Canadian Blood Services
BLOOD
PLASMA
STEM CELLS
ORGANS
& TISSUES

Annual Report 2021–2022

How we connect

Linking our capabilities and insights to improved patient outcomes across Canada's health systems.

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Canadian Blood Services creates vital connections between donors who generously give and the patients whose lives they transform. Between researchers pursuing breakthrough solutions and practitioners delivering the best possible care. Between Canada's multifaceted health systems and the diverse communities they serve.

As we work with our many partners to achieve common goals and explore new opportunities, the links we forge are complex, but the purpose that guides us is simple and clear. We are **Canada's Lifeline**.

And this is how we connect.

Alex,
plasma donor

Sara,
blood, platelet and stem cell recipient

How we connect

generous donors to patients in need

innovative research to clinical outcomes

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Greg,
blood donor

Carissa,
blood and plasma recipient

Rick Prinzen,
Chief Supply Chain Officer and Vice-President, Donor Relations

How we connect

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> Analytics and human insights
> Automation and digitalization
> Research and innovation
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> Community building

As the pandemic continued to challenge Canada's health systems in 2021–2022, our management of the national blood system once again required a balance of agility and resilience. The changes and innovations we introduced were largely in response to specific disruptions or fluctuations in demand. But many will have a positive long-term impact on the production and distribution of blood and blood products — and, ultimately, will help create better outcomes for Canadian patients. At the same time, work has continued on many aspects of our ongoing evolution, from the development of new strategies for recruiting and engaging donors, to the advancement of diversity, equity and inclusion across the blood system. Rick Prinzen — our chief supply chain officer and vice-president, donor relations — looks back at some key challenges and achievements.

Q: How has the continuing pandemic affected blood system performance during the past year?

Rick Prinzen: We've been able to maintain relatively stable supply in fresh blood components. There has been the odd occasion, either because of a spike in demand or a slight drop-off in collections, when inventory levels have gone outside the optimal range. But overall, the supply-demand balance has been good.

When inventory was down, we were able to add capacity to the blood system, though this was sometimes constrained by staffing limitations. So, another key factor has been our continued strong participation within the collaborative National Emergency Blood Management Committee, which includes physician experts, as well as representatives from Canadian Blood Services and the provincial and territorial health ministries. Anytime the committee has spotted potential issues in supply planning, based on our collective experience, we've moved quickly to make adjustments. And the open sharing of data among members has really helped to strengthen overall system performance.

Of course, there were direct impacts from COVID-19 on our operations. When the Omicron wave caused caseloads to rise, it affected both the availability of donors and our own staffing levels, so we did have some short-term inventory challenges. But our surveys told us that most people considered our donor centres to be very safe environments, and they were reassured that we had a fully vaccinated workforce. And ongoing surveys show that our regular donor base has remained strong, generally speaking, throughout this second year of the pandemic.

Looking beyond the immediate challenges of COVID-19, we continue to be mindful of all potential supply risks, many of which were more elevated last year. Whether it's flooding in Manitoba and B.C., forest fires across the west, or severe weather conditions in all parts of the country, people on our team who've been here for many years say they've never seen the kinds of acute disruptions we've faced recently. So we need to stay vigilant. Our move to a more flexible planning system, which we've discussed in previous annual reports, definitely allows us to be more agile in adapting quickly to changing conditions.

Quick Link

"When you get the call and are told you're a match, the reality sinks in."

Todd Bechard has been giving blood since he was 18 years old. "When I started donating regularly in the 1990s," the Halifax resident recalls, "I didn't know anyone who needed blood. I just thought, People need it and I have it, so why not donate?" To date, between whole blood, plasma and platelets, Todd has made over 150 donations — and he has also donated stem cells.

"That was a bit different," he says. "I was happy to register as a possible stem cell donor, but when you get the call and are told you're a match, the reality sinks in. I was very pleased to follow through and make the donation."

Todd first became a regular donor through a Canadian Blood Services program he helped organize at his former workplace, Maritime Life. Over the years, through many changes in his career and personal life, he has always found ways to continue supporting **Canada's Lifeline**. Now, with a son who relies on a medication made from plasma, Todd is more aware than ever how his time in the donor chair is vitally important to patients in need.

Q: You mentioned data sharing at a high level, among ministries and health systems. What about data integration across the blood system supply chain?

A: We continue to make good progress in extending online ordering to hospitals. We've now implemented this capability across all our distribution sites, integrating it with our shipping management system, so fulfillment will be seamless. And the portal that hospitals already use in our existing infrastructure has been enhanced to support online ordering. Now we're bringing hospital blood banks onto the system as they're able to adapt their own information systems. This can take time for some hospitals that have older technology or more than one legacy system.

Internally, we've continued leveraging the capabilities of our management systems to bring together diverse domains — from supply planning and forecasting to our formulary of plasma protein and related products — onto one platform. In a similar vein, we're maturing our donor feedback system, so we can weave together all channels by which donors are communicating with us, to get a holistic perspective, or one donor view, on their experience with us. (See story on page 10.)

Q: How has the continuing pandemic affected blood donor recruitment?

A: We've had some challenges in recruiting donors without the benefit of in-person community events. We also had to suspend our college and university programs, which attract a lot of young, new donors. So with this contraction of our overall base, we've sent out messages to regular donors asking if they could slightly shorten the time between donations — and the response has been good. We make this as easy as possible, based on what we know about individuals' preferred donor centre, day of the week, time of day and so on. But the net result is our donation frequency levels are a bit higher than they were pre-pandemic. We are now very focused on establishing the appropriate balance between donor base size and donation frequency.

At the same time, one piece of good news is that retention rates for active blood donors are higher than they've been in several years. We've got more work ahead to reinforce and sustain that trend. To stabilize blood supply over the longer term, we need 100,000 new donors to continue donating regularly. But it's an encouraging sign that donors are becoming more engaged, thanks to all we've been doing to promote the value of **Canada's Lifeline**.

One other metric we track is our net promoter score, which measures donors' willingness to recommend the blood donation experience to others. It helps us gauge progress relative to our own past performance and compared to other blood operators. And this past year, we saw a slight lift in our score — not a statistically significant gain, but confirmation that regular donors' willingness to spread the word has not been eroded by the pandemic. Another, slightly different metric we look at is satisfaction score, which measures how happy donors are with their overall experience at the donor centre. And this too is slightly up, which is equally good news: donor satisfaction is a key driver for retention.

Q: What successes have you had in your three-point strategy to make donation easier, to deepen personal connections with donors and to ensure they feel valued?

A: One area we've significantly enhanced is group bookings, after donors told us there were too many administrative steps for a company or other organization that wants to inspire its people to donate blood. Our revamped system enables groups to designate champions, who can then use a simple self-service registration process to book individuals they're associated with.

So that makes signing up a lot simpler for groups. It's also easy to extend your group and invite more people to sign up. And on our side, we now have much more detailed reporting on the groups who come in to donate, as well as individuals within those groups. We can greet them personally when they arrive and, even more importantly, follow up to keep them engaged and build longer-term relationships. We can also make groups within a region or sector more aware of each other, even encouraging a bit of good-natured competition as they compare donation stats and egg each other on. So it's a great way of building engagement in all kinds of group environments, which have proven to be a really important source of new donors.

Another area of very significant progress is our work to advance and mature the donor experience. We've been able to establish direct statistical correlations between the experience in our donor centres — reinforced by nine explicit service commitments — and long-term donor retention. Our donor centre teams are constantly analyzing feedback, finding opportunities to improve and, when necessary, taking corrective action.

"Our donor centre teams are constantly analyzing feedback, finding opportunities to improve and, when necessary, taking corrective action."

Q: Lastly, in light of the organization's ongoing efforts to advance diversity, equity and inclusion (DEI), what progress has been made to remove barriers to donation?

A: We've been working over the past several years to make our donor and registrant base more diverse — particularly in terms of ethnic diversity — to ensure it's reflective of Canadian society. More generally, we're reaching out to younger donors, so we can continue to build and sustain long-term relationships. As we work to address and remove barriers, and to engage with specific communities and equity-deserving groups, the expert guidance of our new chief diversity officer, Dr. Yasmin Razack, and the DEI team will continue to be extremely valuable (see the Q&A on page 15).

More concretely, we're opening a new donor centre in Scarborough, Ontario, to serve the diverse communities of Toronto's eastern suburbs. We expect that centre to become a focal point for advancing new donor recruitment and engagement strategies — reinforcing the kind of relationship-building we've been doing, for example, with our Sikh Nation partners across Canada and with Filipino communities around Vancouver.

Expanding the diversity of our donor base will enable us to address some very specific medical needs. For instance, by introducing more intensive phenotype testing in some communities, we can find the rare blood types needed by patients of specific ethnic or ancestral backgrounds, such as people of African descent who are being treated for sickle cell disease.

The past year also brought a very important step toward greater inclusivity with Health Canada's approval of our submission to adopt blood donor eligibility screening based on sexual behaviour. We understand that the previous criteria, which focused on sexual identity, was harmful to many 2SLGBTQIA+ individuals and communities — specifically men who have sex with men, as well as trans women. We're pleased to be starting a new chapter, but we understand there's still a lot of work to do.

We're committed to engaging with 2SLGBTQIA+ communities and stakeholders to build trust and redress harm and stigma. We'll continue evolving our eligibility criteria in ways that maximize participation in **Canada's Lifeline** while keeping the safety of the blood system paramount. To help ensure our donor centres are safe and inclusive spaces, we've also been educating our donor-facing teams on the new screening questions, how to have sex-positive conversations, and how to talk more generally about eligibility screening with all donors.

I should point out that even before this new sexual behaviour–based approach was approved, we did make a modest step forward. In September 2021, we began accepting donations of source plasma from what were then called MSM donors at our centres in London and Calgary. But we look forward to now having eligibility be more inclusive for all types of blood and plasma donation across the system. More broadly with regard to DEI, we know there are other equity-deserving groups, including racialized and Indigenous communities, that face barriers to donation. We're looking at having select donor centres offer services in additional languages other than English and French, so more people they serve will feel comfortable and understood. But other barriers are more deeply rooted. We acknowledge that we need to work harder to build understanding and trust with distinct communities, as this is central to our purpose as an organization: ensuring that everyone in Canada feels welcome as both contributors to and beneficiaries of **Canada's Lifeline**.

Feature

Rewarding experience

Donors are invaluable to Canadian Blood Services. They're the generous providers of all the vital biological products — blood, plasma, stem cells, organs and tissues — that we supply to health systems and patients in need.

How we connect

> Donor engagement and experience
> Empowering employees
> Analytics and human insights
> Automation and digitalization
> Organizational excellence
> Community building
> Diversity, equity and inclusion

In an era of relentless change, donors are naturally changing as well. The pandemic has only accelerated shifts that were already underway in recent years, as Canadians have become more connected and mobile, less predictable in their work and life schedules — and, as a result, increasingly pressed for time. That's why we're concentrating more energy than ever on enhancing the donor experience, evolving every aspect of how we interact with these crucial stakeholders to keep pace with their expectations and, where possible, stay a step ahead.

Among the team members helping to drive this change is Pan Phyu, our head of donor experience, who honed their expertise in customer experience and human-centred design through 15 years in the financial services industry. They provide an overview of how we're rethinking and reshaping the donor experience.

All of our donor experience work starts from a human-centred perspective. Rather than focus on the best way for Canadian Blood Services to collect blood, we begin by asking what donors would feel is the best way for them to give. Of course, we still maintain the highest standards of safety and quality control. But we think through all process steps, and the systems and tools that support them, in terms of the value they deliver from a donor's point of view.

Says Pan: "We want donors to walk away thinking: Oh, that wasn't a big deal at all. I should really do it again. Or: I had such a great experience, maybe I'll bring my friends next time. We're trying to balance meeting the needs of a very process-oriented enterprise with thinking of all interactions in terms of our relationship with donors and what will create a memorable, positive experience for them."

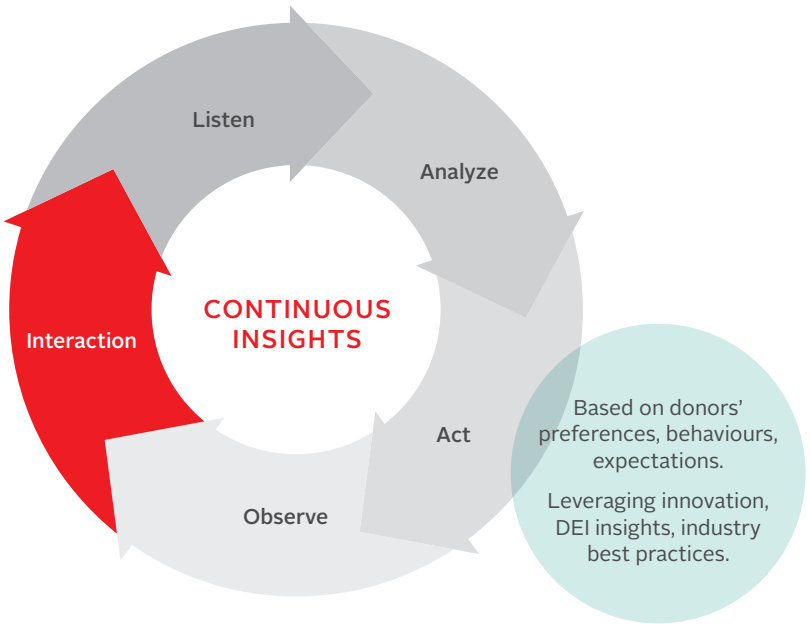
Another pillar of our approach is the need to get it right the first time. A potential donor who has difficulty, say, with the online booking process is unlikely to keep trying multiple times. Similarly, someone whose first donation doesn't go smoothly will be less inclined to book a second one, let alone make a long-term commitment. So we apply the first-time-right principle to every aspect of the donor experience.

"Sometimes all it takes is a hello and a warm smile, and you've set a donor on the right path for their whole visit," Pan says. "We say the ideal experience has three components: you have to keep it easy, make it personal — which could be as simple as noting from someone's file that their birthday is coming up — and you need to ensure the donor feels valued. When we succeed in doing that, donors not only come back; they share their positive experience with other people."

Donor experience isn't a single chain of events; it unfolds in an ecosystem. It includes all the service-delivery steps we take to help people move through the blood donation process smoothly, safely and comfortably. But it's bigger than that. Truly managing donor experience means looking at every dimension, from the interface on our GiveBlood app, to the layout of our donor centres, to the screening questions that donors answer. It's a comprehensive approach — and it's interactive, considering not just how we behave toward donors, but how they respond in return.

"In managing this ecosystem," Pan says, "we listen to what people tell us about their donation experience, and then we do something. We either celebrate what they think we do well, reinforcing how much we value their approval — or, if some aspect let them down, we commit to improving it, so they'll have a better experience next time."

Understanding the donor journey



To deliver an exceptional donor experience, we need to better understand the journey that donors make with us, from first interaction through their ongoing engagement post-donation. We're bringing together team members across the organization to examine each point in the donor journey, sharing positive stories, clarifying expectations and identifying barriers. Leveraging the insights from this continuous process (diagrammed above), we celebrate our successes while working to deepen donor relationships.

Virtually every area of Canadian Blood Services is part of this ecosystem. Even employees who have no direct contact with donors and never set foot in our donor centres (except to give blood themselves) nevertheless play a role in serving the donors, whose selfless gift is essential to our operations and our purpose as an organization.

"We've articulated what we call our donor experience ambition," Pan says, "reminding everyone across the organization that we all share the same goals when it comes to keeping our donors engaged and happy. So it's not just the folks at the donor centres, but also their colleagues in information technology, in data analytics, in process management, in medical affairs, in research and innovation, in communications and marketing — everyone whose work touches our donors in any way."

Together, we create an end-to-end donor journey. From the time someone starts thinking about giving blood, plasma or platelets until they walk out of a donor centre with their next appointment already booked — and if they go on to talk about the experience with family or friends — it's all on the same continuum of experience. And to grow and maintain donors' loyalty, we need to be actively managing every step in that journey.

Pan explains: "If I visit a donor centre and my experience there is easy, but then I have difficulty making my next appointment, that's inconsistent service delivery — and an inconsistent representation of our brand. Our connection with donors is multi-channel; they can interact with us in person, in voice conversations, through our website or mobile app, using the kiosk in the donor centre, or via email or social media. Managing the donor journey means coordinating all those channels. And now we're bringing them together in one holistic omnichannel view. That's the ultimate goal."

Recruitment and engagement are vital. But so is retention. Donors rightly expect the process to be straightforward and stress-free. They also deserve to feel appreciated and respected. As we work to exceed their expectations, we're using digital tools to provide everything from helpful prompts about upcoming appointments to personally tailored health information. Still, donors can become inactive, whether through some misstep or misunderstanding, or simply as their priorities change.

"We never like to see any donor relationship end," Pan says. "Their generosity is what ensures a secure supply for patients. And from a practical perspective, acquiring a new donor is always more expensive than retaining an existing one. So we pay close attention to the feedback we get through surveys directly from donors and also via unsolicited means, like emails or social media posts — especially if they've been upset by some aspect of their experience. We use AI-assisted tools to route concerns to our National Contact Centre, where a team member will reach out to learn more. What's really gratifying is when a donor says, 'Wow, you heard me as a person and you've addressed my issues.' And we turn a detractor into a promoter."

"What's really gratifying is when a donor says, 'Wow, you heard me as a person and you've addressed my issues.'"

Our donor experience ecosystem extends far beyond blood donation. We're leveraging these insights to recruit and retain donors of plasma and platelets, as well as cord blood and adult stem cells. We use similar strategies with potential donors in our stem cell registry. We can also apply them in the various registries of our organ and tissue donation and transplantation program. And we'll ultimately take the same approach with everyone from financial donors to advocates for our various donation options, as we enhance the experience of all stakeholders across **Canada's Lifeline**.

"We have a project underway to get a single view of each donor," Pan says, "integrating data from multiple sources on the background info they've shared and all their interactions with us. It will allow us to serve donors better with relevant information at our fingertips. And we'll be able to cross-promote different ways of participating in ***Canada's Biological Lifeline*** to people we know are strong supporters, offering them more opportunities to help and influence others. We're very excited about where this work will lead us over the next few years."

Diversity, equity and inclusion

Linda,
plasma recipient

Anmol,
volunteer

Dr. Yasmin Razack,
Chief Diversity Officer

How we connect

> Diversity, equity and inclusion
> Donor engagement
> Registrant recruitment
> Patients' perspectives
> Analytics and human insights
> Empowering employees
> Organizational excellence
> Health system collaboration
> Community building

For Canadian Blood Services, working to advance diversity, equity and inclusion (DEI) and Indigenization is fundamental to our vision: To help every patient, match every need and serve every Canadian. In recent years, we've evolved a more formalized approach to DEI. We're strongly committed to addressing systemic inequities and injustices that negatively impact diverse communities, as well as Indigenous people. And we've become acutely aware of potential barriers in how we engage with donors and registrants, which in turn could affect patients' access to the best possible care. The policy statement approved by our board of directors in June 2021 sums up our intent: "We are committed to building an organization reflective of Canada's diversity and creating a workplace where employees feel included and valued, with programs and policies that maximize fairness and opportunity."

To reinforce this commitment, we've established a new organizational DEI function with executive-level leadership. In December 2021, we were pleased to announce the appointment of Dr. Yasmin Razack as our first chief diversity officer. As she helps to define this new position, Dr. Razack draws on nearly two decades of experience — most recently with Toronto's Centennial College — in helping organizations to advance the principles of DEI. We asked her to share some perspectives on the challenges and opportunities ahead as Canadian Blood Services develops and implements a meaningful, sustainable DEI strategy.

Q: You've joined the executive management team of Canadian Blood Services as chief diversity officer. What motivated you to take on this newly created role?

Yasmin Razack: I was attracted by the opportunity to work with a one-of-a-kind national organization that impacts the lives of so many people. Though, to be candid, when I first became aware of the position, I didn't know a lot about efforts to advance DEI and Indigenization in this area of Canadian health care. The initial inspiration came from my uncle, who is a practising physician with a special focus on diversity, equity and inclusion. He told me about Charles Drew, an African American surgeon — educated at McGill — who was a pioneering researcher in transfusion medicine. Dr. Drew helped develop the first large-scale blood banks during World War II. He's also remembered for having resigned from the American Red Cross to protest its policy of racially segregated blood donation.

While that practice officially ended in 1950, we know DEI challenges persist in our health systems and throughout society. And as I researched the issues and met with the leadership team at Canadian Blood Services, I saw what a truly incredible opportunity this could be to bolster DEI and Indigenization — and to eliminate exclusionary practices — wherever individuals and communities interact with **Canada's Lifeline**.

Q: As you came onboard and began mapping out new DEI goals, what kind of building blocks were already in place?

A: Significant work was underway on integrating DEI principles across the organization, and on building new relationships with donors, registrants and volunteers from diverse communities. The commitment was there and resources had been allocated. And there was a strong focus on deepening our knowledge of the issues while paying careful attention to factors that people may not realize have an impact on advancing DEI. A case in point is the comprehensive, decades-long work that led us — alongside a diverse array of stakeholders, particularly those from 2SLGBTQIA+ and intersecting communities — to recommend moving to sexual behaviour–based screening for all blood donors (see story on page 20). Our submission to Health Canada was being finalized when I joined the team, and it was interesting to see how the medical research integrated insights from social science to make participation as inclusive as possible. And I could see that everyone was passionate about making it a success. There's such a high level of enthusiasm and commitment among the majority of employees, from a social justice perspective and in working together to improve the quality of Canadian health care.

I feel strongly that advancing DEI and Indigenization is a shared responsibility, requiring a commitment that's both individual and systemic. This organization clearly understands that. Plus, I appreciate the fact that no one claims to have all the answers. A key point about DEI work is you have to approach it with humility — and be constantly, constantly researching.

"There's such a high level of enthusiasm and commitment among the majority of employees, from a social justice perspective and in working together to improve the quality of Canadian health care."

Q: Can you point to a few initiatives that show this commitment creating impact?

A: As I've mentioned, one area I'm very excited about is how we're sharpening our focus on Indigenization and increasing engagement with Indigenous communities. For the past two years, we've worked with a consulting firm led by Indigenous and non-Indigenous experts to deepen our understanding of the critical components of Indigenization. This work has included a system-wide strategy to build cultural awareness and increase institutional knowledge on how we can engage with communities across the country. We've now finalized a Reconciliation Action Plan (RAP) that outlines our goals in this area.

The plan reflects where we are as an organization, and, at the same time, because our team members co-created it with Indigenous communities, it's relevant to the people whose perspectives we're working to understand better. We hope to further earn the trust of First Nations, Métis and Inuit communities, so we can build off of our accomplishments to date and collaborate on putting the RAP initiatives into action.

Another highlight for me is our progress in forging stronger partnerships with diverse communities. These collaborations can inspire more group donations, as we've seen in our work with Muslim communities in B.C. and with our Sikh Nation partners across Canada. We're also partnering with communities to support individual donors with specific needs — for example, by making plasma donor centres more accessible, and donation protocols more adaptable, for people with disabilities.

These are models we can adapt for other communities as we become even more intentional about growing engagement and building relationships that encourage new donors of blood, platelets and plasma, and new potential donors in our stem cell registry. It's the key to building a sustainable blood system and finding successful matches for patients of diverse backgrounds across Canada.

The last highlight I'll share is actually a cluster of organizational initiatives around DEI. As our new team has come together, we've seen a high level of interest: employees are connecting with us and what we're trying to accomplish. We've worked hand in hand with our colleagues in communications to build awareness of, and engagement with, DEI across the organization. We've seen strong participation in our new learning programs on topics such as trans-inclusive practices and how to address racial microaggressions. We have many other projects in the works, from creating an Indigenous council to launching a women's empowerment network. And helping to drive much of this is our new DEI council, which so far has attracted 145 members. The council is guiding our strategic orientation on four priorities: increasing donor and registrant diversity, advancing employee capacity, addressing systemic racism and strengthening organizational DEI.

All this is to say that there was a lot going on when I arrived, and the work has only broadened and deepened in these first few months. We have many other exciting DEI and Indigenization initiatives on the horizon that will help create a more inclusive workplace at Canadian Blood Services and a more inclusive blood system for patients and donors across Canada.

Q: Lastly, what do you say to people who feel we could be advancing DEI further?

A: I say they're absolutely right: we need to do more. The world needs to do more. And we're getting there. It begins with constructing new narratives that deepen equity consciousness, and then developing practices that are not exclusionary, that embody the principles of DEI. At the same time, I think we all understand that this work is evolutionary and that it's decentralized — it's not just the responsibility of one unit within an organization. We've laid some important groundwork, but there are still significant gaps we need to bridge, whether it's developing a more inclusive hiring strategy or examining our policies and practices to remove any vestiges of institutionalized racism.

We also need to be alert to the fact that people often encounter barriers that reflect more than one dimension of who they are, whether it's their race, gender identity, sexual orientation, physical ability or how they speak a language. Being sensitive to how multiple factors may converge in one person's experience — what people in the field call "intersectionality" — is critical to ensuring a more inclusive health care system.

If we don't ask ourselves some tough questions, we're not going to move the needle. If we're willing to disrupt the status quo — if we're ready to welcome more voices to the table and engage with equity-deserving communities everywhere along **Canada's Lifeline** — then together we'll build the necessary structures to advance diversity, equity and inclusion.

Feature

Welcome change

In December 2021, Canadian Blood Services submitted a request to Health Canada to make eligibility for all donation types more inclusive, regardless of donors' gender or sexual orientation. This came after more than a decade of research, engagement and discussion — and amidst continuing, understandable frustration within 2SLGBTQIA+ communities.

How we connect

> Diversity, equity and inclusion
> Donor engagement
> Patients' perspectives
> Research and innovation
> Empowering employees
> Health system collaboration
> Community building
> Organizational excellence

In April 2022, Health Canada approved the removal of donor eligibility criteria specifically identifying men who have sex with men. Instead, we'll focus our screening protocols on recent sexual behaviours that are associated — among all donors — with a greater chance of infection. Once this landmark change is implemented, beginning in September 2022, men and some trans women will no longer be asked, as part of our donor eligibility questionnaire, whether they've had sex with another man.

Health Canada's approval makes participation in **Canada's Lifeline** more inclusive without compromising the safety of the blood system or security of supply. This long-awaited and welcome change came about through the steadfast efforts of many 2SLGBTQIA+ people and other stakeholder groups. And it reflects the contributions of diverse scientific, medical and social science researchers, including those supported with funding from Health Canada.

The decision is also a testament to the hard work and commitment of teams and individuals across Canadian Blood Services, some of whom identify as members of 2SLGBTQIA+ communities. We asked Terrie Foster, a registered nurse with our national medical services and hospital relations team, to share their perspective.

"It makes me proud to be part of it."

"When I started at Canadian Blood Services in 2006," Terrie says, "I can remember screening donors and wondering if we'd ever have gender-neutral, sexual behaviour–based criteria and be able to stop asking questions directed at men who have sex with men. So, coming from that place, and seeing the dedication of people across our organization, in so many departments, who've been working on this issue, I think this outcome is really, really special.

"As a queer person looking to create a more inclusive donation experience for people from diverse communities, I found that conversations with colleagues, especially in the beginning, weren't always easy. It sometimes felt like I was speaking a different language — which is difficult when you have direct, lived experience in 2SLGBTQIA+ communities. But since then, we've introduced training and other initiatives around diversity, equity and inclusion. And now we have a whole team focusing on those issues (see the Q&A on page 15). It helps make the conversations a lot easier, as I don't have to explain my position and why this is important. These are donors who have faced adversity in their lives in many different ways and we want them to feel like rock stars, just like all other donors.

"Our eligibility criteria were never meant to be overly focused on people's identities or sexual behaviours, or things that had happened in their lives. But sometimes, the way we talked about the criteria could give that impression. So, by screening all donors for recent specific behaviours instead, versus who donors are as people, it helps to humanize the process and shows we understand their experiences. It also paves the way for further evolution.

Gender-diverse donors

Another outcome of the donor eligibility changes approved by Health Canada (see main story) is that trans, Two-Spirit and other gender-diverse donors will now be able to register in our system as male or female. (Unfortunately, until the system software can be updated, non-binary donors will have to register as a binary gender: i.e., male or female.) In addition, we will no longer ask trans donors whether they've had lower genital gender-affirming surgery.

"If we can eventually get to a place where the science and the testing are so good, anybody who wishes will be able to donate safely — that will be great. In the meantime, the feedback we've gotten from staff on their training has by and large been very, very positive. They're better equipped to understand donors' diverse and intersecting identities and sexual behaviours, and as a result they're more comfortable having those conversations. The investment our organization has made in this area is really important. It makes me proud to be a part of it."

Only the questions that matter

In the new screening criteria, all donors — regardless of their gender or sexual orientation — will be asked if they've had a new sexual partner or multiple sexual partners in the previous three months. If they answer "no" on both points, they'll continue with the rest of the standard screening questionnaire.

