evaluating, this technology. CBS is currently engaged in a clinical trial in Canada (Pathogen Reduction Evaluation & Predictive Analytical Rating Score) as part of an international clinical trial for platelets treated with the Mirasol® Pathogen Reduction Technology.

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Pathogen reduction technology has the potential for increased operational efficiency through cessation of some tests, such as bacterial testing. Currently, new tests are developed as the pathogens emerge, whereas the pathogen reduction technologies have a proactive nature, with the potential elimination of threats from unknown pathogens.51

Testing comparison with other blood services organizations

The ABO CMWG conducts comparative studies between ABO members on their various operational aspects. The CMWG notes that cost differences exist in major functional areas between the members; however, differences result from geographical, epidemiological, legislative and/or operational disparity. For example, transmissible disease testing conducted by CBS is mandated by Health Canada. Given these differences, the CMWG strongly cautions not to draw any conclusions from these differences without further analysis to fully understand the underlying cause. The differences among the member countries that were noted by the ABO CMWG, in terms of the types of test conducted and percentage of samples tested, include the following:

Table 9.5 - ABO Type of Tests Comparison52

<table>
<thead>
<tr>
<th>Type of test</th>
<th>ABO Member B</th>
<th>Canada</th>
<th>ABO Member A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>% tested</strong></td>
<td><strong>% tested</strong></td>
<td><strong>% tested</strong></td>
<td></td>
</tr>
<tr>
<td>Mandatory TD Test-Hep B core (HBc)</td>
<td>1.06%</td>
<td>100% (Mandatory)</td>
<td>2.04% (Discretionary)</td>
</tr>
<tr>
<td>Mandatory NAT-WNV RNA</td>
<td>0.00%</td>
<td>100%</td>
<td>2.12%</td>
</tr>
<tr>
<td>Bacterial screening</td>
<td>100%</td>
<td>100%*</td>
<td>2.30%</td>
</tr>
<tr>
<td>Malarial</td>
<td>12.50%</td>
<td>0.00%</td>
<td>2.30%</td>
</tr>
<tr>
<td>High Titre Anti AB (HTAB)-Red Cell serology</td>
<td>0.00%</td>
<td>0.00%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Other factors that contribute to cost differences in testing are summarized in Table 9.6.

Table 9.6 - Summary of other factors contributing to cost difference53

<table>
<thead>
<tr>
<th>Contributing factors</th>
<th>ABO Member B</th>
<th>Canada</th>
<th>ABO Member A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of testing sites</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Number of shifts per day per site</td>
<td>1-2</td>
<td>2-2.5</td>
<td>2-3</td>
</tr>
<tr>
<td>Testing Results turnaround time</td>
<td>24 hours</td>
<td>12 hours</td>
<td>7-12 hours</td>
</tr>
<tr>
<td>Use of pre-manufactures PK Reagents</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Use of pre-manufactured Red Cell Phenotyping Reagents</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

52 ABO Cost Model Working Group, 2012
In Canada, staff are required to have the necessary training and credentials related to the work that they perform. For example, the Quality Control department in CBS provides training for staff on the operations of its system, including data entry, record processing and reporting. This training is audited by Health Canada. Testing activities and associated requirements are subject to provincial and territorial legislation. For example, in Alberta, a medical laboratory technologist is required to perform analytical services in an accredited laboratory.

Safety Indicators

To monitor safety, CBS reports on key safety indicators to its SSEC on a quarterly basis. Each safety indicator refers to a particular business line. The current safety indicators, associated targets and the status for 2012-13 are shown below:

Table 9.7 - Summary of current safety indicators

<table>
<thead>
<tr>
<th>Safety Indicators</th>
<th>Quarterly Target</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Q1</td>
</tr>
<tr>
<td># of recalled components due to E/As &amp; PDIs (TP)</td>
<td>&lt; 433</td>
<td>431</td>
</tr>
<tr>
<td># of Health Canada critical observations (TP)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of reported adverse transfusion reactions (TP)</td>
<td>&lt; 32</td>
<td>19</td>
</tr>
<tr>
<td># of revised reports for Diagnostic Services (per 1,000 reports )</td>
<td>&lt; 0.500</td>
<td>0.439</td>
</tr>
<tr>
<td># of serious events (Stem Cells)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of recalled plasma units sent for fractionation (PPP)</td>
<td>&lt; 150</td>
<td>108</td>
</tr>
<tr>
<td># of suppliers recalls (PPP)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of safety indicators meeting target</td>
<td>7/7</td>
<td>7/7</td>
</tr>
</tbody>
</table>

Indicators not met are shown in red

Safety indicators focus primarily on the number of incidents and events rather than performance of safety efforts and outcomes/impacts to the system

As per Table 9.7, CBS has met most of its safety targets. However, in the second quarter of fiscal year 2012-13, a serious event occurred in Stem Cells business line. This event was caused by a miscalculation of the cell count for a product collected from a Canadian donor, which resulted in over-collection of stem cells from a donor. The donor was not harmed, but there was a delay in providing product to the transplant centre (which was located outside Canada). Corrective actions involving CBS and the collections and transplant centre have been proposed and are being evaluated.

Despite the occurrence of the serious event described above, an overall consistent performance against key safety indicators is visible in the graphs below. See key definitions in Appendix J.

54 Report to SSEC – Quality and Compliance Report, 2012-13
In addition to the safety indicators noted above, a number of other indicators are reported to the SSEC on a quarterly or yearly basis. Quarterly indicators include the percent of affected products impacted by recalls, the number and criticality of Health Canada observations or the number of unresolved Health Canada observations. Safety indicators are also reported annually in the Transmissible Disease Surveillance (e.g., HIV, HCV) report, the Bacterial Contamination Detection Annual Statistics report and the WNV Seasonal report. These indicators are similar to those reported by other jurisdictions, which were identified from public sources and are summarized below.

Many of the indicators reported to the SSEC focus on the number of incidents and events rather than the performance of safety efforts and outcomes/impacts to the system. One of the safety indicators used by Operator 2 is the ‘Number of confirmed transfusion transmitted infection from bacterial contamination incidents’, with a target of less than one per year. This safety indicator includes the cause of the event and focuses on a particular line of business. The impact of such events can be included by categorizing them by severity. This is similar to the adverse transfusion events or serious events for stem cells used by CBS. Another indicator used by Operator 2 is the “Number of ‘critical’ regulatory non-compliances”, with a target of zero per year. This is similar to CBS’ indicators for critical observation.

CBS’ safety indicators are reported in the Quality and Compliance Report to SSEC. Other than reports to SSEC, the communication of safety indicators to other stakeholders is limited. There is a lack of descriptive indicators regarding severity, causes and measures taken to address the adverse events for all stakeholders. In order to present a clear picture of CBS’ performance, the indicators should reflect the cause and the impact of the event. The limitation of the indicators was evident in the second quarter of 2011-12, when the quarterly target for the number of events due to errors and accidents and post donation information was actually met, but the performance was rated below target, as shown in the following table.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Key indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator 1</td>
<td>▶ Number of recalled components per total components issued</td>
</tr>
<tr>
<td>Operator 2</td>
<td>▶ Number of recalled components per total component issues</td>
</tr>
<tr>
<td>Operator 3</td>
<td>▶ Number of serious adverse events (e.g., Incompatible transfusions)</td>
</tr>
<tr>
<td></td>
<td>▶ Percentage of bacterial contaminated red cell products per total red cell issues</td>
</tr>
<tr>
<td></td>
<td>▶ Percentage of bacterial contaminated platelet products per total platelet issues</td>
</tr>
<tr>
<td></td>
<td>▶ Number of recalled components per total component issues</td>
</tr>
</tbody>
</table>

---

55 Report to SSEC – Quality and Compliance Report, 2010-11 and 2011-12
Table 9.9 - Safety indicator from Report to SSEC 2011-12 Q56

<table>
<thead>
<tr>
<th>Safety Indicators</th>
<th>Quarterly Target</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>Number of recall events due to EAs &amp; PDIs (per 10,000 collection)</td>
<td>≤ 12</td>
<td>9.9</td>
<td>10.9</td>
</tr>
</tbody>
</table>

*Target met but performance rated below target

Although the number of recall events of 9.8 per 10,000 collections falls under the quarterly target of 12, the performance was still rated below target because of two events that resulted in an increase in the total number of recalled blood components for the quarter. In 2012-13, the indicator was changed to report performance on the number of recalled components (i.e., not events) broken down by line of business; however, the limitation in terms of reporting on performance still exists.

Recommendation #56:

CBS should continually improve reporting of safety incidents by modifying safety indicators and the corresponding quarterly targets to reflect the cause and impact of the event and, potentially, the impacts to the system.

CBS uses multiple information systems for the management of its safety operations, which could be better integrated

CBS has multiple information systems and databases that gather, exchange and house information on safety measures or data inputs to safety measures. One of these systems is Progesa (a blood management information system) which enables CBS to track a unit of blood from the donor through production and testing to the delivery to hospitals. Progesa benefits the blood system by ensuring every clinic has the same information on each donor, capturing real-time national inventory levels, interfacing with laboratory software to provide faster access to information and improving safety of blood products through bar-code labelling, which reduces the chances of error in product distribution.

Some of the other systems include a Cognos enterprise reporting solution to track and analyze donor information and approximately 300 Lotus applications that support day-to-day operations. Many of these have been replaced, but there are legacy applications in existence to track and analyze historical data.

There are several systems and applications that access databases that hold data pertaining to safety, adverse events and non-conformance, which include the National Non-Conformance Database, Progesa, and the LIS. The overview of the information systems presented above indicates that both manual and automated interfacing processes exchange and consolidate information on safety from multiple systems within CBS and systems of its partners. As information systems become more sophisticated for CBS and its partners, there is an opportunity to streamline processes by reducing manual information exchange and interfacing data from various systems housed within CBS as well as the systems of its partners. This may lead to reduced risks of errors in reporting during process handoffs and manual steps. Utilization of system interfaces improves data accessibility and reduces the effort and risk associated with manual processes and interfaces.

56 Report to SSEC – Quality and Compliance Report, 2011-12 Q4
**Recommendation #57:**

CBS should investigate opportunities to integrate and interface information systems within the organization as well as with those of its partners, particularly as the health care system moves toward electronic information systems. These opportunities will require effective collaboration between CBS and the health care system partners, as well as consideration of the legislative requirements to implement appropriate interfaces.

Safety reporting is highly manual and could be enhanced using technology

To effectively manage and report on safety indicators, a process has been developed to collect the required information to report and trend indicators over time. Information systems support the measurement and monitoring of safety indicators. CBS has developed processes to generate timely incident reports from internal or external sources.

CBS has a non-conformance process in place to control, assess and dispose of products that do not meet CBS’ requirements. It is estimated that approximately 40,000 non-conformance incidents are identified per year and the process followed is described in Figure 9.14.

As depicted in the diagram above, the non-conformance process is predominately manual. These events are reported and recorded in CBS operations using paper forms. The paper forms are then passed to quality assurance staff for validation of the activities undertaken to affect the proposed disposition of the product. The data is then entered into the NNCD. While there are no plans to implement an information system at the front line for this process currently in place, CBS does, in general, want to work toward greater automation in this and many other processes.

Data pertaining to safety, adverse events and non-conformance is collected in several applications and databases including NNCD, Progesa, and the LIS. This data is replicated in the data warehouse where it can be normalized and manipulated together with associated data to provide information elements. Depending on their complexity, reports can either be scheduled or generated on an ad hoc basis. There are multiple processes and various entities involved in the creation of these reports, which may result in a lack of coordination within CBS to generate reports.
According to the World Health Organization’s guidelines for adverse events’ reporting and learning system, there are four underlying principles for the guidelines:\(^57\):

- Fundamental role of patient safety reporting system is to learn from the previous failures
- Reporting must be safe
- Reporting is only of value if it leads to a constructive response
- Meaningful analysis of lessons learnt requires expertise

It is evident from these principles that by making effective use of available data and improving its reporting, efforts can be made by CBS to identify and address the cause non-conformances.

**Recommendation #58:**

CBS should assess the feasibility of incorporating business intelligence capabilities into its information systems. These capabilities can provide further insights on non-conformance trends. However, detailed analysis is required to weigh costs against benefits to prioritize this initiative against CBS’ other current initiatives.

### 9.4.1 Decision making for safety protocols

CBS is playing a leadership role in the development of an international risk-based decision-making framework for blood safety

Since its inception in 1998, CBS has implemented several safety measures. Currently, CBS follows a multi-layer approach to safety starting with donor screening, followed by multiple tests performed on blood and blood products. This approach has resulted in a consistent reduction in residual risk of diseases. The current decision-making process for a new safety initiative or solution for an issue involves multiple CBS entities and external committees. A detailed description of process is depicted in Figure 9.15.

In the past, several successful blood safety measures have been implemented. Based on the documented process reviewed, it appears that the decision-making process for the management of safety initiatives implemented at CBS is robust, thorough and formalized. The focus of the process, in accordance with the direction provided by CBS regulators, is to minimize the risk to safety.

---

In 2010, a consensus conference was held that brought together international experts and blood services organizations to develop the foundations of a risk-based decision framework for blood safety. At the consensus conference, the panel recognized that the current policy and regulations remain underpinned by an unachievable ‘zero risk’ orientation, which delivers marginal improvements in blood safety outcomes over time. It was observed that the current trajectory towards “zero risk” is not sustainable and that there needs to be a fundamental change in the current risk management approach. It was also noted that the rigorous safety regimes in place within the various blood services organizations are heavily shaped by the lessons of 1980s, with a fixation on “avoiding repetition of these events” and a reliance on the precautionary principle. The consensus panel noted that there needs to be a fundamental change and an integrated risk management framework should be developed.

CBS has taken the leadership role in the ABO for the development of an integrated, internationally applicable risk-based decision-making framework, encompassing donor safety and optimal patient outcomes. Other members in ABO include AABB, America’s Blood Centers, American Red Cross, ARCBS, Blood Systems, Inc., European Blood Alliance, Héma-Québec, and NHSBT. CBS is operating as the Project Lead and Project Manager on this project. All participating blood organizations, including CBS, will benefit from this initiative, as an integrated approach will provide measurable objectives, consistency in decision-making, improved confidence in investment decisions and increased transparency in communication and buy-in across the system.

In order to operationalize the work coming out of the consensus conference, the ABO working group will develop an action plan for the creation of the risk-based decision-making framework, which can be implemented by blood services organizations, and a framework for operationalizing the recommendations from the consensus conference. The ABO working group will also seek input from relevant stakeholders and subject matter experts and pursue endorsement of the framework by regulators, national departments of health, blood services organizations and other blood system participants.

Phase I of the project is a program of four distinct projects:
- overall risk framework
- health economics tools
- a stakeholder plan
- user requirements for a collaborative database for risk-based decisions and models

Upon completion of these deliverables, by 31 March 2014, there will be consultation with key stakeholders in Phase II. The following diagram summarizes the shift in current risk-based decision-making:

**Recommendation #59:**
CBS should continue its leadership role to work with other ABO members in the development of the integrated risk-based decision making framework that addresses all major policy and operational challenges, and provides a consistent decision-making approach which would improve confidence and trust in investment decisions. The results of this work should be shared with the CBS Board of Directors as well as with the Members in order to promote further dialogue on risk-based decision making.

---

**Figure 9.16 - Shift in risk-based decision-making process**

<table>
<thead>
<tr>
<th>The current blood safety paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A drive to minimize to the lowest possible levels with secondary attention to cost</td>
</tr>
<tr>
<td>• Focus on infectious disease transmission</td>
</tr>
<tr>
<td>• Reliance on the ‘precautionary principle’</td>
</tr>
<tr>
<td>• Efforts to engage stakeholder community, specifically donors and recipients</td>
</tr>
<tr>
<td>• Emphasis on product quality with less focus transfusion process</td>
</tr>
<tr>
<td>• Rigorous safety regimens are heavily shaped by lessons of 1980s, with fixation on “avoiding repetition of these events”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current blood policy and regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Underpinned by unachievable ‘zero risk’ orientation which delivers marginal &amp; incremental improvement in blood safety outcomes over time; unsustainable trajectory</td>
</tr>
<tr>
<td>• Unclear consideration of costs - direct or opportunity</td>
</tr>
<tr>
<td>• Health spending is likely to be more severely constrained - trend will be accelerated by the global economic crisis and by changing demographic</td>
</tr>
</tbody>
</table>

---

**Five critical dimensions of a comprehensive approach to blood safety**

1. An integrated risk management framework that encompassed “vein to vein”, and beyond
2. Decision making based on transparent principles of risk management
3. A mechanism to balance risks costs and benefits in a sustainable manner
4. Meaningful engagement with interested and affected parties throughout the process of risk decision making
5. A risk management strategy with the context of well-established ethical principles to ensure that the rights of both doors and patients are respected

---

10.1 Objective
The objective of the strategic initiative review is to understand how effectively CBS is delivering and managing these initiatives. The three strategic initiatives that fall under the scope of this review include OTDT, Cord Blood and the NFRB.

10.2 Scope
The scope of the review includes:
- NFRP Phase 1
- Cord Blood
- OTDT
- Program structure, cost, personnel, oversight, third party involvement, reporting and efficiencies
- Opportunities for improvements

The scope of the NFRP review included management and execution of NFRP Phase I since the funding approval in March 2008. This review does not include validation of the business rationale for funding approval of NFRP Phase I or subsequent phases of NFRP.