If they answer "yes" to either question, they'll be asked an additional one: whether they've had anal sex with any partner in the previous three months. If the donor answers "yes," they'll be required to wait three months from when they last had anal sex before donating. If they haven't had anal sex and they meet all other eligibility criteria, they'll be able to carry on with their donation.

This is the crucial advantage of sexual behaviour–based screening: asking donors about anal sex in the context of new or multiple recent partners will postpone donation for those who may have an increased chance of a newly acquired infection that could in turn be transmitted via transfusion.

Balancing safety and inclusion

Getting to this landmark change has been a long journey. The original donor eligibility criteria since 1977 stipulated a permanent deferral for any man who had sex with a man. This standard was adopted by Canadian Blood Services when our organization was founded in 1998. In 2013 the lifetime donation deferral for men who had sex with men was reduced, based on the available scientific evidence, to a five-year waiting period. In 2016, Health Canada approved our request to decrease the waiting period to one year, and in 2019 it was further compressed to three months.

"Each submission to Health Canada required immense effort by many people, as well as extensive community consultation," says Dr. Mindy Goldman, our medical director of donation policy and studies, who has been working to evolve the eligibility criteria for well over a decade. "When we got the waiting period down to three months, that was pretty much as short as we could go with existing testing technologies."

All donations to Canadian Blood Services are tested for an array of transfusion-transmissible infections. But there is a "window period" between when someone gets an infection and when testing can detect it. This is why we use donor screening questions: to postpone donation where there is a higher chance of an infection that may have been acquired too recently for current testing technology to flag it.

"Even with the waiting period reduced to three months," Dr. Goldman explains, "most sexually active gay, bisexual and other men who have sex with men still couldn't donate. So we knew any future change would have to take a different approach."

"This change represents an important fundamental shift in blood donor screening. It ends decades of practices targeting all sexually active men, as well as some trans people, who have sex with men."

Canadian Blood Services has a responsibility to patients, and to the health systems that deliver their care, to ensure the highest possible standards of safety in the blood system. Before we can make any change to donor eligibility criteria, we must have extremely strong evidence to satisfy ourselves — and Health Canada, our regulator — that any proposed change will not compromise those standards.

Until recently, the potential removal of the three-month deferral requirement had never been formally studied. Then in 2017, Health Canada funded a new research program through Canadian Blood Services and Héma-Québec that would provide the bedrock of evidence needed to make this further change to eligibility criteria.

Dr. Nathan Lachowsky — research director at the Community-Based Research Centre in Vancouver and associate professor at the University of Victoria's School of Public Health & Social Policy — is one of the researchers funded through this program. His work contributed significantly to our submission to Health Canada.

"This change represents an important fundamental shift in blood donor screening," Dr. Lachowsky says. "It ends decades of practices targeting all sexually active men, as well as some trans people, who have sex with men. The new gender-neutral approach was strongly supported by gay, bisexual, queer and Two-Spirit men and non-binary people who participated in our research."

The safety and feasibility of moving to sexual behaviour–based screening was backed by strong evidence from the 15 projects in the Health Canada–funded research program, as well as findings from the international research community. And it was bolstered by epidemiological data, as well as preliminary results from the U.K.'s similar change — plus extensive modelling conducted by Dr. Sheila O'Brien, our associate director of epidemiology and surveillance.

"The evidence made it clear," Dr. Goldman concludes, "that the new criteria will continue to postpone donation for people with a higher chance of a recent infection while making donation overall more inclusive."

"We already know more change is needed."

While this eligibility change represents a significant step, we still have considerable work ahead to build trust and repair relationships with 2SLGBTQIA+ communities — and especially, Dr. Lachowsky notes, among Black and trans communities.

As well, some community members have expressed reservations about the new criteria. There are concerns that the screening questions will disproportionately affect gay, bisexual and other men who have sex with men. The criteria also do not take into account an individual donor's safe sex practices. And there is work to be done in addressing the challenges faced by non-binary, some Two-Spirit and other gender-diverse donors who are not women or men.

"Because the new sexual behaviour questions will continue to screen out some donors who might in fact be able to safely donate, we already know more change is needed," Dr. Lachowsky says. "In the coming years, we'll continue advocating and working to reduce discrimination and improve accessibility to blood donation for our communities — while also, of course, maintaining safety for all those who rely on blood products."

Going forward, Canadian Blood Services is stepping up stakeholder engagement and public education efforts, and at the same time continuing to review and refine donation policies and practices. As our chief executive officer, Dr. Graham Sher, says in his message to this annual report (see page 85), repairing the harm caused by the previous criteria will take time, effort and insightful understanding of the various intersecting identities that have been most affected. We're committed to doing so and to welcoming as many donors as possible to join us in strengthening **Canada's Lifeline**.

Plasma sufficiency and the national formulary

Albert,
plasma donor

Brandon,
plasma recipient

Jean-Paul Bédard,
Vice-President, Plasma Operations

How we connect

> Canada's plasma sufficiency
> Growing demand for Ig products
> Donor engagement
> Approval process for new drugs
> Patients' perspectives
> Health system collaboration
> Science, ethics and economics
> Community building
> Diversity, equity and inclusion

Securing Canada's domestic supply of plasma is a key area of strategic focus for Canadian Blood Services. More specifically, we are responsible for ensuring that immunoglobulin (Ig) — the most widely-used plasma protein product — is readily available to patients across the country to treat various medical conditions. We collect as much plasma as we can within Canada for use in manufacturing Ig and other plasma protein products. And we meet the balance of demand by bulk-purchasing drugs on the global market, overseeing their procurement and distribution through the national formulary of plasma protein and related products we manage on behalf of Canada's health systems.

In 2019, provincial and territorial governments approved our proposal to boost domestic plasma sufficiency — the percentage of plasma that Canadian Blood Services collects in Canada to manufacture into Ig exclusively for patients in this country.

We're now putting this plan into action by building a network of dedicated plasma donor centres across the country. Work was underway on the first of these proof-of-concept sites when COVID-19 upended every aspect of Canadians' lives. But rather than putting our plasma initiative on hold, the pandemic in fact gave it renewed momentum as we saw the urgency of addressing global supply-chain disruptions, volatile drug pricing, shortages of medical supplies and other factors that put health care at risk. We asked Jean-Paul Bédard — vice-president, plasma operations — for a progress report.

Q: How has the rollout of plasma donor centres progressed over the past year?

Jean-Paul Bédard: Kelowna, British Columbia, opened in June 2021. Despite the continuing impact of COVID-19, it was on time and on budget. So, with the two sites opened during the previous year — in Sudbury, Ontario, and in Lethbridge, Alberta — we now had three plasma donor centres up and running. And we've just opened two more in Ontario — in Ottawa and Brampton — early in the 2022–2023 fiscal year. Developing those two sites has been a bit more challenging. The pandemic's effect on supply chains and the availability of workers has driven up costs and extended construction schedules. But as we build out the rest of our network, we'll be working to tighten up the timing again.

Q: What kind of results are you seeing from the first three sites?

A: When the provincial and territorial governments approved funding for our proof-of-concept centres, we established ranges for the plasma volume collected at each location. In the initial phase after opening, we committed to achieving 75 per cent of the maximum volume. By the end of the 2021–2022 fiscal year, all three sites were collecting, on average, 83 per cent of our target volume. When you consider the many challenges created by the pandemic, this is encouraging performance and it demonstrates that our model works. But we've still got a long way to go.

Q: How has the pandemic affected donor recruitment?

A: It's had a big impact, especially as COVID-19 variants have led to more widespread infection. As high as our collection levels have been, before the Omicron wave, they were tracking even higher, in some cases above 100 per cent of targets. A key part of our strategy was to build a strong community presence, engaging with potential donors at shopping malls, colleges and universities, the workplaces of large employers and so on. But when public health measures kept people at home, all our donor engagement had to become virtual, which requires a different approach to building relationships. The one benefit is that we've developed digital tools and techniques that we'll continue to use moving forward, even after the pandemic has finally receded. Because that's obviously how more and more people are comfortable connecting.

"When public health measures kept people at home, all our donor engagement had to become virtual, which requires a different approach to building relationships."

Another advantage for our new plasma collection network is that Canadian Blood Services has an integrated blood and plasma system, so we have a solid base of existing blood donors. In Sudbury, Lethbridge and Kelowna, we transitioned from blood to plasma donor centres, and our original goal was to transition 30 per cent of existing donors to plasma donation. We've done much better than that, getting as high as 60 per cent. This is great, but it's not the total answer. Now we need to focus even more on recruiting new plasma donors — especially as we move into bigger places like Ottawa and Brampton.

Q: How will the strategy change as you move into these larger communities?

A: First, there's the question of scale. With a larger population, you obviously have more potential donors, but you also need more resources and channels to reach them. People don't come together in a single meeting place or around key events the way they tend to do in smaller communities. Also, these cities are incredibly diverse and that means developing specific strategies to reach distinct communities. So we're working on many ways to build connections — again, with a lot of the emphasis on digital even as in-person gatherings resume.

Another important consideration is that these larger cities also have blood donor centres, and while that donor base should once again be a good source of plasma donations, we don't want to be competing against ourselves. The broader strategy of Canadian Blood Services is to encourage all ways of giving across the various dimensions of our role as **Canada's Lifeline**. You can donate blood, plasma or cord blood; you can register to be a stem cell, organ or tissue donor; and you can

also support us as a volunteer or by making a financial contribution. This is the message we've begun communicating via advertising and social media around the theme "Make All The Difference." And we're leveraging that theme in our recruitment, highlighting the plasma donor centres as one more way to give.

Q: The donor centre network is part of a larger effort to increase Canada's plasma sufficiency. What other initiatives are underway?

A: Right now, the total volume of plasma we collect for use in Ig products only meets about 15 per cent of Canadian patients' needs. Over the next couple of years, as we build out our initial network of 11 plasma donor centres — subject to funding approvals from the federal, provincial and territorial governments — we expect that domestic plasma sufficiency will rise to 25 per cent. That's a big step in the right direction. But when we developed the national plasma strategy, we determined that Canada's sufficiency must reach 50 per cent to keep pace with growing demand and meet the critical needs of Ig patients. So we need to explore additional avenues.

That's why Canadian Blood Services is in discussions with governments on how, as a country, we should approach the commercial plasma industry to achieve 50 per cent sufficiency as quickly as possible. We're also discussing how to mitigate any impact on national blood system operations and our mandate to meet the needs of hospitals and patients in Canada. Our discussions are informed by a lot of in-depth research and consultation — including the findings of the expert panel report on plasma sufficiency submitted to Health Canada in 2018, as well as the recommendations of the Auditor General of Ontario and the province's Standing Committee on Public Accounts.

In short, there's an urgent national conversation underway on plasma, and Canadian Blood Services — with our expertise, infrastructure and 20-plus years as the trusted steward of Canada's transfusion and transplantation system — is deeply committed to moving it forward.*

*This report was written in the summer of 2022, prior to the announcement of an agreement between Canadian Blood Services and commercial plasma operator Grifols. For more information on this agreement, please visit our website.

Feature

More ways to give

With the opening of our dedicated plasma donor centre in Brampton, Ontario, our community-based plasma and blood teams have found new ways to work together more effectively — and to make **Canada's Lifeline** even more inclusive.

How we connect

> Canada's plasma sufficiency
> Growing demand for Ig products
> Donor engagement
> Community building
> Diversity, equity and inclusion
> Multiple ways to give
> Public awareness and education

In May 2022 our new Canadian Blood Services plasma donor centre opened its doors in Brampton, Ontario — a fast-growing city of more than 660,000 just west of Toronto. It was the fourth such facility launched in the past two years as we continue rolling out our national collection network to address Canada's urgent need to increase domestic plasma sufficiency (see the Q&A on page 25).

But this time, there was a crucial difference. Where the first three locations replaced existing blood donor centres in their communities, the new Brampton plasma centre was just 10 km away from our blood

donation site in neighbouring Mississauga. So we couldn't simply start booking appointments by attracting former blood donors to the new centre. If we only conveyed the benefits of plasma donation to our established donor base, we'd in effect be competing with ourselves — to no one's advantage.

Lilet Raffiñan, a 17-year Canadian Blood Services employee, joined the Brampton plasma team as business development manager a few months before the centre opened. Having transitioned from a similar role in whole blood collections, Lilet quickly understood that the answer was not competition but teamwork:
"I say to everyone, 'We can work together. It can happen!' "

In her previous role, Lilet had built strong relationships with many community volunteers, including one who is now a colleague. Simran Dulay was "just a teen," Lilet recalls, when he started volunteering at his high school, recruiting fellow students to donate blood. Then, in November 2021, Simran joined Canadian Blood Services full-time as a community development manager, becoming Lilet's counterpart in Mississauga just as the new Brampton plasma donor centre was ramping up its recruitment drive.

"We'd worked together for quite a while," Lilet says, "so we already knew a lot of techniques and strategies for reaching out to communities and groups in this area." Instead of treating each other as rivals, the pair decided to combine their efforts.

Cross-selling donation options

As the pandemic continued to make in-person events impossible, Lilet and Simran knew their first outreach initiatives would have to be virtual. In joint video presentations, they informed people of the upcoming opportunity to donate plasma and, at the same time, they encouraged blood donation bookings in Mississauga.

Soon they were filling appointments via corporate and other group donations spanning both sites — even before the plasma donor centre had opened. Online participants, after scanning a QR code created for the event, could choose to donate blood or plasma according to their preferences.

When planning such events, our Partners for Life teams can set two targets: one for blood donation appointments and another for plasma. The teams have designated "champions" who are supported by Canadian Blood Services employees as they track bookings and adjust recruitment strategy to reach their respective goals — and ultimately meet the needs of patients.

Using this "cross-selling" approach, Lilet and Simran have also maximized the impact of their solo outreach efforts. Simran even donated plasma himself before the Brampton centre officially opened, so he could share the experience with prospective donors.

"By working together," Simran says, "we can inform more people about both types of donation, which is obviously the end goal."

Matching donors to needs

Lilet was already adept at cross-selling, thanks to her many years of promoting Canadian Blood Services Stem Cell Registry. She continues to highlight this and other dimensions of **Canada's Lifeline** in a role that challenges her to always place plasma goals in their larger context, considering the overall needs of the blood system. So when Lilet meets prospective plasma donors with O-negative blood, for example, she steers them toward blood donation instead, knowing the vital importance of these rare red cells in emergency medical care.

"By working together, we can inform more people about both types of donation, which is obviously the end goal."

At the same time, the Brampton community is fulfilling its strong potential for plasma donation, as forecast by Canadian Blood Services researchers. One key demographic factor is that 36 per cent of the population is of South Asian origin, so community members make regular and often extended trips to the Indian subcontinent. Because of the high prevalence of malaria in that region, such travellers are ineligible to donate blood for months or even years after their return. Malaria risk, however, is not a barrier to donating plasma at a dedicated centre like the one in Brampton. When the "source" plasma collected at these sites is subsequently used to manufacture plasma protein products, these essential medications undergo a sophisticated pathogen inactivation process (for more on how we're integrating this process at Canadian Blood Services, see the Quick Link on page 71).

Mixing it up a little

While many donors whose travel patterns present risks can choose to donate plasma exclusively, others may opt to mix it up according to what's needed — or what suits them best. "For instance, someone may donate blood before travelling," Simran explains, "and then when they come back, they can donate plasma."

In the weeks before the Brampton centre opened, our centre in Mississauga offered brochures on plasma donation to prospective blood donors who'd been deferred because of their travel history.

Lilet and Simran also share the plasma eligibility criteria widely in community engagement efforts — particularly with international students at post-secondary schools, many of whom are similarly constrained from donating blood because of widespread malaria in their home countries.

"They really want to contribute," Simran says. "In the past, when we'd tell them they couldn't, they'd be so disheartened, we would really feel for them. Now they're happy to have an avenue to help patients."

By connecting with this untapped pool of donors and many others across the region, the new Brampton centre is helping address growing demand for plasma while adapting **Canada's Lifeline** to a community whose remarkable diversity reflects that of the entire country. At the same time, our community-based teams, by working nimbly together, are making the selfless act of giving more flexible and inclusive than ever. As Lilet sums it up: "We can offer everyone a way to donate that they'll feel good about."

Feature

Seeking approval

A father advocates for a new drug that could help his children with hemophilia lead freer, happier lives. At the same time, we initiate the rigorous new review process required for a drug to be included in our national formulary, the official list of medications available for prescription by physicians. And these parallel stories meet in a gratifying outcome — for the children and patients like them across Canada.

How we connect

> Approval process for new drugs
> Patients' perspectives
> Growing demand for Ig products
> Canada's plasma sufficiency
> Health system collaboration
> Diversity, equity and inclusion
> Research and innovation
> Science, ethics and economics

Part I: "Dad, I'm a whole new man."

Ten-year-old Declan McNeely loves soccer, video games and brain teasers. His brother, Tristan, aged seven, likes to ride his motorized four-wheeler near their Prince Edward Island home, picking up litter and doing odd jobs for neighbours. But until recently, childhood has been anything but carefree for the boys and their family.

Declan was just eight months old when he suddenly developed a large bruise. His worried parents, Jenn and Donovan McNeely, took him to the hospital and received a life-changing diagnosis: Declan

had hemophilia A, a severe form of the rare hereditary disorder that prevents blood from clotting properly. When Tristan was born three years later, doctors found that he too had hemophilia A — and, like his brother, would require treatment for the rest of his life. (The boys' younger sister has a milder form of the disorder.)

Children with hemophilia can't receive medication in their first year, as they often have negative reactions or develop "inhibitors," immune system responses that make medications ineffective later in life. At a year old, they begin regular prophylaxis — preventative intravenous treatments usually administered three times a week.

To avoid constant hospital visits, Jenn and Donovan decided to deliver the medication themselves at home. Hoping to avoid injections, they arranged for each boy to have a port-a-cath, a small medical appliance inserted under the skin and connected by a catheter to a vein. Unfortunately, the devices proved to be problematic, and both Tristan and Declan became increasingly anxious over their treatments.

Their parents decided to have the port-a-caths removed and switch to direct intravenous injections. But the boys' anxiety only grew worse, amplified by a deep fear of needles — to the point where Tristan had to be taken to the hospital and sedated for every shot. "We could tell it was consuming his life," Donovan recalls. "Every moment, he was worrying about his next treatment. He had a lot of trauma."

The constant stress was affecting the entire family, with no solution in sight. And then an unexpected piece of news brought hope. At a meeting of the local chapter of the Canadian Hemophilia Society, a pharmaceutical company representative described the promising results among hemophilia A patients taking a new drug called Hemlibra®.

"I'm so much happier now."

The key benefit of Hemlibra® (the trade name for the drug emicizumab) is ease of treatment. Shots are subcutaneous, requiring just a quick pinch lasting a few seconds instead of an intravenous injection that can take 10 to 15 minutes to administer. Equally welcome news, especially for young patients, is the frequency of treatment — shots are every two to three weeks rather than every other day.

Excited to learn of a drug that could make his sons' lives so much easier, Donovan researched Hemlibra® further and found it was already being widely prescribed in several countries, including the U.S. Joining other concerned members of the Canadian Hemophilia Society, he began advocating for approval of the drug in Canada. He called ministers of health, wrote to elected officials, signed petitions, reached out via social media, shared his family's plight with news outlets. In short, Donovan pursued every avenue he could, determined to help secure this welcome alternative for all those who had to endure the same traumatic treatment regimen as his boys.

In October 2021, Hemlibra® was approved for inclusion (or, more accurately, for expanded use — see Part II) in the national formulary of plasma protein and related products operated by Canadian Blood Services. The McNeelys welcomed the good news, although Donovan remains frustrated by a process that he feels is overly complicated and too slow. What helps ease that frustration, however, is seeing his sons' lives transformed. Leaving constant anxiety behind, the family enjoys a more balanced, active life in which the boys are far less constrained by their hemophilia.

"I'm so much happier now with Hemlibra®," Declan says. "I really like that I don't have to do it three times a week. And it's better because I feel like I can do more stuff."

As for Tristan — who was able to transition to the new drug even sooner, thanks to a "compassionate use" allowance for patients in special circumstances — the positive change in his mental health has been a huge relief for the whole family. As the seven-year-old happily declared to his father: "Dad, I'm a whole new man."

"Like all such submissions, it prompted a comprehensive review of the drug's efficacy, potential risks and long-term value for patients and the health system."

Part II: "Everyone worked together to meet patients' needs."

The process by which a new drug is considered for inclusion in the national formulary is initiated by the pharmaceutical company. In the case of Hemlibra®, preliminary approval had been granted for use with a very small group of Canadian hemophilia patients who'd developed inhibitors to other medications. In 2020, Roche, the manufacturer of Hemlibra®, formally requested its approval for a wider range of patients. Like all such submissions, it prompted a comprehensive review of the drug's efficacy, potential risks and long-term value for patients and the health system.

Hemlibra® was the first drug to be reviewed under a new product selection process developed by Canadian Blood Services in partnership with the Canadian Agency for Drugs and Technologies in Health (CADTH). The complex process is closely aligned with the one used to review all other drugs in Canada. It requires the assessment of highly technical scientific and clinical information, as well as nuanced points of view from diverse stakeholders. The various review stages build on our organizations' shared commitment to objective, transparent, evidence-informed evaluation. The main steps in the current (interim) process can be simplified as follows:

Step 1: Provincial and Territorial ministries of health first agree on whether a product meets the requirements for conducting the product selection process by Canadian Blood Services and CADTH. (If not, the product undergoes a separate review by CADTH and Canada's public drug programs.)

Step 2: CADTH's Health Technology Assessment is based on intensive analysis by a team of experts in pharmaceutical review, who consider input from patient groups and clinicians in their investigation. The assessment is also informed by members of the Canadian Plasma Protein Product Expert Committee with expertise in plasma protein and related products. Canadian Blood Services, along with public drug plans, has opportunities to review and respond to the work-in-progress — as does the manufacturer.

Key questions: *Is this drug effective from a medical-scientific perspective? How well does it meet patients' needs? Does it represent good value for the investment involved?*

Step 3: CADTH makes one of three possible recommendations:

- The drug should be offered through the formulary with full reimbursement.
- The drug should be approved but only reimbursed under certain conditions.
- The drug should not be approved for reimbursement through the formulary.

Step 4: Canadian Blood Services, formulary manager on behalf of provincial and territorial governments, reviews CADTH's findings and their potential impact on patients, care providers, health ministries and other stakeholders. Review components include:

- stakeholder engagement
- demand forecasting
- optimal use strategy
- negotiations with the manufacturer
- budget impact assessment
- post-approval monitoring

Step 5: The full assessment is submitted to provincial and territorial ministries of health for a final decision.

The new product selection process requires just under a year — from the manufacturer's original submission to the delivery of a final assessment to governments. For Hemlibra®, the process took 11 months in total: six months to the point where CADTH made its recommendations, and another five for the review by Canadian Blood Services and subsequent submissions and approvals. This can understandably feel like a long time for patients and their families as they anxiously await word on a possible life-changing treatment. But considering the vital goals that the new process is designed to achieve — including more efficient alignment of procedures, guidelines and timelines in the technical assessment phase, along with greater collaboration, information sharing and transparency among all stakeholders — it marks a significant improvement over past approaches. It's also a faster process compared to similar assessments conducted by public drug plans.

"Patients and physicians who've been alerted to potential new treatments naturally want the process to go quickly," says Dr. Sylvain Grenier, director of our plasma protein and related products program. "But they also expect us to be meticulous and highly consultative as we assess safety and efficacy. Our redesigned process is comparable to those of public drug plans. It is in fact very streamlined and offers additional opportunities for patients and clinicians to provide feedback. Moving forward, we'll continue to ensure it meets the needs of patients, clinicians and the overall system, looking for further efficiencies while maintaining our exacting standards."

"Patients and physicians who've been alerted to potential new treatments naturally want the process to go quickly. But they also expect us to be meticulous and highly consultative as we assess safety and efficacy."

Another critical factor that the assessment must weigh is the cost of providing a new drug to all patients who could benefit from it. Even for experienced evaluators armed with robust data, gauging future usage can be difficult. After Hemlibra® received approval, demand initially rose much faster than projected, causing concern among health system leaders that the added expense could strain already tight budgets.

"It was really challenging," Dr. Grenier recalls. "We'd done our due diligence, looking at usage of Hemlibra® in other countries and working with the Association of Hemophilia Clinic Directors of Canada (AHCDC) to develop detailed usage estimates. But then, as the drug became available, we found pent-up demand nationwide that no one around the table had foreseen — perhaps in part because Canada's hemophilia community had heard so much about Hemlibra® from countries where it was already approved."

Responding quickly, the formulary team began meeting every week with the AHCDC, the Canadian Hemophilia Society, Roche and various providers along the supply chain. By coordinating efforts on a range of solutions, including staggered start dates for patients transitioning to the new drug, they were able to address the initial spike in demand and gradually stabilize supply. "Everyone worked together to meet patients' needs," Dr. Grenier says, "and ultimately no patient who could benefit from Hemlibra® went without."

Another important dimension of the revamped selection process is the wider lens applied to return on investment. "We don't just calculate the unit cost of a drug or the time required for a health professional to administer it," Dr. Grenier explains. "We look at other factors in gauging its long-term value." A drug like Hemlibra®, for instance, requires fewer hospital visits, or none at all if it's administered at home. Then there are harder-to-measure variables like patients' protection from related medical issues or their reduced reliance on health care in the future — in both cases, reducing costs to the system.

While the evidence for such advantages remains largely anecdotal, we expect our approach to cost-benefit analysis will grow even more holistic as we share insights with similar organizations around the globe. In the meantime, the Hemlibra® approval shows the effectiveness of our redesigned process in helping governments reach decisions that balance the priorities of patients, care providers and the overall health system.

"There are always ways to make a good solution even better," Dr. Grenier concludes. "But we believe the product selection process we've developed in collaboration with key stakeholders has made drug approvals more transparent, timely and cost-effective — to the benefit of everyone affected by these complex and often difficult decisions."

Organ and tissue donation and transplantation

Shak,
kidney donor

Gurjit,
kidney recipient

Catherine Butler,
Director, Organ and Tissue Donation and Transplantation

How we connect

> Donor engagement
> Registrant recruitment
> Patients' perspectives
> Health system collaboration
> Diversity, equity and inclusion
> Community building
> Organizational excellence

In the past year, successive waves of the COVID-19 pandemic continued to disrupt all areas of Canadian health care, including organ and tissue donation and transplantation (OTDT). Our Organs and Tissues for Life team once again responded with creative solutions and a lot of hard work to support the national system in ensuring that as many Canadian patients as possible received life-saving organ transplants. Many of the team's innovations have been integrated into ongoing efforts to mature the various OTDT programs we operate nationwide — from interprovincial organ sharing to consolidated data collection and reporting — and to improve overall system performance. At the beginning of 2021–2022, Catherine Butler joined Canadian Blood Services as our new director of OTDT. We asked her to reflect on a busy first year and how she views the path forward.

Q: You have wide-ranging leadership experience in many areas of health care. How has that prepared you for this new role?

Catherine Butler: My career path hasn't been a traditional one, though it links together many traditional elements of health care. I started out in nursing, then spent several years in leadership roles with the Victorian Order of Nurses, pursuing my passion for public health and community-based care. That work was very policy-oriented and I wanted to gain more experience in operations. So I moved to an executive role with a large health authority in the Vancouver area, managing a broad portfolio of services in one of Canada's most diverse communities. There was a similar community focus to my next role, overseeing the home care system in the Ottawa region.

When the opportunity arose to lead the OTDT team at Canadian Blood Services, I saw a chance to apply all I'd learned to help advance a vitally important area of health care at the national level. Beyond my experience in planning and leading effective service delivery, I think there are two aspects of my background that help me in this new role. First, my belief in the value of collaboration, both within a team and among organizations that share the same goals but have priorities that may not always align. And second, my experience with the day-to-day realities of meeting patients' needs, whether in hospitals, long-term care facilities or patients' own homes. OTDT involves cutting-edge medicine and incredibly complex logistics — but success still comes down to how well we provide quality care to transplant patients and to the generous donors who support them.

Q: What has surprised you in this first year?

A: Even though I'd seen the impact of Canadian Blood Services in other areas of the health system, I'd underestimated the scope and depth of services we provide. And I hadn't fully appreciated how it all fits together nationally as **Canada's Lifeline**. I've also been inspired to see how this organization's strong leadership is grounded in the values and commitment of everyone who works here.

As for my specific role, I'm more aware than ever of the complexities of OTDT, and the level of expertise and skill required to save and transform lives — again, through programs that connect stakeholders across Canada. The simple truth of OTDT is that demand for organs and tissues far exceeds supply, so we have a big job to do in helping make transplants happen for all who need them. We can play a pivotal role by bringing together various components of the system in a coordinated way to help improve outcomes for patients and donors, and to raise overall donation rates.