10.3 Context
CBS has undertaken several key initiatives in recent years. The NFRP and Cord Blood were internally initiated while OTDT was mandated by the federal government and the provincial and territorial governments. Context specific to each initiative is provided in the corresponding sub-sections.
10.4 NFRP

10.4.1 Context

The NFRP is a multi-year commitment by CBS and its funding partners, the provincial and territorial governments, to upgrade the CBS facility infrastructure to better meet current and future business requirements. Three key issues drive the requirements for new facilities:

- Inadequate state of existing facilities to consistently operate in an environment which meets Good Manufacturing Practices
- Operational risks pertaining to insufficient and inappropriate space
- Optimizing business strategies to become more cost effective and efficient

Beginning in 2005, with a strategic plan for facilities, CBS has developed a prototype facility design to be used in future Collection, Component Production, and Donor Testing facilities. The Functional Program was developed with an engineering and architecture firm to address the key issues and drivers facing CBS with regards to its aging facilities. The details of the Functional Program are described more completely in Facilities Function Program59.

In March 2008, CBS received approval from the provincial and territorial governments for a $121 million investment ($118 million in funding) to implement CBS’ Functional Program at Phase I regions and sites. This included:

- Southern Ontario:
  - Consolidating London, Hamilton and Toronto Component Production to a single facility in the Greater Toronto Area

<table>
<thead>
<tr>
<th>$ millions</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Ontario</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toronto Tier 2 (Production)</td>
<td>$34.5</td>
<td>$18.9</td>
<td></td>
<td></td>
<td>$53.4</td>
</tr>
<tr>
<td>67 College Upgrade (Blood)</td>
<td>$3.0</td>
<td>$1.7</td>
<td></td>
<td></td>
<td>$4.7</td>
</tr>
<tr>
<td>London Tier 3 (Collection)</td>
<td>$2.5</td>
<td>$0.0</td>
<td></td>
<td></td>
<td>$2.5</td>
</tr>
<tr>
<td>Toronto Project Costs (including implementation)</td>
<td>$2.5</td>
<td>$10.4</td>
<td>$9.4</td>
<td></td>
<td>$22.3</td>
</tr>
<tr>
<td>Sub-total</td>
<td>$37.0</td>
<td>$34.8</td>
<td>$11.1</td>
<td>$0.0</td>
<td>$82.9</td>
</tr>
<tr>
<td>Maritimes Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halifax Tier 2 (Production)</td>
<td>$18.4</td>
<td>$7.3</td>
<td></td>
<td></td>
<td>$25.7</td>
</tr>
<tr>
<td>Halifax Tier 4 (Regional Collection)</td>
<td>$1.3</td>
<td></td>
<td></td>
<td></td>
<td>$1.3</td>
</tr>
<tr>
<td>Saint John Tier 4 (Regional Collection)</td>
<td>$0.6</td>
<td></td>
<td></td>
<td></td>
<td>$0.6</td>
</tr>
<tr>
<td>Halifax Project Costs (including implementation)</td>
<td>$2.0</td>
<td>$8.9</td>
<td></td>
<td></td>
<td>$10.9</td>
</tr>
<tr>
<td>Sale of Saint John Facility</td>
<td></td>
<td></td>
<td>$3.2</td>
<td></td>
<td>-$3.2</td>
</tr>
<tr>
<td>Sub-total</td>
<td>$0.0</td>
<td>$20.4</td>
<td>$18.1</td>
<td>$3.2</td>
<td>$35.3</td>
</tr>
<tr>
<td>Total</td>
<td>$37.0</td>
<td>$55.2</td>
<td>$29.2</td>
<td>$(3.2)</td>
<td>$118.2</td>
</tr>
</tbody>
</table>
• Renovating the Toronto Blood Centre (67 College Street) to establish a viable, long-term, GMP-compliant Donor Testing Laboratory

• Establishing a new collection site in London

• Maritimes Region:
  • Consolidating New Brunswick and Nova Scotia Component Production to a single facility in the Halifax region
  • Transferring Halifax Donor Testing to Toronto
  • Establishing new collection sites in Halifax and Saint John

Phase I of the NFRP is still in progress in both the Southern Ontario and Maritimes regions. The new Consolidated Production site in Brampton and the new collection site in Halifax have gone live delivering on the benefits of CBS’ Functional Program. These new facilities have begun to address the inadequate state of existing facilities by allowing CBS personnel to operate in newly renovated or purpose built complexes that promote GMP within the initial funding budget of $118 million.

The funding request of $118 million for the NFRP Phase I was approved by the Members through a formal business case and established the funding baseline for the project. Subsequent to the approval of the business case for funding approval, location specific Project Plans were initiated to further detail costs, scope and schedule expectations, as per CBS’ Project Governance Methodology. Table 10.1 outlines the cost breakdown across region and site as described in the business case he presented to members.

The cost structure for the NFRP can be categorized as:

• Facilities and Equipment: costs associated with the establishment of the physical building and capital equipment including construction and renovation costs, building and land acquisition costs, real estate fees, equipment and furnishings and fixtures

• Project Management: staff and general and administrative costs including project management, site selection and acquisition, architecture, implementation planning and commissioning and validation

• Implementation: one-time costs associated with the adoption of the new Functional Program design including moving and relocation costs, severance, training, transition costs and any asset retirement obligations

In several CBS documents for the NFRP, project management and implementation costs are typically summarized as Project Costs. For the purpose of this assessment, they have been delineated.

The funding approval in 2008 was also based on an anticipated annual operating cost savings of $3.5 million per year at the NFRP Phase I maturity. This was in addition to the implementation of the Functional Program. These operating cost savings were largely driven by expected staffing cost reductions in both Southern Ontario and the Maritimes region, and by facility operating expense reductions in the Maritimes region. These annual operational savings were anticipated to be achieved, at a consistent level, during year four of the NFRP or 2011-12.

59 Facilities Functional Program, Volume 1 (15 Dec 2006)
60 Assumes Year 1 of the plan begins 2008-09 - the fiscal year following the year of funding approval
61 National Facilities Re-Development Plan Business Case, 30 August 2007
The table below describes the annual operating cost savings by region and type anticipated at the time of funding approval.

Table 10.2 - Summary of annual NFRP operating cost savings

<table>
<thead>
<tr>
<th></th>
<th>$ millions</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Southern Ontario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staffing</td>
<td>$0.0</td>
<td></td>
<td>$1.9</td>
<td>$2.6</td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td>($0.2)</td>
<td></td>
<td>($0.2)</td>
<td>($0.2)</td>
<td></td>
</tr>
<tr>
<td>Bio Med</td>
<td>$0.0</td>
<td></td>
<td>$0.0</td>
<td>$0.1</td>
<td></td>
</tr>
<tr>
<td>Logistics / Warehousing</td>
<td>$0.0</td>
<td></td>
<td>($0.1)</td>
<td>($0.1)</td>
<td></td>
</tr>
<tr>
<td><strong>Sub total</strong></td>
<td>$0.0</td>
<td>($0.2)</td>
<td>$1.6</td>
<td>$2.3</td>
<td></td>
</tr>
<tr>
<td><strong>Maritimes Region</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staffing</td>
<td>$0.0</td>
<td></td>
<td></td>
<td>$0.9</td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td>($0.1)</td>
<td></td>
<td></td>
<td>$0.7</td>
<td></td>
</tr>
<tr>
<td>Bio Med</td>
<td>$0.0</td>
<td></td>
<td></td>
<td>$0.0</td>
<td></td>
</tr>
<tr>
<td>Logistics / Warehousing</td>
<td>$0.0</td>
<td></td>
<td></td>
<td>($0.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Sub total</strong></td>
<td>$0.0</td>
<td>$0.0</td>
<td>($0.1)</td>
<td>$1.2</td>
<td></td>
</tr>
<tr>
<td><strong>Total operational savings (cost)</strong></td>
<td>$0.0</td>
<td>($0.2)</td>
<td>$1.5</td>
<td>$3.5</td>
<td></td>
</tr>
</tbody>
</table>

The $3.5 million of staffing cost savings were anticipated as a result of a reduction in FTEs: 42.5 FTEs in Southern Ontario and 17.4 FTEs in the Maritimes region.

10.4.2 Observations and recommendations

Most NFRP Phase I deliverables have experienced a two year delay relative to the initial funding plan and did not use a formal change control process. Phase I of the NFRP is currently still in progress in both the Southern Ontario and Maritimes regions. The new Consolidated Production site in Brampton went live in February 2012, and a new collection site in Halifax was opened January 2011. The new Consolidated Production site in Halifax is scheduled to be opened March 2013, and the new collection site in London is schedule to be opened May 2013.

The figure below illustrates the original, high-level, schedule as per the funding baseline relative to actual implementation schedules as of time of reporting.

62 National Facilities Re-Development Plan Business Case, 30 August 2007
## Figure 10.1 - Planned and actual or forecasted timelines for each NFRP deliverable

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td><strong>Southern Ontario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brampton Tier 2 (Production) - Complete</td>
<td></td>
<td></td>
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<tr>
<td>67 College Upgrade (Blood) - In Progress</td>
<td></td>
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<tr>
<td>London Tier 3 (Collection) - In Progress</td>
<td></td>
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</tr>
<tr>
<td>Toronto Project Costs (inc. implementation)</td>
<td></td>
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<tr>
<td><strong>Maritimes Region</strong></td>
<td></td>
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<tr>
<td>Dartmouth Tier 2 (Production) - In Progress</td>
<td></td>
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<td></td>
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<tr>
<td>Halifax Tier 4 (Regional Collection) - Complete</td>
<td></td>
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<tr>
<td>Saint John Tier 4 (Regional Collection) - N/A</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Halifax Project Costs (inc. implementation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale of Saint John Facility - N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Funding schedule as per business case (Mar 2008)
Baseline as per integrated schedule (Apr 2009)
Most recent forecast
Based on the latest CBS forecasts at the time of reporting, the NFRP Phase I is on-going. Two material changes to plan have been encountered:

- Interim solution only at the Toronto Blood Centre (67 College Street)
- No new regional collection facility in Saint John

Following the initial funding business case an integrated schedule was developed. Delays relative to the funding baseline schedule and the integrated schedule were experienced in both Brampton and Dartmouth due to longer than anticipated site selection processes. In Brampton, site selection was anticipated to require three months. In reality, site selection required nine months, due to market conditions in the Toronto area, plus an additional two months to complete environmental testing. Similar impacts and rationale were experienced in Dartmouth, including lengthy discussions with the Halifax Regional Municipality to allow CBS to build in a light industrial park.

The upgrade to the Toronto Blood Centre located at 67 College Street in Toronto has been stopped due to the general poor condition of facility infrastructure (e.g., HVAC) resulting in substantially greater than expected renovation costs and delays in construction. The initial plan for the 67 College upgrade was to renovate existing space released by moving component production to the Brampton facility. However, due to greater than anticipated complexities experienced in the Donor Testing Laboratory, the scope was increased to address contamination and infrastructure concerns. In the short term, the site will receive minimal renovations to accommodate consolidated donor testing, which is scheduled to be completed in April 2013. However, a long-term solution requires substantial renovations estimated at $9 million. Due to the materially greater than expected costs, alternative options being considered include the development of a new stand-alone Donor Testing facility located on the same property as the Consolidate Production facility in Brampton. At the time of reporting, the planned completion for the long-term solution for donor testing at 67 College is undefined.

The original intent was to sell the existing Saint John facility following the transfer of production from that facility to the Consolidate Production facility in Halifax, generating a recovery of $3.2 million (factored in the $118 million funding estimate). Regional collections would remain in Saint John but would not require the capacity of the existing Saint John facility. The under-utilized existing facility was to be sold and a new, smaller facility leased to accommodate regional collections. However, to address significant concerns raised by the medical community resulting from NFRP, the plan for the existing Saint John facility was altered to:

- Establish a Stock Holding Unit to provide greater assurance to hospitals that supply would be met in case of emergency and inclement weather
- Continue to collect and process apheresis platelets, including the manufacturing process of end labeling the product
- Continue to freeze apheresis plasma in Saint John and ship to Dartmouth for storage

CBS also decided to locate a contingency call centre in the Saint John facility and utilized the available space.

Due to these changes to operational assumptions, the premise that the existing facility would be under-utilized no longer held true. After minor renovations had been carried out, the facility was retained and will accommodate both the regional collection facility and the contingency call centre. Further renovations will be done to the existing facility, resulting in savings of $0.4 million compared to the initial $0.6 million initially intended for the new Saint John facility. The expected recovery of $3.2 million on the sale of the facility will no longer happen.

Offsetting the loss of revenue from the sale of the Saint John facility was the sale of the existing London site for $1.6 million and the leasing of a new space. While the sale of the London site was described in the business case for the NFRP, the revenue from this sale, unlike the intended revenue from the sale of the Saint John facility, was not considered in the financial estimates.

As a result of these changes and other circumstances, four of the six initially planned deliverables were, or are forecasted to be, late by two years or more relative to the funding baseline. Two components are no longer expected to happen. The business case used to secure funding was high level and the timeline did not reflect this reality.

The review of the project documentation revealed that plans and forecasts were modified and updated regularly without using an established change control process, which would have documented the changes and the rationale for making them. A construction change log was maintained to track construction and installation changes but no change control log was available that documented significant changes to the business case or business/project plans (e.g., changes to the plan for Saint John and 67 College). Meeting minutes

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63 CBS, NFRP Forecast 31 vs Original Case (10 Jan 2013)
were cited as documentation but no formal change request with decision record was available. As a result, it is difficult to understand the various changes in scope that took place and their impact on costs and timelines. The review also demonstrated a lack of program-level monitoring of project schedules relative to initial plans.

The use of a high level business case, the limited experience in such projects and unforeseen challenges are some probable explanations for the delay. The project management methodology and tools applied for the NFRP Phase I had several shortcomings (e.g., plans were regularly changed without an established change control process).

CBS and governments agreed on a formal management structure for appropriate, regular monitoring of the NFRP program. A Facilities Redevelopment Advisory Group (FRAG), which was made up of both government and Canadian Blood Services representatives and which reported to the PTBLC, provided monthly guidance for the Phase I of the NFRP. All budgets, decisions, delays or changes required, after approval by the CBS Program Board, were thoroughly discussed with the FRAG, and then reported to the PTBLC as a standing item at monthly meetings.

Recommendation #60:
CBS should implement a formal change control process that would include a clear set of baseline expectations, as well as a formal change request and decision record.

These baseline expectations should include a consolidated view of all major program milestones. As changes to this schedule are required, they should be formally submitted and approved by the executive oversight committee and recorded as a formal decision.

The benefits of implementing a more formalized change control procedure include a consistent understanding of the expectations of the program, which may influence decisions that impact scope, schedule, budget, and benefits realization.

CBS has executed a fairly robust communication strategy. Communication material has been developed for both the Southern Ontario and Maritimes regions and for both internal and external stakeholder groups. The Building for Tomorrow communications program targeting CBS employees and internal stakeholders communicate project progress, rationale for program decisions and support resources for employee transitions. The Building to Deliver performs a similar function for external stakeholders, such as hospitals. In addition to the communication material, the NFRP communication strategy effectively empowers the management structure by preparing key talking points and toolkits that allow managers to engage reports in a personal manner.

Recommendation #61:
The level and method of communications executed in NFRP Phase I should be maintained in subsequent phases to promote high-levels of employee engagement and adoption.

Although CBS has standard Project Governance Methodology and tools and templates, the documentation produced for the NFRP did not always follow the recommended approach.

The NFRP was approved for funding in March 2008 by the provincial and territorial governments based on a high level business case. The scope of this funding included all sites within Phase I (i.e., three sites in Southern Ontario and three sites in the Maritimes region). Following funding approval, each individual site (e.g., Toronto Consolidated Production) was required to submit a Project Plan as per the CBS Project Governance Methodology.

The review team performed a high-level analysis of CBS’ Project Governance Methodology, which revealed a substantially thorough process for planning and execution of projects. This included a structured review and approval process as well as standard tools and templates for planning and delivery. However, utilization and adherence to this methodology is at the discretion of the project management.

A construction-specific project delivery methodology was developed by the NFRP program. However, the stages and gates prescribed by this methodology were limited to construction-specific activities and deliverables did not include planning documents. For example, deliverables listed are: Functional program, Approval of site, Cost estimate (Schematic design), Cost estimate (Design drawings), Successful acceptance of tenders and costs, Completed facility as per design specifications, Final acceptance. The methodology does not describe Project Plans which encompassed the project as a whole, beyond construction, such as benefits measurement or non-construction related program costs.
The standard format of the CBS Project Plan includes: scope, schedule, budget and benefits. It is based on this document that CBS internally baselines project performance measures as per CBS’ Project Governance Methodology. However, NFRP project plans varied by site in terms of quality, completeness and contents. In general, project plans included descriptions of scope and deliverables, but did not include sufficient financial estimates and assumptions, schedule details, operational and financial performance metrics and/or descriptions of operating and financial benefits to be achieved and how they would be tracked and measured. For example: the project plan for the Brampton Consolidated Production states in section 13.1 titled Project Timelines, “Will be updated as project evolves.” The table below summarizes the contents of the site Project Plans.

**Recommendation #62:**
CBS should require that all NFRP projects use the established Project Governance Methodology, in particular quality assurance of the project planning deliverables. It should also develop and implement a formal change control process. This methodology should be supplemented with construction-specific delivery tools and templates, but should not replace the requirements of the Project Governance Methodology.

CBS has not used a formal process to manage NFRP reserve or contingency funds. Funds were simply allocated based on forecasted costs.