Quick Link

"I feel so privileged that I was able to do this."

From the day her infant daughter, Elena, was diagnosed with chronic kidney disease, Jennifer Ciavaglia knew the little girl would eventually require a transplant. A member of the Canadian Blood Services public affairs team since 2009, Jennifer had seen first-hand the vital role that organ donation plays in saving patients' lives. But when her daughter's need for a kidney became acute at age 17, the search for a donor ended up even closer to home. Jennifer proved to be a match, and in February 2021 her left kidney was successfully transplanted into Elena.

"I feel so privileged that I was able to do this for my daughter," Jennifer says. "As her mom, I found it stressful, but overall, my experience was really positive despite the pandemic." She was able to take advantage of the living donation leave policy at Canadian Blood Services, which supports employees who donate organs with up to 12 weeks of paid time off. "It allowed me to be Elena's donor and her mother, without worrying about work." And knowing that more than 250 Canadians die each year on the transplant waitlist, Jennifer is deeply thankful for her daughter's new lease on life. "She's looking and feeling hopeful. I see good things in her future."

Q: How do OTDT efforts in individual jurisdictions benefit from the national scope of Canadian Blood Services?

A: Interprovincial organ sharing is one area where we make a big contribution. There's a lot of value in being able to search easily across provincial and territorial boundaries to find the right organ for a transplant candidate. Similarly, we connect donors and recipients across the country in our kidney-paired donation program, and in finding organs for patients with medically complex needs that make them harder to match.

Another area where we have deep experience is developing clinical decision-making tools and leading practices that have value for all jurisdictions. When we collaborate with our partners to create a standard-based tool or practice that every clinician in Canada can use, we get a lot of gratitude across the system. It means jurisdictions with limited resources can still produce great outcomes — and patients aren't disadvantaged by where they happen to live.

Q: How does the patient perspective inform OTDT decision-making?

A: As we work to strengthen relationships across the system, we're focusing especially on patients. This is something many health care organizations haven't done very well. And we recognize there's a lot of room for growth in the OTDT area, ensuring we're bringing the patient perspective from donors, transplant recipients and their families

Let's say we're working on a guideline designed to positively impact the outcome of a transplant process. We could invest a lot of time and effort into making something that's fantastic from a clinical perspective but, on a practical level, isn't what patients and their families prioritize or even need. That will make it hard to implement. We may get clinicians on board, but not the people who matter most in the process.

Similarly, if we're developing a protocol around donation, we need to think about the families who ultimately make the decision about donating a loved one's organs. This is an emotionally heightened, traumatic event. How physicians and counsellors work with a family to make that decision — the conversations that need to happen, the supports that must be in place — don't always get captured if we're too focused on the clinical process.

Another key dimension of our role in OTDT is public awareness. We support and supplement provincial campaigns, and we take a national approach when it makes sense from the provinces' perspectives. If we don't listen to patient and family voices, how will we know what will inspire people to embrace donation as the right choice for them? We work closely with education coordinators in a range of organizations, but there's a real opportunity to engage more deeply with patients and patient organizations to ensure our campaigns have maximum impact.

Most of those campaigns have been aimed at living donors, or potential deceased donors and their families. But at the other end of the spectrum are transplant patients, who are on their own health journeys with their families, hoping to live longer and enjoy better quality of life. We need to develop messaging for and about this group too, as part of a larger effort to be more open and inclusive in all areas of stakeholder engagement.

Quick Link

Game Seven Media

"I can't let their loved one's sacrifice go to waste."

Dylan Kalambay was 16 years old when he developed a nagging cough. Soon he was experiencing persistent shortness of breath and his pulse would shoot up to 200 beats per minute. But even then, it was hard to fathom that Dylan, a healthy teenager who played basketball for Team Canada, could actually have a heart problem.

Further testing, though, revealed that Dylan was suffering from dilated cardiomyopathy, where one or more chambers of the heart become enlarged and the heart's walls are weakened. Not only were his dreams of a basketball scholarship shattered — he needed a heart transplant simply to live.

Dylan processed his diagnosis as most teenagers would, finding his relatively carefree life suddenly under threat. By turns angry and depressed, he was further devastated to learn that it's not unusual for a transplant recipient to wait up to a year for a matching donor. Fortunately for Dylan — though tragically for the deceased donor's family — a match was found in just four months' time.

"It's so sad that they had to lose someone in order for me to live," says Dylan, who has renewed his hopes of earning a division 1 scholarship and becoming the first heart transplant recipient ever to do so. "I now work twice as hard because I was given a second chance. I can't let their loved one's sacrifice go to waste. I want to show them that the person they lost is appreciated. And that being an organ donor is one of the best things you can possibly do."

Q: How does more inclusive engagement fit into the organization's overall strategy around diversity, equity and inclusion (DEI)?

A: This is a challenge we face in every area of health care. It's evident that the system doesn't deliver equitable outcomes for all communities — not by design, but because of a lack of awareness of social impacts, and a lack of intentional work from health care organizations to address them. There's also insufficient data about health outcomes for various populations. But what data does exist tells us there's a lot of work to do.

All this is equally true in the world of OTDT. We need to build stronger relationships with racialized communities, with Indigenous people and with other equity-deserving groups. This is a big piece of work we're mapping out in partnership with our chief diversity officer, Dr. Yasmin Razack, and her team (see page 15) to ensure that our engagement plans are aligned and in lockstep with the organization's strategy.

We've also been meeting with other organizations to talk about DEI efforts. Yasmin joined one of our knowledge-exchange sessions with over 75 OTDT professionals from across Canada, all of whom brought their own DEI work to share. They were interested in the initiatives we're pursuing and they saw how they could connect the same dots in their own organizations. Among the topics covered were data collection and reporting; strengthening collaboration and partnerships; better understanding representation on committees and projects and in society memberships; improving representation on speaker panels — and much more. Overall, I'm hopeful and impressed to see partners across the system making this a priority. We all know we can do better.

Q: When OTDT spans so many organizations and jurisdictions, how does everyone ensure their efforts are aligned and moving in the same direction?

A: It can be challenging because there's no one body that determines what the priorities will be and how each organization should respond to them. Thankfully, Health Canada has spearheaded the Organ Donation and Transplantation Collaborative since 2018. All the key stakeholders are actively involved, including provincial and territorial governments, transplant programs, patient groups and our team. Collectively, we're looking at how we can work together more effectively, ensuring decision-makers are agreed on the critical priorities. Part of that work in progress is aimed at clarifying and optimizing the role of Canadian Blood Services within a governance structure supported by all jurisdictions.

In the meantime, we're focused on strengthening relationships with stakeholders across the OTDT system to better leverage everyone's collective expertise. And as our team develops and enhances the services we provide, I know we'll continue to grow and learn, inspired by the promise and values of this organization.

Feature

Saving the day

A team of mighty animated characters is heading into Canadian schools, backed by a network of human champions, to help children learn about the benefits of organ donation — as just one aspect of our newly launched Canadian Blood Services education portal.

How we connect

> Donor engagement
> Public awareness and education
> Registrant recruitment
> Health system collaboration
> Diversity, equity and inclusion
> Community building

Organ donation is not a familiar topic for most young children. And yet the earlier they start learning and talking about it, the more likely they are to support this vital area of health care throughout their lives. This was the challenge that preoccupied Roydon Turner, a U.K.-based director, writer and producer — until it inspired an imaginative solution that has since been embraced by kids, parents and teachers around the world. Turner created the Orgamites, a team of nine animated characters (representing the human organs most often donated to

transplant patients) whose life-saving superpower is the ability to spark conversations between adults and kids about all the good that comes from donating an organ to another human being.

And now the Orgamites have come to Canada, thanks to a licensing agreement that enables Canadian Blood Services to adapt the original concept and multimedia content, in both English and French, for use in classrooms across the country.

"The more people know about organ donation, and the sooner they know it, the better equipped they are to make decisions if the opportunity to donate presents itself," explains Jenny Ryan, manager of public education and awareness with our organs and tissues team. "It's really important to reach as many people as possible with good information — and to dispel myths."

The Orgamites are just one element of our recently launched Canadian Blood Services education portal, a comprehensive collection of resources for parents, caregivers, teachers and students in kindergarten through Grade 12. Other materials that can be accessed through the portal include *One Life...Many Gifts*, developed for high school students by renowned transplant pioneer Dr. William Wall, as well as resources from Lucie Dumont's *Chain of Life* program, originally developed for ESL students in Quebec.

"Our aim," Jenny says, "is to help teachers bring the topic of organ donation to the classroom in compelling ways that also fit curriculum expectations, whether it's biology or civics or language arts."

The portal is the result of years of collaboration across Canada's organ and tissue donation and transplantation (OTDT) community. Canadian Blood Services has long worked to facilitate interprovincial collaboration in sharing not only organs and tissues for transplant, but also knowledge to fuel education and awareness. Then, in June 2019, funding from Health Canada enabled us to bring together many OTDT stakeholders in person for the first time. We emerged from that Toronto meeting with a commitment to focus particularly on enhancing youth education — a cause that was already gaining momentum nationally, thanks in part to the efforts of one remarkable Alberta family.

"I didn't have the resources."

In early 2019, a teacher in the southern Alberta community of Lethbridge found herself searching in vain for materials to help teach her Grade 2 students about the importance of organ donation. That teacher was Bernadine Boulet, whose son, Logan, was one of 16 people who'd died the previous April following the tragic bus crash involving the Humboldt Broncos hockey team. The Boulet family's decision to proceed with organ donation — in accordance with Logan's expressed wishes — saved lives and inspired nearly 150,000 Canadians to register as organ donors in the days and weeks that followed.

The family continued to inspire people across the country, announcing plans for the first-ever Green Shirt Day in April 2019 to create an annual rallying point for organ donor awareness and registration. In her own classroom, however, Bernadine Boulet felt ill equipped to explore the topic of organ donation with her students: "I had a voice, but I didn't have the resources."

"Finding enthusiastic support across the OTDT community, we moved quickly to create an accessible online hub for sharing the wealth of materials we'd gathered."

Bernadine reached out to Canadian Blood Services and soon was working with our OTDT team to find or develop materials that would fill the learning gap she'd identified. When we discovered the Orgamites online, everyone immediately recognized a winner. Reaching out to the program's creator in the U.K., we secured the rights to begin using it in Canada.

Another key catalyst for our youth education initiative was at a critical care conference in mid-2019 that connected our team with Dr. Meagan Mahoney, a pediatric intensive care physician at Alberta Children's Hospital in Calgary. Dr. Mahoney had a keen interest in raising awareness among young people, based on her many years of helping families navigate difficult decisions about organ donation. She quickly became another go-to expert for the growing initiative.

At this point, the Canadian Blood Services team was not envisioning a comprehensive online portal. But finding enthusiastic support across the OTDT community — and faced with delays on other projects because of the pandemic — we moved quickly to create an accessible online hub for sharing the wealth of materials we'd gathered. The portal was launched in September 2021, just as a new school year was beginning.

A culture of organ donation

Excitement over the new resource spread quickly, especially in the Boulet family's home province of Alberta. And when details of the Orgamites program were shared with the Canadian Transplant Association, it immediately hit home for the association's Alberta director, Jan Clemis, whose own family has been deeply touched by organ donation.

In 2018, at age 60, Jan had received a kidney from a living donor — her adult son, Blair — after polycystic kidney disease caused her own kidneys to fail. Her late husband, Kelly, had also benefitted from a transplant, in his case receiving lungs from a deceased donor that helped to extend his life. "The three extra years that we got with Kelly were full," Jan recalls. "Two more weddings, two more grandchildren and lots of family suppers. That time was very, very well spent and really treasured by everybody in the family."

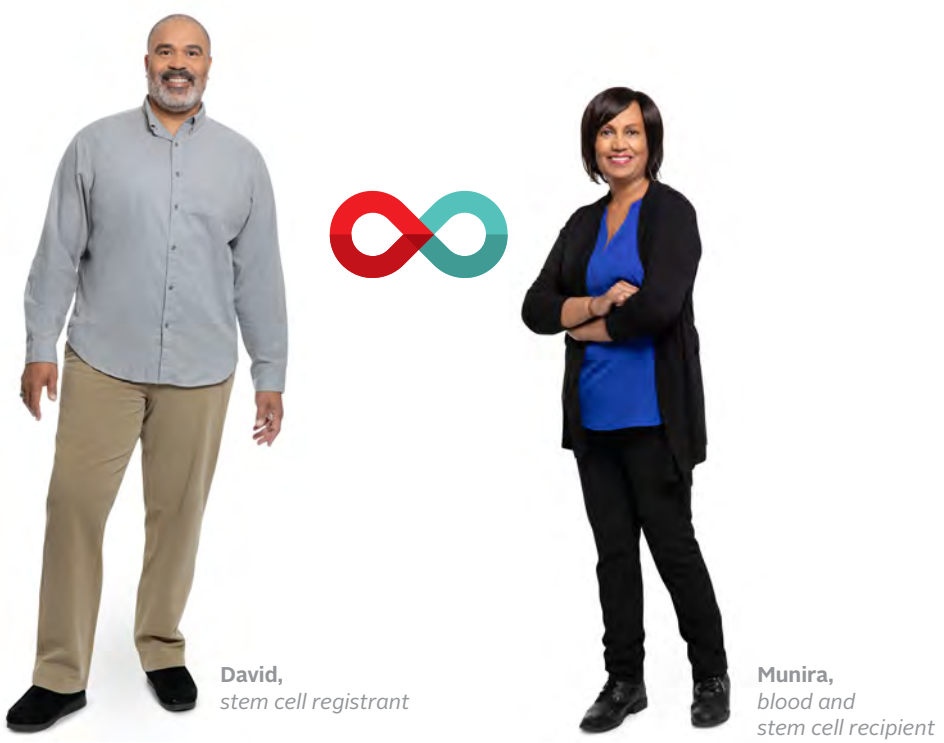
A retired teacher who spent decades in the classroom, Jan was the ideal champion for a program aimed at bringing the topic of organ donation into elementary schools. "I immediately thought, How do we disseminate this great information?" The answer, she quickly realized, was the regular teachers' conventions that bring together instructors and administrators from across Alberta to further their professional development. Jan asked Jenny Ryan for help making it happen — "and then," Jan says, "it was just magic."

Jan and our team delivered presentations to four teachers' conventions that winter, joined by Bernadine Boulet, Dr. Meagan Mahoney and a third expert, Jenny Wichart, a clinical pharmacist at Alberta Children's Hospital who works with young patients waiting for kidney transplants. With their diverse expertise and powerful personal stories, the team members made a compelling case for teachers to introduce discussions of organ donation into their classrooms.

By the fourth annual Green Shirt Day, in April 2022, the group's efforts were already bearing fruit, as the Orgamites were welcomed by Alberta teachers — among them Jan Clemis's daughter Bonnie, who teaches Grade 4 in the farming community of Taber. Bonnie and her twin sister, Carli, both in their 30s, have inherited the same kidney disease that challenged their mother and they live with the knowledge that they too will likely need kidney donors later in their lives.

A powerful source of hope for the sisters, and indeed for all the potential patients of tomorrow, is knowing that a new generation will grow up better informed about organ donation at school (in many cases, thanks to the Orgamites) and better prepared to continue the discussion with their families at home. “This shouldn’t be a taboo subject that we have to avoid because of the connection to death,” Jan says. “We have to work toward a culture of organ donation, where it’s seen as the right thing to do — and where we talk about it and are all aware of the benefits.”

Stem cells and cord blood



David,
stem cell registrant

Munira,
blood and stem cell recipient

Dr. Tanya Petraszko,
Senior Medical Director, Medical Laboratory and Stem Cell Services

How we connect

> Registrant recruiting
> Donor engagement
> Patients' perspectives
> Diversity, equity and inclusion
> Analytics and human insights
> Health system collaboration
> Research and innovation

In 2021–2022 our ongoing response to the pandemic continued to be a catalyst for change in the Stem Cells for Life program, which includes Canadian Blood Services Stem Cell Registry, our cord blood bank and our collaborative efforts with organizations around the globe that match stem cell donors with patients in need. The stem cell registry, like those of our international counterparts, has been especially challenged by the suspension of in-person recruiting events. This has accelerated the transition of our recruitment efforts to digital channels — within a larger quest for more nimble and creative ways to address the needs of patients, donors and registrants, as well as our own teams. Dr. Tanya Petraszko — senior medical director, medical laboratory and stem cell services — provides her perspective on the year's progress.

Q: As the pandemic has carried on through a second year, what further impacts has it had on the stem cells program?

Dr. Tanya Petraszko: One area where we've continued to be agile is cryopreservation of stem cell products collected by our transplant partners. This is a process in which stem cells are frozen to extend their effective storage life. When a donor and a recipient are matched, they're often in different parts of the world. And once stem cells are collected, transplant centres prefer to ship them while they're fresh, as much of the medical community feels this produces better patient outcomes.

However, when the pandemic started causing serious shipping disruptions, we could no longer count on fresh shipments moving quickly enough. In a situation where a medical team has begun pre-transplant "conditioning" — when a patient undergoes chemo or radiation therapy to prepare for an imminent stem cell transplant — a delayed shipment can put the patient in jeopardy. So we began cryopreserving stem cells prior to shipping, handling this process on behalf of Canadian transplant centres that didn't have the ability to do it themselves.

As time went on, our team became quite adept at working around the disruptions to get these frozen products where they needed to be — navigating border closures, negotiating travel exemptions for stem cell couriers and so on. The transplant centres adapted as well. Then, as things somewhat returned to normal, we went back to shipping mainly fresh cells — until we were hit by the Omicron wave, which brought a new set of challenges.

Q: How did this more infectious variant of COVID-19 affect stem cell transplants?

A: There was an incident in December 2021 that put everyone on alert. We had a transplant recipient overseas who'd started conditioning *before* stem cells were collected from the donor in Canada — standard procedure before the pandemic, when we would anticipate transporting the stem cells fresh. But then the donor contracted Omicron and was unable to proceed with the donation. The patient's life was now at risk, as there were no stem cells available to "rescue" them from the chemotherapy they'd undergone. So our team had to move fast. Fortunately, we found another suitable donor here in Canada, and we quickly arranged to fly them to Ottawa for the stem cell donation. We'd lost the surgery time associated with the original donor but were able to work with the Ottawa hospital to find an alternative date — at the peak of the holiday travel season, just to add to the complications.

Quick Link

"We're more likely to die if we ever need a stem cell donor match."

Black people comprise about 3.5 per cent of Canada's population but less than two per cent of prospective donors in Canadian Blood Services Stem Cell Registry. This discrepancy points to an area where donor engagement is not as inclusive as it needs to be. To help close that gap, two of our Partners for Life groups are expanding their recruiting efforts in diverse Black communities in the Toronto area.

"Because racialized communities are severely under-represented in the registry, we're more likely to die if we ever need a stem cell donor match," says Christopher Adam Infantry, president of the Toronto graduate chapter of Omega Psi Phi, a fraternity of mainly Black university students and alumni. "We want to help our communities help themselves."

Joining in this effort is a local chapter of Delta Sigma Theta, a primarily Black sorority founded — like Omega Psi Phi — at Howard University in Washington, D.C. "Our 22 founders were the only Black women to join the Women's Suffrage March in 1913 despite the dangers they faced," explains Laura Wilson-Lewis, president of the sorority's Toronto alumnae chapter. "More than a century later, our members continue to be at the forefront of social action and service." That commitment includes enthusiastic support for Canadian Blood Services: "We're constantly encouraging chapter members, their families, people in our networks and members of the Black community to donate blood, as well as to join the stem cell registry. It's one of the ways we can make a real impact."

In the end, the recipient's transplant was delayed by just five days. And it was a success, thanks to our generous donor and a lot of amazing teamwork every step of the way. We've since shared details of this incident widely to remind transplant partners internationally how vital it is to collect and freeze stem cells before a transplant patient begins conditioning. We continue to help update and promote such guidelines as part of our membership in the World Marrow Donor Association.

Q: What about the pandemic's effect on recruiting potential donors?

A: We've always relied mainly on in-person swabbing events to sign up new donors for the stem cell registry. Obviously we haven't been able to sustain those during the pandemic, and it's really had an impact on our recruiting momentum, as well as overall community engagement. So we've had to shift our thinking and also how we work together within our team and with our colleagues in donor recruitment — as always, keeping the needs of patients top of mind. And as we've explored alternatives to in-person recruiting, especially via digital channels, we've made some important improvements.

"One of the interesting things we've learned is that people who register online, as opposed to signing up in person, are in fact more committed."

One of the interesting things we've learned is that people who register online, as opposed to signing up in person, are in fact more committed. It's not hard to imagine why. If a potential donor agrees to do a quick cheek swab at a registration event while someone looks after all the paperwork, they may not be all that invested in the experience. Whereas if a donor registers online and then completes the process at home — doing their own swab, filling in the forms and sending the postage-paid kit back to us — there's a level of commitment that makes it more likely they'll follow through if called to donate.

We've also prioritized revamping our e-registration platform, as we've seen some potential donors come to our web page and then not complete the process. We're redesigning the experience to be more user-friendly — simplifying the health questionnaire, for instance, and streamlining our educational content, so people can learn what they need to know quickly (though they're still welcome to drill down deeper if they want more detailed content).

At the same time, we're moving to a hybrid recruitment model. We'll still hold in-person events as they once again become possible, but the aim will be to have people who sign up at these events complete their registrations online. The process will be easier and we'll be recruiting donors with a higher level of commitment.

And for those who discover they unfortunately aren't eligible to be stem cell donors, we showcase other ways to give, such as cord blood donation or a charitable financial contribution. This reinforces the broader message of Canadian Blood Services that there are multiple ways to give across all dimensions of **Canada's Lifeline** — which we've begun communicating via ads and social media around the theme, "Make All The Difference."

Quick Link

Kathy Ganz,
Director, Stem Cells

"I look forward to continuing the progress we've made."

In March 2022, Canadian Blood Services was pleased to announce the appointment of Katherine Ganz as full-time director of our stem cells program. In her new role, Kathy leads the team responsible for maintaining our registry of potential stem cell donors and cord blood units. The group also operates Canada's national public cord blood bank and provides support to manufacturers of stem cell products and cellular therapies.

Kathy joined the stem cells team in January 2020 as associate director of planning and compliance after working for several years in our quality and regulatory affairs division. She brings a wealth of experience to her new role. Starting out in 1982 as a medical laboratory technologist, over the past four decades she has worked in diverse areas of our organization (and its precursor), including donor and diagnostic testing, human leukocyte antigen (HLA) typing and stem cell processing.

"I look forward to continuing the progress we've made in building a robust stem cell registry with more young, ethnically diverse potential donors than ever," Kathy says. "That's the key to helping more Canadian patients receive life-saving stem cells from donors in this country, and to supporting more international patients as well. We're also fostering better collaboration across the transplant community — particularly in the emerging field of cellular therapies, where Canadian Blood Services has an integral part to play. As we continue to modernize our manufacturing processes, we hope to extend our partnerships with pharmaceutical companies that can benefit from our expertise."

Q: How is the stem cell program evolving to reflect the diversity of patients and donors and of Canadian society generally?

A: As part of a general "cleanup" of our donor registry, we're trying to contact as many of our 600,000 registrants as possible to ensure they're still committed to donating. And, of course, to confirm we have up-to-date contact info, so we can reach them quickly if they're matched to a transplant patient. As part of this initiative, we're focusing on segments of our donor base that better reflect the diversity of Canadian patients. So we've launched a project to identify donors in our registry who are young — between 17 and 35 — and therefore will typically have a more robust supply of stem cells. And we're also identifying donors whose ancestral backgrounds will help expand the registry's ethnic diversity. In addition, we're looking to re-contact registered donors who have the particular human leukocyte

antigen (HLA) types most needed by our patients. Moving forward, we want to go even deeper, both in tracking down former registrants and recruiting new ones, to make our registry as diverse as possible.
At the same time, we're exploring how we can work with teams in other areas of Canadian Blood Services to further increase diversity across the stem cell program. For instance, our colleagues in the platelets program currently record the HLA type of many platelet donors, so they can potentially be matched with patients of the same type. This creates an opportunity for our team to reach out to platelet donors and encourage them to join the stem cell registry — while also asking people in our program's registry to consider donating platelets. Similarly, there's a lot of work being done to target red cell donors who have rare blood types, especially people from specific racial and ethnic communities. Coordinating with our colleagues in the rare blood program, we want to engage with those donors and their families in the hope that they'll join the stem cell registry or consider donating cord blood.

In pushing forward on all these efforts, we're fortunate to be guided by our newly dedicated diversity, equity and inclusion team. As they work to identify and remove barriers to donation among diverse communities, it improves the prospects for patients in those communities who have health issues that correlate to race, as well as for those who need stem cell transplants to treat leukemia. An example is sickle cell disease, which largely affects diverse Black communities; our work will open the door to engaging more Black donors across our programs, from plasma and platelets to cord blood and the stem cell registry. We see the same exciting potential for all the diverse patients we serve, whether we're connecting with first-generation immigrants or Indigenous peoples whose ancestry dates back thousands of years.

Q: Is ensuring diversity also a goal of the cord blood bank?

A: Absolutely, and I'm proud to say we once again exceeded our diversity targets in the past year. We also issued more units for transplant, continuing the upward trend we've seen since the onset of the pandemic. As well, we're in a research partnership with a major Canadian hospital, studying how to increase the number of stem cells in a cord blood unit prior to transplant. That will enhance the efficacy of cord blood in treating adult patients for whom some donated units are unfortunately too small to be effective. So it's one more way we can work with transplant physicians to ensure that this is a safe, effective option for their patients.

Q: Summing up, how would you characterize the past year in a few words?

A: I'll use two — resilience and teamwork. We've continued to adapt our processes and practices to meet the evolving challenges of the pandemic. And driving all that great work is an incredible team of talented, experienced and dedicated people, both within our organization and across the national and global networks we help to support.

Feature

Easy giving

Stem cell donor Francisco Rico-Garcia of Edmonton urges other members of the Hispanic community — and people across Canada — to make a simple gift that can save a life.

How we connect

> Registrant recruiting
> Donor engagement
> Diversity, equity and inclusion
> Analytics and human insights
> Health system collaboration
> Public awareness and education

The phone screen showed an unfamiliar number, but Francisco Rico-Garcia decided to answer anyway. And two minutes into this call out of the blue, he found himself launched on a journey that could transform another person's health — and affirm his own deep sense of community.

The journey had in fact begun several years earlier, when Francisco decided to join the blood donation club at his high school in Edmonton, Alberta. At the time, he was temporarily ineligible to donate, as he'd recently travelled to a region with an elevated risk of malaria. So initially he expected just to help at club events. But then another

volunteer pointed out that his travel history didn't prevent him from giving in another important way: by joining Canadian Blood Services Stem Cell Registry.

"She said it was basically just a swab," Francisco recalls. "But if later on they find a match for your stem cells, it might save someone's life."

A key link in the lifeline

Stem cells — or, more specifically, blood stem cells — are found in bone marrow, circulating blood and umbilical cord blood. Transferred from donors to matched patients, they can be used to treat dozens of life-threatening disorders, including many blood cancers. Most patients who require stem cells have only a 25 per cent chance of finding a match within their own families. The volunteer registry operated by Canadian Blood Services — with its links to millions of other potential donors via registries worldwide — is therefore a key component of **Canada's Lifeline**.

Nearly anyone between the ages of 17 and 35 can join the registry. Provided with a free kit by our stem cell team, registrants use swabs to painlessly collect a small sample of cells from the insides of their cheeks. Then they simply return the postage-paid kit to the Canadian Blood Services lab, where their sample is tested and typed, and they're entered in the registry.

Reaching more communities

For Francisco, the aspiration to help make other people's lives better began at home. His family, originally from Colombia, arrived in Canada when Francisco was seven years old. "We were immigrants who came here with basically nothing," he says, "but we were given immense opportunities. From that, we learned how to help the community around us, whether it was volunteering at a food bank or my dad starting a soccer program. My parents always instilled the idea of giving back to the community — though they weren't really aware of stem cell donation."

Patients in need of stem cells are more likely (albeit not guaranteed) to find a matching donor among people who share their ethnicity. In Canada, medical teams have particular difficulty finding matches for patients in a number of key groups, including Indigenous, Asian, South Asian, mixed-race and people of diverse Black backgrounds. Also in this hard-to-match category are people who, like Francisco, identify as Hispanic (or, in the past, Latin American); they only make up about one per cent of all registered stem call donors. For Francisco, the solution is clear: "We really need to be pushing this in our community a bit more."

“It’s just a good thing to do.”

On the day Francisco got the call to donate, he’d wrapped up his third year of studying finance at the University of Alberta and had just started a summer internship. “I was in my office cubicle and saw the call coming in from a Toronto number. When I picked up and the caller told me she was with Canadian Blood Services, the first thing that came to mind was: Oh, I haven’t donated blood in a while. I should probably do that.”

On learning he’d actually been matched for a stem cell donation, Francisco didn’t hesitate to help, even though the procedure would require him to travel twice from his home in Edmonton to a hospital in Calgary, 300 km to the south. The first trip was for a day of medical assessments and an information session. The second was for the donation itself, which took about three hours. (Costs associated with stem cell donation, including travel expenses, are covered by Canadian Blood Services, the transplant centre or the donor’s provincial health plan.)

In the days leading up to a donation, a drug is used to stimulate the production and release of stem cells from the donor’s bone marrow into the blood stream. Francisco was able to do these injections himself at home. For the actual donation process, he was connected to an apheresis machine, which collects stem cells from circulating blood while returning other blood components to the donor’s body, which is similar to the process used for collecting plasma or platelets. Unlike a bone marrow transplant — the less common method of stem cell donation — apheresis does not require general anesthesia.

Francisco is quick to underline how simple it is to supply this life-saving gift. “When I try to get friends to join the registry, sometimes they’re hesitant or worried about the time commitment involved,” he says. “But it’s extremely easy — and it’s just a good thing to do.”

People, culture and performance

Emmanuel,
employee,
platelet donor

Carrie,
employee,
blood recipient

Andrew Pateman,
Vice-President, People,
Culture and Performance

How we connect

> Diversity, equity and inclusion
> Employee engagement
> Mental health and well-being
> Analytics and human insights
> Flexible technologies
> Organizational excellence
> The workplace of the future

Over the past year, our response to COVID-19 once again drove work forward in a key focus area of our strategic plan: *to create an engaging and empowering employee experience*. As we helped to address the continuing challenges faced by Canada's health systems, within our organization, we accelerated and expanded initiatives already underway before the pandemic. Three top priorities are to ensure employees' mental health and well-being, to foster diversity, equity and inclusion and to create a more flexible and adaptable workplace. Andrew Pateman — vice-president, people, culture and performance — shares his perspective on progress in 2021–2022 and how we envision the future of work at Canadian Blood Services.

Q: Canadian Blood Services has made a commitment to support employees' mental health and well-being. How has that work progressed over the past year?

Andrew Pateman: We've talked in our last two annual reports about the added stress created by COVID-19. But even as an organization that's constantly alert to public health risks, I don't think we envisioned the impact of this pandemic being so strong for so long. We continue to pay close attention to the mental well-being of our team members as they juggle work, family and other responsibilities.

This focus predates the pandemic and is part of a broader healthy workplace initiative launched in 2018. The disruption of COVID-19 simply intensified our efforts. In late 2020, we worked with outside experts on employee mental well-being to assess the maturity of our current programs and overall approach. And from there, we developed a comprehensive mental well-being strategy in partnership with the Centre for Addiction and Mental Health.

The strategy was approved in June 2021 and we're well into rolling out its 30 action items. Some of these are process-oriented — for instance, mapping out a better return-to-work process for those coming back after an illness. But many of the strategic priorities are aimed at evolving aspects of our culture, from destigmatizing mental health issues to helping leaders and team members recognize when a colleague is in distress and empowering them to intervene early.

Q: While many employees have been working from home, many more are in frontline roles that require being in the workplace. How are you supporting them?

A: Since the onset of the pandemic, we've seen a modest increase in the number of people seeking support from our Employee Assistance Program and filing claims for counselling services through our benefits plan. But the increase hasn't been dramatic, which seemed counterintuitive, so we decided to investigate further. We held focus groups with frontline employees to ask if they felt access to our mental well-being programs was simple enough; for the most part, people told us it was.

Of course, the conversation can't stop there. Ensuring that everyone feels comfortable talking about mental well-being is still a work-in-progress. Nor are we naïve about the potential longer-term impacts on our employees, who've had to endure so much. Anecdotally, we know that passing the pandemic's two-year mark prompted a lot of people to wonder how much more we could all take. So we'll continue monitoring the data and, more importantly, promoting candid and non-judgmental conversations about mental well-being.

Q: Increasing awareness and acceptance around mental well-being is part of building a more inclusive culture. How will such efforts continue to evolve with the addition of a chief diversity officer to the executive team?

A: Dr. Yasmin Razack has been welcomed by her peers on the leadership team and indeed by the entire organization (see the Q&A on page 15). She brings fresh perspectives, backed by a wealth of experience, that are already having a significant impact on how we approach diversity, equity and inclusion (DEI) at Canadian Blood Services — both in our ongoing initiatives and in the work we'll undertake next.

To put a bit of context around this important step forward, DEI has always been core to our mission as an organization committed to improving the health and well-being of all Canadians. And because there are so many dimensions to our role as **Canada's Lifeline**, our DEI journey is a bit more nuanced than some. First and foremost, we must be as inclusive as possible in the services and products we provide to patients. So that means working to build a more ethnically diverse stem cell registry, for example, and to tailor products for the rare blood types we find among people with certain racial or genetic attributes.

As chief diversity officer, Yasmin brings added focus to all this work while highlighting the potential positive impact it can have across the organization. DEI is integral to everything we do, from donor engagement to eligibility guidelines to priorities that fall within my portfolio. Yasmin's team and my team are collaborating, for instance, on an inclusive hiring strategy. So for Canadian Blood Services, DEI is both a social imperative and the key to building a stronger and more effective organization.

"We'll continue monitoring the data and, more importantly, promoting candid and nonjudgmental conversations about mental well-being."

Q: What about employee engagement generally? How are people feeling about the organization and their role in it?

A: Every two years, we do a comprehensive employee experience survey. Our primary focus is employee engagement, but we also gather data on inclusion and psychological safety. The most recent survey was in January 2022, in the middle of the Omicron wave, so we kept the communications low-key, knowing people already had a lot on their plates. And yet, we achieved a completion rate of 71 per cent, one of the best we've seen. Overall engagement remained high, in the top quartile among peer organizations.

We also track what we call our "employee net promoter score," which measures satisfaction and loyalty — much as we do with donors — in terms of people's willingness to recommend us as an employer. And that score increased by 46 per cent. Needless to say, we were really pleased.

Now, as we dig into the data, there are still areas where we've got work to do. Most significant is an engagement gap between frontline employees and people who work in administrative and support roles. Gaining a better understanding of that gap will help us improve the frontline experience, which is a priority of our recent addendum to the organization's strategic plan.

Q: How has the pandemic affected thinking at Canadian Blood Services about the future of work?

A: We recognize that people's experience of the pandemic differed across the organization. About two-thirds of employees continued to work in collections, production, testing, logistics, distribution and other areas. These several thousand employees came to Canadian Blood Services sites every day, observed our changing safety protocols and experienced the limitations and constraints implemented to keep them and our donors safe. And their dedication ensured we kept operating without interruption, providing seamless service to patients.

Other employees — approximately one-third of our workforce — were disrupted by the sudden requirement to work virtually and at this point they've continued doing so for over two years. These team members absorbed their new reality, quickly adjusted and continued to deliver outstanding leadership and support.

Now we're moving to a different state and we need to be intentional about the specific steps we take. As a biologics manufacturer, we've always had a "go-and-see" culture in which leaders are expected to be visible across diverse teams and geographies. And we believe that the kind of culture we want to build going forward will be best supported by maintaining strong in-person connections between employees.

That said, we recognize that where flexible — or hybrid — work arrangements are possible, we do want to explore how best to balance the need for in-person contact with the remote-working options that many employees have grown accustomed to. So for those who'd prefer to keep some form of flexible arrangement after the pandemic recedes, we want to accommodate them, where possible, while doing so in a manner that nourishes our culture.

At the same time, we're thinking about how to make the experience for our frontline team members more engaging. For example, we're piloting strategies to make scheduling more predictable and stable. We're deepening our continuous improvement efforts to ensure that team members have a voice in how they perform their work. We're also finding ways to create more cohesive teams, because we know consistency is vital for building effective working relationships — and for keeping everyone engaged around a common purpose.

There are, of course, a lot of issues to figure out together. As always, we'll be listening closely to our employees and working with the DEI team to ensure we maintain an equitable approach moving forward.

Feature

Speaking freely

When Jayshri Lad's son revealed he was having mental health challenges, it opened up new lines of communication within her family — and became part of a larger conversation around mental health and well-being at Canadian Blood Services.

How we connect

> Employee well-being
> Mental health awareness
> Diversity, equity and inclusion
> Organizational excellence

Jayshri Lad had no idea how much her son was struggling emotionally.

The 23-year-old was midway through his undergraduate program at an Ontario university, where he was studying digital technology design. During the 2019–2020 academic year, he'd scaled back his course load a little, saying he wanted to focus his efforts more. Then in the fall of 2020, during the pandemic's first wave, he told his parents the school had offered the option of suspending studies for a year, so he'd decided to take a break. But the following September, when Jayshri and her husband asked about tuition fees for the coming semester,

their son broke down and admitted he'd in fact failed to earn enough credits during the previous year and had been removed from his program in April 2020.

"It was a huge, huge shock," says Jayshri, a process development specialist at the Canadian Blood Services production facility in Brampton. "And it was terribly hard to see him like that — crying and telling us how he felt so stupid, he should be able to do that kind of work without struggling. But because he couldn't do it, he felt there was something wrong with him. He was a failure."

Like all concerned parents in such situations, the couple began thinking back on what they might have missed — signs of moodiness or withdrawal they'd attributed to typical young male behaviour, when now it appeared there must have been more to it. They also wondered how much pressure their son may have felt to live up to their presumed expectations. "I always thought we were quite relaxed in that way," Jayshri says. "But there is an expectation that your kids will go through university and do certain things in their lives, right? And I guess that had prevented him from being able to open up to us."

Their son hadn't shared his feelings with any other family members or friends either, fearing judgement of what he saw as his own inadequacy. Instead, he'd become increasingly isolated — although the signs had been hard to spot when COVID-19 lockdowns were obliging so many young people to stay home, connected to the world only through their phones and computers. Now Jayshri learned how her son had spent much of the previous year trying to hide his constant anxiety and the countless nights when he'd been unable to sleep, wrestling with what she calls "all the what if scenarios."

The weight of high expectations

The day after the young man's crisis came to light, the entire family sat down together, including Jayshri's other son, who's five years younger than his brother. "My husband and I opened up about our own life experiences," Jayshri recalls, "the mistakes we've made, the failures we've had. This was a big thing for us, having a candid discussion with the boys about life. We also talked about the fact that, even though you may have certain expectations, it's not necessarily how things are going to move forward."

In their own early years, the couple hadn't pursued straight paths to higher education; they'd both begun working and then earned further academic credentials as their career plans became clearer. "But our son never realized that," Jayshri says, "or I guess we never spoke about it."

As the family began speaking more freely, they also discussed the influence of their cultural heritage on standards of personal achievement. "We talked about the reality of high expectations," Jayshri says, "which can be really overwhelming for a South Asian immigrant first-born son." Her husband, who was also first-born, knew he was carrying his parents' hopes with him when he emigrated to the U.K. And Jayshri, who was born in England, grew up with the same pressure. "Even those of us who were born outside our native land carry the weight of previous generations, who endured so much so that we can have a better life."

"He's happy, he's joking. He's having more conversations with us than he did before. He's in a better place, just trying to figure out life."

Among people of her parents' generation, mental health issues had rarely, if ever, been discussed. And even for Jayshri's peers, it wasn't a comfortable topic. But seeing her son, after struggling for so long with self-doubt, at last managing to put his pain into words, she knew it was vital to keep that conversation going. When he expressed interest in getting professional help, she guided him toward the range of support services he could access himself, quickly and confidentially, through the Canadian Blood Services employee assistance program.

"Things are going to be okay."

With counselling and other tools, including meditation, the young man has begun to ease his anxiety and recover from the damage inflicted by so many sleepless nights. Being able to talk openly within the family about his challenges has helped as well.

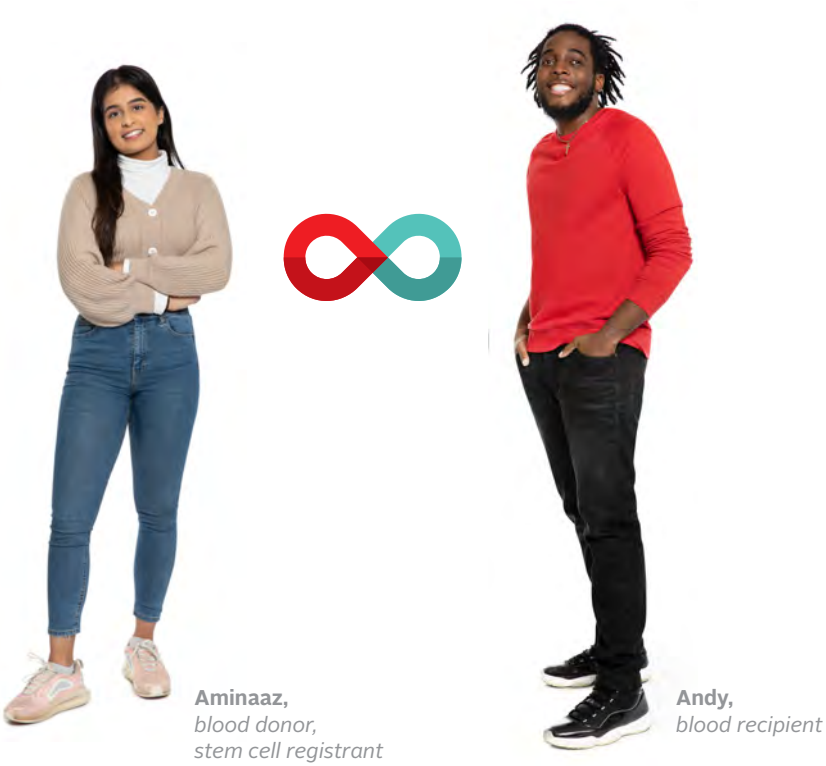
"He's doing a lot better," Jayshri says. "The burden of trying to keep things together on the outside was so draining. He feels a lot of relief." Her son is now working part-time and benefiting from the interaction with other people. "He hasn't figured out yet what he wants to do or how to get there. He doesn't want to make the same mistake and sign up for something he's not really a hundred percent enjoying. But he's in a good place. He's happy, he's joking. He's having more conversations with us than he did before. He's in a better place, just trying to figure out life."

Jayshri has explained the additional services, such as career counselling, that are available through the employee assistance plan, and her son may take advantage of these going forward. His mental health journey has also changed the outlook of his brother. "My younger son knows that if things aren't going as planned or as we were expecting, that's okay. He can say, 'I'm not doing well in this or I'm struggling in this area.' And he can look for help."

Alongside the services available through her benefits plan, Jayshri also values the thoughtful support she receives from colleagues when they hear what her family has been going through. "It takes two seconds of courage to open up," she says, "and then you're suddenly hearing other people's stories. 'That happened to us' or 'my niece had the same problem' or whatever. And it gives you a sense of relief, because up until that point, you've felt like you were the only ones going through something like this."

Jayshri quickly saw that she could trust the people on her team to be understanding. "I felt very safe and comfortable having those discussions with them." Now she tries to help others feel the same. In January 2022, she joined several colleagues for a virtual panel on Bell Let's Talk Day, the annual mental health awareness event spearheaded by Bell Canada. She's also quick to offer support one-on-one. "If anybody comes to me who's going through a similar experience, I'll tell them about what happened with us. Because just hearing how other people have navigated this kind of thing helps you feel that you'll get through it, you'll be able to take the next step. That moment provides so much relief and clarity. It gives you hope that things are going to be okay."

Innovation in response to health system needs



Aminaaz,
blood donor,
stem cell registrant

Andy,
blood recipient

Dr. Isra Levy,
Vice President, Medical Affairs and Innovation

How we connect

> Research and innovation
> Advancing public health
> Donor engagement
> Patients' perspectives
> Health system collaboration
> Diversity, equity and inclusion
> Community building
> Science, medicine and ethics

As Canadian Blood Services responds to current, often pressing needs in Canada's health systems, we're also looking to the future. Indeed, it's this dual focus that keeps our organization agile, responding to a changing environment with innovative strategies and solutions. From our founding, we've constantly evolved our products, services, processes and systems — and when necessary, invented new ones — to reflect emerging health care priorities and the shifting currents of social change, as well as potential threats to public health. A case in point from the past year is our new approach to eligibility screening based on blood donors' sexual behaviour, rather than their identities. We asked Dr. Isra Levy — vice-president, medical affairs and innovation — for his perspective on this long-awaited development and other recent innovation milestones.

Q: Looking at innovation in the broadest sense, as not only leveraging research insights but also finding creative new solutions to difficult challenges, what are some highlights from the past year?

Dr. Isra Levy: COVID-19 continued to be a catalyst for innovative thinking and problem solving across the organization. As the operator of Canada's blood system, we once again had to be very nimble, particularly in managing the processes by which we balance supply and demand. But our response to the pandemic has also showcased the value Canadian Blood Services brings to the overall health system, as we're able to extend our unique capabilities into new areas of impact.

A case in point is our lead contribution to the national seroprevalence work funded by the federal government's COVID-19 Immunity Task Force (see story on page 75). As the operator of Canada's blood system, we have the capacity and testing expertise to provide data on COVID-19 antibody levels in donated blood from across the country (with the exception of Quebec, where Héma-Québec has contributed in the same way). Using this information, the task force has been able to determine the extent of COVID-19 infection, its incidence in certain communities and demographic groups, how it has changed over time and much more, including — by extension — the optimum timing of vaccination rollouts.

This is the largest national study of its kind ever undertaken in Canada and we have the scale to support it. We've already supplied data from more than a million blood samples and that work continues. But even more importantly, this collaboration shows the value we can deliver in helping to advance public health in Canada. By correlating our data with other information sources, we can learn more, for example, about immunity levels among people who live in lower-income areas or are members of racialized groups. This type of analysis can help ensure more inclusive and equitable approaches to understanding and addressing the health care needs of different communities. And if we overlay other data we collect from donors, such as recent travel history or any drugs they may be taking, we can gain further insights on patterns of infection across the national population — for a known virus like COVID-19 or, potentially, for an emerging pathogen that has yet to be detected in the health system.

So our role in the seroprevalence study is not only vital as Canada continues to deal with COVID-19 variants and subvariants. It also underlines the expanded role that Canadian Blood Services can play in monitoring and helping to improve public health.

Quick Link

"Pathogen inactivation adds a whole new layer of safety."

Canadian Blood Services works to maintain a safe supply of blood and blood products for patients across the country. As part of our rigorous safety protocols, donors are asked a series of eligibility questions before they give. We also test all donated blood for an array of infectious pathogens. Our team monitors global patterns of known and emerging diseases to identify potential threats to the blood system. Still, new pathogens can arise unexpectedly, and sometimes there's no established testing technology available to screen blood donations.

This led our researchers to join colleagues around the world in asking: Is there a way to zap viruses, bacteria or parasites that somehow make it through existing protections and could compromise blood safety? The answer is pathogen inactivation technology, which neutralizes a broad spectrum of potential disease-bearing microorganisms. The technology is licensed in Canada for platelets and plasma, and our hope is that it will be adapted for screening red cells too, so pathogen reduction can be extended to all blood products that we provide to Canadians in the near future.

As an important first step in that direction, during the past year Canadian Blood Services began producing pathogen-reduced platelets. They're now in hospitals served by our Ottawa production site, and we'll soon implement the process at our other facilities. "Pathogen inactivation adds a whole new layer of safety," says Dr. Chantale Pambrun, senior medical director of innovation and portfolio management, "especially against emerging pathogens, as well as those for which testing isn't yet available. It's an important new tool in ensuring a safe blood supply."

Q: The urgency of the pandemic response set this particular study in motion. Why couldn't such a rewarding avenue of research have been explored before this?

A: I think there are three main reasons why we haven't previously pursued this kind of work, at least not at such a scale. One, frankly, is the lack of a compelling reason to tackle the kinds of obstacles our team had to overcome, which they did successfully at incredible speed, though it took tremendous effort. A devastating global pandemic has a galvanizing effect, as we've seen across society. Second, and related to this, is the lack of sustained funding for work that could seem

speculative in the absence of an imminent threat. And third is the concern that sensitive health information remain private and protected.

To be clear, the data we provide is completely anonymized; there's no need to tie it back to individual donors. Still, that aspect had to be given careful consideration. And if, in future, we want to share more robust data — again anonymized but linking blood samples to specific attributes of the people who provided them — we need to have a thorough discussion of the ethical, philosophical and cultural dimensions of our relationship with donors. Before we begin sharing data with other organizations to gain deeper public health insights, whether for academic research or applied in real world initiatives, we have to carefully consider what additional privacy protocols or technological safeguards may be required. And that starts with elevating donors' and other stakeholders' awareness of the principle of informed consent. Transparency is vital to ensuring that people see the value, for them personally and for all of society, of granting us permission to use their information anonymously.

These are conversations we're already having as we explore how we can extend a fundamental commitment of our mandate: to protect Canadians' health and well-being.

Q: A related area of research, also leveraging personal data, is the development of donor-recipient biobanks. Can you explain what these are?

A: A biobank is basically a repository of biological samples and related medical data that scientists can access to conduct research. The specific type of biobank we envision will take a donor's blood sample and relevant health information, and link them to medical data from the person who received that donated blood. With insights into a recipient's transfusion experience and treatment outcome, we can identify factors that lead to more successful transfusions and also those that could pose a risk, such as an allergic reaction. This would benefit not only the specific recipient linked to a donor, but also potentially all recipients of transfused blood.

Again, there will have to be measures in place to ensure data security and privacy — for our donors, as well as for the recipients who permit their information to be shared by hospitals or clinicians. But the benefits could accrue to the entire health system, as we find ways to improve transfusion medicine for all patients, and as biobank data is potentially used to explore other aspects of patient care and public health, such as evidence of emerging infectious diseases. So this is another area where we could see our capabilities and expertise extending **Canada's Lifeline** in an interesting new direction.

Q: Lastly, another recent development in your portfolio involves new thinking about an old problem, as well as sensitivity to how personal information is used. How do you view the decision to base blood donor eligibility on sexual behaviour?

A: This is a complex and often contentious story that has unfolded over many years. We've finally reached a turning point, which is explained in more detail elsewhere in this annual report (see page 20). But let me distill it down to a few key points:

First, it's important to note that we defer donations from many different kinds of donors, and for a wide range of reasons — always based on the latest scientific evidence. For decades, the available evidence indicated that gay, bisexual and other men who have sex with men, which we abbreviate as gbMSM+, fell into a higher risk category for certain sexually transmitted infections that are also blood-borne. If donors in higher-risk categories give blood and our secondary level of protection — testing methods — fails, it could put the safety of Canada's blood supply at risk. So for that reason, in the interest of optimum safety, gbMSM+ were excluded from being able to donate. Such potential donors were subject, in the last decade or so, to time-limited deferrals and other provisos. But the fundamental effect was to continue restricting donation in a system that has always strived to be as inclusive as possible — to ensure the health and well-being of donors and recipients, and to uphold broader principles of social justice.

"The fundamental effect was to continue restricting donation in a system that has always strived to be as inclusive as possible."

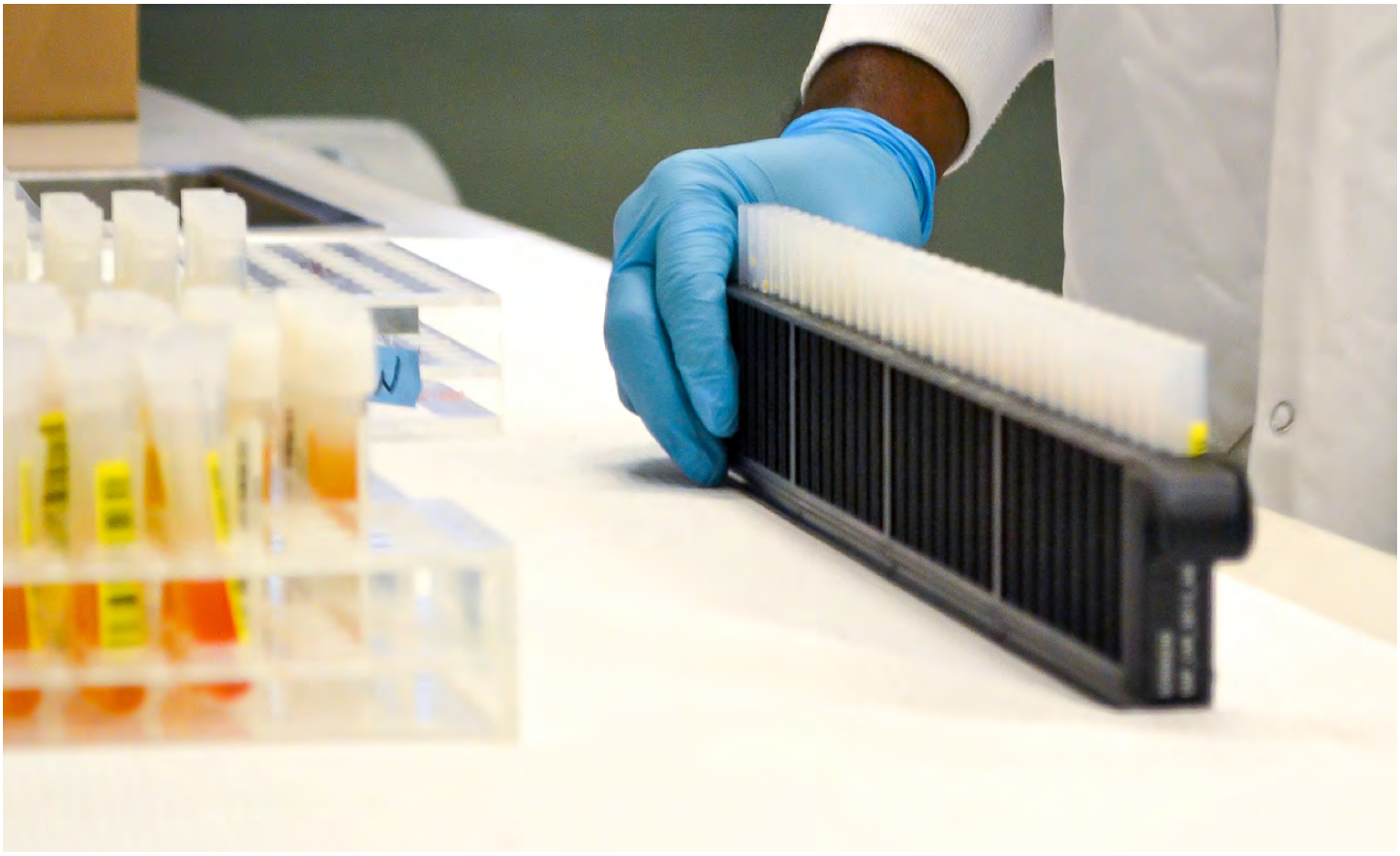
Now, after extensive research and consultations across the global community of blood operators — lasting far too long, I realize — we're finally able to make a pivotal change. Rather than characterize potential donors by sexual orientation, we're going to base eligibility screening on sexual behaviour. So that means we're going to ask everyone the same questions, irrespective of their sex or gender, or that of their sexual partner or partners. We're going to ask every prospective donor if they've recently had sex with a new partner and if they have multiple partners, as the evidence shows that both these behaviours correlate with a greater risk of sexually transmitted infections. And then we'll ask those who say yes to either question whether they've had anal sex. It's this combination of questions that will enable us to identify donors who are at higher risk. We'll ask them to defer donating blood until the behaviours associated with risk no longer apply.

Moving forward, we'll be treating donors more equitably, with no additional risk to the safety of the system. It's an approach that has now been successfully implemented in the U.K. In adopting it here, we're reinforcing our commitment to inclusivity and fulfilling our promise to serve every Canadian.

Feature

Amplifying our impact

Even as the pandemic forced many changes to our operations, it was also a catalyst for innovative research — notably a national seroprevalence study that has been critical in guiding public health policy and points to new ways we can support Canadians' well-being.



How we connect

> Research and innovation
> Advancing public health
> Health system collaboration
> Diversity, equity and inclusion
> Community building
> Science, medicine and ethics

In April 2020, when the federal government established the COVID-19 Immunity Task Force (CITF), Canadian Blood Services moved quickly to help by providing a critical source of insight: data on the levels of COVID-19 antibodies found in donated blood across the country. Two years on, we've tested close to half a million blood samples from donors to support what has become one of the largest-ever national studies of seroprevalence — the level of immunity to a specific pathogen within a population, based on analysis of blood serum. (Quebec's blood operator, Héma-Québec, has also been providing data for the study.)

"By the end of that first pandemic summer, in 2020, we were seeing hugely important findings," says Dr. Timothy Evans, executive director of the CITF Secretariat. Although provinces at that point were still testing widely for COVID-19, it wasn't clear how many infections were potentially being missed, including in people without symptoms. The seroprevalence data helped fill in the picture, revealing that very few Canadians had in fact been infected with COVID-19. This spoke to the success of public health measures, but it also signalled to officials facing an expected autumn surge that they could not count on widespread immunity from past infections to blunt its impact."