CBS is forecasting to deliver all aspects of NFRP Phase I, taking into consideration scope changes, with $4 million below the $118 million approved funding. The program costs for the NFRP Phase I included an inflation factor of 6% for construction costs and 20% for contingency. Based on CBS’ latest financial forecasts, costs associated with the NFRP Phase I are anticipated to be $114 million across the Southern Ontario and Maritimes regions, nearly the entirety of the approved funding including contingency. Excluding contingency allotment, the initial funding budget was $95 million ($118 million with contingency).

**Table 10.3 - Summary of content for each NFRP deliverable business plan**

<table>
<thead>
<tr>
<th>Location</th>
<th>Scope</th>
<th>Schedule</th>
<th>Financials</th>
<th>Operational Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Ontario</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brampton Consolidated Production</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>67 College upgrade</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>London Collection</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maritimes Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dartmouth Consolidated Production</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halifax Collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saint John Collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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65 Described in Brampton Consolidated Production - Project Plan, 33.
The table below highlights the funding baseline cost estimates compared with latest forecasts by CBS using the current NFRP cost structure.

**Table 10.4 - Summary of NFRP forecasts**

<table>
<thead>
<tr>
<th>$ millions</th>
<th>Baseline</th>
<th>Forecast 31 as of November 2012</th>
<th>% of Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management</td>
<td>$19.6</td>
<td>$7.3</td>
<td>38%</td>
</tr>
<tr>
<td>Implementation</td>
<td>$13.6</td>
<td>$14.3</td>
<td>105%</td>
</tr>
<tr>
<td>Southern Ontario - Facilities and Equipment</td>
<td>$60.6</td>
<td>$59.9</td>
<td>99%</td>
</tr>
<tr>
<td>Toronto Tier 2 (Production)</td>
<td>$53.4</td>
<td>$49.6</td>
<td>93%</td>
</tr>
<tr>
<td>67 College Upgrade (Blood)</td>
<td>$4.7</td>
<td>$9.0</td>
<td>191%</td>
</tr>
<tr>
<td>London Tier 3 (Collection)</td>
<td>$2.5</td>
<td>$2.8</td>
<td>113%</td>
</tr>
<tr>
<td>Sale of London Facility</td>
<td>$0.0</td>
<td>($1.6)</td>
<td>N/A</td>
</tr>
<tr>
<td>Maritimes Region - Facilities and Equipment</td>
<td>$24.4</td>
<td>$32.4</td>
<td>133%</td>
</tr>
<tr>
<td>Halifax Tier 2 (Production)</td>
<td>$25.7</td>
<td>$31.1</td>
<td>121%</td>
</tr>
<tr>
<td>Halifax Tier 4 (Regional Collection)</td>
<td>$1.3</td>
<td>$1.2</td>
<td>87%</td>
</tr>
<tr>
<td>Saint John Tier 4 (Regional Collection)</td>
<td>$0.6</td>
<td>$0.2</td>
<td>36%</td>
</tr>
<tr>
<td>Sale of Saint John Facility</td>
<td>($3.2)</td>
<td>$0.0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$118.2</strong></td>
<td><strong>$113.9</strong></td>
<td><strong>96%</strong></td>
</tr>
</tbody>
</table>

The reduction in Project Management costs has been attributed to the synergies gained by deploying a single program/project management team to both regions rather than the original intent, which was to deploy distinct teams.

Facilities and equipment costs in the Southern Ontario region are in line with original estimates. Variations within the region include the increase in estimated costs of the 67 College facility upgrade. Donor Testing from Halifax has still been moved to this location; however, the upgrade at 67 College is currently on hold pending a review of alternate options. This increase in estimated costs has been partially offset by the sale of the London facility, which was not financially included in the business case for the NFRP.

Facilities and equipment costs in the Maritimes Region are 33% greater than those estimated in the business case for the NFRP due, in large part, to the greater than anticipated cost of the Dartmouth Consolidated Production facility (Halifax Tier 2). The $5.4 million increase for the Dartmouth Consolidated Production facility has been attributed to higher construction costs driven by market conditions.
The review team’s analysis of project documentation and interviews with CBS personnel concluded that CBS did not use a formal approval process to manage the reserve and contingency funds. For large projects like the NFRP, especially construction projects, leading practice is to have a formal process to manage and approve access to the reserve or contingency funds.

**Recommendation #63:**

A formal process for budgeting and accessing contingency and reserve funds should be implemented to ensure they are used judiciously and for the intended purpose. This will promote planning and delivery in line with the requirements, rather than budget.

Project contingency funds should be allocated and accessed for the purpose of addressing unexpected cost overruns due to cost estimation variances. Contingency should be explicitly allocated in the budget and released through a formal request for funds approved by an executive oversight committee.

Reserve funds may be allocated to address implementation considerations, which were originally out-of-scope of the initial funding approval. Similarly, reserve funds should be released through a formal request for funding approved by an executive oversight committee.

**Intended outcomes for NFRP initiatives were not sufficiently described in business cases/plans and CBS has not perform a formal assessment of benefits**

The NFRP Phase I business case, upon which funding was approved, described three key issues driving the need for the NFRP:

- Inadequate state of existing facilities to consistently operate in an environment which meets GMP
- Operational risks pertaining to insufficient and inappropriate space
- Optimizing business strategies to become more cost effective and efficient

Only annual operational cost savings were quantified and could be tracked and reported against. No measurable objectives were defined to describe any operational improvement over baseline expectations. Operational cost savings were quantified as $3.5 million per year at maturity during year four of implementation (2011-12).

Subsequent site project plans either lacked any description of operational and financial benefit targets or described benefits that were not consistent with the targets set forth in the business case. The project plans for the facilities in London and at 67 College describe expected performance targets that maintain baseline performance but do not describe operational savings or functional program objectives. Project plans for Maritimes Region sites were either not developed by the program or did not contain specific targets aligned with the desired strategic outcomes, nor did they quantify reductions in operating or staffing costs. For example, the Project Plan for the Maritimes Region consolidated production facility defined as Benefits/Other Measures of Success67:

- Operational Efficiencies:
  - Productivity improvements for all areas
- Production throughput at or above described line throughputs
- Financial savings:
  - Reduction in operating costs
  - Reduction in staffing costs

For business plans that contained some specific performance metrics and targets, for example, the business plan for the Brampton facility, CBS has not performed a formal benefit assessment for both financial and non-financial benefits. On the financial side, CBS has tracked reduction in FTEs for the Brampton facility and consolidation of Donor Testing, but it did not perform a full analysis of all expected financial impacts, for example, staffing costs which result from FTE impacts, facility and logistics costs. Therefore, CBS cannot conclude and report on the achievement of the benefits that were included in the business case.

The review team analyzed operating costs for Southern Ontario facilities prior to the opening of the Brampton facility, and after, to determine if the targeted savings had been achieved; similar operating cost information was not available for the Maritimes Region due to the level of maturity of the Maritimes sites at the time68. At the time of reporting, this analysis concluded the annual operational savings achieved to date falls short of

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67 CBS, Atlantic Production Consolidation Plan (5 October 2010), 13.
68 Staffing cost savings resulting from consolidation of Donor Testing from Halifax to Toronto have not been included because a complete analysis of the operating costs in the Atlantic region could not yet be completed.
the $2.3 million identified in the business case for the Southern Ontario region\textsuperscript{69}. The estimated operational savings is $1.2 million rather than the intended $2.3 million savings, a shortfall of approximately $1.1 million, due in large part to:

- Fewer than anticipated Production FTE savings
- Greater than anticipated Logistics and Warehouse expenses

Table 10.5 - Summary of NFRP target versus actual savings to date

<table>
<thead>
<tr>
<th></th>
<th>Target Savings</th>
<th>Actual Savings</th>
<th>Surplus / (Shortfall)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing\textsuperscript{70}</td>
<td>$2.6</td>
<td>$2.0</td>
<td>($0.6)</td>
</tr>
<tr>
<td>Facilities</td>
<td>($0.2)</td>
<td>$0.6</td>
<td>$0.8</td>
</tr>
<tr>
<td>Bio Med</td>
<td>$0.1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Logistics / Warehousing</td>
<td>($0.1)</td>
<td>($1.5)</td>
<td>($1.4)</td>
</tr>
<tr>
<td>Sub total</td>
<td>$2.3</td>
<td>$1.2</td>
<td>($1.1)</td>
</tr>
<tr>
<td>FTEs saved</td>
<td>42.5</td>
<td>33.2</td>
<td>(9.3)</td>
</tr>
</tbody>
</table>

In the case of fewer than anticipated Production FTE savings, CBS cites a maturing process required to realize production savings. It is anticipated the savings may be achieved once the improved production process resulting from the Functional Program has had an opportunity to mature; however, these savings have not yet been fully realized.

In the case of greater than anticipated Logistics and Warehouse expenses, CBS cites both operating changes resulting from NFRP, as well as operational changes outside the scope of NFRP, as causes. ASAP/STAT deliveries are cited as a primary driver of greater Logistics and Warehousing expenses caused by the need to cover costs that were previously incurred by hospitals, which became the responsibility of CBS once the Consolidated Production facility was moved to Brampton. However, Saturday deliveries was an operating decision outside the scope of NFRP and the associated costs would have a negative impact on the overall cost savings.

**Recommendation #64:**

Program and project benefits, both financial and non-financial, should be described in a manner they can be measured and evaluated post implementation to assess the performance against desired outcomes (e.g., expected operational performance outcomes of implementing GMP). These measures should be described at the project onset and carried forward throughout the lifecycle of the initiative. The benefits and outcomes described should align with the overall objectives of the program.

\textsuperscript{69} CBS, Operating Costs 2007 and Present - Brampton Summary.xlsx (19 February 2013).

\textsuperscript{70} Staffing cost savings based on per FTE estimate of $61,176 derived from staff cost savings of $2.6 million by 42.5 FTEs described in the business case.
Additionally, programs and project should be challenged, not only to describe measurable performance objectives that are in line with the intent of the project, but to describe the methods and tools that will be required to measure the benefits achieved. This may include baseline performance data, as well as the benefits validation plan required to accurately assess performance against defined targets.

Project and program expenditure was not consistently reported relative to funding baseline

The review of NFRP project documentation indicated that the format of financial reporting was altered, relative to the business case, with the participation of the FRAG committee and the PTBLIC. However, the financial reports do not compare the actual costs with a baseline cost breakdown, regardless of format, which is normally the business case. Instead, actual costs are reported against most recent forecasts. The only amount that has been tracked and reported on regularly since the beginning of the project is total funding available.

As a result, it may be difficult for stakeholders to monitor project performance against the business case and clearly appreciate the progress and changes made to the initial plans. It is also difficult to understand changes in costs and related to scope changes, if applicable. Finally, this approach makes it almost impossible to determine how contingency funds have been utilized.

Recommendation #65:

Financial reporting for projects should be enhanced to present actual spending against a formal baseline cost breakdown, which is typically the business case that was used to approve the funding. Forecasts should be presented in addition to the baseline and actual spending. Such an approach facilitates understanding of changes and adjustments to the plan that have an impact on the scope, schedule and overall budget.

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10.5 Organ and Tissue Donation and Transplantation

10.5.1 Context

The CCDT was established in 2001, with a five year mandate to advise the CDM on matters related to OTDT in Canada. Among CCDT’s many recommendations was the development of a nationally coordinated system, which included the development and operation of national organ patient registries.

Acting on the advice of CCDT, the CDM began to work with Canadian Blood Services in 2007 to transfer responsibilities for OTDT services in Canada to CBS. To continue the development of a national OTDT system, the federal, provincial (except Québec) and territorial governments jointly funded a national OTDT mandate for CBS in April 2008. CBS’ experience managing the national blood system and the governance established around CBS made it a mature candidate for the OTDT responsibilities. It is also important to point out that many blood services organizations in other jurisdictions have some OTDT responsibilities.

CBS assumed the mandate of CCDT for five years effective 1 April 2008. That year, two agreements were signed between CBS and the federal, provincial and territorial governments (except Québec):

- A five year contribution agreement (1 April 2008 – 31 March 2013) between CBS and Health Canada providing funding of $3.6 million per year
- A LOI with provincial and territorial governments (except Québec) for five years (1 April 2008 – 31 March 2013), which provided funding of $3.6 million per year

At time of this review, federal, provincial and territorial governments (except Québec) were agreeing to extend these agreements for 2013-14. With these agreements, CBS assumed a number of responsibilities, which included the previous mandate of CCDT:
Table 10.6 - Summary of responsibilities and their funding sources

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Funding by federal, provincial and territorial governments</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Plan Development and Implementation</td>
<td>Co-funded</td>
<td>▶ Developing a national system design for OTDT, including defining mandate, roles and responsibilities of Canadian Blood Services, within an integrated, coordinated OTDT system.</td>
</tr>
<tr>
<td>Support Leading Practices, Public Awareness and Education</td>
<td>Co-funded</td>
<td>▶ Supporting leading practices (development, evaluation and dissemination), knowledge transfer to health practitioners, and professional education activities (conferences, seminars, collaborative work). This also includes facilitating public education activities for the public, organ donation organizations, transplant programs and others in the OTDT community.</td>
</tr>
<tr>
<td>System Performance</td>
<td>Co-funded</td>
<td>▶ Facilitating and supporting system performance improvement through the development of performance metrics, a data collection, reporting and management strategy and implementation of accreditation standards.</td>
</tr>
<tr>
<td>Organ Patient Registries</td>
<td>Provincially and territorially funded only</td>
<td>▶ Development and implementation of three patient registries: living donor paired exchange, urgent status patients, and highly sensitized patients, as well as related databases.</td>
</tr>
</tbody>
</table>

CBS is required to report on the progress of the OTDT initiatives through multiple mechanisms, which include:

- Quarterly report provided to Health Canada, outlining activities accomplished and expenses against the annual work plan
- Monthly briefing notes and regular face-to-face updates on its activities provided to the PTBLC
- Ad hoc reports requested by the PTBLC

In addition, CBS also provided information on this initiative in its three-year corporate plans and yearly reports to the CDM.

CBS has noted the following benefits of the OTDT initiatives:

- 171 kidney transplants from the LDPE program resulting in significant dialysis savings in all provinces
- Collaboration of donation and transplantation community from all provinces through numerous committees, workshops and consultations
- Implementation of leading practices in some provinces, such as donation after cardio-circulatory death and donation specialists
- Development of policies and tools (NOW) to support inter-provincial activities such as organ sharing
- More standard HLA laboratory practices across the country and collaborative sample testing to ensure consistency in reported results

CBS also expects significantly improved transplant opportunities for difficult to match highly sensitized kidney patients following the implementation of the HSP registry in March 2013.
CBS developed a high level, five-year work plan (2008-13) at the beginning of the project, but basically managed the initiative on an annual basis. Based on the LOI and the Health Canada contribution agreement, work plans and budgets are developed each year by CBS and reviewed and approved by the provincial and territorial governments (for the LOI) and Health Canada (for the contribution agreement).

Most deliverables related to registries were late by one to two years

For the patient registries, there were several delays and changes in the implementation plan, when comparing the current status to the original plan. The following diagram depicts the changes in schedule for the go-live dates of the registries.

CBS reported that the LDPE was built in 2008 in eight months using a rapid application development platform with the long term strategy to fully integrate the three registries using a new standard IT development platform onto which LDPE would be migrated. The LDPE was developed based on practices and policies that had already been established, with the assistance of an advisory committee, and in line with an existing consultant report. Also, according to the original plan, HSP and NOW were to be launched simultaneously. Subsequently, a lag time of six months between the launches of these registries took place to provide additional time for proper implementation and staff training.

The implementation of NOW was initially targeted for October 2011. In August 2011, CBS determined it would not be able to meet this timeline for the following reasons:

- Change of strategy to implement NOW separately from HSP as requested by stakeholders
- Significant delays in completing provincial reviews of the registries’ Privacy Impact Assessment and finalization of Data Sharing Agreements
- Delays in development of data feeds with Quebec, Ontario, British Columbia and Nova Scotia
- Challenges to finalize an agreement with Quebec for participation, and funding, for NOW and HSP registries; negotiations commenced in May 2011 and were completed in February 2013

The NOW Registry went live on 28 May 2012.

HSP will go-live for highly sensitized patient data entry on 25 March 2013. Previously planned for implementation in October 2011, delays were experienced for several reasons, many similar to those for NOW:

- Decision to implement NOW first
- Delays in development of data feeds between HSP and provincial software systems
- Challenges in finalizing business requirements and policies were given expanded scope and limited access to medical experts through scheduled committee meetings

![Figure 10.2 - Changes in schedule for go-live dates](image)

<table>
<thead>
<tr>
<th>#</th>
<th>Activity</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Status/Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LDPE Enhancements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LDPE delivered in December 2008; Enhancements continued.</td>
</tr>
<tr>
<td>2</td>
<td>HSP on LDPE</td>
<td>Go live original*</td>
<td>NOW go-live</td>
<td>HSP expected go live</td>
<td>HSP not built on LDPE platform; NOW registry went live on 28 May 2012. HSP expected to go-live in 25 March 2013.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>LDPE/HSP Integration</td>
<td>Original*</td>
<td>Expected</td>
<td></td>
<td></td>
<td></td>
<td>LDPE will be integrated with the Canadian Transplant Registry (CTR). CBS is currently developing a project plan and is expected to be delivered in 2014.</td>
</tr>
</tbody>
</table>

*Original milestones have been taken from Business Case for registries (2009)
CBS built expertise in-house to acquire requisite skills to build the innovation required for the initiatives (e.g., building of the patient registries specific to OTDT).

The task was more complex than anticipated.