"Some people had been suggesting that as much as 30 or 40 per cent of the population might already have been infected, when in fact it was less than one per cent," explains Dr. Evans, who is also the inaugural director of McGill University's School of Population and Global Health. "This made clear that there was a lot of dry tinder for a second wave."

As the second wave spread in the fall of 2020, Canadian Blood Services seroprevalence data showed that overall infection rates remained well below five per cent of the adult population. And when vaccines became available in early December, the study data continued to reveal low levels of infection-acquired immunity. "It was abundantly clear to policymakers that the only route to herd immunity was to rapidly role out the vaccines," Dr. Evans says. "And that's what Canada did."

An extraordinary team effort

Blood testing and analysis for the seroprevalence study are conducted at Canadian Blood Services headquarters in Ottawa — in an existing lab that was actually being dismantled when Craig Jenkins, a veteran medical laboratory technologist and technology consultant with our innovation team, was asked to transform it for the new initiative.

"I love a challenge, I think sometimes to my own detriment," Craig says with a laugh. "I truly believe if you put your mind to it and you have the right approach, you can do anything."

Craig and a team of colleagues from across the organization marshalled equipment and staff and set up the necessary processes, working with a speed that impressed the study's principal investigator, Dr. Sheila O'Brien. "Normally it would take six months or a year of planning and getting things in place," says Dr. O'Brien, who is our associate director of epidemiology and surveillance. "They had a lab set up in a month."

Craig credits this remarkable achievement to the spirit of collaboration that is one of our organization's defining values. "There were a lot of moving parts, right down to the facilities folks running electrical wiring for us, changing the plumbing and moving around whole pieces of the lab. It really was a team effort."

In the first week of testing, Craig was joined by a dedicated group of colleagues — including Dr. Chantale Pambrun, our senior medical director of innovation and portfolio management — as everyone clocked 14-hour days to meet an initial target of 10,000 samples. Since then, resourceful teamwork has kept the data flowing despite a wide range of challenges, from a tight job market for additional lab staff to a global shortage of pipette tips. When one of the lab's freezers failed, putting blood samples at risk, the Ottawa logistics team managed to save the day by securing a refrigerated truck.

"As jabs went into arms, we needed to keep tracking immunity acquired via infection while also measuring the antibodies arising from vaccination."

Tracking the vaccines' impact

Blood samples from donors arrive at the lab from all over the country (excluding Quebec and the northern territories) via Canadian Blood Services testing facilities in Calgary and Brampton. After lab personnel test for COVID-19 antibodies, information specialists combine the results for each sample with anonymized data on the corresponding donors, including age, sex, ethnic background and location. Dr. O'Brien's team then draws on that data in preparing regular reports for the task force.

The arrival of vaccines beginning in late 2020 was naturally cause for celebration across Canada. But it also posed new challenges for the study. Our initial testing methods and equipment could only detect antibodies generated by infection. As jabs went into arms, we needed to keep tracking immunity acquired via infection while also measuring the antibodies arising from vaccination. This meant reconfiguring the lab to install new analyzers, as well as updating procedures for staff.

The continued flow of data on infection-acquired antibodies proved especially valuable from late 2021 onward, as COVID-19 cases skyrocketed (mainly from the Omicron variant) even as the rate of community testing plunged, with the result that only a tiny fraction of infections were being recorded. While some monitoring of COVID-19 has been maintained through wastewater sampling, the ongoing seroprevalence study has enabled far more accurate estimates of the actual number of infections.

"Data from blood donations has become more important than ever in the context of Omicron, which has simply overwhelmed acute infection testing systems," Dr. Evans says. As the seroprevalence study has increased reporting frequency from monthly to every two weeks, the data reveals that nearly 50 per cent of Canadians have been infected during the Omicron wave. We've entered a new era of hybrid immunity.

Identifying larger patterns

Combining blood sample analysis with other donor data has also helped illuminate the bigger public health picture. "We're now able to link differences in infection rates to key social determinants of health," Dr. O'Brien explains. "We've seen, for example, that racialized donors are more likely than white donors to have been infected with COVID-19. The same is true for donors who live in more materially deprived neighbourhoods."

The next stages of this work promise even richer insights if antibody levels can be linked to other health information (in jurisdictions where such data is available — as always, using secure methods that protect donors' privacy). This could include details of the donor's COVID-19 vaccination history, the timing and brand of each vaccine dose, and any history of infection confirmed by lab testing. "It opens up many very interesting opportunities to better understand people's immunity generally," Dr. O'Brien says.

In an increasingly complex pandemic environment, this evolving data stream could help inform decisions about when to provide more boosters and to whom. "If people have had three vaccinations and have also been infected, do they need a booster?" Dr. Evans asks. "And if so, when? Understanding the number of infections in the population and their distribution — for example, we've seen higher prevalence among younger age groups — is going to be really important as we think about the best strategies for managing risk."

A springboard for future insights

The national seroprevalence study was initially scheduled to conclude in the spring of 2022 but has now been extended to at least 2023. It has also opened up new potential areas of inquiry as the pandemic gradually recedes.

"The recognition of the role that blood donors and Canadian Blood Services can play in public health surveillance happened all at once in 2020," says Dr. O'Brien. "And it's been a springboard for the idea that we could have an ongoing role, even after the pandemic."

Dr. O'Brien explored this possibility further in a recent journal article co-authored with Dr. Steven Drews, a microbiologist on our research team, and scientists from other organizations. They noted that each time a donor gives blood, an extra tube is collected in case additional testing is required. But because only about 20 per cent of those samples are ever needed, the rest can be made available for other purposes (as has been the case for the seroprevalence study). For example, they could be used in surveillance of other vaccine-preventable infections. Or they could allow scientists to track emerging pathogens spread by animals or insects — an especially important area of investigation as climate change affects habitats.

Test results from the extra blood tubes could also be combined with information obtained through routine donor screening, such as hemoglobin levels, current medications, recent vaccinations, travel history and more. And because about 90 per cent of our donors give blood repeatedly, they could form a cohort to be monitored over time. In addition, we're exploring the feasibility of collecting additional health and lifestyle data through voluntary donor surveys, which could yield powerful new insights when overlaid with health registry data.

"Every society needs blood donors and blood collection services," Dr. Evans sums up. "As long as they're going to be a fixture in our institutional landscape, I think we could be much more creative and resourceful in how we harness their potential."

A message from our chair

Dr. Brian Postl
Chair, board of directors

On behalf of the board of directors of Canadian Blood Services, I'm pleased to offer my first message to stakeholders since being appointed chair in January 2022.

When I joined the board three years earlier, I approached our oversight responsibilities from the perspective of a practising physician and health educator. I'd seen first-hand the crucial part Canadian Blood Services plays in helping health systems across the country deliver the best possible patient care. And I had tremendous respect for this organization's legacy as a trusted steward of Canada's blood system, guided by founding principles set out nearly a quarter century ago.

My experience as a director has only deepened my appreciation for the thousands of Canadian Blood Services team members who work so diligently to keep our blood system safe and secure — while also managing critical organ transplant registries, a major national drug formulary, the country's largest public cord blood bank and much more. This complex organization, with its wealth of specialized expertise and experience, is an essential pillar of Canadian health care.

Health systems never stop evolving, of course. Institutions and organizations must be adaptable and agile, constantly exploring new opportunities and always ready to tackle unexpected challenges. This has never been more evident than in the past two years. We've seen COVID-19 take a huge toll in human lives while creating social and economic disruption around the world. But at the same time, the pandemic has driven innovative breakthroughs in prevention and treatment that will change health care forever. In the case of Canadian Blood Services, the global public health crisis has obliged us to look critically at all aspects of our operations. In many areas, we've accelerated important work already underway. The pandemic

response has also inspired initiatives that are truly transformative, as our chief executive officer, Dr. Graham Sher, details in his annual report message (on page 85).

Still, we know there are further challenges ahead. A key part of the board's role is to regularly scan the horizon for emerging and potential risks while working to ensure the organization is well positioned to address them.

Protecting the blood system

Although the COVID-19 virus is not spread via transfusion, its catastrophic impacts have prompted even higher levels of vigilance among the Canadian Blood Services teams responsible for protecting against risks from emerging infectious diseases. During the past year, our production facilities began deploying advanced pathogen inactivation technology to neutralize potentially harmful microorganisms. Currently used to treat platelets, the process is now being extended to plasma, and its full potential will be realized when it is ultimately applied to red blood cells as well.

Another area of concern as the pandemic recedes is an expected rise in demand for blood and blood products. This is being driven in part by the backlog of surgeries and hospital treatments deferred through successive waves of COVID-19. Canadian Blood Services was generally able to anticipate system needs over the past year, despite the challenges of the Omicron wave and the subvariants that have followed. Our supply-chain management was significantly enhanced by a new planning system and more effective use of digital channels for donor engagement — again, ongoing initiatives that were accelerated by the pandemic response. Still, we expect that balancing supply and demand will be an ongoing challenge. The organization will have to remain nimble as we respond to further, potentially dramatic fluctuations in demand. Over the longer term, we know that deepening donor engagement, as well as increased recruitment, will be essential to meet the future needs of Canadians.

Meanwhile, global events like Russia's invasion of Ukraine have sharpened our alertness to the potential impact of geopolitical crises on blood operators. We're also keenly aware of the need for constant vigilance in protecting the information entrusted to us by donors, health systems and other stakeholders. Canadian Blood Services made significant progress in strengthening cyber security in 2021–2022, and the board has approved management's latest three-year outlook highlighting priorities in this area. Going forward, we will continue to focus on tightening cyber controls and clarifying

accountabilities; improving the constant monitoring of cyber threats; enhancing operational processes that depend on IT systems; and ensuring that all areas of the organization adapt judiciously to the use of network-connected technologies.

Canadians are more conscious than ever of the risks — and the rewards — of life in a digital world. And they rightly expect us to be rigorous and unwavering in our efforts to keep their information confidential and secure.

Ensuring Canada's plasma sufficiency

"Any use of commercial plasma collection must have zero negative impacts on the existing national blood and plasma collection system."

The pandemic's rapid onset revealed the vulnerability of all health systems to disruptions in global supply chains. Initial shortages of medical and protective supplies were followed by troubling signs of "vaccine nationalism" in countries that viewed the public health threat largely through a domestic lens. This has amplified concern, already rising before the pandemic, about increased demand for immunoglobulin (Ig), the plasma-derived product that more and more patients worldwide depend on to extend and enhance their lives.

During the past year, Canadian Blood Services continued building out a new network of plasma donor centres as we implement our strategy to secure Canada's domestic supply of plasma for the production of Ig. As of the summer of 2022 (when this annual report is being prepared), there are five sites up and running. We plan to open another six by fiscal 2024–2025, subject to final funding approval from provincial and territorial governments. When completed, this work will be a significant step forward. But it will only get us halfway to the ultimate goal of at least 50 per cent domestic plasma sufficiency, which our analysis shows is vital to ensure Canadian patients' long-term access to life-saving Ig products.

We've therefore been in ongoing policy discussions with our funding governments on whether commercial plasma collection could play a role in securing domestic sufficiency. As we've often acknowledged, there are divergent views about the potential role of the commercial plasma industry in Canada. From the perspective of Canadian Blood Services, any use of commercial plasma collection must have zero negative impacts on the existing national blood and plasma collection system. Another key objective is to ensure that all plasma from Canadian donors remains in this country to benefit Canadian patients.* Our discussions follow the report of the Expert Panel on Immune Globulin Product Supply and Related Impacts in Canada, convened by Health Canada, which encouraged governments and Canadian Blood

*This report was written in the summer of 2022, prior to the announcement of an agreement between Canadian Blood Services and commercial plasma operator Grifols. For more information on this agreement, please visit our website.

Services to explore creative solutions to meeting the Ig needs of patients in this country.

As a leading blood system operator, Canadian Blood Services has built strong relationships with commercial biologics manufacturers worldwide, notably through our management of the national formulary of plasma protein and related products. We believe our deep expertise, grounded in our values and purpose as **Canada's Lifeline**, will be invaluable in the search for a sustainable plasma solution that benefits all Canadians — today and for generations to come.

Advancing diversity, equity and inclusion

Our efforts to achieve plasma sufficiency, like everything we do to enhance the safety and accessibility of our products and services, reflect the broader commitment summed up in our vision: *To help every patient, match every need and serve every Canadian*. As a socially conscious organization, Canadian Blood Services has long been supportive of efforts to advance diversity, equity and inclusion (DEI). But in recent years, Canadians' growing concern over issues such as racial injustice, gender equity and 2SLGBTQIA+ rights have led us to take a more formalized approach to DEI.

In June 2021, the board approved a comprehensive DEI policy aimed at "building an organization reflective of Canada's diversity and creating a workplace where employees feel included and valued, with programs and policies that maximize fairness and opportunity." And with the creation of a new executive role, chief diversity officer, the organization has begun systematically reviewing all policies, processes and programs through a DEI lens — an initiative whose positive effects are already evident throughout this annual report.

The board emphatically supports this important work and we're particularly appreciative of the increased focus on Indigenization. From the shameful legacy of the residential school system to the countless unsolved cases of murdered and missing women and girls, Indigenous people in Canada have been mistreated and misjudged for far too long — and health systems cannot stand apart from this regrettable history. Organizations like Canadian Blood Services have a critical role to play in building (or rebuilding) trust. As we take the first steps toward engaging more meaningfully with Indigenous communities, we welcome their candid advice on how to ensure our services reflect their needs, expectations and values.

We strive for the same level of sensitive engagement with all the communities we serve, whether recruiting Black and ethnically diverse

donors for the national stem cell registry or adopting more inclusive eligibility criteria for 2SLGBTQIA+ blood donors.

Equally important is the internal dimension of this unfolding DEI strategy: our commitment to ensuring a diverse, equitable and inclusive work environment within Canadian Blood Services. A new employee-led DEI council has attracted strong support, as have initiatives ranging from a women's empowerment network to learning programs on topics such as systemic racism and the unique perspectives of trans donors. At the same time, the organization is developing more inclusive practices both for attracting new talent and for helping current employees advance to more senior roles. The board actively promotes these critical changes in management policy and organizational culture — and we reinforce them in our own recruitment of future members.

"The organization is developing more inclusive practices both for attracting new talent and for helping current employees advance to more senior roles."

Sustaining and extending a vital lifeline

In closing, I'd like to express the board's appreciation and gratitude to Mel Cappe, who stepped down as chair in December 2021 at the end of his four-year term. Mel combined remarkable breadth of experience in organizational governance with a deep belief in the purpose of Canadian Blood Services and our power to make a difference in the lives of Canadians. We all benefited from his wise counsel, and his legacy is more than evident in the focused, well-functioning board he leaves behind.

Let me also extend our heartfelt thanks to the stellar team of executives led by Dr. Graham Sher, who have continued to improve and transform Canadian Blood Services even in the midst of a lingering pandemic; to the exceptional leaders, researchers and innovators across the organization whose work has earned the respect of health professionals around the world; to the donors and registrants whose generosity enables us to continue meeting the needs of Canadian patients; to the volunteers and other partners whose unflagging support is so crucial to our continued success; and, above all, to the team members who each day bring their energy, creativity and personal convictions to sustaining and extending **Canada's Lifeline**.

It's a privilege to join my fellow directors in providing strategic direction, governance and oversight to this extraordinary organization — for the benefit of all Canadians.

Dr. Brian Postl
Chair, board of directors

A message from our chief executive officer

Dr. Graham D. Sher
Chief Executive Officer

This year our annual report to Canadians once again reflects the continuing impact of COVID-19 — on Canadian Blood Services and the health systems we support, and indeed on all dimensions of Canada's social and economic well-being. The pandemic has evolved, however, and so has our response to its many challenges. In last year's report, we looked at how the global public health crisis had been a catalyst for creative thinking and problem solving throughout our organization, accelerating work already underway and sparking new strategic directions. The narrative of 2021–2022 highlights the progress we've made in putting those strategies into action, to the benefit of patients, their loved ones and the care providers who support them.

As we work to ensure the safety, quality and reliability of Canada's blood system, we naturally place a high value on predictability. But at the same time, an essential part of our mandate is to always be prepared for the unexpected. When COVID-19 disrupted the world in early 2020, we were ready with a pandemic response plan and robust business continuity protocols. We soon replaced those short-term measures with more comprehensive approaches that embraced the disruption, adapting and transforming our operations to reflect a world that in many ways has changed forever. While it's simplistic to talk about "the new normal," our innovative strategies and solutions are in effect aimed at normalizing uncertainty.

Transforming safety and security

Across our scope of activities in the past year, two areas of work particularly illustrate the pandemic's power to speed up transformation. The first is pathogen inactivation, which uses sophisticated technology to neutralize potential disease-bearing microorganisms in blood and

blood products. In 2021–2022, we began supplying pathogen-reduced platelets to hospitals in the Ottawa area. We're now expanding production nationwide and will soon be applying the same process to plasma. And as work continues on adapting the technology to treat red blood cells as well, we look forward to extending this added layer of protection to all blood components.

The rapid spread of COVID-19, while not blood-borne, has underlined the fact that the world is increasingly vulnerable to infectious diseases that can move around our planet with unprecedented speed and impact. We're more conscious than ever of the need to protect the blood supply, and public health generally, from threats that can arise anytime, anywhere. Pathogen inactivation is a key tool in that proactive effort.

"We're more conscious than ever of the need to protect the blood supply, and public health generally, from threats that can arise anytime, anywhere. Pathogen inactivation is a key tool in that proactive effort."

Another critical area of focus for Canadian Blood Services is our commitment to ensuring a secure supply of Canadian plasma for immunoglobulin (Ig). Here again, the pandemic, in further tightening global supplies of Ig (and pointing out the vulnerability of supply chains generally), has amplified the urgency of work we've been spearheading for nearly a decade to significantly increase plasma collection within Canada. This in turn has accelerated the rollout of our national network of plasma donor centres.

When fully implemented, our dedicated collection network is projected to yield 25 per cent domestic plasma sufficiency. However, the national strategy we prepared for our funding governments set a target of 50 to 60 per cent sufficiency to keep pace with the steadily rising Ig needs of Canadian patients. To explore further avenues for achieving this goal, Canadian Blood Services has been in discussions with governments on the need for an end-to-end domestic supply chain for Ig. This could include a potential role for commercial plasma collection in boosting national sufficiency — while ensuring that all plasma collected in Canada is for the benefit of patients in this country. We look forward to continuing those conversations as we maintain our stewardship of the transfusion and transplantation system on behalf of all Canadians.*

Collaborating to meet changing needs

The strategic support we provide to provincial and territorial governments is similarly evident in our management of the national formulary of plasma protein and related products. Addressing the evolving needs of patients who depend on these products requires a thoughtful balance of medical, scientific, ethical and economic considerations as we work with health ministries, health care professionals and patient groups to arrive at the best possible outcomes.

*This report was written in the summer of 2022, prior to the announcement of an agreement between Canadian Blood Services and commercial plasma operator Grifols. For more information on this agreement, please visit our website.

A case in point was the approval during the past year of Hemlibra® (emicizumab), a drug used to treat some forms of hemophilia. This was the first product to be reviewed in a new selection process developed by Canadian Blood Services in partnership with the Canadian Agency for Drugs and Technologies in Health. It's a complex process requiring many layers of consultation and research (see story on page 33). But we've enabled many patients to avoid uncomfortable treatments and lead freer, happier lives — while also providing strong evidence that their health care costs will be reduced over the long term.

Success stories like these showcase our role as a pan-Canadian organization that has the expertise, skills and experience to collaborate effectively with stakeholders across the heath care ecosystem. As our annual report theme suggests, this is how we connect innovative research to improved medical treatment, and disciplined management to better patient outcomes.

Enhancing our impact

The powerful connections we help to create are also exemplified by our support for the COVID-19 Immunity Task Force (CITF) in conducting a major national seroprevalence study. After setting up a dedicated team and laboratory specifically for this purpose, we have so far tested nearly half a million samples of donated blood for COVID-19 antibodies. Our scientists have provided data to their CITF counterparts, as well as to policymakers, that has deepened understanding of changing levels and patterns of immunity through various phases of the pandemic (see page 75). The information and analysis we generate can be combined with other insights to broaden collective understanding of epidemiological trends in Canada. As a result, governments and public health entities are able to adapt and modify their policies over time.

The seroprevalence study is just one example of the value Canadian Blood Services delivers across geographical and organizational boundaries in Canada's federation of health systems. Whether we're helping match organ donors to recipients among the provinces and territories or managing a drug formulary that can serve as a model for aspects of a national pharmacare program, we create vital connections that wouldn't otherwise exist. Just as importantly, we help make health care more inclusive of all Canadians.

Welcoming and serving all Canadians

A commitment to fostering diversity, equity and inclusion (DEI) has long been implicit in the social purpose of Canadian Blood Services. As **Canada's Lifeline**, we welcome the contributions of all Canadians and strive to ensure everyone has equal access to our products and services. That commitment has only strengthened during the pandemic, as we've seen diverse communities come together to face a common challenge — and as broader efforts to address social injustice have been galvanized by events such as the killing of George Floyd and the discovery of Indigenous children's graves at former residential schools across Canada.

In response to these currents of social change, we're bringing significantly enhanced focus and intention to advancing DEI and Indigenization at Canadian Blood Services — both within our organization and in our interactions with donors, patients, health system partners and other stakeholders. Our new, comprehensive DEI policy was formally approved by the board of directors in June 2021. And in December, we extended our executive management team with the appointment of Dr. Yasmin Razack as our inaugural chief diversity officer. Drawing on her wealth of expertise and experience, Dr. Razack is now working with colleagues and teams across the organization to deepen understanding of DEI issues and turn nuanced strategies into concrete action.

The ambitious goals we've set in this area will take time to be fully realized. We believe we're moving in the right direction — with conviction, urgency and momentum.

"As Canada's Lifeline, we welcome the contributions of all Canadians and strive to ensure everyone has equal access to our products and services."

Earning and retaining trust

As we continue working to make blood donation as inclusive as possible, we achieved a welcome milestone in April 2022, when Health Canada approved our proposal to remove donor eligibility criteria specifically identifying men who have sex with men. Going forward, our screening protocols will instead focus on recent sexual behaviours that are associated with a greater chance of infection — among all donors, regardless of gender or sexual orientation. As of September 2022, men and some trans women who wish to donate blood will no longer be asked whether they've had sex with men.

This landmark change culminates more than a decade of rigorous research and stakeholder engagement — and, understandably, growing impatience among members of 2SLGBTQIA+ communities. For people across Canadian Blood Services, including many who identify as 2SLGBTQIA+, it's been a long journey in which we've had to constantly

balance the head and the heart. Intellectually, we believed that any change of donation criteria had to meet a standard of evidence based on scientific, medical and social science research; while, in our hearts, we wanted to make eligibility more inclusive and avoid causing pain to anyone generous enough to volunteer to give blood or plasma. We're very pleased to finally have a better solution. At the same time, we still have a great deal of work to do in building trust among 2SLGBTQIA+ communities as we promote meaningful dialogue on all aspects of our relationships with donors.

This is what drives all our efforts to advance diversity, equity and inclusion. Whether we're engaging with Black communities to address the needs of patients with sickle cell disease or developing a Reconciliation Action Plan with Indigenous communities that are justifiably wary of the health care system, success depends on earning and retaining trust. Canadians of all backgrounds and identities expect of us what we expect of ourselves: to be open, honest and transparent, blending empathy with humility.

This is how we connect

The initiatives I've touched on here reflect just some of the transformative strategies we've put into action over the past year; many more are showcased in the pages of this annual report. The common element uniting all these achievements is people — the hard-working individuals and teams across Canadian Blood Services whose efforts have been shaped, accelerated and inspired by the unique challenges of the pandemic.

Living through another year of COVID-19 has also brought continued stress and fatigue to our thousands of team members as they've juggled the demands of vital work alongside family and personal responsibilities. I want to thank everyone at Canadian Blood Services for a tremendous collective effort, driven by our shared values of integrity, collaboration, adaptability, respect and dedication to excellence. Every day, people in all areas of this organization make critical connections that enable our health system partners to deliver superior-quality care — that ensure our generous donors and registrants feel valued and respected — and that help create better outcomes for patients across the country who count on **Canada's Lifeline**.

Dr. Graham D. Sher
Chief executive officer

Management analysis

This management analysis outlines Canadian Blood Services' financial results for the year ended March 31, 2022. It should be read in conjunction with Canadian Blood Services' audited consolidated financial statements and accompanying notes for the year ended March 31, 2022. The financial statements have been prepared in accordance with Canadian accounting standards for not-for-profit organizations. This management analysis should also be read together with the complete annual report, which provides context on the programs and operations of Canadian Blood Services. The information in this analysis is current to June 17, 2022, unless otherwise indicated.

In assessing what information to provide in this management analysis, management applied the materiality principle as guidance for disclosure. Management considers information material if its omission or misstatement could reasonably be expected to influence decisions that the primary users make on the basis of the financial information included in this management analysis.

Readers are cautioned that this management analysis includes forward-looking information and statements. By their nature, forward-looking statements require management to make assumptions and are subject to important known and unknown risks and uncertainties that may cause actual results to differ materially from those disclosed here. Although we consider our assumptions to be reasonable and appropriate, given current information, actual results may vary from those predicted in the forward-looking information and statements.

Funding

Together with donors, recipients, employees, partners and volunteers, we are **Canada's Lifeline**. Our role is to provide lifesaving products and services in transfusion and transplantation for Canadian patients and to safeguard Canada's systems of life essentials in blood, plasma, stem cells, and organs and tissues. To achieve this end, we receive most of our funding from our corporate members, the provincial and territorial ministers of health across Canada, with the exception of Quebec. Our blood, plasma, stem cells, and organs and tissues programs are block funded, whereas our systems for procurement and distribution of plasma protein and related products (PPRP) and our diagnostic services are funded according to products issued and services rendered. We also receive federal and Quebec government funding for our role in organ and tissue donation and transplantation (OTDT), which includes management of national registries for interprovincial organ sharing, development of leading national practices, and activities related to professional education, public awareness and system performance. Federal funding also supports research and development activities aimed at improving patient outcomes and the health and safety of donors. For both OTDT and research and development activities, the federal funding we receive complements funding for related activities received from our corporate members. We also generate revenue from the sale of stem cells to international recipients and receive income from our investments.

Canadian Blood Services has established two wholly owned captive insurance corporations: CBS Insurance Company Limited (CBSI) and Canadian Blood Services Captive Insurance Company Limited - Compagnie d'assurance captive de la Société canadienne du sang Limitée (CBSE). Together, these captive insurance companies provide Canadian Blood Services with comprehensive blood risk insurance covering losses up to $1 billion. The primary policy held by CBSI provides coverage up to $300 million, while the excess policy held by CBSE provides coverage up to $700 million. The corporate members provided funding for the CBSI policy in its early years. Those funds were invested, and the investments have increased in value such that no further injections of funding have been required for several years. The CBSE policy is not funded, but rather is underwritten through indemnities provided by the corporate members.

Financial highlights

Statement of operations

On a consolidated basis, revenues exceeded expenses by $15 million in 2021–2022, a situation primarily driven by $8 million of unrealized gains in forward currency contracts, combined with $6 million of unrealized gains and $1 million of realized net investment income generated by the insurance companies during the year.

Expenses — consolidated view

During 2021–2022, resiliency measures, such as productivity improvements and efficiencies, ensured that our blood operating costs remained relatively flat compared with 2020–2021, amid a rebound in blood product demand to prepandemic levels and continued COVID-19-related cost pressures.