CBS noted a lack of formal accountability framework between and amongst other provincial stakeholders (e.g., transplant programs, organ donation organizations) that are impacted by organ and tissue donation and transplantation. As a result, there were no formal mechanisms to resolve provincial and inter-provincial issues that occurred between stakeholders. An interim advisory committee structure was established by CBS to inform and guide strategic initiatives, while provincial governments worked to develop a more permanent accountability framework.

The review team was not provided with formal project management documentation that specifically outlined a complete plan for the five year project period. In addition to the review of the project documentation, the review team held discussions with key personnel at CBS to understand the reasons why this initiative incurred long delays for all deliverables. Projects status reports included explanations for the delays.

**Recommendation #66:**

CBS should perform a thorough assessment of requirements when asked to assume new responsibilities to determine if it possesses the capabilities (e.g., knowledge, people, processes and technology) to fulfill the mandate. It should also secure key resources from the provinces and territories and other stakeholders required to successfully complete the mandate.

**Project documentation was missing key information related to the project**

In June 2010, two years after funding agreements were signed with provincial and territorial governments, an OTDT Accountability Framework was established, which included defining the roles and authorities of the parties, including who approves items in the OTDT mandate identified in the LOI. Also defined were the reporting requirements, phases and timelines of the project with associated budgetary requirements and allocations.

The review team observed a lack of project documentation detailing the specific project requirements for initiatives such as a detailed project plan/charter. There was no document that described project roles and responsibilities, milestones with respective budget and deadlines for the OTDT initiatives. Without such documents in place, there might not be a consistent understanding of expectations by stakeholders. CBS has a formal project management approach developed for projects, but this approach was not consistently applied to the OTDT initiatives.

For the Strategic Plan initiative, the review team noted that the approach followed to manage potential delays was not explained in the project management documentation. The Strategic plan delivered by CBS and named “Call to Action” was presented to the provincial and territorial governments in April 2011, within the timeline established in the contribution agreement. However, changes to the original plan were not clearly identifiable.

**Recommendation #67:**

CBS should make the use of its project management process and templates for all types of projects and initiatives mandatory. Once an initiative has received approval, details related to the execution of the project should be clearly articulated and documented in a project plan/charter, including roles, responsibilities, project goals, deliverables, detailed budget, deadlines, and reporting cycles. Furthermore, as the roles and expectations evolve for an initiative, the revised/updated descriptions should be incorporated into the project documentation.

**Expenditures for OTDT program and individual initiatives are not clearly and consistently reported**

As previously noted, CBS has two sources of revenue (federal, provincial and territorial funding) for the OTDT program with total annual revenues of $7.2 million. While federal funding consists of $3.6 million per year beginning 1 April 2008 for five years, provincial and territorial governments (excluding Québec) matched the funding of $3.6 million per year for the same time period. Specific contributions for each provincial and territorial government (toward the $3.6 million) have been clearly defined. These two revenue sources jointly fund the activities, with the exception of development and implementation of patient registries, which is entirely funded by provincial and territorial governments.

To ensure complete separation of the OTDT mandate from the blood program, CBS has separately tracked funding received from Health Canada and the provincial and territorial governments from the funding received for its business lines and other strategic initiatives (Cord Blood and NFRP). CBS has also tracked expenses separately in its accounting system.
The federal funding allocated towards the three strategic initiatives, excluding development of patient registries and associated administration costs, is separately reported from provincial and territorial funding in the federal work plan and reports.

For the registries, there was a high level plan established when the LOI was signed. However, CBS informed the review team that this information was preliminary and incomplete and should not be used for assessing the performance of the project. CBS did not prepare complete forecasts for the duration of the project. Instead, it prepares annual forecasts as part of its corporate planning and budgeting process. As a result, the review team was unable to compare actual spending to a project plan. Timing of activities and corresponding spending changed significantly as a result of adjustments in implementation plans, system decisions and schedules. This caused CBS to regularly update its plans and forecasts.

Due to many changes in its plan, CBS received funding from federal, provincial and territorial governments that was not spent in the year it was received. Between 2008 and 2012, CBS deferred revenue ranging from $2.4 million in 2008-09 to $0.9 million in 2011-12. Between 2008-09 and 2011-12, CBS received $34 million in funding and spent $28.8 million. The following table compares CBS’ 2009 plans with actual expenditures.

Although not in the documentation reviewed, CBS explained to the review team the three major factors that contributed to the variance shown in Table 10.7:

- The participation rates for the CBS’ leading practice workshops were very different from the plan. Travel costs were included in the planned budget but, with limited participation, CBS did not incur these costs.
- Several initiatives for system performance and leading practices were delayed to focus staff resources on the development of the OTDT strategy (Call to Action) and the subsequent implementation plan.
- Registries encountered delays in getting privacy and data sharing agreements in place, which slowed down the development of the registries.

Project documentation inconsistently outlines variances in project expenditures for OTDT. Furthermore, the documentation does not clearly quantify the factors for the expenditure variances in terms of impacts to the project.

From the review of project documentation, the review team observed that funding has not been tracked against the planned funding presented in the original business plan. As a result, it is difficult for CBS and stakeholders to understand the underlying causes for the changes in expenditures, and related scope and deliverables. In the documentation reviewed, it was not clear how the expenses are traced back to the two funding sources, i.e., federal and provincial/territorial contributions. The limited tracking of cost by key deliverable potentially resulted in a lack of clarity in how funding was allocated across the OTDT deliverables.

**Recommendation #68:**
CBS should track and report on its project costs in a way that is consistent with its project plan. Financial reporting for projects should be clear about how expenditures are allocated across deliverables and are traceable to funding sources. Variances of actual expenditures from planned and forecasted expenditures should be clearly outlined and explained, with causation factors, in a comprehensive manner.

### Table 10.7 - Summary of Actual spending vs. Budget

<table>
<thead>
<tr>
<th>$ millions</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>$7.2</td>
<td>$8.0</td>
<td>$9.7</td>
<td>$9.0</td>
<td>$33.9</td>
</tr>
<tr>
<td>Actual</td>
<td>$4.6</td>
<td>$7.5</td>
<td>$9.0</td>
<td>$7.7</td>
<td>$28.8</td>
</tr>
<tr>
<td>Variance</td>
<td>$2.6</td>
<td>$0.5</td>
<td>$0.7</td>
<td>$1.3</td>
<td>$5.1</td>
</tr>
</tbody>
</table>

*From CBS report on OTDT “Budget by Pillar”*
Project documentation does not demonstrate that consideration was given to outsourcing options for the development of IT solutions

During the project documentation review and interviews with CBS personnel involved with the development of the OTDT registries, it was found that CBS largely developed the registry using internal resources. CBS personnel conveyed to the review team that consideration was given to using off-the-shelf products. In 2008, based on a recommendation from a consultant report, CBS decided to build the system for the registries rather than to buy it off-the-shelf, as the registries needed to be specific to the Canadian environment. Supporting rationale for the decision and consideration to utilize an outsourced vendor to build the registries was not evident from the documentation reviewed. CBS reported that given its existing expertise in the development of registries (e.g., from the bone marrow registries) as well as the short timeframe to build the LDPE registry (i.e., 8 months), building the patient registries in-house was the most cost-effective option. There was no cost-analysis in the project documentation to support this conclusion.

CBS generally leverages in-house IT resources and augments project teams with contracted resources with specific expertise, as required. This stems from a concern that knowledge and expertise would not be embedded within the organization when contracts with external resources concluded. As a result, in-house resources were primarily utilized to manage and execute the activities for the OTDT initiatives, including the technical development of the registries.

With a high utilization of in-house resources for the development of the registries, there was a lengthy ramp-up period for these resources to develop the skills required for this initiative according to CBS personnel. It was also observed that there were several changes in implementation plans and delays in go-live dates for the registries.

By not leveraging a third party vendor with expertise in large IT solution build projects, CBS may have missed an opportunity to partner with a vendor that could have supported the registration and commercialization of the intellectual property associated the registries and reduce its costs. Based on comments received from CBS personnel, the technology used for CBS registries is superior to other existing registries around the world. An experienced technology company could have facilitated the process to investigate the market potential for the registry technology. CBS did not take this aspect into consideration when deciding to build the patient registries in-house. At the time of the review, CBS had not registered any patent for its registry technology, since it does not believe it will ever license it due to limited resources and expertise.

Recommendation #69:
CBS should include, as part of its project management process, a formal assessment of opportunities to leverage third parties for projects involving the development of IT solutions. Potential benefits that should be assessed include cost, access to knowledge and experience, as well as reduction in timeline. A third party could also assist with patent registration and licensing opportunities.

The Letter of Intent and the federal contribution agreement related to the OTDT initiative did not include any long term role and funding for CBS

As previously mentioned, both the LOI with provincial and territorial governments and the federal contribution agreement related to the OTDT were for specific deliverables and for a specific period of time. Both agreements were to expire on 31 March 2013, but have recently been extended for one year to allow CBS to complete the registries and an assessment of key priorities related to the OTDT strategy.

In April 2011, as part of the Strategic Plan Development and Implementation OTDT initiative, CBS presented “Call to Action”, the federal, provincial and territorial (excluding Québec) Health Ministries with a comprehensive strategy for improving the performance of OTDT across the country. This document lists 25 recommendations that reflect the plan for timely, practical and achievable solutions to overcome OTDT challenges and deliver significant performance improvements.

There was limited understanding by the provincial and territorial governments of how all the “Call to Action” initiatives align with the OTDT Mandate. CBS is currently working with the provincial and territorial governments to understand how the initiative is in alignment with the mandate and the next steps to move forward with the initiative. Provincial and territorial governments, as well as the federal government, have not yet decided the next steps regarding “Call to Action” recommendations. This created a challenge for CBS when preparing its 2013-16 Corporate Plan, as it does not know what its long term mandate will be regarding OTDT, if any. It also creates uncertainty for CBS personnel involved with OTDT.

Each province and territory has its own priorities, and individual governments have required time to assess the impacts of implementing the recommendations, given the difficult fiscal environments the provinces are working in. CBS also continues to work with the provincial and territorial governments to identify priority areas in order to develop detailed implementation plans, acknowledging the fiscal environment and unique jurisdictional requirements. There have also been discussions between provinces on differences in priorities for...
the work and, as result, clear direction on implementation
of the recommendations has not yet been received. Further
decisions are expected from the governments in May 2013,
which will further impact the initiative’s proposed budget and
work plan for future years.

Recommendation #70:
When accepting new responsibilities, CBS, together with
Members, should assess the long term impact on the
organization and include provisions in the agreement for longer
term considerations or a specific timeline for the next steps.

10.6 Cord blood

10.6.1 Context
To serve the need for a national, public cord blood bank, the
provincial and territorial Deputy Ministers (excluding Québec)
requested that CBS prepare a business plan for a national,
public umbilical cord blood bank. The intention of a national,
public cord blood bank is to increase stem cell transplant
opportunities for patients by complementing the existing adult
donor OneMatch Registry. In May 2008, the business plan was
submitted and revised to address areas in which the provinces
and territories requested further clarification and consultation.
A revised detailed business plan was submitted to the Deputy
Ministers in June 2009 and approved in principle. At the time,
funding could not and was not secured.

In March 2011, Members committed to invest $48 million for
the creation of a national public umbilical cord blood bank.
To help meet the total cost, CBS agreed to lead a $12.5
million community fundraising effort. When the bank is fully
operational by spring 2014, the goal is to provide access to
Canadian cord blood stems cells within an international alliance
of stem cell registries offering access to approximately 560,000
cord blood units. The goal is to have a bank of approximately
20,000 cord blood units in storage for transplantation by 31
March 2019. The key characteristics of the model for Core
Blood are summarized below.

<table>
<thead>
<tr>
<th>Collection Sites</th>
<th>Ottawa, Edmonton, Vancouver, Toronto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing and</td>
<td>Ottawa, Edmonton</td>
</tr>
<tr>
<td>Storage Sites</td>
<td></td>
</tr>
<tr>
<td>Inventory Level</td>
<td>20,000</td>
</tr>
<tr>
<td>Time to reach inventory</td>
<td>8 years</td>
</tr>
</tbody>
</table>

CBS was asked to manage this project because of in-house
expertise developed through its OneMatch Stem Cell and
Marrow Network and the organization’s existing national
presence and success as a trusted health-care partner. The
executive oversight to the project would be provided by the
Chief Operating Officer and the Executive Director for the
OneMatch Marrow and Stem Cell Network. An Executive
Management Cord Blood Program Board and Cord Blood
Steering Committee has been setup for oversight and
management. CBS reports project governance and project
management practices are being used under the leadership
of medical and scientific directors, subject matter experts
and certified (i.e., Project Management Professional) project
managers. The project is also being guided and managed
using CBS project management methodology and tools such
as, but not limited to, a project charter, project plan, status
reports, log reports, a detailed schedule and an eight-year
budget. A steering committee and project team have been
setup for oversight and management. For advice on scientific,
medical and ethical issues, the project has access to an external
advisory committee.

The establishment of a national public umbilical cord blood bank
is expected to yield many benefits:

- A nationally (excluding Québec) integrated collection program
  would reduce Canada's dependency on international cord
  blood units
- Increased ability to find units for hard-to-match patients.
  While not replacing the need for cord blood units obtained
  internationally, a Canadian bank would improve the chances
  of finding high-quality cord blood for Canadian patients
- It would increase confidence and consistency in product
  quality and safety
- It would leverage Canada’s ethnic demographics for our
  benefit and the benefit of international patients and ensure
  readiness to meet the needs of an increasingly ethnically
  diverse Canadian population
- It would stimulate stem cell research in Canada and provide
  support for translating Canada’s leading-edge research into
  cellular therapies

CBS estimates that in year eight, a Canadian cord blood unit
would cost approximately $2,400 to process. Currently, it
costs approximately $37,000 to purchase a cord blood unit
on the international market. Therefore, the cord blood bank
is expected to generate significant savings to the health care
system of participating provinces and territories.
The initiative is progressing according to plan

There are three components of this project namely Phase I, Phase II and the fundraising initiative. The national public cord blood bank is intended to be fully operational in Ottawa by summer 2013 (Phase I) and in the remaining sites of Toronto, Vancouver and Edmonton by mid-2014 (Phase II). The high-level Phase II plan is presented in the following diagram.

Table 10.9 - Schedule for Cord Blood Phase II

<table>
<thead>
<tr>
<th></th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14</th>
<th>2014-15</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottawa Pilot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▶ Developing a request for information for selecting hospitals in Vancouver, Edmonton and Toronto</td>
</tr>
<tr>
<td>Edmonton Processing Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▶ Preparing for renovations and equipment procurement at the stem cell manufacturing facility in Edmonton</td>
</tr>
<tr>
<td>Edmonton Collection Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▶ Involving staff at the Edmonton manufacturing facility in the development and approval of all documentation</td>
</tr>
<tr>
<td>Vancouver Collection Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toronto Collection Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The major activities of Phase I include the development of recruitment plans, stakeholder communication materials, cord processes and manufacturing procedures, a cord blood stem cell manufacturing and storage facility in Ottawa, and an information system for storing cord blood information that is compatible with national and international standards. The cord blood bank will register with Health Canada as a source establishment as required by law and will comply with Health Canada regulations (Safety of Human Cells, Tissues and Organs for Transplantation Regulations), Canadian Standards Association standards and World Marrow Donor Association standards by go-live. Another outcome being sought through Phase I is to begin the process of seeking accreditation from the Foundation for the Accreditation of Cellular Therapy/NetCord and the American Association of Blood Banks.

Several efforts have been made for the completion of Phase I including:

- Requirements gathering and designing for all processes
- Establishing a partnership for collections with the Ottawa Hospital
- Complementing renovations at the stem cell manufacturing facility in Ottawa and procurement activities for major pieces of equipment
- Developing documentation for all aspects of operations and taking steps to ensure that all regulatory and any accreditation standards will be met
Budget and actual expenses for the initiate is presented in Table 10.10.

Table 10.10 - Summary of budget and actual expenses

<table>
<thead>
<tr>
<th>$ millions</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Project Costs</td>
<td>$7.0</td>
<td>$4.0</td>
<td>$4.6</td>
<td>$2.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Operating Costs</td>
<td>-</td>
<td>-</td>
<td>$3.4</td>
<td>$7.8</td>
<td>$12.9</td>
<td>$13.4</td>
<td>$14.5</td>
<td>$14.1</td>
</tr>
<tr>
<td>Equipment Replacement/ Depreciation</td>
<td>-</td>
<td>-</td>
<td>$0.2</td>
<td>$0.2</td>
<td>$0.2</td>
<td>$0.2</td>
<td>$0.2</td>
<td>$0.2</td>
</tr>
<tr>
<td>Revenue (Domestic Savings)*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>($1.1)</td>
<td>($4.8)</td>
<td>($7.6)</td>
<td>($10.4)</td>
<td>($13.3)</td>
</tr>
<tr>
<td>Annual Cost (Net of revenue)</td>
<td>$7.0</td>
<td>$4.0</td>
<td>$8.2</td>
<td>$8.95</td>
<td>$8.3</td>
<td>$6.1</td>
<td>$4.3</td>
<td>$1.0</td>
</tr>
<tr>
<td>Cumulative Cost - Total Program</td>
<td>$7.0</td>
<td>$11.0</td>
<td>$19.2</td>
<td>$28.1</td>
<td>$36.3</td>
<td>$42.4</td>
<td>$46.7</td>
<td>$47.7</td>
</tr>
</tbody>
</table>

* Revenue is generated from the number of cords used domestically that no longer need to be imported, plus cords exported

Funding received from Members was $5.3 million in 2011-12 and $5.7 million in 2012-13.

From reviewing project documentation, the review team concluded that the established CBS project management approach was used for this strategic initiative. There is an opportunity to improve the timeliness and robustness of detailed schedules, work plan, status report and communication of progress with various stakeholders.

CBS has been actively involved in raising funds to contribute toward the $12.5 million it committed to raise for the Cord Blood Bank initiative. Donations received as of 31 March 2013 amounted to $1.0 million and pledges received totalled approximately $3.6 million. CBS told the review team it is pleased with results so far and is optimistic it will reach its $12.5 million goal by March 2015. The review team could not validate plans to determine if this target is being met or not.

**Recommendation #71:**
CBS should continue to carefully manage this initiative using its project management process, including the development of a contingency plan.
Under this section, the RFP requested a comparative analysis of CBS' operational and financial performance with other similar blood services organizations. The review team performed comparisons between CBS and other similar blood services organizations when reviewing and assessing specific aspects of CBS such as governance, operational and financial performance and needs and safety. Results of these analyses are included in specific sections of the report.

11.1 Objective

There are three distinct objectives for this part of the review:

- Performance indicator review: Assess performance indicators currently used by CBS to determine their relevance and completeness in supporting the achievement of CBS objectives, and identify other indicators that could assist with this goal

- Risk Management: Assess the appropriateness of the ERM framework and related processes

11.2 Scope

The scope for this part of the review includes:

- CBS' performance management framework KPIs
- CBS' ERM framework, including policies and process
- Internal Audit function

11.3 Context

The MOU requires CBS to establish and maintain an appropriate risk management regime and to manage the blood system in a cost-effective and cost-efficient manner. Like other organizations of similar size and complexity, CBS has implemented various frameworks and processes to manage risks, both operational and financial. These include an ERM framework, performance management practices and processes, as well as an Internal Audit function. Context specific for each of these aspects is provided in the corresponding sub-sections.
11.4 Observations and recommendations

11.4.1 Key performance indicators

11.4.1.1 Context
The MOU outlines two aspects of overall accountability for performance management at CBS. First, the MOU authorizes Members to approve the organization's three year Corporate Plan, which includes the plan's performance objectives. Secondly, subsequent to approval of the plan, CBS' Board of Directors is required to report on the organization's performance to the Members.

Execution of the CBS mandate is the result of a number of CBS business units, provincial stakeholders (including hospitals), and national regulatory agencies working in partnership towards a series of activities, outputs, and outcomes. In an effort to enable performance monitoring across the organization, CBS management utilizes established performance measurement methods, maintains supporting internal documentation, and complies with its performance reporting obligations.

Performance management framework

CBS uses a formal performance management framework, but there are opportunities for improvement

CBS Methodology
In order to track and monitor its performance, CBS applies the Kaplan Norton Strategy Focused Organization methodology, adopted in 2002. Designed to help organizations achieve their performance goals, this methodology aligns an organization's strategic objectives with relevant performance measures. Performance targets and KPIs have been established for each of the scorecard's five performance domains. In addition, corporate initiatives are linked to each of the performance domains.

Complementing the performance target is a performance rating that measures deviations in actual performance from targeted performance. In 2007, CBS was recognized as a leading practice organization for achieving “breakthrough performance results” through the implementation of the balanced scorecard framework.72

CBS Internal documentation
CBS' EMT has developed internal documentation to govern performance monitoring activities. CBS maintains an internal document that outlines processes to define strategy and to link strategy to operational management through strategic and operational initiatives. At the corporate and business unit levels, CBS uses the strategy map and balanced scorecard both for performance reporting purposes and for managing the organization's strategic plan.

CBS Reporting
CBS' core performance management reports are listed in Figure 11.1. Business unit reports, corporate reports, and reports to the Board are each aligned to the corporate strategy map and related objectives. It was found that internal reporting mechanisms at CBS consistently align with the organization's corporate strategy. CBS has established performance targets for its KPIs. These performance targets set the desired level of performance. Many of the corporate KPIs have simple targets and performance ratings, which measure progress of a planned corporate initiative, rather than reporting on quantitative outputs and outcomes related to their implementation.

Conversely, KPIs at the business unit level are predominantly based on quantifiable outputs of operational activity. Performance indicators without clear targets or ratings were observed, making it difficult to objectively assess performance on certain KPIs. For instance, the 2010-11 corporate scorecards reviewed contained 25 KPIs, six or 25% of which did not include targets or performance ratings73. Leading practice suggests measurable performance targets or ratings for all identified KPIs on a corporate scorecard.

CBS has assigned performance advocates to each corporate and business unit level KPI. These performance advocates are responsible for providing a “comprehensive performance view” and supporting initiatives that impact the KPI.

CBS produces quarterly performance reports for its Members. The structure of the reports to Members is based on the objectives outlined in the corporate strategy, and reports on progress of all CBS strategic objectives. In reviewing the reports, we were unable to link operational metrics to associated performance objectives. The MOU outlines that performance objectives should be agreed upon during the corporate planning process. In reviewing the corporate plan, these performance objectives are not clearly summarized and outlined in the related documentation. Additionally, the

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73 CBS Corporate Strategy - Corporate Scorecard 2010 & 2011
structure of the report to Members has remained constant from 2008-09 to 2012-13, implying that the performance objectives have not changed over this period of time.

An assessment of Ontario’s and BC’s approach to performance measurement and performance accountability by the review team indicates a clear trend among leading healthcare providers and authorities toward consistent, transparent, accessible performance measurement and reporting. We examined funding arrangements and their associated accountability mechanisms between Health Ministries and service providers in Ontario and BC, and compared them with CBS’ accountability mechanisms.

**Figure 11.1 - CBS Core Performance Management Reports**

- **Financial management reports (monthly)** - Presents financial metrics and status for each business line and each division of CBS.
- **Business performance council strategy reports (quarterly)** - Presents performance metrics relevant at a divisional level to report on how business line performance impacts achievement of corporate strategic priorities.
- **Corporate strategy reports (quarterly)** - Presents status of strategy execution including results of Key Performance Indicators, and active strategic initiatives meant to address performance gaps and risks. Executive management team tool.
- **CEO reports to the board of directors (quarterly)** - Presents the overall performance of the organization aligned with the organizational strategic priorities. Addresses achievements, strategy execution, new issues, and legal matters.
- **Reports from the board of directors to Members (quarterly)** - Presents operational and financial information in accordance with CBS by-laws.
- **The annual report “A Report to Canadians”** - Presents publically the annual operational and financial performance, with detailed information in the financial report and management’s report.
Ontario:

- All 14 LHINs74 have individual accountability agreements with the Ontario Ministry of Health and with all hospitals funded
- The agreements between LHINs and the Ontario Ministry of Health outline performance expectations for each LHIN's respective region
- Agreements with service providers establish accountabilities associated with funding
- The Hospital Service Accountability Agreement contains specific indicators with defined targets, performance corridors, performance obligations and reporting obligations

The contents of the Hospital Service Accountability Agreement are amended annually to reflect changes in the operating environment and to renew targets and objectives. For example, Ontario recently transitioned from a global budgeting mechanism to an approach that includes activity-based costing and pay relative to performance. The provincial government has incorporated these changes into its healthcare funding model and, by extension, into its accountability agreements. In 2010, the Ontario government also passed the Excellent Care for All Act,75 mandating all health care organizations in Ontario develop annual quality improvement plans that are monitored by an internal quality committee and reported publicly.

BC:
- BC's Health Authorities76 publish their organization's three year Service Plan on their website
- Service Plans outline Health Authorities’ goals, objectives, strategies and performance metrics over a three year timeframe and align these metrics to the BC Ministry of Health priorities
- Alignment with the Health Ministry's performance priorities endeavours to “ensure there is continuous improvement in the delivery of patient care and health services across the province”77
- Accountability frameworks were implemented by the provincial government in 2000

Public Reporting

In Ontario and BC, health system performance is publicly reported by governments, government agencies and providers. The Health Quality Council of Ontario publishes performance results for long-term care, home care, and patient safety (Hospital care) performance.78 Cancer Care Ontario publishes a robust cancer system quality index79. The quality index provides performance information on thirty-seven performance indicators across the quality dimensions of safe, effective, accessible, responsive, equitable, integrated, and efficient. Health authorities and many hospitals in Ontario produce publicly accessible, web-based performance reporting of their organization's balanced scorecards. Sunnybrook Hospital's website provides detailed information, analysis and videos of key leaders explaining performance results.80 In BC, surgical wait times have been a focus of the Ministry of Health and it has created an online portal that allows patients to search wait times by physician81. The Vancouver Coastal Health Authority publishes an online report card that reports on KPIs aligned with its strategic goals.

Recommendation #72:

CBS should ensure that its corporate indicators are objective and quantifiable (e.g., PEP realized efficiency savings). A balance should be achieved between reporting on outputs and on the achievement of outcomes in relation to its corporate strategy and organizational mandate.

CBS should review its approach to public reporting and disclosure practices on performance related to its key mandates of safety, system integration, national self-sufficiency, supply management, and cost-effectiveness of the blood system with the goal of increasing transparency. This reporting could occur on a monthly/quarterly basis.

Two recommendations made in Section 3 are also related to performance indicators:
- Development of an accountability agreement between CBS and its Members
- Improve reporting to Members by establishing mutually agreed upon reporting content and schedules

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74 Regional organizations that plan, fund and integrate health services
76 Regional organizations that plan, fund and integrate health services
78 http://www.hqontario.ca/public-reporting
79 http://www.csqi.on.ca/
80 http://sunnybrook.ca/scorecard/index.asp#sr
81 http://www.health.gov.bc.ca/swt/
Key performance indicators

CBS has developed KPIs to assess performance for each corporate strategic objective and business unit mandate. KPIs were examined at both the corporate level for 2010-11 and 2012-13 and at the operational or business line level for 2012-13. As part of the 2012-13 corporate strategy refresh, CBS reduced the overall number of KPIs from 25 to 16.

The Kaplan Norton Balanced Scorecard framework for public sector entities was applied to assess CBS’ KPIs across the five performance dimensions shown in Figure 11.2. The Kaplan Norton balanced scorecard framework stresses the importance of achieving a balanced set of KPIs that report on the dimensions outlined to ensure performance in one area is not being sacrificed for performance in another. Balanced reporting is especially crucial for public sector organizations to ensure that an organization not only delivers on its mandate, but does so in a way that is efficient and provides value to its funders and stakeholders.

Figure 11.2 - Distribution of KPI dimensions across Corporate Score Cards and Business Lines by percentage

Trends in performance reporting

A review of accountability mechanisms in Ontario and BC, combined with recent provincial legislation such as theExcellent Care for All Act, suggests a culture of quality and safety performance reporting is widespread across the country. As Canada’s healthcare spending has been a key agenda item in recent years, there is mounting public pressure to determine the value for money that Canadians are receiving for their health care dollar spend. This is not a new concept in health care, and countries around the world have been pursuing the goal of reporting on accountability of health care spending. Outcome data is a pre-requisite for reporting on value for money metrics.

Corporate Balanced Scorecard KPIs

CBS has a significant amount of operational data that can be translated into KPIs. Data is collected for financial, supply chain, quality and safety and other mandated reporting requirements for Health Canada and other regulating bodies. At the corporate reporting level, CBS has taken an approach generally to report on the progress of certain corporate initiatives, rather than reporting on the outcomes of these initiatives. In 2010-11 there were 25 corporate KPIs reported on; in 2012-13 the figure was reduced to 16. In both instances the majority of metrics are process based, 64% and 65% respectively. Process based metrics generally fall into two categories: counts of activities and progress to plan. Counts of activities are binary, i.e., an event occurred or not. As such, activity counts rarely provide insight into the outcome or significance of the event or activity being counted. For example, in 2012-13 the Leadership in Action index consists of two sub-metrics, number of retreats and number of feedback sessions. Progress to plan KPIs indicate the progress of initiatives against a project plan, rather than a quantitative assessment of the impact corporate initiatives have on performance levels. For an overview of each specific KPI and the overall assessment please refer to Appendix K.

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83 ibid
Stakeholder value

CBS measures stakeholder value as a function of the organization’s capability to maintain the trust of Canadians, Members, and hospitals. Given the organization’s history, public trust remains a vital element of CBS’ mandate. CBS conducts annual or semi-annual surveys of external clients, customers, hospitals and donors, instruments which enable the organization to track trust measures over time. Based on survey frequency, stakeholder value includes KPIs with lags ranging from six to 18 months.

For quality and safety, CBS reports a composite index and a selection of KPIs within the quality and safety dimension. The index captures a range of outcomes related to quality service provision. Product or supplier recalls, report revisions, Health Canada “critical observations,” and adverse health events related to CBS products or services are some of the components of the quality and safety index. In 2012-13, CBS added three new types of quality-related KPIs. Both the additional indicators and the composite index are count-based measures, i.e., they measure event occurrence or absence, not event outcome or impact. Based on the examination of performance reporting patterns in other comparable jurisdictions, it was found that in addition to safety-related count data such as total number of errors, other jurisdictions reviewed reported on outcome indicators such as percentage of product discarded from hospitals and collection cost per litre of plasma for fractionation.

Financial KPIs across the corporate scorecard and other business units are generally limited to one KPI and one index. In 2010-11, cost per unit was the only stand alone indicator reported. In 2012-13, CBS added a blended financial and process based index, based on LHU and supplies and services cost. A comparative analysis found that other jurisdictions reported additional financial indicators such as cost per litre, variances related to project cost for strategic initiatives, and variances to the corporate budget.

Learning and growth

KPIs in the learning and growth dimension intend to capture an organization's investment in its people. In both reporting periods CBS reported on employee engagement, and in 2012-13 an employee engagement index was added which included internal movements, sick time, and employee turnover. CBS also tracks two process metrics related to leadership; however, there was no reporting on front-line learning and training opportunities.

Business Line KPIs

In the business lines, more balanced reporting on performance was found overall. Generally, business lines reported on KPIs relevant to their performance objectives based on the maturity of the business line. Overall, there is limited financial reporting in the operational performance reports for each business line, consistent with what was found in the corporate reporting structure. While financial reporting occurs in the monthly financial management reports, the performance methodology CBS subscribes to promotes a balanced approach to reporting on key performance activity with a single snapshot, in this case the operational performance reports. The operational performance reports should not replace the very detailed monthly financial reporting; however, they should focus on the key drivers of financial performance and report this alongside the other performance domains.

Transfusable Products

As a business line, Transfusable Products collects performance data across its value chain: recruitment, collections, testing, production, distribution, and overall safety. Transfusable Products reports its KPIs in the Transfusable Products Operational Quarterly Report. Overall, the review team found that the Transfusable Products business line reports on a relatively balanced collection of KPIs. Similar to the corporate balanced scorecard, financial KPI reporting is limited. Out of the 43 KPIs tracked in this business line (noting for the duplication of employee engagement and sick time across all value chain components), only two are financially focused.

Transfusable Products does not report KPIs that indicate value creation such as cost efficiencies in the operational performance report. Each component of the value chain contributes to the overall supply chain cost, but the cost drivers of each component are not outlined in the performance report. The monthly financial report contains business line-specific financial information. As a business line, however, Transfusable Products accounts for a majority of CBS’ operational expenditures (outside of plasma protein products purchases). By not providing the financial performance alongside the operational performance, the balanced performance picture is not available in one area for CBS’ largest business line. The supply chain section of this report provides a more detailed account of the performance across the outlined components.
Plasma Protein Products

The PPP business line performance report is the most balanced of the reports reviewed. It provides performance information across all of the relevant dimensions, including the most robust set of financial metrics. The performance report is concise, targeted, and focused on quantifiable metrics.

Diagnostic Services

Performance reporting in Diagnostic Services is predominantly based on counts of activity. It does not provide performance indication relative to the delivery of diagnostic services to the respective provinces served outside of the percentage turnaround time. The KPIs are counts of activities and do not provide an indication of the outcomes achieved in this business line. This business line’s KPIs do not capture its relative financial performance. There is a KPI that indicates opportunities for process standardization, but no reporting on the outcome of any process standardization initiatives. Other jurisdictions report on testing productivity as a KPI that outlines performance outcomes.

Stem Cells and Organ and Tissue Donation and Transplantation

The structure of the performance reports and KPIs for stem cells and the OTDT strategic initiative are very similar. Both of these areas are in earlier stages of implementation and contain similar approaches to reporting. As Stem Cells is a program that has been implemented, it does report on quality and safety outcomes. These KPIs track the self-sufficiency of stem cell usage in Canada and monitor the profile and registrant mix of the individuals that have signed up for the OneMatch Network. There is also a financial KPI tracked for stem cells; this is related to the payments associated with international usage of Canadian stem cells.

For OTDT and the balance of Stem Cell performance reporting, the KPIs selected are predominantly progressed against planned enabling activity, consistent with the on-going development stage in which both initiatives find themselves. However, no financial metrics are reported that would comprehensively capture OTDT implementation performance in the OTDT Performance Report. The OTDT initiative is a multi-year, multi-million dollar program, where tracking of cost variances would provide a more balanced performance view for this initiative. Providing an indication on the financial health of these initiatives should be considered as part of a balanced approach to reporting performance, for this and other strategic initiatives.

CBS makes great use of KPIs to manage its activities, but they are mainly process-based and qualitative. CBS reports on five performance dimensions at the corporate and business line levels. CBS utilizes a majority of process-based indicators and uses few outcome-based indicators. CBS lacks a balanced set of financial metrics across the various performance reporting mechanisms reviewed. The emerging Stem Cells business line and the OTDT strategic initiative rely on performance indicators predominantly based on progress against plan and milestone-type reporting. Reporting on the financial progress of funded initiatives as part of a balanced approach to performance reporting in operational reports is limited. The two major trends in healthcare performance measurement in Canada, most relevant to CBS, are reporting on quality and safety outcomes and value for money.