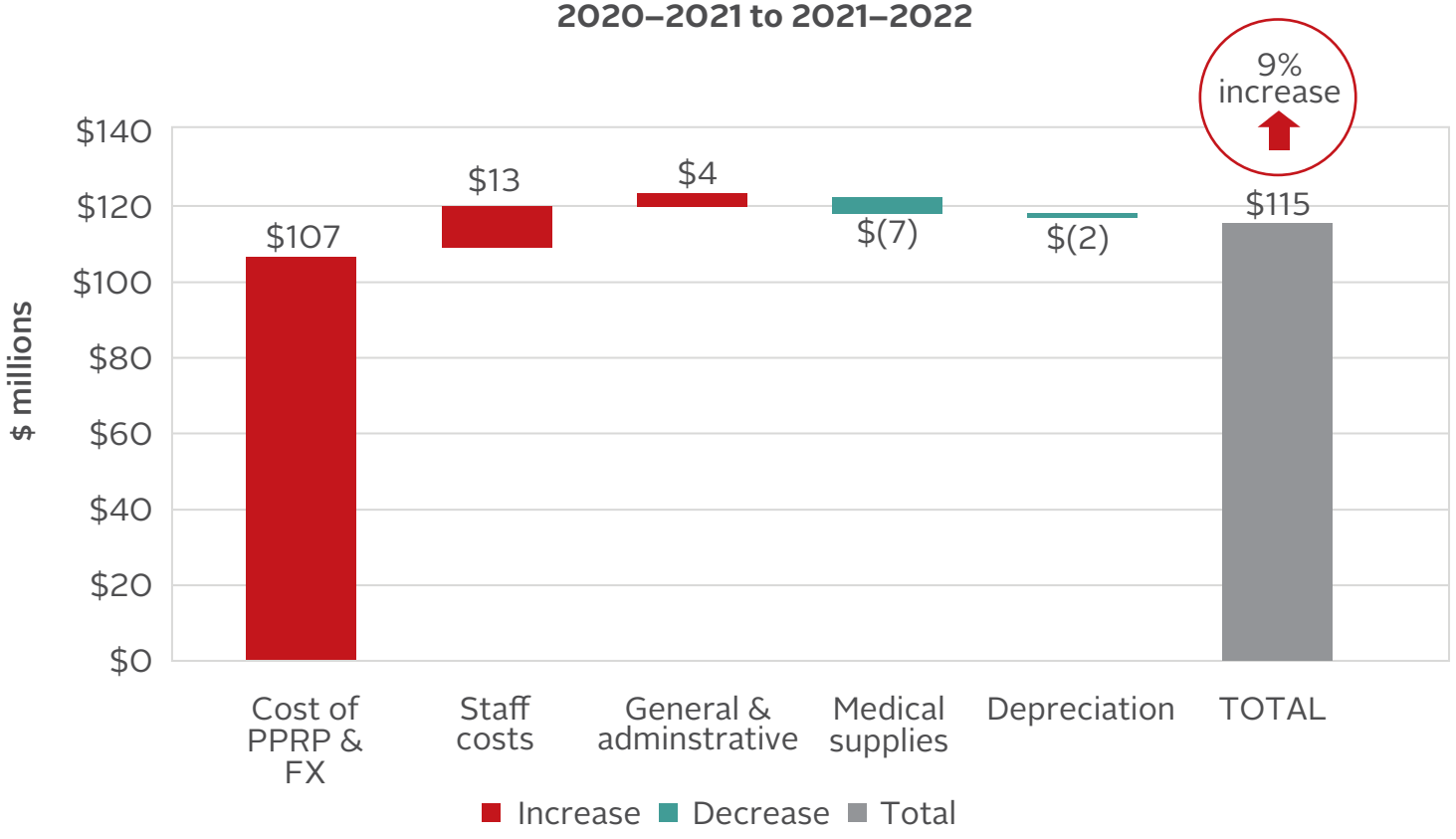
Management analysis

For the PPRP program, supply was secured to meet rising demand; however, increased pricing and inventory levels have decreased our cash position, which nonetheless has been well managed, with no requirement to draw on our available line of credit.

Costs incurred in the Stem Cells, Organs and Tissues, and Diagnostic Services programs remained relatively consistent with the prior year.

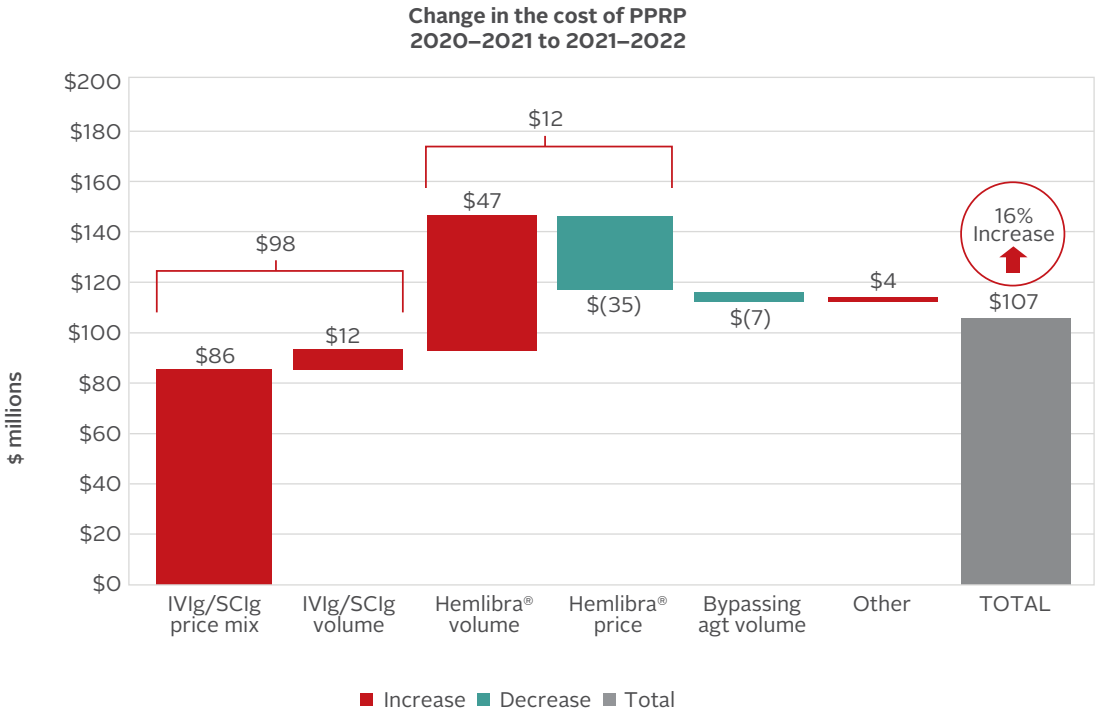
Total consolidated expenses increased by $115 million or nine per cent, to $1,336 million, primarily driven by higher pricing for and utilization of PPRP, which account for $107 million of the increase.

Change in expenses as presented in the consolidated statement of operations, 2020–2021 to 2021–2022



Cost of PPRP was higher primarily because of immunoglobulin pricing and, to a lesser extent, changes in utilization of various product groups.

As shown in the accompanying chart, the cost of PPRP, including foreign exchange, increased by $107 million or 16 per cent, to $782 million.



The main contributors to the cost increases were the following:

- $98 million increase in immunoglobulin (Ig) costs, because of an $86 million increase relating to price mix (reflecting an increase in the use of higher-priced products), a $7 million or three per cent increase in intravenous immunoglobulin (IVIg) volume and a $5 million or six per cent increase in subcutaneous immunoglobulin (SCIg) volume.
- $12 million net increase in Hemlibra® costs, because of a $47 million or 153 per cent increase in product issues generated by expanded use for patients without inhibitors, which was partially offset by a negotiated pricing reduction totalling $35 million.
- $7 million decrease in the costs of bypassing agents, driven by a nine per cent reduction in issues.

Staff costs increased by $13 million or four per cent, mainly because of planned termination costs, incremental staffing costs related to the new plasma collection sites in Ottawa and Brampton, higher non-cash pension expenses driven by interest rate changes and annual wage increases.

General and administrative expenses increased by $4 million or three per cent, as a result of additional professional services across most divisions, higher advertising and marketing costs, and increases in core operating expenses including logistics costs such as fuel, maintenance and delivery costs.

Management analysis

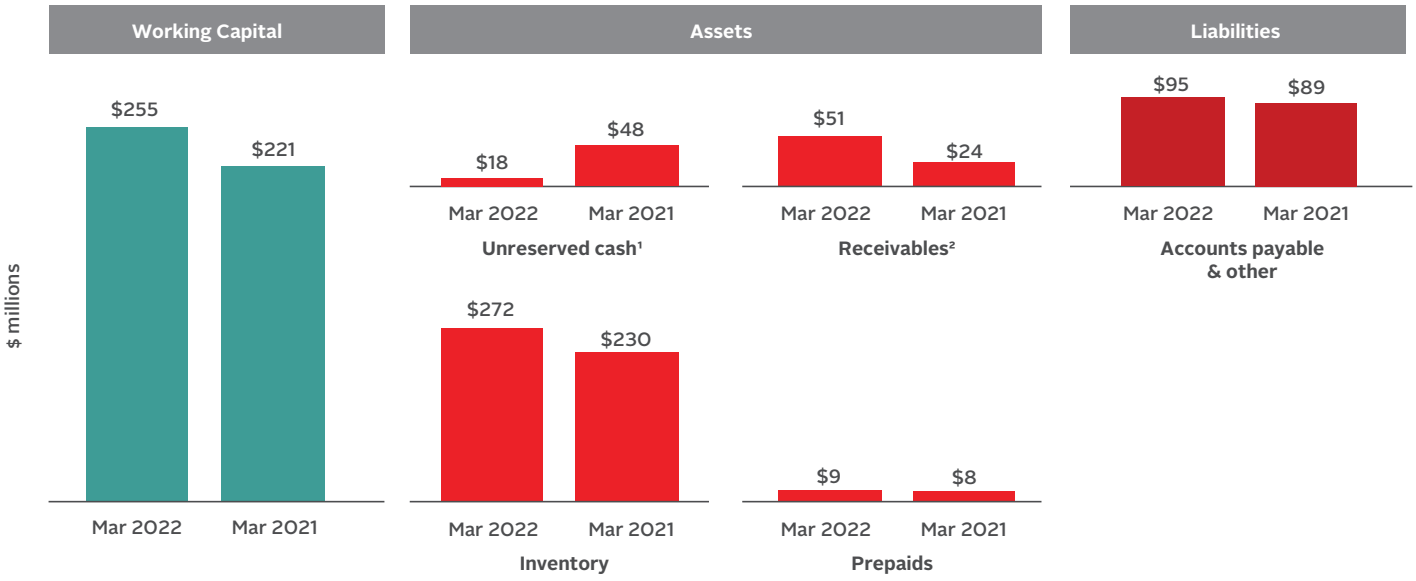
Medical supplies decreased by $7 million or 12 per cent, to $53 million, mainly because of increased donor testing efficiency with the move to next-generation equipment and reductions in personal protective equipment.

Foreign exchange (FX) showed a loss of $8 million in 2021–2022, compared with a gain of $0.4 million in 2020–2021, because of the strengthening of the Canadian dollar relative to the forward currency contract rates. We enter into forward currency contracts to mitigate foreign exchange exposure on a substantial portion of our U.S. dollar purchases of PPRP.

Statement of financial position

Our liquidity is largely influenced by the timing of receipt of funds from corporate members, the volume of inventory held, the supply of and demand for PPRP, the amount of deferred contributions and the number of large capital-intensive projects. As the operator of a national system, Canadian Blood Services is also exposed to varying payment terms on balances owed to and owed by the organization within each jurisdiction. Liquidity can be negatively affected if provinces do not remain current on their contributions or if additional cash outlays are required to invest in inventory.

The following chart provides an overview of the components of working capital as at March 31, 2022, and March 31, 2021.



[1] Unreserved cash represents cash ($102 million at March 31, 2022; $136 million at March 31, 2021) less internally reserved cash balances relating to certain deferrals reserved for future expenses ($56 million at March 31, 2022; $54 million at March 31, 2021) and other post-retirement and post-employment benefit liabilities ($28 million at March 31, 2022; $34 million at March 31, 2021).

[2] Accounts receivable represent corporate members' contributions receivable ($4 million at March 31, 2022; $6 million at March 31, 2021) and other amounts receivable ($47 million at March 31, 2022; $18 million at March 31, 2021).

Management analysis

At March 31, 2022, we had a healthy working capital ratio[3] of 4:1, with working capital of $255 million, up from $221 million at March 31, 2021; however, our liquidity ratio[4] slipped from 0.9:1 at March 31, 2021, to 0.7:1 at March 31, 2022, with a shift from unreserved cash to inventory. The unreserved cash balance on hand was $18 million or 5 days, down from the same time in the prior year (when it was $48 million or approximately 14 days). Cash days on hand were below the target of 14 to 45 days. These declines in unreserved cash and the liquidity ratio were primarily related to the increase in inventory of PPRP as a risk mitigation strategy, combined with an unexpected softening of demand, triggered by the pandemic.

Inventory for PPRP was above target at March 31, 2022, for two main reasons. First, there was a planned increase in immunoglobulin inventory to address the development of a more complex supply chain and the global supply chain concerns caused by the pandemic in 2020–2021. The success of this risk mitigation strategy ensured that all patient needs continued to be met in the face of great uncertainty and global supply chain disruption. Second, there was an unexpected and prolonged softening in immunoglobulin demand growth[5] in 2020–2021, which has continued (to a lesser degree) through 2021–2022.

Since March 2021, the number of immunoglobulin inventory weeks on hand has remained consistent, but immunoglobulin inventory value has grown because of higher pricing. Hemlibra® inventory also increased to meet demand from the expanded use by non-inhibitor patients. More aggressive uptake than forecast necessitated a controlled approval of requests while inventory was built to appropriate levels.

Actions have been taken to adjust for the softened demand, but inventory is anticipated to remain elevated during the remainder of the year and continuing into 2023–2024. Management has negotiated reductions in contractual purchases of immunoglobulin for 2023–2024 and deferrals of immunoglobulin purchases from 2022–2023 to 2023–2024. Management continues to explore additional avenues to reduce inventory and improve liquidity. By mid 2023–2024, inventory is expected to reach target levels as certain contracts expire.

Receivables for members' contributions were current at March 31, 2022, representing $4 million of the total accounts receivable of $51 million. A $27 million supplier credit and $6 million in federal government receivables accounted for most of the increase in receivables, with the remainder consisting of trade and statutory receivables.

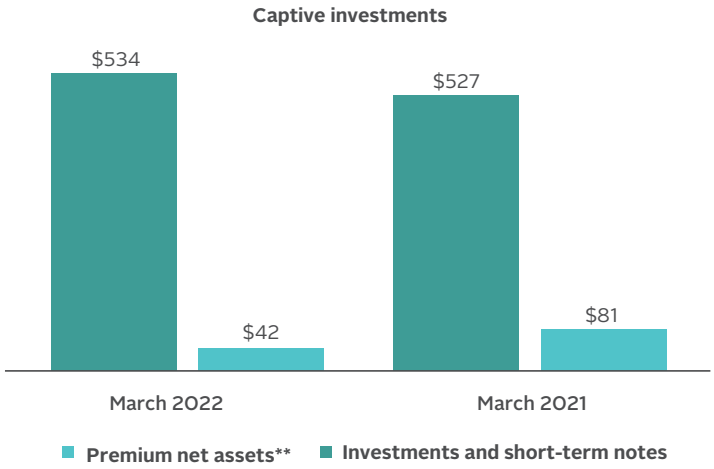
[3] Working capital ratio is calculated as the total of unreserved cash, accounts receivable, inventory and prepaids, divided by accounts payable.

[4] Liquidity ratio is calculated as the total of unreserved cash, accounts receivable and prepaids, divided by accounts payable.

[5] Demand continued to grow in 2021–2022 but not at the historical and expected rate.

CBSI continues to be in a healthy position, with sufficient assets to fully fund the extent of its insurance limits and its regulatory and market volatility reserves. Premium net assets (assets less insurance limits and reserves) amounted to $42 million[6] at March 31, 2022 ($81 million at March 31, 2021). In early 2021–2022, premium net assets were utilized to mitigate risks, including increasing the stock throughput policy by $20 million when the commercial insurance market proved challenging and establishing a $10 million business continuity endorsement when there was a lack of availability in the commercial markets.

Investments and short-term notes[7] have remained relatively constant since the prior year, with a slight increase of $7 million or one per cent primarily driven by unrealized gains on Canadian pooled equities. Gains realized on global equities through to December 2021 were affected by uncertainties arising from Russia's invasion of Ukraine, which caused a significant decline in value during the last quarter of the fiscal year. In addition, losses on the sale of bonds were incurred as the fixed income portfolio was adjusted for inflationary concerns.



The impacts of the COVID-19 pandemic and the Russian invasion of Ukraine continue to evolve, and the economic environment could be subject to sustained volatility. The ultimate duration and magnitude of effects on the economy and the ensuing financial effects on the organization are not known at this time. Notably, there could be further fluctuations in the fair value of our investments and future declines in investment income.

The portfolio's asset allocation target is broadly a 75/25[8] split between fixed income and equities. Of the 75 per cent allocation to fixed income, 65 per cent is represented by Canadian-issued securities. These consist mainly of Canadian federal and provincial government bonds and a limited segment of corporate bonds. The remaining 10 per cent is invested in a global sovereign bond fund. Of the 25 per cent allocation to equities, 10 per cent is invested in Canadian equities and 15 per cent is invested in global equities. Although market volatility remains, this is a conservative portfolio with some modest exposure to growth and risk. The portfolio does not include any Russian or Ukrainian securities.

[6] Measured on an International Financial Reporting Standards basis. Premium net assets comprise net current assets (primarily investments) held by CBSI, measured in accordance with International Financial Reporting Standards ($516 million at March 31, 2022; $521 million at March 31, 2021), less the aggregate limits of insurance policies held by CBSI ($370 million at March 31, 2022; $340 million at March 31, 2021) less statutory reserves ($45 million at March 31, 2022; $45 million at March 31, 2021) and the market volatility reserve ($59 million at March 31, 2022; $55 million at March 31, 2021). The statutory reserves are calculated as 15 per cent of the aggregate limits of the insurance policies, and the market volatility reserve is determined in consultation with a third-party investment adviser.

[7] Investments and short-term notes comprise investments (primarily held by CBSI), measured in accordance with Canadian accounting standards for not-for-profit organizations ($532 million at March 31, 2022; $524 million at March 31, 2021), and short-term notes, classified as cash and cash equivalents in the consolidated statement of financial position ($2 million at March 31, 2022; $3 million at March 31, 2021).

[8] The allocations discussed in this paragraph are not rigid and may vary slightly from time to time.

Optimizing cost-efficiency

As a partner in health care, Canadian Blood Services has an obligation to ensure that every dollar entrusted to us by Canadians is invested wisely and managed effectively. Although our first priority is to safeguard the processes, practices and systems that help us to ensure the quality, safety and sufficiency of our products and services, we constantly look for opportunities to become more productive and to maximize the impact of our investments.

The tangible benefits arising from these efforts have been observed through two consecutive independent performance reviews:

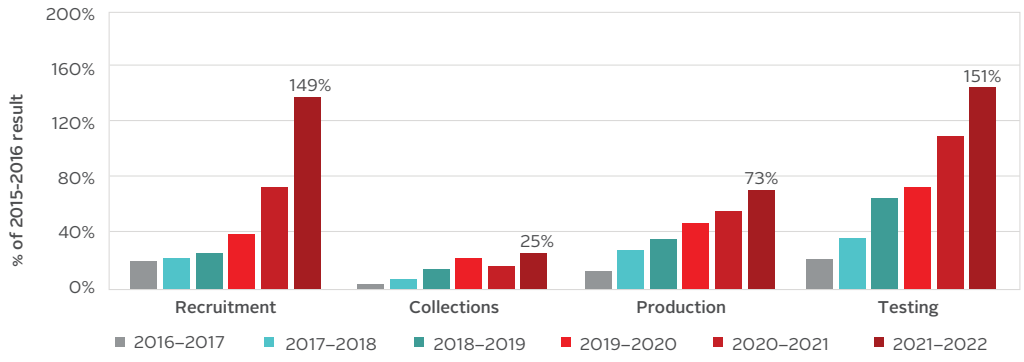
- $70 million in cost savings were achieved between fiscal years 2008–2009 and 2011–2012; and
- $60 million in cost savings were achieved between 2012–2013 and 2018–2019.

The cumulative savings to March 31, 2022, are $164 million, despite the impacts of the pandemic. Beyond efficiencies in the blood program, our corporate members continue to benefit from product choice and favourable pricing obtained through Canadian Blood Services' value-based procurement activities for PPRP. Through these procurement processes, Canadian Blood Services has provided brand diversity, product choice and state-of-the-art products while obtaining favourable pricing.

The cumulative benefits provided (in terms of savings and avoidance) exceeded $1.3 billion between 2013–2014 and 2021–2022. Realized savings and cost avoidance of $857 million from requests for proposal and contract re-negotiations between 2013–2014 and 2018–2019 were confirmed in an independent performance review.

The milestones reached to date reflect our commitment to cost containment and give us confidence that we are on course. Even with the impacts of the pandemic, we achieved all four of the productivity targets in 2021–2022.

The chart shows progress in each of the productivity metrics[9] between fiscal years 2015–2016 and 2021–2022. By 2021–2022, recruitment increased by 149 per cent, collections increased by 25 per cent, production increased by 73 per cent and testing increased by 151 per cent.



[9] The four productivity metrics are recruitment (number of units collected from donors per recruitment full-time equivalent), collections (number of units collected per collections full-time equivalent), production (number of weighted products processed per production full-time equivalent) and testing (number of samples tested per testing full-time equivalent).

Governance

Canadian Blood Services is a not-for-profit charitable organization operating independently at arm's length from government. It is regulated by Health Canada through the federal Food and Drugs Act and is governed and guided by the principles of accountability, engagement and transparency. The organization was created through a memorandum of understanding among the federal, provincial and territorial governments. In 2019–2020, Canadian Blood Services and the provincial and territorial governments, as corporate members, finalized the National Accountability Agreement, which sets out the accountability relationships among the parties.

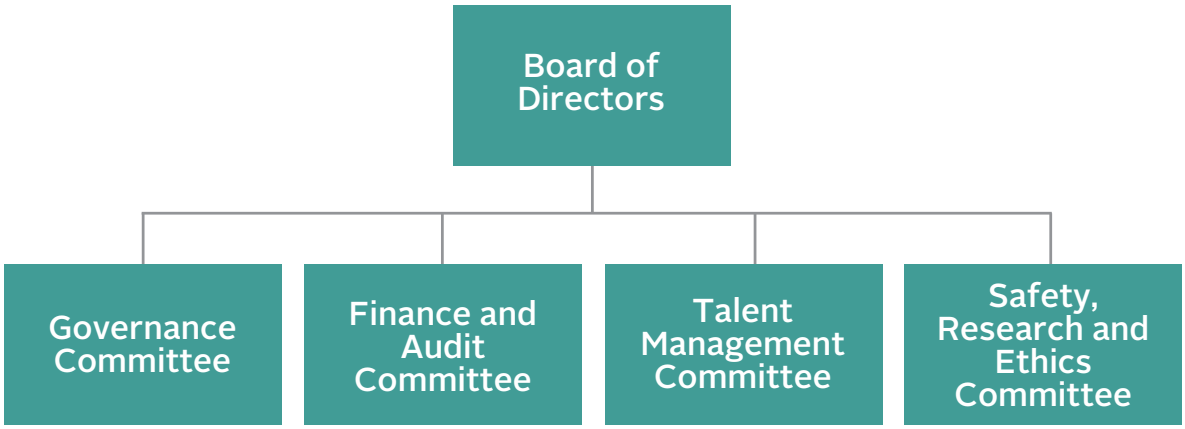
Members

Under bylaws governed by the *Canada Not-for-profit Corporations Act*, the provincial and territorial ministers of health (except Quebec's minister) serve as corporate members of Canadian Blood Services and appoint our board of directors. The board of directors is accountable to the corporate members.

The ministers also collectively approve Canadian Blood Services' three-year corporate plan and annual budget. A lead province is designated every two years. Effective April 1, 2021, Ontario assumed this role, replacing Prince Edward Island, which had been in the role since April 1, 2019.

Board of directors and committees

Our board consists of 13 directors, who are appointed by the corporate members. The board's role is broad oversight of Canadian Blood Services' management and direction, as well as helping to maintain and protect the soundness and integrity of the blood system in Canada, with the goal of protecting the integrity of the products and services that the organization provides to Canadians.



Number of meetings held in 2021-2022	
Board	7
Talent Management Committee	5
Finance and Audit Committee	4
Governance Committee	4
Safety, Research and Ethics Committee	4

Board attendance and compensation paid during 2021–2022

Director	Chair	Number of board meetings attended	Number of committee meetings attended	Honorariums paid
Mel Cappe	Board, to December 12, 2021	5/7	7/9	$53,149
Judy Steele	Finance and Audit Committee	6/7	8/8	$20,375
Glenda Yeates	Board Vice-Chair	6/7	9/9	$26,250
Dr. Brian Postl	Board, from December 13, 2021	6/7	8/8	$34,601
Lorraine Muskwa		7/7	6/9	$23,125
Robert Adkins		7/7	8/8	$13,000
Kelly Butt	Governance Committee	7/7	8/8	$34,625
Victor Young		7/7	8/8	$23,500
Craig Knight	Talent Management Committee, to December 12, 2021	5/7	7/9	$24,550
David Lehberg		7/7	9/9	$22,188
Anne McFarlane	Safety, Research and Ethics Committee	7/7	8/8	$26,500
Dunbar Russel		5/7	6/8	$19,500
Dr. Jeff Scott	Talent Management Committee, to December 13, 2021	7/7	9/9	$25, 250
Bobby Kwon		2/2	2/2	$6,188
David Morhart		2/2	2/2	$6,563
Donnie Wing		2/2	2/2	$6,563

There were a number of changes to the board of directors during 2021–2022. Mel Cappe, Craig Knight and Dunbar Russel retired from the board on December 12, 2021. They were replaced by Bobby Kwon, David Morhart and Donnie Wing, who joined the board on December 13, 2021. Board member Dr. Brian Postl became the new board chair on December 13, 2021, replacing Mel Cappe, and Dr. Jeff Scott became the new Talent and Management Committee chair on December 13, 2021, replacing Craig Knight.

Board of directors' retainer and honorariums

Canadian Blood Services' bylaws stipulate that directors be remunerated for attendance at meetings of the board of directors and committees, as set by the corporate members. Directors receive honorariums for meetings and business conducted on behalf of the board and are reimbursed for their travel expenses. The chair receives an annual retainer.

The table below shows the structure of honorariums paid to the directors of the board.

Board of directors' retainer and honorariums	
Annual retainer for the chair	$15,000 per annum
Meeting participation honorarium	$750 per day
Meeting preparation honorarium	One preparation day for directors @ $750 per each meeting day. Up to two additional days for chair and vice-chair @ $750 per day. Up to one additional day for committee chairs @ $750 per day.
Special meeting preparation honorarium	$750 per day. One preparation day for participating directors per each meeting day. Up to one additional day for special meeting chair.
Travel to meetings	Up to two days (depending on origin and destination) per meeting @ $500 per day.
Travel	Travel costs according to Canadian Blood Services' expense policy.
Days on business honorarium	$750 per day (for events such as meetings on behalf of Canadian Blood Services)

Executive management team compensation

Canadian Blood Services is founded on the principles of safety, transparency, integrity and accountability — traits deeply rooted in our culture. How we compensate executives reflects these principles. Canadian Blood Services has a comprehensive and rigorous executive performance management and compensation program, which follows best-practice principles in corporate governance.

The CEO, who reports to the board of directors, oversees the vice-presidents and our internal auditor. Each year, the performance of members of the executive management team, including the CEO, is measured using executive performance agreements. These agreements contain goals, defined by the board of directors, linked to achieving corporate performance objectives. Performance against these goals is used to derive the specific calculations for either merit increases or performance awards.

The CEO's evaluation is the responsibility of the full board, with the process largely overseen and managed by the Talent Management Committee. The CEO is subject to two performance reviews during each fiscal year: an interim review in the second quarter and a full review at the end of the fourth quarter. This full board review tracks in detail the CEO's performance against specific, measurable performance goals. Any compensation adjustments flow from this review, after deliberation by the board, and such adjustments are solely at the board's discretion.

Every two years, the Talent Management Committee also commissions an independent study to gather comparative compensation data for the CEO. Every third year, the committee independently commissions outside expertise to lead a 360 degree performance review of the CEO.

Members of the executive management team are reviewed through a similar process. The CEO meets with all executive management team members and reviews their performance in relation to achievement of goals set out in their respective performance agreements. The CEO's recommendations for compensation adjustments are presented to the Talent Management Committee of the board for approval.

Canadian Blood Services aims to align our total compensation for executives with the market median for comparator groups.

Total compensation for executives

	Fiscal year	Base salary	Compensation at risk as a percentage of base salary[10]
Dr. Graham D. Sher *Chief Executive Officer*	2021–2022 2020–2021	$655,389 $636,300	30.0% 30.0%
Jean-Paul Bédard *Vice-President, Plasma Operations*	2021–2022 2020–2021	$317,610 $308,359	22.5% 22.5%
Judie Leach Bennett *Vice-President, General Counsel and Chief Risk Officer*	2021–2022 2020–2021	$311,640 $294,000	22.5% 22.5%
Dr. Christian Choquet *Vice-President, Quality and Regulatory Affairs*	2021–2022 2020–2021	$293,790 $286,624	22.5% 22.5%
Dr. Isra Levy *Vice-President, Medical Affairs and Innovation*	2021–2022 2020–2021	$487,396 $468,650	25.0% 25.0%
Ralph Michaelis *Chief Information Officer*	2021–2022 2020–2021	$258,862 $251,323	22.5% 22.5%
Andrew Pateman *Vice-President, People, Culture and Performance*	2021–2022 2020–2021	$355,441 $341,771	22.5% 22.5%
Pauline Port *Chief Financial Officer and Vice-President, Corporate Services*	2021–2022 2020–2021	$405,938 $391,938	25.0% 25.0%
Rick Prinzen *Chief Supply Chain Officer and Vice President, Donor Relations*	2021–2022 2020–2021	$350,776 $342,220	25.0% 25.0%
Ron Vezina *Vice-President, Public Affairs*	2021–2022 2020–2021	$271,625 $265,000	22.5% 22.5%
Yasmin Razack *Chief Diversity Officer*	Started on December 1, 2021	$65,981	22.5%

[10] *Compensation also includes:*

- *a $10,000 annual vehicle allowance, with the exception of the CEO, who receives an annual vehicle allowance of $18,000*
- *vacation entitlement: year one, four weeks; year two, five weeks; year three, six weeks; and for the CEO, year 20, seven weeks*
- *benefits package: executive benefits package covering health, dental, life insurance, long-term disability, accidental death insurance, defined benefit pension and health-care spending account.*

Consolidated Financial Statements of

And Independent Auditors' Report thereon

Year ended March 31, 2022

KPMG LLP
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Ottawa ON K2P 2P8
Canada
Tel 613-212-5764
Fax 613-212-2896

INDEPENDENT AUDITORS' REPORT

To the Members of Canadian Blood Services

Opinion

We have audited the consolidated financial statements of the Canadian Blood Services (the "Entity"), which comprise:

- the consolidated statement of financial position as at March 31, 2022
- the consolidated statement of operations for the year then ended
- the consolidated statement of changes in net assets for the year then ended
- the consolidated statement of cash flows for the year then ended
- and notes to the consolidated financial statements, including a summary of significant accounting policies.

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the consolidated financial position of the Entity as at March 31, 2022, and its consolidated results of operations, its consolidated changes in net assets and its consolidated cash flows for the year then ended in accordance with Canadian Accounting standards for not-for-profit organizations.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "***Auditors' Responsibilities for the Audit of the Financial Statements***" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group Entity to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Canada

June 17, 2022

Canadian Blood Services
BLOOD PLASMA STEM CELLS ORGANS & TISSUES

Consolidated Statement of Financial Position

As at March 31, 2022, with comparative information for 2021
(In thousands of dollars)

	2022	2021
Assets		
Current assets:		
Cash and cash equivalents (note 3)	$ 101,987	$ 136,427
Members' contributions receivable	4,158	6,094
Other amounts receivable	47,023	17,992
Inventory (note 4)	271,838	230,149
Forward currency contracts (note 16)	277	–
Prepaid expenses	9,191	8,360
	434,474	399,022
Employee future benefits assets (note 8)	2,613	–
Investments, captive insurance operations (note 5)	532,504	524,042
Capital assets (note 6)	256,967	260,223
Total Assets	$ 1,226,558	$ 1,183,287
Liabilities and Net Assets		
Current liabilities:		
Accounts payable and accrued liabilities (note 7)	$ 94,830	$ 88,977
Forward currency contracts (note 16)	–	7,641
	94,830	96,618
Employee future benefit liabilities (note 8)	30,483	65,567
Deferred contributions (note 10)	448,049	426,409
Provision for future claims (note 17)	299,787	299,706
Total Liabilities	873,149	888,300
Net assets (note 11) :		
Invested in capital assets	20,920	20,920
Restricted for fair value of forward currency contracts	277	(7,641)
Restricted for captive insurance purposes	238,165	230,676
Unrestricted net accumulated surplus	94,047	51,032
	353,409	294,987
Guarantees and contingencies (note 18)		
Commitments (note 19)		
Total Liabilities and Net Assets	$ 1,226,558	$ 1,183,287

See accompanying notes to the consolidated financial statements.

On behalf of the Board

Dr. Brian Postl, Director and Chair

Judy Steele, Director

Canadian Blood Services
BLOOD PLASMA STEM CELLS ORGANS & TISSUES

Consolidated Statement of Operations

Year ended March 31, 2022, with comparative information for 2021
(In thousands of dollars)

	2022 (note 13)	2021 (note 13)
Revenue:		
Members' contributions	$ 1,310,268	$ 1,184,936
Federal contributions	13,067	11,440
Less amounts deferred	(57,794)	(45,976)
	1,265,541	1,150,400
Amortization of previously deferred contributions:		
Relating to capital assets	20,351	21,271
Relating to operations	26,279	23,032
Total contributions recognized as revenue	1,312,171	1,194,703
Net investment income (note 12)	4,221	31,733
Stem cells revenue	18,305	16,093
Other income	2,571	7,561
Total revenue	**1,337,268**	**1,250,090**
Expenses:		
Cost of Plasma protein and related products	782,035	683,470
Staff costs	322,468	309,344
General and administrative	151,617	147,406
Medical supplies	52,597	59,833
Losses and incurred expenses	294	84
Depreciation and amortization	19,291	21,204
Foreign exchange loss (gain)	7,945	(362)
Total expenses	**1,336,247**	**1,220,979**
Excess of revenue over expenses before the undernoted	**1,021**	**29,111**
Change in fair value of forward currency contracts	7,918	(18,685)
Change in fair value of investments measured at fair value	6,468	22,990
Excess of revenue over expenses	**$ 15,407**	**$ 33,416**

See accompanying notes to the consolidated financial statements.

Canadian Blood Services
BLOOD PLASMA STEM CELLS ORGANS & TISSUES

Consolidated Statements of Changes in Net Assets

Year ended March 31, 2022, with comparative information for 2021
(In thousands of dollars)

March 31, 2022	Invested in capital assets	Restricted for fair value of forward currency contracts	Restricted for captive insurance purposes	Unrestricted net accumulated surplus	Total
Balance, beginning of year (note 11)	$ 20,920	$ (7,641)	$ 230,676	$ 51,032	$ 294,987
Excess of revenue over expenses	–	–	7,489	7,918	15,407
Remeasurements and other items related to employee future benefits	–	–	–	43,015	43,015
Release of net asset restriction for realized loss	–	7,828	–	(7,828)	–
Change in fair value of forward currency contracts	–	90	–	(90)	–
Balance, end of year (note 11)	$ 20,920	$ 277	$ 238,165	$ 94,047	$ 353,409

March 31, 2021	Invested in capital assets	Restricted for fair value of forward currency contracts	Restricted for captive insurance purposes	Unrestricted net accumulated surplus	Total
Balance, beginning of year (note 11)	$ 24,006	$ 11,044	$ 178,575	$ 42,030	$ 255,655
Excess (deficiency) of revenue over expenses	–	–	52,101	(18,685)	33,416
Remeasurements and other items related to employee future benefits	–	–	–	9,002	9,002
Change in investment in capital assets	(3,086)	–	–	–	(3,086)
Release of net asset restriction for realized loss	–	24	–	(24)	–
Change in fair value of forward currency contracts	–	(18,709)	–	18,709	–
Balance, end of year (note 11)	$ 20,920	$ (7,641)	$ 230,676	$ 51,032	$ 294,987

See accompanying notes to the consolidated financial statements.

Canadian Blood Services
BLOOD PLASMA STEM CELLS ORGANS & TISSUES

Consolidated Statement of Cash Flows

Year ended March 31, 2022, with comparative information for 2021
(In thousands of dollars)

	2022	2021
Cash and cash equivalents provided by (used for):		
Operating activities:		
Excess of revenue over expenses	$ 15,407	$ 33,416
Items not involving cash and cash equivalents:		
Depreciation and amortization of capital assets	19,291	21,204
Amortization of deferred contributions	(46,630)	(44,303)
Loss (gain) on sale of capital assets	975	(154)
Net realized gains on sales of investments, captive insurance operation	4,464	(23,137)
Change in fair value of equity investments, captive insurance operation	(6,468)	(22,990)
Interest amortization of bonds, captive insurance operations	1,795	1,908
Change in provision for future claims	81	(210)
Employee future benefit expenses in excess of cash payments	5,318	4,777
Change in fair value of forward currency contracts	(7,918)	18,685
	(13,685)	(10,804)
Change in non-cash operating working capital:		
Decrease in Members' contributions receivable	1,936	967
Increase in other amounts receivable	(29,031)	(1,817)
Increase in inventory	(41,689)	(73,052)
(Increase) decrease in prepaid expenses	(831)	706
Increase in accounts payable and accrued liabilities	5,431	2,246
Increase deferred contributions received for expenses for future periods	51,175	16,370
Total operating activities	(26,694)	(65,384)
Investing activities:		
Proceeds on sale of investments, captive insurance operations	513,669	625,970
Purchases of investments, captive insurance operations	(521,922)	(638,396)
Proceeds on sale of capital assets	85	222
Purchases of capital assets	(16,673)	(16,409)
Total investing activities	(24,841)	(28,613)
Financing activities:		
Deferred contributions received related to capital assets	17,095	16,493
Total financing activities	17,095	16,493
Decrease in cash and cash equivalents	(34,440)	(77,504)
Cash and cash equivalents, beginning of year	136,427	213,931
Cash and cash equivalents, end of year	$ 101,987	$ 136,427
Cash and cash equivalents are comprised of:		
Cash on deposit	$ 100,279	$ 133,679
Short-term notes	1,708	2,748
	$ 101,987	$ 136,427
Non-cash investing activities		
Non-monetary disposal of capital assets (note 22(a))		
Decrease in capital assets	$ –	$ (12,179)
Decrease in restricted net assets – capital	–	3,086
Decrease in deferred contributions – capital	–	9,093
Total non-cash investing activities	$ –	$ –

See accompanying notes to the consolidated financial statements.

1. Nature of the organization and operations:

Canadian Blood Services/Société canadienne du sang (the Corporation) owns and operates the national blood supply system for Canada, except Québec, and is responsible for the collection, testing, processing and distribution of blood and blood products, including red blood cells, platelets, plasma and cord blood, as well as the recruitment and management of donors. In addition, the Corporation provides the following services: (i) contracting of plasma protein manufacturers, and purchasing and distributing of plasma protein and related products, (ii) developing and managing donor registries for stem cells, cord blood stem cells and organs, (iii) providing diagnostic services for patients and hospitals across Western Canada and some parts of Ontario, (iv) supporting policy and leading practice development, professional education and public awareness over transfusion practices and organ and tissue donation and transplantation, and (v) conducting and supporting research in transfusion science, medicine, cellular therapies and organ and tissue transplantations.

The Corporation was incorporated on February 16, 1998, under Part II of the Canada Corporations Act. Effective May 7, 2014, the Corporation transitioned its incorporation to the Canada Not-for-Profit Corporations Act. It is a corporation without share capital and qualifies for tax-exempt status as a registered charity under the Income Tax Act (Canada). The Members of the Corporation are the Ministers of Health of the Provinces and Territories of Canada, except Québec. The Members, as well as the Federal and Quebec governments provide contributions to fund the operations of the Corporation. The Corporation operates in a regulated environment, pursuant to the requirements of Health Canada.

The Corporation has established two wholly-owned captive insurance corporations; CBS Insurance Company Limited (CBSI) and Canadian Blood Services Captive Insurance Company Limited/Compagnie d'assurance captive de la société canadienne du sang limitée (CBSE). CBSI was incorporated under the laws of Bermuda on September 15, 1998 and is licensed as a Class 3 reinsurer under the Insurance Act, 1978 of Bermuda and related regulations. CBSE was incorporated under the laws of British Columbia on May 4, 2006 and is registered under the Insurance (Captive Company) Act of British Columbia.

2. Basis of presentation and significant accounting policies:

Significant accounting policies:

The consolidated financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations in Part III of the CPA Canada Handbook – Accounting.

2. Basis of presentation and significant accounting policies (continued):

Significant accounting policies (continued):

A summary of the significant accounting policies used in these consolidated financial statements are set out below. The accounting policies have been applied consistently to all periods presented.

(a) Consolidation:

The consolidated financial statements include the results of the operations of Canadian Blood Services and the accounts of its wholly-owned captive insurance subsidiaries.

(b) Use of estimates:

The preparation of the consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses in the consolidated financial statements. Estimates and assumptions may also affect disclosure of contingent assets and liabilities at the date of the consolidated financial statements. Actual results could differ from these estimates.

The COVID-19 pandemic has continued to evolve and the economic environment in which the Corporation operates could be subject to sustained volatility, which could continue to impact our financial results, as the duration of the COVID-19 pandemic and related containment efforts, and the effectiveness of vaccines on new variants remains uncertain.

On February 24, 2022, Russia invaded Ukraine, while Ukraine mounted resistance to advances made by Russia. The Russian-Ukraine war has created geopolitical and economic uncertainties across the globe. The market volatility created by the conflict has resulted in a decline in the value of investments, mainly on the equity funds. This impacts the investments held by Canadian Blood Services' wholly-owned captive insurance corporations CBSI and CBSE and the investment assets held in the defined benefit pension plans. The situation is dynamic and the ultimate duration and magnitude of the impact on the economy and the financial effect on the Corporation is not known at this time. These impacts could include fluctuations in the fair value of the investments, future declines in investment income and fluctuations in the employee future benefits liability. An estimate of the financial effect of the pandemic on the Corporation is not practicable at this time.

Certain critical judgments are particularly complex in the current uncertain environment and significantly different amounts could be reported under different conditions or assumptions. The Company continues to monitor and assess the impacts of the COVID-19 pandemic and Russia's war on Ukraine on our critical accounting judgments, estimates and assumptions.

Significant estimates include assumptions used in measuring pension and other post-employment benefits and the provision for future insurance claims, which are described in more detail in notes 8 and 17, respectively.

2. Basis of presentation and significant accounting policies (continued):

Significant accounting policies (continued):

(c) Revenue recognition:

The Corporation follows the deferral method of accounting for contributions for not-for-profit organizations.

Members' and Federal contributions are recorded as revenue in the period to which they relate. Amounts approved but not received by the end of an accounting period are accrued. Where a portion of a contribution relates to a future period, it is deferred and recognized in the subsequent period.

Externally restricted contributions are recognized as revenue in the year in which the related expenses are recognized. Contributions restricted for the purchase of capital assets other than land are initially deferred and then amortized to revenue on a straight-line basis, at a rate corresponding with the depreciation rate for the related capital asset.

Contributions restricted for the purchase of land are recognized as direct increases in net assets invested in capital assets.

Unrestricted funding is recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Restricted investment income is recognized as revenue in the year in which the related expenses are recognized. Unrestricted investment income is recognized as revenue when earned.

Revenue from fees and contracts is recognized when the services are provided, or the goods are distributed.

Restricted donations are recognized as revenue in the year in which the related expenses are recognized. Unrestricted donations are recognized as revenue in the year received.

(d) Donated goods and services:

The Corporation does not pay donors for whole blood, plasma, platelets or cord donations. Additionally, a substantial number of volunteers contribute a significant amount of time each year in support of the activities of the Corporation. The value of such contributed goods and services is not quantified in the financial statements. Contributions of materials and services, other than volunteer hours, are recorded when a fair value can be reasonably estimated and when the materials and services are used in the normal course of operations and would otherwise be purchased.

2. Basis of presentation and significant accounting policies (continued):

Significant accounting policies (continued):

(e) Inventory:

Inventory of the Corporation consists of plasma protein and related products, blood products, cord blood products and supplies related to the collection, manufacturing and testing of blood products.

Inventory is measured at the lower of cost and current replacement cost. Cost for plasma protein and related products and supplies inventories is measured at average cost. Cost for blood products and cord blood products includes an appropriate portion of direct costs and overhead incurred in the collection, manufacturing, testing and distribution processes.

Plasma protein and related products, blood products, cord blood products are charged to the statement of operations upon distribution to hospitals.

Management regularly performs reviews and when necessary, writes off slow moving or obsolete inventory.

(f) Capital assets:

Purchased capital assets are recorded at cost. Contributed capital assets are recorded at fair value at the date of contribution. Assets acquired under capital leases are amortized over the estimated life of the assets or over the lease term, as appropriate. Repairs and maintenance costs are expensed. Betterments, which enhance the service potential of an asset are capitalized.

When capital assets can be segregated into major components that have different useful lives, these components are separately identified and amortized over their respective estimated useful lives.

Capital assets are reviewed for impairment whenever events or changes in circumstances indicate that the asset no longer contributes to the Corporation’s ability to provide goods or services, or that the value of future economic benefits or service potential associated with the asset is less than its net carrying amount. In this event, recoverability of assets held and used is measured by reviewing the estimated the estimated fair value or replacement cost of the asset. If the carrying amount of an asset exceeds its estimated fair value or replacement cost, an impairment charge is recognized by the amount by which the carrying amount of the asset exceeds the fair value or replacement cost of the asset. In instances where a tangible capital asset is integrated with other assets such that it may be necessary to consider the value of the tangible capital asset's future economic benefits or service potential for the group of integrated assets as a whole; a write-down may be recognized and measured for the group of assets rather than for an individual tangible capital asset. Any write-down is allocated to the assets of the group on a pro rata basis using the relative carrying amounts of those assets. When a capital asset is written down, the corresponding amount of any unamortized deferred contributions related to the capital asset is recognized as revenue. Write-downs are not reversed.

2. Basis of presentation and significant accounting policies (continued):

Significant accounting policies (continued):

(f) Capital assets (continued):

Amortization is recorded on a straight-line basis over the estimated useful lives of the assets at the rates indicated below:

Asset	Useful life
Buildings and building components	25 to 65 years
Machinery and equipment	8 to 25 years
Furniture and office equipment	5 to 10 years
Motor vehicles	8 years
Computer equipment	3 years
Computer software	2 to 5 years

Leasehold improvements are depreciated on a straight-line basis over the shorter of the lease term or their estimated useful lives. Assets under construction are not depreciated until they are available for use by the Corporation.

The right to the blood supply system represents the excess of the purchase price of the system over the fair value of the tangible net assets acquired in 1998 and is being amortized on a straight-line basis over 40 years.

The Corporation has future obligations associated with the disposal of certain equipment in an environmentally responsible manner, and the restoration of leased premises to an agreed upon standard at the end of the lease. Where there is a legal obligation associated with the retirement of equipment or restoration of leases premises, the Corporation recognizes a liability and the costs are capitalized as part of the carrying amount of the related asset and depreciated over the asset's estimated useful life.

(g) Foreign currency transactions:

Foreign currency transactions of the Corporation are translated using the temporal method. Under this method, transactions are initially recorded at the rate of exchange prevailing at the date of the transaction. Thereafter, monetary assets and liabilities are adjusted to reflect the exchange rates in effect at the consolidated statement of financial position date. Gains and losses resulting from the adjustment are included in the consolidated statement of operations.

(h) Employee future benefits:

The Corporation sponsors two defined benefit plans, one for employees and the other for executives. In addition, the Corporation sponsors a defined contribution pension plan and provides other retirement and post-employment benefits to eligible employees. Benefits provided under the defined benefit pension plans are based on a member's term of service and average earnings over a member's five highest consecutive annualized earnings.

2. Basis of presentation and significant accounting policies (continued):

Significant accounting policies (continued):

(h) Employee future benefits: (continued):

The Corporation accrues its obligations under employee benefit plans as the employees render the services necessary to earn pension and other retirement and post-employment benefits.

The defined benefit obligations for pensions and other retirement and post-employment benefits earned by employees is measured using an actuarial valuation prepared for accounting purposes. The obligation is actuarially determined using the projected benefit method pro-rated on service and management's best estimate assumptions including discount rate, inflation rate, salary escalation, retirement ages and expected health care costs. Plan assets are measured at fair value. The measurement date of the plan assets and defined benefit obligation coincides with the Corporation's fiscal year. The most recent actuarial valuations for the employee and executive benefit pension plans for funding purposes were as of March 31, 2021 and January 1, 2020, respectively. The next required valuation for the employee and executive benefit plans will be as of March 31, 2024 and January 1, 2023, respectively.

The most recent actuarial valuation of the other retirement and post-employment benefits was as of April 1, 2021 and the next valuation will be as of April 1, 2024.

The defined benefit pension plan for employees is jointly sponsored by the employer and participating unions. To reflect the risk-sharing provisions of this plan, the Corporation recognizes the 50 percent of the defined benefit liability or asset that accrues to the employer.

The Corporation also has a defined contribution plan providing pension benefits. The cost of the defined contribution plan is recognized based on the contributions required to be made during each period.

Termination benefits result from either the Corporation's decision to terminate employment or an employee's decision to accept the Corporation's offer of benefits in exchange for termination of employment. The Corporation recognizes contractual termination benefits when it is probable that employees will be entitled to benefits and the amount can be reasonably estimated. Special termination benefits for voluntary terminations are recognized when employees accept the offer and the amount is reasonably estimated. Special termination benefits for involuntary terminations are recognized when management commits to a detailed plan that establishes the termination benefits, it is communicated in sufficient detail to employees, and the plan will be executed in a reasonable time such that significant changes are not likely.

(i) Financial Instruments:

Upon initial recognition, financial instruments are measured at their fair value. Financial assets and financial liabilities are recognized initially on the trade date, which is the date that the Corporation becomes a party to the contractual provisions of the instrument.

2. Basis of presentation and significant accounting policies (continued):

Significant accounting policies (continued):

(i) Financial Instruments (continued):

Fixed income securities are measured on the consolidated statement of financial position at amortized cost. Interest income is recognized on the accrual basis and includes the amortization of premiums or discounts on fixed interest securities purchased at amounts different from their par value. Pooled funds, equity securities and equity futures are measured at fair value with changes in fair value recorded directly in the consolidated statement of operations. Dividends and distributions are recorded as income when declared.

Forward currency contracts not in a qualifying hedging relationship are measured at fair value with changes in fair value recorded directly in the consolidated statement of operations. A forward currency contract designated in a hedging relationship is not recognized until the earlier of the date it matures and the date of the anticipated transaction (the hedged item). The hedged item is recognized initially at the amount of consideration payable based on the prevailing foreign exchange rate on the date of goods or service receipts. At this time, any gain or loss on the forward currency contract is recognized as an adjustment of the carrying value amount of the hedged item when the anticipated transaction results in the recognition of an asset or a liability. When the hedged items are recognized directly in the consolidated statement of operations, the gain or loss on the forward currency contract is included in the same expense or revenue category.

All other financial instruments are subsequently measured at cost or amortized cost.

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing cost, which are amortized using the effective interest rate method. Transaction costs are comprised primarily of legal, accounting, underwriters' fees and other costs directly attributable to the acquisition, issuance or disposal of a financial asset or financial liability.

Financial assets measured at cost or amortized cost are assessed for indicators of impairment on an annual basis at the end of the fiscal year. If there is an indicator of impairment, the Corporation determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the higher of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Corporation expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future period, an impairment loss will be reversed to the extent of the improvement, not exceeding the amount that would have been reported at the date of the reversal had the impairment not been recognized previously. The amount of the reversal shall be recognized in the consolidated statement of operations in the period the reversal occurs.

(In thousands of dollars)

3. Cash and cash equivalents:

Cash and cash equivalents include deposits with financial institutions that can be withdrawn without prior notice or penalty, short-term notes and broker deposits.

Cash and cash equivalents include $2,604 (2021 - $3,313) that is restricted for captive insurance operations. Cash and cash equivalents also include Members' contributions received in advance for expenses of future periods (note 10(a)).

4. Inventory:

Inventory comprises:

	2022	2021
Raw materials	$ 4,384	$ 4,237
Work-in-process	30,386	30,256
Finished goods	237,068	195,656
	$ 271,838	$ 230,149

Raw materials include supplies available for use in the collection, manufacturing and testing of blood products. Work in process consists of plasma for fractionation and blood products. Finished goods include plasma protein and related products, red blood cells, platelets and plasma for transfusion and cord blood products that are available for distribution to hospitals. Work in process and finished goods inventories include direct costs and overhead incurred in the collection, manufacturing, testing and distribution process.

5. Investments, captive insurance operations:

All investments are restricted for captive insurance operations. The amortized cost and fair value of investments are as follows:

	2022	2021
Measured at amortized cost:		
Fixed income securities	$ 339,486	$ 328,822
Measured at fair value:		
Pooled funds	160,863	163,718
Equity securities	32,155	31,502
	$ 532,504	$ 524,042

At March 31, 2022, equity securities include equity futures equal to $12 (2021 - $4). The notional value and fair value of the underlying equities are $270 (2021 - $246) and $283 (2021 - $249), respectively.

(In thousands of dollars)

6. Capital assets:

	Cost	Accumulated amortization	2022 Net book value	2021 Net book value
Land, building, software and equipment:				
Buildings and building components	$ 210,993	$ (61,511)	$ 149,482	$ 153,779
Machinery and equipment	119,213	(89,408)	29,805	31,229
Land	20,920	–	20,920	20,920
Land Improvements	3,333	(222)	3,111	3,244
Furniture and office equipment	31,905	(22,575)	9,330	10,227
Leasehold improvements	34,877	(22,057)	12,820	12,637
Computer equipment	63,009	(58,991)	4,018	4,472
Motor vehicles	17,237	(12,768)	4,469	5,009
Computer software	40,718	(38,814)	1,904	1,637
Equipment under capital leases	5,091	(5,012)	79	384
Assets under construction	6,507	–	6,507	1,283
	553,803	(311,358)	242,445	244,821
Intangible asset:				
Right to the blood supply system	35,203	(20,681)	14,522	15,402
	$ 589,006	$ (332,039)	$ 256,967	$ 260,223

During the current year, cash payments of $16,673 (2021 - $16,409) were made to acquire capital assets. Capital assets no longer in use with cost of $6,180 (2021 - $27,462) and accumulated amortization of $5,120 (2021 - $15,215) were sold or written off.

Cost and accumulated amortization of capital assets at March 31, 2021 amounted to $578,091 and $317,868, respectively.

7. Accounts payable and accrued liabilities:

Included in accounts payable and accrued liabilities are government remittances payable of $365 (2021 - $151) which include amounts payable for sales and payroll taxes.

8. Employee future benefits:

The Corporation sponsors two defined benefit pension plans, one for employees and the other for executives. In addition, the Corporation sponsors a defined contribution pension plan and provides other retirement and post-employment benefits to eligible employees.

(In thousands of dollars)

8. Employee future benefits (continued):

The Corporation's defined benefit assets/liabilities included in the consolidated statement of financial position are comprised of the following:

		2022		2021
Benefit assets				
Employee future benefit assets – defined benefit pension plan	$	2,613	$	–
Benefit liabilities				
Defined benefit pension plans liability	$	2,576	$	31,159
Other retirement and post-employment benefit plans liability		27,907		34,408
Employee future benefit liabilities	$	30,483	$	65,567
Net employee future benefit liabilities	$	27,870	$	65,567

(a) Defined benefit pension plans:

Information about the Corporation's defined benefit plans are combined and summarized as follows:

		2022		2021
Fair value of plan assets	$	550,332	$	536,807
Defined benefit obligation		552,871		598,081
Defined benefit liabilities before adjustment for risk sharing provisions		(2,539)		(61,274)
Adjustment for risk sharing provisions		2,576		30,115
Defined benefit asset (liability)	$	37	$	(31,159)

(In thousands of dollars)

8. Employee future benefits (continued):

(a) Defined benefit pension plans (continued):

The significant actuarial assumptions adopted in measuring the Corporation's defined benefit plans, defined benefit obligation and benefit cost are summarized as follows:

	2022	2021
Defined benefit obligation:		
Discount rate	4.30%	3.40%
Inflation rate	2.00%	2.00%
Rate of compensation increases	2.50% - 3.10%	2.50% - 3.25%
Mortality Table	CPM 2014-B CPM 2014Publ-B	CPM 2014-B CPM 2014Publ-B
Benefit cost:		
Discount rate	3.40%	4.20%
Rate of compensation increases	2.50% - 3.25%	2.50% - 3.25%

Other information about the Corporation's defined benefit plans is combined and summarized as follows:

	2022	2021
Employer contributions	$ 15,136	$ 14,616
Employee contributions	10,278	9,919
Benefits paid	22,027	19,787
Net expense	19,151	17,160
Remeasurement gain	(35,211)	(8,299)

(b) Defined contribution pension plan:

The expense for the Corporation's defined contribution pension plan was $3,797 (2021 - $3,920).

(c) Other retirement and post-employment benefits:

Information about the Corporation's other retirement and post-employment benefits is as follows:

	2022	2021
Benefits paid	$ 1,469	$ 1,278
Net expense	2,772	3,511
Remeasurement gain	(7,804)	(703)
Defined benefit liability	27,907	34,408

(In thousands of dollars)

8. Employee future benefits (continued):

(c) Other retirement and post-employment benefits (continued):

The significant actuarial assumptions adopted in measuring the Corporation's other retirement and post-employment defined benefit obligation and benefit cost are as follows:

	2022	2021
Defined benefit obligation:		
Discount rate	4.00% - 4.30%	2.80% - 3.50%
Rate of compensation increases	2.50% - 3.10%	2.50% - 3.25%
Mortality Table	CPM 2014-B CPM 2014Publ-B	CPM 2014-B CPM 2014Publ-B
Benefit cost:		
Discount rate	2.80% - 3.50%	3.60% - 4.20%
Rate of compensation increases	2.50% - 3.25%	2.50% - 3.25%

Hospital costs – 4.00% (2021 - 4.00%) per annum;

Drug costs – 6.16% (2021 - 6.27%) per annum, grading down to 4.00% (2021 - 4.00%) per annum in and after 2040 (2021 - 2040);

Other health costs – 4.00% (2021 - 4.00%) per annum.