CBS’ corporate performance reporting KPIs are predominantly process-based (64%) and qualitative (63%), whereas, the KPIs at the business unit level are predominantly quantitative and based on outputs.

CBS regularly reports on financial metrics for all business lines and spending related to strategic initiatives in its financial reports. However, there is not a balanced viewpoint on financial performance in the performance reports that CBS generates at both a corporate and operational level. Linking outcomes and financial performance is becoming increasingly important for publicly-funded organizations.

Recommendations #73:

CBS should develop a precise set of outcome KPIs at the corporate level to objectively report on the performance outcomes related to the achievement of corporate strategic priorities. The tracking of initiatives against plan should not be considered KPIs in an organization with a wealth of accessible operational performance data.

CBS should ensure that its performance reporting strategy includes a balanced set of KPIs, with specific emphasis on financial performance metrics in both corporate and business line performance reports.

84 The OneMatch Stem Cell and Marrow Network is dedicated to recruiting and locating compatible, committed, healthy, unrelated stem cell and bone marrow donors for patients in Canada and around the world.
CBS should consider the development of value-based performance indicators to outline the value for money delivered to funders and the public. There is an opportunity to be leaders on this front, in the blood system and the health care system. CBS could work with other members of the ABO in developing broadly accepted value for money metrics for blood systems internationally.

Specific additional performance indicators that should be considered across the Transfusible Products and PPP business lines in relation to the overall supply chain are outlined in the supply chain section of this review.

In summary, CBS should seek to adopt metrics that:
- Track the effectiveness of the processing centres
- Quantify the impact of supply chain performance on CBS’ financial performance
- Measure customer satisfaction and on-time order fulfillment performance
- Measure utilization of key assets such as manufacturing facilities, private fleet and inventory

11.5 Enterprise risk management

11.5.1 Context

CBS began developing and implementing its ERM framework in 2007. One of the major milestones on this journey was development of a vision, as well as a related change agenda for ERM. CBS’ vision for ERM within the organization is that, “by 2015, CBS’ informed, targeted, and integrated approach to risk oversight and risk decision-making will be a key driver of optimized performance and enhanced resilience.” The change agenda for ERM has been pushed forward using a top-down approach, through which ERM principles and practices have been targeted at the management of strategic risks, as opposed to risks at a more granular level, which have historically been the focus of CBS.

In June 2012, CBS’ Internal audit function delivered a report on its review of the implementation of ERM framework and program. The objective of this review was to identify the level of maturity, opportunities for improvement and priorities with regards to CBS’ risk management capacities and capabilities by assessing ERM implementation against approved plans/objectives, stakeholder expectations, and leading practices. The review relied on an industry-neutral benchmarking model to assess the development of CBS’ ERM program.

While the review found that the level of maturity of the ERM framework and program is progressing relative to CBS’ ERM Change Agenda timeline, and that CBS has taken steps to reflect elements of leading practices in its ERM framework and program, it also found that the current state of the ERM program is relatively immature compared to the end state envisioned by the Change Agenda. As such, three key recommendations were made with the intent to assist CBS in its journey toward organization-wide ERM implementation by 2015. The review recommended that CBS:
- Promote a risk-intelligent culture by cascading CBS’ ERM framework and principles throughout the organization and raising awareness and understanding of CBS’ Change Agenda
- Provide additional and/or more specific guidance to help drive this development of a risk-intelligent culture
- Implement an integrated risk and control framework

The review also recommended, on a lower priority basis, that CBS:
- Leverage technology to analyze risk data and create reports
- Support effectiveness of the Board of Directors’ risk oversight role
- Support engagement of subject matter experts
- Monitor the adequacy of ERM resources

In its response to the ERM review, CBS management developed a series of action items and an implementation plan to address most of the recommendations from the review. The review team analyzed the proposed implementation plan and identified the following additional improvements.

Developing a mechanism for employee feedback on CBS’ ERM program will allow for continuous improvement of the program and an increased sense of ownership among staff

As previously noted, one of the key recommendations put forward in the ERM review was that CBS cascade its ERM framework and principles throughout the CBS organization. In order to do so, the review suggested that CBS raise awareness and understanding of its Change Agenda and socialize the ERM framework by designing and implementing ERM communications and informal awareness sessions, targeted training, and a mechanism for employee feedback.
CBS has elected to adopt this recommendation and has committed to developing a Risk Communication, Awareness and Training Program. This will involve both general communications within CBS on the ERM program itself, as well as specific training opportunities. Furthermore, CBS’ senior management team will promote the importance of ERM and its integration with other management system processes and communicate their expectations for fulfilling risk management roles and responsibilities.\(^{85}\) However, one activity that was notably absent from CBS’ implementation plan for this recommendation was the development of a mechanism through which employees can provide feedback on CBS’ ERM program in order to continuously improve ERM at CBS. Given that employees across all functions and position levels within the CBS organization are responsible for managing risk, it is crucial that they be provided with a forum that allows them to not only improve, but to assume a greater level of ownership over ERM at CBS.

**Recommendation #74:**

As part of its development and implementation of a Risk Communication, Awareness and Training Program, CBS should create a mechanism that allows its employees to provide feedback on CBS’ enterprise risk management program and enablers.

Additional specific and procedural guidance, as well as linking risk management to employee performance management, could strengthen CBS’ ERM program. Another key recommendation put forward in the ERM review was that CBS develop additional and or more specific guidance, as it was noted that, while CBS’ ERM Policy is well-written, there was a lack of procedural guidance to support the behaviours envisioned within CBS’ Change Agenda and to otherwise support the cascading of the ERM framework throughout the CBS organization. The procedural guidance proposed in the review includes more explicit definitions of risk tolerance, appetite, and reporting requirements, including quantitative risk tolerance bands; a narrative to support CBS’ ERM framework; standardized risk management procedural guidelines; and materials to address and guide reporting on interrelationship of risks. The review also proposes linking risk management to managers’ performance objectives and evaluation and incorporating risk management abilities into job descriptions, performance objectives and evaluation of all staff, as part of their performance metrics.

CBS has elected to adopt this recommendation and has committed to:

- Formally publishing its ERM process and underlying guidance materials
- Developing qualitative descriptions for CBS’ risk appetite and risk tolerance for each strategic theme
- Developing a process for managing risks (reporting and escalation, including “attestation” of risk tolerance) which are outside risk tolerance
- Integrating a risk appetite and tolerance review with the Strategy Management process
- Considering quantitative risk tolerance descriptions for strategic themes/risk categories

Based on CBS’ management response, it does not appear that there is currently a plan to develop guidance to support the consistent and efficient integration of risk management principles into existing activities or to develop standardized risk management procedural guidelines. As the notion of ERM is often a lofty concept to non-risk practitioners, specific, detailed guidance is generally required to bring ERM to life and demonstrate to employees how it is applicable and relevant to their jobs. There also does not appear to be any plan to link risk management into the performance objectives and evaluation of managers and staff alike. An ERM program cannot succeed without accountability; it is critical that employees be required to take ownership for their role in ERM and that the results of their efforts be monitored and measured.

**Recommendation #75:**

CBS should develop guidance to support the consistent and efficient integration of ERM principles into existing activities, as well as develop standardized risk management procedural guidelines to guide employees at all levels on how to integrate risk management into their day-to-day activities.

Development and implementation of a process that leverages CBS’ risk tolerance limits and cost/benefit analyses in decision-making will enhance CBS’ ERM program.

The third key recommendation put forward in the ERM review was that CBS should implement an integrated risk and control assessment framework. The review noted that this would involve developing a framework and approach to risk reporting that would help minimize the risk of gaps/overlaps in reporting, as well as developing a risk hierarchy and implementing a process that leverages CBS’ risk tolerance limits, as well as cost/benefit analyses, to support risk management decisions.

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\(^{85}\) Canadian Blood Services – Management’s response to Internal Audit’s review of the Enterprise Risk Management Program
CBS’ proposed action plan reflects partial adoption of this recommendation. It has committed to develop a risk hierarchy as well as a process for assessing control and mitigation effectiveness. The implementation plan does not propose the inclusion of cost/benefit analyses to support risk management decisions. Leveraging risk tolerance limits and cost/benefit analyses to support risk management decisions is integral to achieving a more sophisticated decision-making approach. At this level, risk management is embedded in how an organization conducts business and decisions are made with due consideration to risk/return tradeoffs.

**Recommendation #76:**

In order for CBS to reach the strategic level of maturity against the Risk Tolerance, Risk Response and Decision-Making attribute it should implement the ERM review’s recommendation that it leverage risk tolerance limits and cost/benefit analyses to support risk management decisions.

Ongoing risk management training would assist CBS’ Board of Directors in understanding CBS’ approach to risk management and their role and responsibilities for ERM. The ERM review recommended that CBS support the effectiveness of the risk oversight role of CBS’ Board of Directors by working with the Board to develop a more structured approach to risk reporting to and risk discussions with the Board and supporting it in achieving a more effective connection with its committees regarding risk oversight responsibilities and related reporting. The review also recommended that CBS work with the Board to determine an appropriate nature and frequency for ongoing risk management training.

While CBS has elected to adopt this recommendation, its implementation plan focuses only on developing a structured approach for sharing risk information with the Board. It does not include any activities around developing an ongoing risk management training program for the Directors.

**Recommendation #77:**

Given that CBS’ Board of Directors retains overall responsibility for risk management within the organization, it is imperative that the Directors have a fulsome and common understanding of CBS’ ERM program and their role within it. As such, CBS should develop training on ERM for its Board Members.

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11.6 Internal Audit

11.6.1 Context

Internal Audit is, “an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes”\(^{86}\).

CBS’ Internal Audit function is one of many assurance providers for the organization. Federal regulations require routine Health Canada inspections of CBS facilities and operations. Legislative or accreditation rules also necessitate that CBS participate in third party audits. Quality and supplier audits round out the assurance space and include a wide-range of compliance-based assessments. Internal Audit complements these assurance-related engagements (inspections and audits) performed through CBS’ quality assurance program through its audit responsibility for all corporate processes.

Figure 11.3 summarizes annual reporting output for five assurance categories. On average, CBS participated in 84 assurance engagements per year between fiscal year 2008-09 and 2011-12, with a high in 2008-09 of 86 and a low in 2011-12 of 82.

**Figure 11.3 - Summary of assurance-related engagements conducted at CBS by year and category**

![Figure 11.3 - Summary of assurance-related engagements conducted at CBS by year and category](image)

The Internal Audit function within CBS functionally reports to the Board of Directors and administratively to the CEO, consistent with IIA standards. CBS maintains one Internal Audit FTE on staff - the function’s executive director - and outsources its Internal Audit planning, execution, and reporting activities to professional Internal Audit suppliers.

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\(^{86}\) Institute of Internal Auditors - *International Professional Practices Framework*
Internal Audit has historically been compliance-oriented and could play a greater role in the future by increasing its scope to strategic value audits

While the Internal Audit function at CBS has historically been compliance-oriented, over the past two years it has conducted engagements that have the potential to generate strategic value for the organization. Although Internal Audit has remained primarily focused on activities and processes related to compliance with regulations, policies and procedures, the past two RBAPs have included a heavier focus on audits of IT-related services (IT change management) and performance management. The function also performed an audit of the financial controls over the national facilities redevelopment program, one of CBS' strategic initiatives, as well as conducted a review of CBS' ERM program. Mature Internal Audit functions drive strategic value for organizations that understand the function by serving both assurance and advisory purposes. Involving Internal Audit in areas most traditionally reviewed at CBS through third-party consultants would elevate the function's corporate status and increase the value it adds to CBS.

Recommendation #78:
Internal Audit remains a vital component in CBS' approach to risk management, governance, and control. CBS' Internal Audit function should continue to drive strategic value by further broadening the scope of the services that it offers and the nature of the engagements that it conducts. The Internal Audit function should plan to conduct a mix of assurance and advisory-related engagements, as well as further diversify the nature of the engagements it conducts, so that its focus is not strictly on assessing compliance, but value-for-money, performance, efficiency of operations, etc.

Internal Audit has relied on internal input when preparing its annual audit plans and would benefit from broadening the scope of the consultations

The International Standards for the Professional Practice of Internal Auditing (“the Standards”) requires that an Internal Audit function's chief audit executive (or equivalent) “establish a risk-based audit plan to determine the priorities of the Internal Audit activity, consistent with the organization's goals”. The chief audit executive is responsible for developing a risk-based audit plan that takes into account the organization's risk management framework and uses the risk appetite levels set by management for the different activities or parts of the organization. If a framework does not exist, the chief audit executive uses his/her own judgment of risks after considering the input of senior management and the Board of Directors. The Standards also require that an Internal Audit function's plan of engagements must be based on a documented risk assessment, undertaken at least annually, and that the input of senior management and the Board of Directors must be considered in this process.

Despite the wide range of risk exposures facing the organization, it was found that CBS' Internal Audit function does not conduct extensive consultations when developing its risk-based audit plan. Internal Audit consults with CBS' EMT, as well as with the Chair and Vice-Chair of the Board of Directors and the Chairs of the Finance and Audit Committee, Talent Management Committee, SSEC, and Governance Committee during the risk assessment process. Internal Audit also occasionally consults with the Co-Chairs of the National Liaison Committee. It does not consult with the provinces and territories and extended external stakeholders. By not consulting with the provinces and territories, CBS may not be accounting for and assessing all of the risks facing the organization and thus limiting its current audit universe.

Recommendation #79:
When undertaking its annual risk-based audit planning exercise, CBS' Internal Audit function should consult with a variety of external stakeholders (e.g., the PT representatives, suppliers). In doing so, CBS will be able to capture a more fulsome view of the risk environment facing the organization and develop a more comprehensive audit plan.

87 Institute of Internal Auditors – International Standards for the Professional Practice of Internal Auditing – Standard 2010
Appendix A - Summary of recommendations

**Recommendation #1:**
The Members should work together, as well as with CBS, to develop a single, formal SLA or similar document between the Members and CBS. As clearly stated in the MOU, the provincial and territorial governments must have appropriate safeguards to ensure fiscal accountability. As such, this agreement should align with the collective nature of the governance structure of the national blood system and define:

- Respective roles and responsibilities of the parties
- Term during which the agreement will be in effect
- Frequency with which CBS is required to provide operational and financial reporting to the Members, the required content of those reports as well as the timelines they are expected to adhere to in providing it
- Specific operational and financial performance metrics that CBS will be required to measure and report against
- Streamlined decision framework for overall business planning, including who must be consulted, the extent to which they must be consulted, and at what point(s) in the process they must be consulted
- A process that CBS can use to solicit feedback on the information provided to the provinces and territories
- Appropriate funding level of contingency fund, what it can and cannot be used for, as well as a replenishment plan
- Dispute resolution procedures
- Procedures for amending the agreement

**Recommendation #2:**
CBS and its Members should work together to define the concept of “arm’s length”, which was an important principle recommended by the Krever Commission. Together they should determine which types of decisions should be at CBS’ sole discretion, which ones might be shared between CBS and its Members and others that should be made by Members. For example, decisions related to supply and safety of blood products should, as stated in the MOU, be made solely by CBS. Budget decisions, for their part, could be made jointly as is currently the case. The agreement discussed in the first recommendation could include the specific surrounding of the “arm’s length” relationship.

**Recommendation #3:**
CBS should continue to work with the provinces and territories to develop a single, national accountability framework under which it will operate and that meets legislative requirements of the provincial and territorial governments. As effective public accountability requires a shift from compliance to collaboration, CBS and the Members should be working together early and often to ensure that each side understands the other’s operating context so the needs of their respective stakeholders can be met.
Recommendation #4:
In order to facilitate a national, collective, and consistent approach, the Members should establish role descriptions for the PTBLC representatives, including skill set requirements and the decision-making authority of the representatives and those of other senior levels within the Health ministries.

Recommendation #5:
The Members and CBS should work together to develop terms and conditions governing new business lines. The agreements should clearly and specifically outline the respective roles and responsibilities of CBS and the Members, as well as define a funding framework for the new business lines. They should be incorporated in the SLA discussed in Recommendation #1.

Recommendation #6:
The Members should establish a practice to require regular operational reviews of CBS and incorporate it into the document discussed in Recommendation #1.

Recommendation #7:
CBS’ Board and Chair should decide whether the timing, frequency and duration of Board and committee meetings are adequate to effectively discharge the Board’s responsibilities.

Recommendation #8:
The Chair of the Board of Directors should undertake the development and implementation of a formal review process for evaluating director performance.

Recommendation #9:
CBS Members should expand the role of the Board of Directors in the selection and nomination process for new directors.

Recommendation #10:
Members should review the director rotation approach and make changes to facilitate a more gradual turnover of directors.

Recommendation #11:
The Members should undertake a review of the honorarium rates for members of CBS’ Board of Directors for 2013-14, with a view to ensuring compensation alignment with comparable publicly-funded entities. A process for future periodic reviews should also be established.

Recommendation #12:
CBS should continue the review of its organizational structure and realign the service delivery model for support functions with a view to improving span of control and reducing managerial overhead.

Recommendation #13:
Management should continue to implement the changes noted above in order to further CBS’ progress in ensuring that its compensation approach better aligns to leading practices.

Recommendation #14:
Management should formulate and document a clear executive compensation strategy and framework for approval by the Board of Directors. The framework should include selection of comparators, mix of fixed and variable pay components, and disclosure protocol that are relevant to a publicly funded organization.