Termination benefits have been recognized in accounts payable and accrued liabilities on the consolidated statement of financial position and in staff costs in the consolidated statement of operations. At March 31, 2022, $4,611 (2021 - $3,720) is accrued for termination benefits on the consolidated statement of financial position. During the year ended March 31, 2022, movements relating to the accrual included payments of $1,911 (2021 - $3,562), a reversal to opening accrual of $920 (2021 - $3,967) and the establishment of new termination benefits of $3,722 (2021 - $2,002).

9. Credit facilities:

(a) Demand operating credit:

This facility has been arranged as an operating line of credit in the amount of $125,000 (2021 - $125,000). At March 31, 2022, $Nil (2021 - $Nil) was outstanding under the facility.

(b) Standby letters of credit:

Standby letters of credit in the amount of $2,000 (2021 - $2,000) were arranged to cover municipal requirements with regard to the redevelopment of the Corporation's facilities. At March 31, 2022, $82 (2021 - $82) had been issued under the facility.

(In thousands of dollars)

9. Credit facilities (continued):

(b) Standby letters of credit (continued):

Pursuant to the arrangements included in (a) and (b) above, the Corporation has provided a general security agreement in favour of the bank over receivables, inventory, equipment and machinery and a floating charge debenture over all present and future assets, property and undertaking of the Corporation. Amounts deferred for contingency purposes are excluded from the general security agreement and debenture.

(c) Operating loan:

The Corporation maintained a credit facility which was established to finance a portion of the National Facilities Redevelopment Program phase IIa (NFRP IIa) focused in western Canada. During the prior year, the credit facility, which consisted of a $68,000 term loan, was scheduled to convert to a $55,300 committed term loan. Prior to conversion, the Corporation amended the term loan and cancelled the committed term loan. The term loan authorized facility balance was amended to $20,000 reducing to $14,000, $8,000 and $Nil on March 31, 2023, 2024 and 2025, respectively.

This credit facility is secured by a first ranking on the NFRP IIa assets and any member funding received under the NFRP IIa program. Through March 31, 2022, no amount had been borrowed under this credit facility.

10. Deferred contributions:

	2022	2021
Expenses of future periods:		
Balance, beginning of year	$ 187,107	$ 193,769
Increase in amounts received related to future periods	56,695	22,215
Less amounts recognized as revenue in the year	(26,279)	(23,032)
Less capital assets purchased from deferred contributions	(5,995)	(6,199)
Add income earned on resources restricted for contingency	190	186
Add income earned on other restricted resources	285	168
	212,003	187,107
Capital Assets:		
Balance, beginning of year	239,302	253,173
Deferred contributions received	17,095	16,493
Less capital assets sold or written off	(1,060)	(9,160)
Less amounts amortized to revenue	(19,291)	(21,204)
	236,046	239,302
	$ 448,049	$ 426,409

(In thousands of dollars)

10. Deferred contributions (continued):

(a) Expenses of future periods:

Deferred contributions represent externally restricted contributions to fund expenses of future periods.

The capital assets purchased represent purchases from contributions that were deferred at March 31, 2021, as well as contributions received and deferred in the year ending March 31, 2022.

At March 31, deferred contributions comprise:

	2022	2021
Members' funding received in advance	$ 73,745	$ 52,578
Deferred contributions restricted for specific projects or programs:		
Fundraising:		
Campaign for all Canadians	807	807
Other	1,524	905
Programs - Members funding:		
National facilities redevelopment program	8,580	4,952
Diagnostic services - Manitoba	670	771
Inventory:		
Plasma protein and related products	47,653	47,653
Source plasma	2,697	–
Blood	29,871	31,767
Medical supplies	4,384	4,237
Projects:		
Digitalization	6,835	6,784
Laboratory information system - Manitoba	1,176	1,167
Other	–	89
Research and development	12,040	13,567
Contingency	22,021	21,830
	$ 212,003	$ 187,107

(b) Capital assets:

Funds received to acquire capital assets are recorded as deferred contributions on the consolidated statement of financial position. They are amortized to revenue in the consolidated statement of operations at the same rate as capital assets are depreciated to expenses.

(In thousands of dollars)

11. Net assets:

Net assets restricted for captive insurance purposes are subject to externally imposed restrictions stipulating that they be used to provide insurance coverage with respect to risks associated with the operations of the Corporation.

Net assets restricted for forward contracts are subject to internally imposed restrictions on the unrealized fair value of the forward currency contracts not in a qualifying hedge relationship. This restriction will be released once the forward currency contracts mature.

Unrestricted net assets comprise of the following:

	2022	2021
Accumulated pension remeasurement gains	$ 56,224	$ 13,209
Unrestricted accumulated surplus	37,823	37,823
	$ 94,047	$ 51,032

12. Net investment income:

	2022	2021
Interest income on unrestricted funds	$ 615	$ 865
Net investment income earned on investments restricted for captive insurance	3,606	30,868
Interest income on restricted resources	333	352
	4,554	32,085
Less amounts deferred	(333)	(352)
	$ 4,221	$ 31,733

Included in net investment income earned on investments restricted for captive insurance is $8,070 (2021 - $7,731) of investment income and $4,464 of realized losses on sales of investments (2021 - $23,137 of realized gains).

Year ended March 31, 2022
(In thousands of dollars)

13. Canadian Blood Services revenue and expenses detail:

	Blood and NFRP[1]		Plasma Protein and Related Products, Proof of Concept Sites and Source Plasma		Diagnostic Services		Stem Cells		Organs and Tissues		Total Canadian Blood Services		Captive Insurance Operations		Intercompany Transactions		Total Consolidated	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
Revenue:																		
Members' contributions	$ 430,619	$ 422,118	$ 843,848	$ 727,801	$ 16,861	$ 16,577	$ 14,700	$ 14,700	$ 4,240	$ 3,740	$ 1,310,268	$ 1,184,936	$ –	$ –	$ –	$ –	$ 1,310,268	$ 1,184,936
Federal contributions	9,487	7,925	–	–	–	–	–	–	3,580	3,515	13,067	11,440	–	–	–	–	13,067	11,440
Less amounts deferred	(31,667)	(29,328)	(20,142)	(11,490)	(312)	(86)	(776)	(1,216)	(4,897)	(3,856)	(57,794)	(45,976)	–	–	–	–	(57,794)	(45,976)
	408,439	400,715	823,706	716,311	16,549	16,491	13,924	13,484	2,923	3,399	1,265,541	1,150,400	–	–	–	–	1,265,541	1,150,400
Amortization of previously deferred contributions:																		
Relating to capital assets	20,351	21,271	–	–	–	–	–	–	–	–	20,351	21,271	–	–	–	–	20,351	21,271
Relating to operations	9,365	10,737	12,590	8,343	52	2	32	210	4,240	3,740	26,279	23,032	–	–	–	–	26,279	23,032
Total contributions recognized as revenue	438,155	432,723	836,296	724,654	16,601	16,493	13,956	13,694	7,163	7,139	1,312,171	1,194,703	–	–	–	–	1,312,171	1,194,703
Gross premiums written and earned	–	–	–	–	–	–	–	–	–	–	–	–	475	420	(475)	(420)	–	–
Net investment income	615	865	–	–	–	–	–	–	–	–	615	865	3,606	30,868	–	–	4,221	31,733
Stem cells revenue	–	–	–	–	–	–	18,305	16,093	–	–	18,305	16,093	–	–	–	–	18,305	16,093
Other income	1,276	6,570	223	157	–	–	241	3	831	831	2,571	7,561	–	–	–	–	2,571	7,561
Total revenue	440,046	440,158	836,519	724,811	16,601	16,493	32,502	29,790	7,994	7,970	1,333,662	1,219,222	4,081	31,288	(475)	(420)	1,337,268	1,250,090
Expenses:																		
Cost of plasma protein and related products	–	–	782,035	683,470	–	–	–	–	–	–	782,035	683,470	–	–	–	–	782,035	683,470
Staff costs	282,695	275,421	10,729	7,254	12,572	12,217	9,965	8,344	6,507	6,108	322,468	309,344	–	–	–	–	322,468	309,344
General and administrative	118,212	114,965	6,879	6,942	1,217	1,218	21,531	20,746	1,487	1,862	149,326	145,733	2,766	2,093	(475)	(420)	151,617	147,406
Medical supplies	46,658	54,876	2,024	1,058	2,812	3,058	1,103	841	–	–	52,597	59,833	–	–	–	–	52,597	59,833
Losses and loss expenses incurred	–	–	–	–	–	–	–	–	–	–	–	–	294	84	–	–	294	84
Depreciation and amortization	19,291	21,204	–	–	–	–	–	–	–	–	19,291	21,204	–	–	–	–	19,291	21,204
Foreign exchange loss (gain)	(60)	442	8,102	(663)	–	–	(97)	(141)	–	–	7,945	(362)	–	–	–	–	7,945	(362)
Transfer of recovered plasma costs	(26,750)	(26,750)	26,750	26,750	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Total expenses	440,046	440,158	836,519	724,811	16,601	16,493	32,502	29,790	7,994	7,970	1,333,662	1,219,222	3,060	2,177	(475)	(420)	1,336,247	1,220,979
Excess of revenue over expenses before the undernoted	–	–	–	–	–	–	–	–	–	–	–	–	**1,021**	**29,111**	–	–	**1,021**	**29,111**
Change in fair value of forward currency contracts	–	–	7,918	(18,685)	–	–	–	–	–	–	7,918	(18,685)	–	–	–	–	7,918	(18,685)
Change in fair value of investments measured at fair value	–	–	–	–	–	–	–	–	–	–	–	–	6,468	22,990	–	–	6,468	22,990
Excess of revenue over expenses	**$ –**	**$ –**	**$ 7,918**	**$ (18,685)**	**$ –**	**$ –**	**$ –**	**$ –**	**$ –**	**$ –**	**$ 7,918**	**$ (18,685)**	**$ 7,489**	**$ 52,101**	**$ –**	**$ –**	**$ 15,407**	**$ 33,416**

(1) National facilities redevelopment program

(In thousands of dollars)

14. Blood products and national facilities redevelopment program details:

	Blood		National Facilities Redevelopment Program		Total	
	2022	2021	2022	2021	2022	2021
Revenue:						
Members' contributions	$ 424,527	$ 416,027	$ 6,092	$ 6,091	$ 430,619	$ 422,118
Federal contributions	9,487	7,925	–	–	9,487	7,925
Less amounts deferred	(25,575)	(23,237)	(6,092)	(6,091)	(31,667)	(29,328)
	408,439	400,715	–	–	408,439	400,715
Amortization of previously deferred contributions:						
Relating to capital assets	20,351	21,271	–	–	20,351	21,271
Relating to operations	7,368	3,383	1,997	7,354	9,365	10,737
Total contributions recognized as revenue	436,158	425,369	1,997	7,354	438,155	432,723
Net investment income	570	804	45	61	615	865
Other income	925	2,341	351	4,229	1,276	6,570
Total revenue	437,653	428,514	2,393	11,644	440,046	440,158
Expenses:						
Staff costs	282,160	272,165	535	3,256	282,695	275,421
General and administrative	116,354	106,634	1,858	8,331	118,212	114,965
Medical supplies	46,658	54,819	–	57	46,658	54,876
Depreciation and amortization	19,291	21,204	–	–	19,291	21,204
Foreign exchange (gain) loss	(60)	442	–	–	(60)	442
Transfer of recovered plasma costs	(26,750)	(26,750)	–	–	(26,750)	(26,750)
Total expenses	437,653	428,514	2,393	11,644	440,046	440,158
Excess of revenue over expenses	**$ –**	**$ –**	**$ –**	**$ –**	**$ –**	**$ –**

(In thousands of dollars)

15. Plasma protein and related products, proof of concept sites and source plasma details:

	Plasma Protein and Related Products		Proof of Concept Sites		Source Plasma		Total	
	2022	2021	2022	2021	2022	2021	2022	2021
Revenue:								
Members' contributions	$ 823,706	$ 716,311	$ 13,892	$ 11,490	$ 6,250	$ –	$ 843,848	$ 727,801
Less amounts deferred	–	–	(13,892)	(11,490)	(6,250)	–	(20,142)	(11,490)
	823,706	716,311	–	–	–	–	823,706	716,311
Amortization of previously deferred contributions: Relating to operations	–	–	8,012	8,343	4,578	–	12,590	8,343
Total contributions recognized as revenue	823,706	716,311	8,012	8,343	4,578	–	836,296	724,654
Other income	223	157	–	–	–	–	223	157
Total revenue	823,929	716,468	8,012	8,343	4,578	–	836,519	724,811
Expenses:								
Cost of plasma protein and related products	782,035	683,470	–	–	–	–	782,035	683,470
Staff costs	3,728	2,960	4,286	4,294	2,715	–	10,729	7,254
General and administrative	2,510	3,164	2,535	3,778	1,834	–	6,879	6,942
Medical supplies	804	787	1,191	271	29	–	2,024	1,058
Foreign exchange loss (gain)	8,102	(663)	–	–	–	–	8,102	(663)
Transfer of recovered plasma costs	26,750	26,750	–	–	–	–	26,750	26,750
Total expenses	823,929	716,468	8,012	8,343	4,578	–	836,519	724,811
Excess of revenue over expenses before the before gain/ loss on forward currency contracts	–	–	–	–	–	–	–	–
Change in fair value of forward currency contracts	7,918	(18,685)	–	–	–	–	7,918	(18,685)
Excess (deficiency) excess of revenue over expenses	**$ 7,918**	**$ (18,685)**	**$ –**	**$ –**	**$ –**	**$ –**	**$ 7,918**	**$ (18,685)**

16. Financial instruments:

Risk management:

The Board of Directors has responsibility for the review and oversight of the Corporation's risk management framework and general corporate risk profile. Through its committees, the Board oversees analysis of various risks facing the organization that evolve in response to economic conditions and industry circumstances.

The Corporation's financial instruments consist of cash and cash equivalents, members' contributions receivable, other amounts receivable, investments, accounts payable and accrued liabilities, and forward currency contracts.

The Corporation is exposed to risks as a result of holding financial instruments. The Corporation does not enter into transactions involving financial instruments, including derivative financial instruments such as forward currency contracts, for speculative purposes. The following is a description of those risks and how they are managed.

(i) Market risk:

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises three types of risk: interest rate risk, foreign currency risk and other price risk. These risks are discussed below:

Interest rate risk:

Interest rate risk pertains to the effect of changes in market interest rates on the future cash flows related to the Corporation's existing financial assets and liabilities.

The Corporation is exposed to interest rate risk on its cash and cash equivalents and investments. At March 31, 2022, this exposure was minimal due to low prevailing rates of return and due to majority of fixed income investments having fixed rates.

Foreign currency risk:

Foreign currency risk is the risk that the value or future cash flows of financial instruments will fluctuate as a result of changes in foreign exchange rates. The Corporation is exposed to foreign currency risk on purchases that are denominated in currencies other than the functional currency of the Corporation. To mitigate this risk, the Corporation has a formal foreign currency policy in place. The objective of this policy is to monitor the marketplace and, when considered appropriate, fix exchange rates using forward contracts to reduce the risk exposures related to purchases made in foreign currencies. Generally, forward currency contracts are for periods not in excess of twenty months.

(In thousands of dollars)

16. Financial instruments (continued):

Risk management (continued):

(i) Market risk (continued):

Foreign currency risk (continued):

Excluding the investments held by the CBS Insurance Company Limited, at March 31, the Corporation had the following instruments denominated in U.S. dollar (USD):

	2022 CAD		2021 CAD	
	Carrying value	Fair value	Carrying value	Fair value
Financial assets:				
Cash	$ 1,340	$ 1,340	$ 23,530	$ 23,530
Accounts receivable	29	29	–	–
Financial liabilities:				
Accounts payable and accrued liabilities	(12,439)	(12,439)	(18,657)	(18,657)
Forward currency contract assets:				
Designated as hedges	–	(1,339)	–	(30,832)
Not designated as hedges	277	277	(7,641)	(7,641)

During the years ended March 31, 2022 and 2021, the Corporation entered into forward currency contracts to hedge its foreign currency exposure on a substantial portion of its USD purchases of plasma protein and related products. The contracts are intended to match the timing of the anticipated future payments in foreign currencies.

At March 31, 2022, forward currency contracts in the amount of USD $354,240 (2021 - USD $400,860) were designated as being in a hedging relationship with the equivalent amount of the 2022-2023 future forecasted plasma protein product payments. Hedge accounting has been applied in accordance with CPA Canada Handbook - Accounting, Section 3856, as these hedges are considered to be effective. The forward currency contracts designated as hedges mature monthly from April 2022 through March 2023 (2021 - April 2021 through March 2022), at an average rate of 1.25 (2021 - 1.33). The USD purchased under the hedging forward currency contracts will be used to pay USD $29,520 per month (2021 - USD $33,405) of USD plasma protein product purchases, creating a net cost for these products that fixes the foreign exchange rate to 1.25 (2021 - 1.33).

16. Financial instruments (continued):

Risk management (continued):

(i) Market risk (continued):

Foreign currency risk (continued):

The forward currency contracts included on the consolidated statement of financial position represent forward currency contracts that have not been designated in a hedging relationship. The contracts fix the currency rate at 1.25 (2021 - 1.33) on USD $96,000 (2021 - USD $99,540) notional amount and one-twelfth of the non-designated forward currency contracts mature monthly from April 2022 through March 2023. These forward currency contracts are recorded at fair value. The fair value of the forward currency contracts is determined using a quote from its forward exchange dealers.

In addition to operational foreign currency risk, investments held by CBS Insurance Company Limited denominated in currencies other than the Canadian dollar expose the Corporation to fluctuations in foreign exchange rates. Fluctuations in the relative value of foreign currencies against the Canadian dollar can result in a significant impact on the fair value of investments. The Corporation's exposure to foreign currency arises from its investment in pooled funds of $160,863 (2021 - $163,718) and equity securities of $32,155 (2021 - $31,502). The pooled funds hold international equities and global fixed income of which $51,470 (2021 - $55,076) and $47,306 (2021 - $46,595), respectively, are denominated in foreign currencies. The equity securities include $31,001 (2021 - $30,450) which are denominated in foreign currency.

Other price risk:

Other price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices (other than those arising from interest rate risk or foreign exchange risk), whether those changes are caused by factors specific to the individual financial instrument or its issues, or factors affecting similar financial instruments traded in the market.

The Corporation is exposed to other price risk on its pooled funds and equity securities and equity futures due to changes in general economic or stock market conditions, and specific price risk which refers to equity price volatility that is determined by entity specific characteristics. These risks affect the carrying value of these securities and the level and timing of recognition of gains and losses on securities held, causing changes in realized and unrealized gains and losses.

The Corporation mitigates price risk by holding a diversified portfolio. The portfolio is managed through the use of third-party investment managers and their performance is monitored by management and the Board of Directors of the captive insurance operations.

16. Financial instruments (continued):

Risk management (continued):

(ii) Credit risk:

The Corporation is exposed to the risk of financial loss resulting from the potential inability of a counterparty to a financial instrument to meet its contractual obligations. The carrying amount of cash and cash equivalents, Members' contributions receivable and other amounts receivable, forward currency contracts, and investments, captive insurance operations represent the maximum exposure of the Corporation to credit risk.

Cash and cash equivalents and forward currency contracts are mainly held with Canadian financial institutions rated by Standard & Poor's credit rating as A+ with a stable outlook and short-term notes consisting of Canadian treasury bills. All forward currency contracts must be transacted with Schedule I or Schedule II financial institutions as per the Corporation's foreign currency policy.

The Corporation is also exposed to credit risk on fixed income securities investments, equity securities and equity futures. The investment policy requires an average credit rating of 'A' on the credit quality of its fixed income portfolio, related to captive insurance operations. In addition, equity futures are exchange-traded and as such, are subject to a number of safeguards to ensure that obligations are met. These include the use of clearing houses (thus reducing counterparty credit risk), the posting of margins and the daily settlement of unrealized gains and losses. The amount of credit risk is therefore considered low.

Members' contributions receivable are current in nature and management considers there to be minimal exposure to credit risk from Members due to funding agreements in place and third-party Member credit ratings. Standard & Poor's available credit ratings for Members range from A (negative) to AA+ (stable).

Other amounts receivable consists primarily of amounts due from federal and provincial agencies and is considered to have low credit risk. The carrying amount of amounts receivable for these parties represents the Corporation's maximum exposure to credit risk.

(iii) Liquidity risk:

Liquidity risk is the risk that the Corporation will not be able to meet its financial obligations as they fall due. The Corporation's approach to managing liquidity is to evaluate current and expected liquidity requirements to ensure that it maintains sufficient reserves of cash and cash equivalents. In addition, the Corporation has credit facilities described in note 9 that it can draw on as required.

At March 31, 2022, the Corporation's accounts payable and accrued liabilities are due within one year.

The provision for future claims has no contractual maturity and the timing of settlement will depend on actual claims experience in the future.

16. Financial instruments (continued):

Risk management (continued):

(iii) Liquidity risk (continued):

The liabilities for employee future benefits are generally long-term in nature and fall due as eligible employees in the Corporation's defined benefit pension plans retire or terminate employment with the Corporation.

17. Captive insurance operations:

The Corporation has established two wholly-owned captive insurance subsidiaries, CBS Insurance Company Limited (CBSI) and Canadian Blood Services Captive Insurance Company Limited/ Compagnie d'assurance captive de la société canadienne du sang limitée (CBSE). CBSI provides insurance coverage up to $300,000 with respect to risks associated with the operation of the blood system. CBSE has entered into an arrangement whereby the Members have agreed to indemnify CBSE for all amounts payable by CBSE under the terms of the excess policy up to $700,000, which is in excess of the $300,000 provided by CBSI. No payment shall be made under CBSE until the limit of the liability under the primary policy in CBSI, in the amount of $300,000, has been exhausted. As a result, the Corporation has $1,000,000 total in coverage.

The provision for future claims is an actuarially based estimate of the cost to the Corporation of settling claims relating to insured events (both reported and unreported) that have occurred to March 31, 2022 and 2021, respectively.

A significant proportion of both the future claims expense for the period and the related cumulative estimated liability of the Corporation for these future claims at March 31, 2022, of $299,787 (2021 - $299,706) covers the manifestation of blood diseases, which is inherently difficult to assess and quantify. There is a variance between these recorded amounts and other reasonably possible estimates.

(In thousands of dollars)

18. Guarantees and contingencies:

(a) Guarantees:

In the normal course of business, the Corporation enters into lease agreements for facilities and assets acquired under capital leases. In the Corporation's standard commercial lease for facilities, the Corporation, as the lessee, agrees to indemnify the lessor and other related third parties for liabilities that may arise from the use of the leased premises where the event triggering liability results from a breach of a covenant, any wrongful act, neglect or default on the part of the tenant or related third parties. However, this clause may be altered through negotiation. In the Corporation's assets acquired under capital leases, both the lessee and the lessor agree to indemnify each other for death or injury to the employees or agents of either party, where the event triggering liability results from negligent acts, omissions or willful misconduct.

The maximum amount potentially payable under any such indemnities cannot be reasonably estimated. The Corporation has liability insurance that relates to the indemnifications described above. Historically, the Corporation has not made significant payments related to the above-noted indemnities and, accordingly, no liabilities have been accrued in the consolidated financial statements.

(b) Contingencies:

The Corporation is party to legal proceedings in the ordinary course of its operations. In the opinion of management, the outcome of such proceedings will not have a material adverse effect on the Corporation's financial statements or its activities. Claims and obligations related to the operation of the blood supply system prior to September 28, 1998, and the Canadian Council for Donation and Transplantation prior to April 1, 2008, are not the responsibility of the Corporation.

19. Commitments:

At March 31, 2022, the Corporation had the following contractual commitments:

	Vendor commitments	Research and development grants	Operating leases	Total
2022-2023	$ 117,496	$ 1,973	$ 8,916	$ 128,385
2023-2024	1,300	434	6,438	8,172
2024-2025	1,149	67	5,462	6,678
2025-2026	–	–	3,561	3,561
2026-2027	–	–	2,433	2,433
Thereafter	–	–	7,174	7,174
Total	$ 119,945	$ 2,474	$ 33,984	$ 156,403

19. Commitments (continued):

The research and development grants are funded by contributions included in deferred contributions for future expenses.

20. Donated goods and services:

The Corporation received donated personal protective equipment, leased space and marketing services and recorded an amount of $403 (2021 - $1,787) relating to these donations in other income and general and administrative expenses in the consolidated statement of operations.

21. Research and development:

For the year ended March 31, 2022, the Corporation incurred $13,737 (2021 - $13,698) of expenses related to research and development. These costs are reported in note 13 and 14 under Blood and National Facilities Redevelopment Program and are included in general and administrative and staff costs.

22. Related party transactions:

a) The Members provide funding for the operating budgets of the Corporation. The Corporation enters into other transactions with these related parties in the normal course of business.

University Health Network (UHN) is an entity controlled by our Ontario Member and as a result, UHN and Canadian Blood Services are related parties. Under an agreement inherited from the Canadian Red Cross, Canadian Blood Services owned a building and land with certain restrictions benefiting UHN. These restrictions included a provision for free rental space for UHN and a requirement that, upon sale of the building and land, UHN would be provided a put option to purchase the land and building for $1, or at the end of the term of the agreement in 2029, UHN could execute a call option to purchase the land and building for $1.

Effective April 1, 2020, UHN accepted the $1 put option offered by Canadian Blood Services which resulted in the transfer of the ownership of the land and building from Canadian Blood Services to UHN. This transaction resulted in a decrease to capital assets, deferred contributions and net assets invested in capital of $12,179, $9,093 and $3,086 respectively, as disclosed in the Statement of Cash Flows In addition, effective April 1, 2020, UHN is providing Canadian Blood Services rental space at this same building for a nominal consideration for a period of 10 years, with an option to renew for up to 10 additional years. During the year-ended March 31, 2022, Canadian Blood Services recorded rent expense at the notional value paid to UHN.

b) Transactions with the defined contribution pension plan, the two defined benefit pension plans, and the other defined retirement and post-employment benefits plan are conducted in the normal course of business. The transactions with these plans consist of contributions as disclosed in note 8, as well as administrative charges totaling $207 (2021 - $206). At March 31, 2022, the net amount due from the Corporation’s pension plans is $364 (2021 - $454).

23. Capital disclosures:

The Corporation is a non-share capital corporation and plans its operations to essentially result in an annual financial breakeven position. The Corporation considers its capital to be the sum of its net assets.

This definition is used by management and may not be comparable to measures presented by other entities. The Corporation manages capital through a formal and approved budgetary process where funds are allocated following the underlying objectives below:

(a) to provide a safe, secure, cost-effective and accessible supply of blood and blood products, including red blood cells, platelets, cord blood, and plasma protein and related products, to all Canadians. The Corporation also provides the management of donor registries for stem cells, cord blood stem cells and organs, diagnostic services in certain parts of Canada, and research and development;

(b) to support the Corporation's ability to continue as a going concern;

(c) to meet regulatory and statutory capital requirements related to captive insurance operations; and

(d) to ensure the funding of working capital requirements.

The Corporation evaluates its accomplishment against its objectives annually. The Corporation has complied with all externally imposed capital requirements and there were no changes in the approach to capital management during the period.

The Corporation's captive insurance operations are required to maintain statutory capital and surplus greater than a minimum amount determined as the greater of a percentage of outstanding losses or a given fraction of net written premiums. At March 31, 2022, the Corporation's captive insurance operations were required to maintain a minimum statutory capital and surplus of $44,968 (2021 - $44,956). The actual statutory capital and surplus was $216,019 (2021 - $220,689) and the minimum margin of solvency was therefore met.

The Corporation's captive insurance operations were also required to maintain a minimum liquidity ratio whereby the value of its relevant assets is not less than 75% of the amount of its relevant liabilities. At March 31, 2022, the Corporation's captive insurance operations were required to maintain regulatory assets of at least $225,246 (2021 - $225,386). At that date, relevant assets were $516,347 (2021 - $521,204) and the minimum liquidity ratio was therefore met. The value of regulatory assets differs from that reported on the consolidated statement of financial position as it is determined under a different accounting framework, International Financial Reporting Standards.

24. Statutory disclosures:

As required under the Charitable Fundraising Act of Alberta, included in staff costs is $797 (2021 - $770) paid as remuneration to employees whose principal duties involve fundraising.

25. Reclassification:

Certain 2021 comparative information has been reclassified to conform with the consolidated financial statements presentation adopted in the current year.