Recommendation #15:
CBS and its Members should work together to revisit funding models for working capital, investments in PPE and other assets and replenishment of the Contingency Fund. These funding models should be formalized and incorporated in official documentation, such as an SLA, as discussed in the first recommendation. Approaches and practices used by other blood services organizations could provide valuable suggestions.

Recommendation #16:
CBS and its Members should assess the opportunity to provide hospitals and health institutions with details on volumes and costs for the transfusable products they receive, similar to what exists for plasma protein products. Providing this information would partly meet the Krever Commission’s recommendation on billing hospitals. It would help hospitals in understanding the costs associated with their use of blood products. Héma-Québec, the NHSBT and the ARCBS all provide this type of information, even when the payment comes from a central payer. Since there would be additional costs associated with this practice, a cost-benefit assessment should be completed prior to making a decision.

Recommendation #17:
CBS should perform a cost-benefit assessment to determine the opportunity to implement a more robust costing system to enable the calculation of complete costs for its different products and services. This analysis should take into consideration the cost of implementing and operating such a system, the funding models agreed with its Members, and its current and future business lines.
Recommendation #18:
PT governments, together with CBS, should develop a mutually acceptable written agreement that defines in specific detail how excess of annual funding over costs are to be used. A governance framework should be developed and documented to address the following: Use of these funds, minimum levels and release/approval process. These principles should be included in the SLA discussed in Recommendation #1.

Recommendation #19:
CBS and its Members should develop an approach to determine the level of cash CBS should have available to fulfill its responsibilities. This approach should be documented in the SLA discussed in the first recommendation and consider CBS funding models. Members and CBS should develop a plan on how to best use CBS excess cash balance, if applicable.

Recommendation #20:
CBS should work to implement efficiencies identified to reduce the overall costs of this business process by $4 to $6 million a year by 2014-15.

Recommendation #21:
CBS should closely monitor the cost-effectiveness of its contact centre in terms of costs versus performance. CBS has discussed contact centre solutions with Operator B, and plans to discuss contact centre metrics with Operator A in March. CBS should identify relevant metrics in terms of performance and cost, and track and report on these on an ongoing basis.

CBS should explore opportunities to decrease contact centre costs per appointment, including investigating the viability of outsourcing. This initiative will allow CBS to focus on areas that provide greater direct value to the organization.

Recommendation #22:
CBS should work to implement efficiencies identified to reduce overall costs by $8 to $9 million a year by 2014-15.

CBS has plans to continue to streamline its collection processes. The overarching initiative, identified as part of the productivity and efficiency review, includes full implementation of standard models, removal of certain managerial functions, increasing the number of LVP collections and implementation of new shakers.

The total potential savings identified for this initiative from 2012-13 to 2015-16 range from $33 to $35 million. Implementation costs were estimated at $7 million for net benefits of $26 to $28 million by 2015-16.

Recommendation #23:
CBS should continue to explore opportunities to optimize staff mix through implementing the use of donor care associates.

Recommendation #24:
CBS should continue to explore opportunities to decrease deferral rates, without impacting safety of blood products.

Recommendation #25:
CBS should work to implement the end-to-end discard reduction efficiency initiative identified that could reduce overall costs by $1.3 to $2.2 million a year by 2015-16. These savings would be realized throughout the supply chain.

Recommendation #26:
CBS should work to increase its LVP split rate to 70% by 2014-15, largely through moving to single technology across all regions, to reduce overall costs by an estimated $2.8 million a year by 2014-15.

Recommendation #27:
CBS should work to implement efficiencies identified that could further reduce the overall costs of this business process by $3 to $4 million a year by 2015-16.

Recommendation #28:
As part of its organizational redesign, CBS should reconsider the optimal mix of management across its supply chain processes.

Recommendation #29:
CBS should consider implementing some of the productivity and efficiency opportunities identified for its Information Technology and other corporate services functions. Improvements for Talent Management and Finance should not be considered a priority at this time.

Recommendation #30:
CBS should establish its National Fundraising Office as a standalone entity rather than being a corporate function under Transfusable Products. The independent National Fundraising Office should finance its activities from donations received, as is the normal practice. CBS should develop a long term strategic plan for its fundraising activities and assess the effectiveness and cost-efficiency of its National Fundraising Office.

Recommendation #31:
Members should develop guidelines and mechanisms to optimize usage of plasma products; CBS, using its unique expertise, should play a leadership role in exploring ways to achieve this objective.
Recommendation #32:
The provincial and territorial governments should work with CBS to investigate opportunities to decrease costs.

Decreasing costs may be achieved through centralization of testing or divesting testing services performed by CBS to local hospitals. Centralization may be possible for prenatal testing, which represents the majority of red cell serology procedures. Platelet immunology testing was centralized in the Winnipeg site and, during the period under review, the cost per unit for this procedure decreased by 6%, demonstrating the potential cost benefits of centralization. A centralization strategy may need to be led and approved by provincial and territorial governments using the service.

Recommendation #33:
CBS should continue to build on existing effort to improve the donor base. Savings can be generated by increasing the use of Canadian donations for transplants.

CBS should also continue to develop and foster partnerships with customers, stakeholders and international communities, such as the WMDA. These collaborations may result in matching Canadian patients to international donors.

Recommendation #34:
CBS should formalize the use of standard inventory models to calculate inventory requirements. It should examine its inventory and use inventory models to determine the amount of inventory to carry. The cycle and safety stock components of the inventory can be calculated using standard inventory models. To determine the strategic stock component, CBS should quantify the risks and assign an inventory value (similar to the risk based approach used to calculate overall inventory levels). This methodology might allow CBS to reduce and justify the amount of inventory carried in the system.

Recommendation #35:
CBS should create a centralized inventory management function. Inventory management of plasma protein products and medical supplies for Transfusable Products should be centralized in one group.

This reorganization would enable standardization of inventory management processes across CBS. An added advantage of centralizing this function is to build capability within one group and share leading practices across different products. Once the function is centralized, CBS should monitor inventory using appropriate metrics and set improvement targets.

Recommendation #36:
CBS should also broaden the number of inventory metrics it currently monitors. Suggestions include measuring turns (backward looking) in addition to a forward looking Days of Supply metric, inventory accuracy and others. In addition, performance of inventory levers such as forecast accuracy, service levels and supply reliability should also be concurrently measured.

Recommendation #37:
CBS should implement processes and tools to track asset and driver utilization, and regularly assess its fleet size and opportunities for outsourcing to commercial logistics providers in, for example, regions sparsely populated.

Recommendation #38:
CBS should restructure the supply chain organization for cost control and process excellence and appoint a single executive in charge of all core demand planning, logistics, purchasing and inventory management functions.

The process of determining a future state supply chain organizational structure for its supply chain is a complicated one that is governed by several organizational design principles.

Recommendation #39:
CBS and Members should work together to redefine information requirements during the budgeting process to streamline the process (see Section 3.4.1).

CBS should provide both year-to-date actual and forecasted expenses for the current year to provincial and territorial governments during the budgeting and planning process.

CBS should implement a costing system to present fixed and variable cost components for budgeted, actual and forecasted spend, to enable greater transparency of resource utilization (see Section 3.4.4).

CBS and the provincial and territorial governments should revisit the allocation of costs related to the collection of plasma that is sent for fractionation to the PPP business line to more appropriately align funding to business line expenses.
Recommendation #40:
CBS and its Members should determine the status of the Diagnostic Services business line.

Recommendation #41:
CBS should revise its Purchasing Policy to incorporate greater transparency in the bid invitation process for high value and high risk solicitations.

Specifically, CBS should:
• Implement a formal process for selecting vendors for bid solicitation (e.g., selection from a broader pool of vendors on a systematic, rotational basis), including formal documentation of decisions
• Consider using open public tendering. The use of public tendering would most likely increase the level of effort and resources required to assess the proposals received. However, these additional costs may be offset by savings realized on the procurement of goods and services because a competitive process could result in lower prices.
• Introduce clear restrictions around the use of RFQs for high value and high risk solicitations

Recommendation #42:
CBS should review its practices around direct purchases and reduce the categories of goods and services that could be acquired using this approach.

CBS should also implement a process to regularly review approved direct purchases to seek opportunities for volume discounts by establishing standing offers with preferred vendors.

Recommendation #43:
CBS should expand its supplier relationship management strategy to drive further cost reductions. Key aspects of a supplier relationship management strategy include dedicated resources and activities focused on improved process integration between CBS and its key suppliers, and continuous process improvement.

Recommendation #44:
CBS should integrate a thorough understanding of cost drivers in its strategic sourcing approach and methodologies. It should understand key cost drivers within its operations, as well as the external supplier marketplace, to effectively optimize its procurement decisions to minimize total cost of ownership.

CBS should also utilize a regular market review process to proactively analyze key cost drivers in its high priority cost areas (e.g., plasma protein products). If a price benchmark is not practical, a cost driver model can be utilized to understand how key supply markets are trending. A cost driver model would allow CBS to determine a supplier’s key costs (e.g., raw materials versus logistics costs), information that could be utilized for procurement design (including what to include in the pricing model), regular contract reviews and negotiations for new procurements.

Recommendation #45:
CBS should increase the maturity of its procurement processes to increase focus on high value strategic sourcing. It should deploy procurement technology to automate, where practical, and re-deploy sourcing resources to support strategic sourcing goals.

CBS should continue to look for partnership arrangements with other buying groups to save time on lower priority sourcing areas, and redeploy resources to strategic activities.

Recommendation #46:
CBS should incorporate additional details to its travel policies to minimize room for interpretation. More specifically:
• Clarify definition of “valid business purpose”
• Define maximum spending thresholds for business meals, conferences/meetings and other hospitality

Recommendation #47:
CBS should consider using formal competitive processes for high value professional service contracts more frequently. It should also develop and implement a formal process for selecting vendors for bid solicitations.

Recommendation #48:
CBS should review its use of professional services and develop and implement guidelines on utilization of professional services, together with a management and approval approach.

A similar recommendation was included in the productivity and efficiency review conducted by an external firm.

Recommendation #49:
CBS should develop, document and implement a formal methodology to estimate efficiency savings. CBS should explain its approach and methodology to members of the PTBLC to facilitate their understanding of the amounts presented in its reports, and to maintain full transparency.
Recommendation #50:
CBS should develop a funding plan to finance its overall PEP. The funding plan might include a traditional funding approach, such as Members’ grants/contributions, or other alternatives such as debt or capital leases. CBS might also propose to use part of its $110 million in “unrestricted” cash it possessed at the beginning of the year 2012-13.

Recommendation #51:
CBS should clearly identify PEP as a strategic priority and communicate it to the overall organization as soon as ready. All executives should publicly support the program. Appropriate levels of resources should be deployed to support the Program, including augmenting the PEP management office capabilities with one to two resources dedicated to supporting individual project and site teams with change management planning and execution. A formal and complete change management plan should be developed and implemented prior to beginning the deployment of specific projects.

Recommendation #52:
The PEP management office should ensure project teams prepare project planning documentation that describes KPIs and cost-benefit details. Project plans should include a detailed break-down of cost and benefit factors that were considered, as well as financial assumptions. KPIs (i.e., project objective and measures of success) should describe measurable expected results that directly impact the achievement of benefits.

Recommendation #53:
A PEP portfolio management approach should be adopted, which includes managing and reporting on initiatives at different stages (e.g., idea, concept, assessment, execution and benefit realization). This approach would provide a longer term view of the PEP and improve chances of success. In addition, the office should maintain management-level reporting of the PEP portfolio as a whole, especially the overall spending and savings expectations, to all executives, committees and the EMT.

Recommendation #54:
CBS should undertake an analysis to compare outdates and discards between Manitoba and other Canadian jurisdictions to assess the impact of automated inventory management and centralized blood bank management.

Specifically, CBS should:
- Work with its funders and major hospitals to develop a blueprint for improved collaboration across the extended blood supply chain
- Outline cost and benefit estimates as well as determine the technology considerations, reports and controls that would be required to sustain and monitor enhanced collaboration

Recommendation #55:
CBS should work with hospitals to develop standardized data collection and reporting mechanisms for hospital demand and utilization to enable better monitoring and management of system wide outdates and costs.

Recommendation #56:
CBS should continually improve reporting of safety incidents by modifying safety indicators and the corresponding quarterly targets to reflect the cause and impact of the event and, potentially, the impacts to the system.

Recommendation #57:
CBS should investigate opportunities to integrate and interface information systems within the organization as well as with those of its partners, particularly as the health care system moves toward electronic information systems. These opportunities will require effective collaboration between CBS and the health care system partners, as well as consideration of the legislative requirements to implement appropriate interfaces.

Recommendation #58:
CBS should assess the feasibility of incorporating business intelligence capabilities into its information systems. These capabilities can provide further insights on non-conformance trends. However, detailed analysis is required to weigh costs against benefits to prioritize this initiative against CBS’ other current initiatives.

Recommendation #59:
CBS should continue its leadership role to work with other ABO members in the development of the integrated risk-based decision making framework that addresses all major policy and operational challenges, and provides a consistent decision-making approach which would improve confidence and trust in investment decisions. The results of this work should be shared with the CBS Board of Directors as well as with the Members in order to promote further dialogue on risk-based decision making.

Recommendation #60:
CBS should implement a formal change control process that would include a clear set of baseline expectations, as well as a formal change request and decision record.

These baseline expectations should include a consolidated view of all major program milestones. As changes to this schedule are required, they should be formally submitted and approved by the executive oversight committee and recorded as a formal decision.
Recommendation #61:
The level and method of communications executed in NFRP Phase I should be maintained in subsequent phases to promote high-levels of employee engagement and adoption.

Recommendation #62:
CBS should require that all NFRP projects use the established Project Governance Methodology, in particular quality assurance of the project planning deliverables. It should also develop and implement a formal change control process. This methodology should be supplemented with construction-specific delivery tools and templates, but should not replace the requirements of the Project Governance Methodology.

Recommendation #63:
A formal process for budgeting and accessing contingency and reserve funds should be implemented to ensure they are used judiciously and for the intended purpose. This will promote planning and delivery in line with the requirements, rather than budget.

Project contingency funds should be allocated and accessed for the purpose of addressing unexpected cost overruns due to cost estimation variances. Contingency should be explicitly allocated in the budget and released through a formal request for funds approved by an executive oversight committee.

Reserve funds may be allocated to address implementation considerations, which were originally out-of-scope of the initial funding approval. Similarly, reserve funds should be released through a formal request for funding approved by an executive oversight committee.

Recommendation #64:
Program and project benefits, both financial and non-financial, should be described in a manner such that they can be measured and evaluated post implementation to assess the performance against desired outcomes (e.g., expected operational performance outcomes of implementing GMP). These measures should be described at the project onset and carried forward throughout the lifecycle of the initiative. The benefits and outcomes described should align with the overall objectives of the program.

Recommendation #65:
Financial reporting for projects should be enhanced to present actual spending against a formal baseline cost breakdown, which is typically the business case that was used to approve the funding. Forecasts should be presented in addition to the baseline and actual spending. Such an approach facilitates understanding of changes and adjustments to the plan that have an impact on the scope, schedule and overall budget.

Recommendation #66:
CBS should perform a thorough assessment of requirements when asked to assume new responsibilities to determine if it possesses the capabilities (e.g., knowledge, people, processes and technology) to fulfill the mandate. It should also secure key resources from the provinces and territories and other stakeholders required to successfully complete the mandate.

Recommendation #67:
CBS should make the use of its project management process and templates for all types of projects and initiatives mandatory. Once an initiative has received approval, details related to the execution of the project should be clearly articulated and documented in a project plan/charter, including roles, responsibilities, project goals, deliverables, detailed budget, deadlines, and reporting cycles. Furthermore, as the roles and expectations evolve for an initiative, the revised/updated descriptions should be incorporated into the project documentation.

Recommendation #68:
CBS should track and report on its project costs in a way that is consistent with its project plan. Financial reporting for projects should be clear about how expenditures are allocated across deliverables and are traceable to funding sources. Also, variances of actual expenditures from planned and forecasted expenditures should be clearly outlined and explained, with causation factors, in a comprehensive manner.

Recommendation #69:
CBS should include, as part of its project management process, a formal assessment of opportunities to leverage third parties for projects involving the development of IT solutions. Potential benefits that should be assessed include cost, access to knowledge and experience, as well as reduction in timeline. A third party could also assist with patent registration and licensing opportunities.

Recommendation #70:
When accepting new responsibilities, CBS, together with Members, should better assess the long term impact on the organization and include in the agreement provisions for longer term considerations or a specific timeline for the next steps.

Recommendation #71:
CBS should continue to carefully manage this initiative using its project management process, including the development of a contingency plan.
Recommendation #72:
CBS should ensure that its corporate indicators are objective and quantifiable (e.g., PEP realized efficiency savings). A balance should be achieved between reporting on outputs and on the achievement of outcomes in relation to its corporate strategy and organizational mandate.

CBS should review its approach to public reporting and disclosure practices on performance related to its key mandates of safety, system integration, national self-sufficiency, supply management, and cost-effectiveness of the blood system with the goal of increasing transparency. This reporting could occur on a monthly/quarterly basis.

Two recommendations made in Section 3 are also related to performance indicators:

- Development of an accountability agreement between CBS and its Members
- Improve reporting to Members by establishing mutually agreed upon reporting content and schedules

Recommendations #73:
CBS should develop a precise set of outcome KPIs at the corporate level to objectively report on the performance outcomes related to the achievement of corporate strategic priorities. The tracking of initiatives against plan should not be considered KPIs in an organization with a wealth of accessible operational performance data.

CBS should ensure that its performance reporting strategy includes a balanced set of KPIs, with specific emphasis on financial performance metrics in both corporate and business line performance reports.

CBS should consider the development of value based performance indicators to outline the value for money delivered to funders and the public. There is an opportunity to be leaders on this front, in the blood system and the health care system. CBS could work with other members of the ABO in developing broadly accepted value for money metrics for blood systems internationally.

Specific additional performance indicators that should be considered across the Transfusable Products and PPP business lines in relation to the overall supply chain are outlined in the supply chain section of this review.

Recommendation #74:
As part of its development and implementation of a Risk Communication, Awareness and Training Program, CBS should create a mechanism that allows its employees to provide feedback on CBS’ enterprise risk management program and enablers.

Recommendation #75:
CBS should develop guidance to support the consistent and efficient integration of ERM principles into existing activities, as well as develop standardized risk management procedural guidelines to guide employees at all levels on how to integrate risk management into their day-to-day activities.

Recommendation #76:
In order for CBS to reach the strategic level of maturity against the Risk Tolerance, Risk Response & Decision-Making attribute it should implement the ERM review’s recommendation that it leverage risk tolerance limits and cost/benefit analyses to support risk management decisions.

Recommendation #77:
Given that CBS’ Board of Directors retains overall responsibility for risk management within the organization, it is imperative that the Directors have a fulsome and common understanding of CBS’ ERM program and their role within it. As such, CBS should develop training on ERM for its Board Members.

Recommendation #78:
Internal Audit remains a vital component in CBS’ approach to risk management, governance, and control. CBS’ Internal Audit function should continue to drive strategic value by further broadening the scope of the services that it offers and the nature of the engagements that it conducts. The Internal Audit function should plan to conduct a mix of assurance and advisory-related engagements, as well as further diversify the nature of the engagements it conducts, so that its focus is not strictly on assessing compliance, but value-for-money, performance, efficiency of operations, etc.

Recommendation #79:
When undertaking its annual risk-based audit planning exercise, CBS’ Internal Audit function should consult with a variety of external stakeholders (e.g., the PT representatives, suppliers). In doing so, CBS will be able to capture a more fulsome view of the risk environment facing the organization and develop a more comprehensive audit plan.
Appendix B: CBS general and administrative expense categories

Table A.1 - CBS general and administrative expense categories

<table>
<thead>
<tr>
<th>G&amp;A Category</th>
<th>Brief Description</th>
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<tbody>
<tr>
<td>Professional Services</td>
<td>Marketing and advertising services, consulting services, medical consultant fees, internal and external audits</td>
</tr>
<tr>
<td>Purchased Services</td>
<td>Temporary outside staff (contractors), phone and communication equipment services, waste disposal, moving and storage, printing, other third-party purchased services</td>
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<tr>
<td>Equipment</td>
<td>Maintenance costs related to computer hardware and software, building equipment maintenance, biomedical equipment maintenance, equipment rentals</td>
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<tr>
<td>Program Administration</td>
<td>Office and computer supplies (ink, toner, paper, pens, etc.), postage, meeting costs, special events, uniforms and laundry, corporate membership dues, photocopying service costs, forms</td>
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<tr>
<td>Operating Expenses</td>
<td>Transport supplies, vehicle maintenance and operating costs, freight and courier costs, third-party delivery of products to hospitals and centres, donor sample movements, clinic mobile costs for travel/locating/meals, donor food, clinic expenses, donor recognition events</td>
</tr>
<tr>
<td>Travel</td>
<td>Staff travel costs, parking, flights, hotels, mileage, per diems, transaction fees related to travel bookings, car rentals</td>
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<tr>
<td>Property Expenses</td>
<td>Heat and electricity, building and grounds maintenance, property taxes, property rent, facility cleaning, HVAC and Electrical parts and services, elevator services, security services</td>
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<tr>
<td>R&amp;D</td>
<td>Grants issued - CBS funding to R&amp;D</td>
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<td>Search and Transplant Costs</td>
<td>Stem Cell accrued expenses</td>
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<tr>
<td>Inventory and Corporate</td>
<td>Physical write-off of inventory at head office, pricing adjustments, foreign currency valuation, realized and unrealized gains and losses, bank charges, cash discounts taken, interest expense, bad debt expense</td>
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<tr>
<td>Miscellaneous</td>
<td>Cost recoveries, donations in kind expenses, losses (gains) on disposal of assets, accretion expenses, loss of derivative (2010 fiscal year only)</td>
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Appendix C - Select plasma protein products volume and price growth

Table B.1 - CAGR for select plasma protein products (2008-12)

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<th>Price CAGR (US $’s)</th>
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<tr>
<td>Recombinant Factor VIII</td>
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<td>Starches</td>
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Appendix D - Movement of supplies and in-transit inventory

Appendix D - Movement of supplies and in-transit inventory

88 Provided by Gilles Rancourt, Director Logistics at Canadian Blood Services
## Appendix E - CBS vehicle fleet

<table>
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<th>Pass Van</th>
<th>Buses</th>
<th>8 Pass Cargo Miz</th>
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<th>Cargo Van</th>
<th>Buffy Coat Van</th>
<th>Tractor Trailer</th>
<th>Delivery Truck</th>
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Data obtained from presentation “Logistics Presentation (National) October 2012”, provided by Gilles Rancourt
Appendix F - Relevant strategic sourcing leading practices

Process:
- High level of process synchronization with key suppliers (e.g., through integrated processes suppliers have visibility into CBS demand to proactively plan)
- Continuous improvement of processes with suppliers
- Contracts are actively managed with periodic reviews, performance measures (KPIs) and benchmarking
- Negotiation process involves development of partnership with suppliers

People:
- Use of cross-functional sourcing teams to enable sourcing objectives (e.g., utilizing project management methodology)
- Employees trained and participating in continuous improvement activities with suppliers
- Training in advanced negotiation techniques to select suppliers, build supplier partnerships and manage contracts

Technology:
- Technology that enables process integration, improved strategic sourcing data, and automates manual processes to allow employees to increase productivity (e.g., focus on higher value strategic sourcing activities)

The relationship between these three areas (drivers, goals and benefits) is summarized below:

<table>
<thead>
<tr>
<th>Strategic Sourcing Drivers</th>
<th>CBS Strategic Sourcing Goals</th>
<th>CBS Corporate Details</th>
</tr>
</thead>
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<tr>
<td>Process</td>
<td>1. Alignment to Corporate Strategy</td>
<td>1. Lower cost per treatment</td>
</tr>
<tr>
<td>People</td>
<td>2. Minimize TCO</td>
<td>2. Improved service levels</td>
</tr>
<tr>
<td></td>
<td>5. Productivity</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix G - Regulatory requirements for Product Safety

<table>
<thead>
<tr>
<th>Products or services</th>
<th>Legislative, Regulatory or Standard Requirements</th>
</tr>
</thead>
</table>
| **Transfusable products** | • Food and Drugs Act  
                          • Food and Drug Regulations, Part C (Drugs)  
                          • Canadian Nuclear Safety and Control Act (closed source irradiators)  
                          • Ontario Laboratory Accreditation (confirmatory testing)  
                          • CAN/CSA Z902: Blood and blood component (voluntary)  
                          - Sections may become mandatory if referenced in Regulations under renewed regulatory framework for blood |
| **Plasma protein products** | • Food and Drugs Act  
                          • Food and Drug Regulations, Part C (Drugs)  
                          • US FDA Import for Export Requirements (Federal Food, Drug, and Cosmetic Act, section 801) including 21 CFR 607.40, 610.62 and 640.70 |
| **Stem Cells (includes OneMatch & Cord Blood)** | • Food and Drugs Act  
                          • CTO Regulation - Safety of Human Cells, Tissues and Organs for Transplantation Regulations  
                          - CAN/CSA-Z900.2.5-03: Lymphohematopoetic Cells for transplantation (Sections 12.2.2 to 12.2.2.4, 13.1.3, 13.1.3.4, 13.2, 14.2.3)  
                          - Stem cells: International Standards for Cellular Therapy Product Collection, Processing, and Administration (FACT/JACIE) (voluntary standard)  
                          - World Marrow donor Association (WMDA) International Standards for Unrelated Hematopoietic Stem Cell Donor Registries (voluntary standard) |
| **Organs & Tissues** | • Food and Drugs Act  
                          • Medical Devices Regulations (for human heart valves)  
                          • CTO Regulations - Safety of Human Cells, Tissues and Organs for Transplantation Regulations  
                          - CSA Z900.2.2 Tissues for Transplantation (Sections 13.1.2, 14.2.6, 14.3 (excluding 14.3.2.8) and 17.2)  
                          - CSA Z900.2.3 Perfusable Organs for Transplantation (Sections 12.2.2.3,12.2.2.4, 12.2.3.4, 12.2.3.7, 13.2,2, 14.1.2, 14.3.2, 14.2.6.3, 14.2.6.6)  
                          - CSA Z900.2.4 Ocular Tissues for Transplantation (Sections 13.1.3 to 13.1.6)  
                          • Alberta  
                          - Human Tissue Donation Procedure Statutes Amendment Act, RSA 2000, c.15 (awaiting proclamation, will amend Human Tissue Gift Act)  
                          • British Columbia - Human Tissue Gift Act (RSBC 1996) c.211; Consent to Donation Regulation B.C. Reg. 65/99  
                          • Manitoba - Human Tissue Gift Act (CCSM c.H180), Bill 4B, Human Tissue Amendment Act (SM 2004, c.40)  
                          • Ontario - Trillium Gift of Life Network Act, R.S.O. 1990, c.H.20; Bill 142 Act to Amend Human Tissue Gift Act, 2000; Trillium Gift of Life Network Act Ontario Regulation 179/05  
                          • Saskatchewan - The Human Tissue Gift Act, RSS 1978 c.H-15  
                          • Yukon - Human Tissue Gift Act, RSY 2002 c.117  
                          • Northwest Territories & Nunavut - Human Tissue Act, RSNWT 1988, c.H-6  
                          • Québec - Bill 197 (2006, chapter 11) Act to facilitate organ donation |
## Appendix H - Major testing techniques and their impact

<table>
<thead>
<tr>
<th>Test for</th>
<th>Testing Technique (Implementation Date)</th>
<th>Impact/History (1990 - 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chagas</td>
<td>Chagas’ Disease Selective Testing (2010)</td>
<td>14 out of approximately 28,000 donors tested to date have been confirmed positive for Chagas and indefinitely deferred</td>
</tr>
<tr>
<td>West Nile Virus</td>
<td>Test for West Nile virus RNA (2003)</td>
<td>If tested positive, the donor is deferred from giving blood for 56 days.</td>
</tr>
<tr>
<td>HBV</td>
<td>Antibody to Hepatitis B Core Antigen Testing Anti-HBV (2005)</td>
<td>HBV prevalence rate remained steady from 1997 to 2001, and then declined for first time donations. The repeat donation rate remains unchanged.</td>
</tr>
<tr>
<td></td>
<td>Multiplex Nucleic Acid Testing (NAT) - 2011</td>
<td></td>
</tr>
<tr>
<td>HTLV</td>
<td>Antibody Test for HTLV</td>
<td>HTLV prevalence rates remained unchanged for first time and repeat donations, with a small decrease from 1990 to 1993 in repeat donations.</td>
</tr>
<tr>
<td>Syphilis</td>
<td>Blood Test for syphilis</td>
<td>Significant decreases were observed for syphilis rates in both first time donations and repeat donations.</td>
</tr>
</tbody>
</table>
## Appendix I - CBS’ performance against safety indicators

<table>
<thead>
<tr>
<th>Safety Indicators</th>
<th>Quarterly Target</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Number of recall events due to EAs &amp; PDIs (per 10,000 collection)</td>
<td>&lt;=12</td>
<td>9.9</td>
<td>10.9</td>
</tr>
<tr>
<td>Number of Health Canada critical observations</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of reported adverse transfusion events</td>
<td>&lt;=12</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Number of revised reports for Diagnostic Services (per 1,000 reports)</td>
<td>&lt;5</td>
<td>0.09%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Serious Events (Stem Cells)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of safety indicators meeting target</td>
<td>41399</td>
<td>5/5</td>
<td>5/5</td>
</tr>
</tbody>
</table>

*Table 1 - Safety indicators used in previous years. Indicators not met are shown in red,* Indicator met but performance below target
## Appendix J - Definition of key words

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse Event</td>
<td>An undesirable and unintended occurrence during or after the administration of whole blood, blood component, or blood product. Examples include adverse reactions and incidents (Errors/Accidents)</td>
</tr>
<tr>
<td>Adverse reaction</td>
<td>An undesirable and unintended response to the administration of blood or blood component that is considered to be definitely, probably or possibly related to administration of blood, blood component or blood products.</td>
</tr>
<tr>
<td>Incidents</td>
<td>An accident or error that could lead to an adverse outcome affecting safety, efficacy or quality of blood or blood components. Types:</td>
</tr>
<tr>
<td></td>
<td>▶ Accident: an unexpected or unplanned event, not attributable to a deviation from standard operating procedures or applicable laws and regulations.</td>
</tr>
<tr>
<td></td>
<td>▶ Error: an unexpected, unplanned deviation from standard operating procedures or applicable laws and regulations, usually attributable to a human or system problem.</td>
</tr>
<tr>
<td>MSRA</td>
<td>Medical, Scientific &amp; Research Affairs</td>
</tr>
</tbody>
</table>
## Appendix K - Other performance reporting activities by CBS\(^90\)

<table>
<thead>
<tr>
<th>Regulatory</th>
<th>Satisfaction</th>
<th>Operational</th>
<th>Strategic</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Health Canada, reporting of:</td>
<td>▶ Annual online Hospital Customer Satisfaction Survey (Safety, Service, Delivery, Availability)</td>
<td>▶ Provincial &amp; Territorial Shared Documents</td>
<td>▶ Quarterly National Facilities Redevelopment Plan Update to the Board</td>
</tr>
<tr>
<td>◀ Errors and Accidents (E/As)</td>
<td>▶ Annual Provincial/ Territorial Representative Satisfaction Survey</td>
<td>▶ Quarterly Quality Assurance Report (Safety Indicators, Product Notifications, Corrective Actions, KPIs)</td>
<td>▶ Quarterly OTDT Update to the Board</td>
</tr>
<tr>
<td>◀ Post Donation Information</td>
<td>▶ Post Donation Information</td>
<td>▶ TP Regular Performance Reporting</td>
<td>▶ Quarterly MSM Update to the Board</td>
</tr>
<tr>
<td>◀ Adverse Transfusion Reactions</td>
<td>▶ Changes to Information Technology</td>
<td>◀ To the Board of Directors:</td>
<td>▶ Quarterly National Liaison Committee Report to the Board</td>
</tr>
<tr>
<td>◀ Traceback/Lookback</td>
<td>▶ Changes to the List of Unacceptable Medications</td>
<td>◀ Quarterly CEO reports</td>
<td>▶ Quarterly National Liaison Committee Report to the Board</td>
</tr>
<tr>
<td>◀ Serious Donor Events</td>
<td>▶ Annual Establishment License Renewal</td>
<td>◀ Quarterly Report of the General Counsel</td>
<td>▶ Quarterly Safety, Science &amp; Ethics Committee Report to the Board</td>
</tr>
<tr>
<td>◀ Changes to Information Technology</td>
<td>▶ New Fixed Site Establishment License</td>
<td>◀ Quarterly reports from the CBS subsidiaries, CBSI and CBSE</td>
<td>▶ Quarterly Talent Management Committee Report to the Board*</td>
</tr>
<tr>
<td>◀ Changes to the List of Unacceptable Medications</td>
<td></td>
<td>◀ Quarterly Finance &amp; Audit Committee Report</td>
<td>◆ Open Board Meetings</td>
</tr>
<tr>
<td>◀ Annual Establishment License Renewal</td>
<td></td>
<td>◀ Quarterly IT and eProgesa Update</td>
<td></td>
</tr>
<tr>
<td>◀ New Fixed Site Establishment License</td>
<td></td>
<td>◀ Yearly update on the Pension plans</td>
<td></td>
</tr>
<tr>
<td>To FDA:</td>
<td>◆ To the Board of Directors:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◀ Annual Establishment Registration Renewal</td>
<td>◀ Quarterly National Facilities Redevelopment Plan Update to the Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◀ New Site Registration</td>
<td>◀ Quarterly OTDT Update to the Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◀ Establishment Registration for Human Cells, Tissues, and Cellular Tissue-Based Products</td>
<td>◀ Quarterly MSM Update to the Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Canadian Nuclear Safety Commission:</td>
<td>◀ Radioisotope Annual Compliance Reports</td>
<td>◀ Quarterly National Liaison Committee Report to the Board</td>
<td></td>
</tr>
<tr>
<td>◀ Radioisotope License Renewal (every 5 years)</td>
<td>◀ Radioisotope License Renewal (every 5 years)</td>
<td>◆ Quarterly Safety, Science &amp; Ethics Committee Report to the Board*</td>
<td></td>
</tr>
<tr>
<td>To Ontario Ministry of Health/ Saskatchewan Ministry of Health :</td>
<td></td>
<td>◆ Quarterly Talent Management Committee Report to the Board*</td>
<td></td>
</tr>
<tr>
<td>◀ Annual Ontario Provincial Laboratory License Renewal (NTL, HLA, TO)</td>
<td></td>
<td>◆ Open Board Meetings</td>
<td></td>
</tr>
<tr>
<td>◀ Laboratory License (Sask.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^90\) CBS Performance Management Snapshot (2012-11-20)