Unlocking the Potential of Blood and Cells

Jason Gutierrez
Heart transplant recipient
treated using our Spectra Optia® Apheresis System

CO-NONP-00319

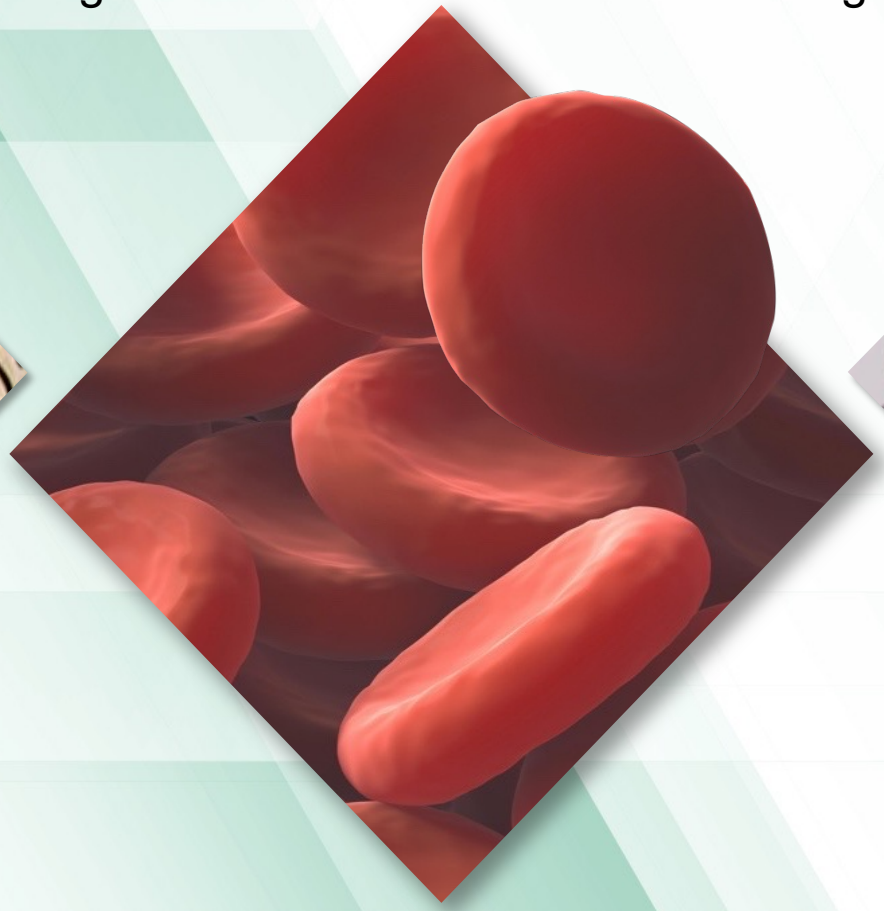
TERUMO BLOOD AND CELL TECHNOLOGIES

One Mission, One Terumo

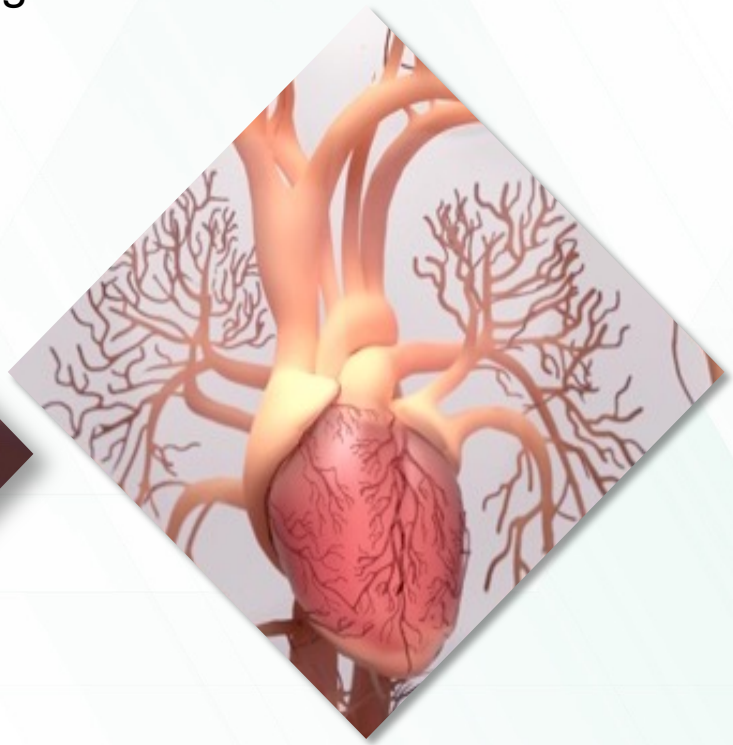
Contributing to Society through Healthcare

- 30,000+ associates globally
- Founded in 1921
- Revenue $5.9B USD
- Serving customers in 160 countries and regions

Terumo Medical Care Solutions



Terumo Blood and Cell Technologies



Terumo Cardiac and Vascular Company

Terumo Blood and Cell Technologies

Enabling Blood and Cell-Based Therapies Around the World

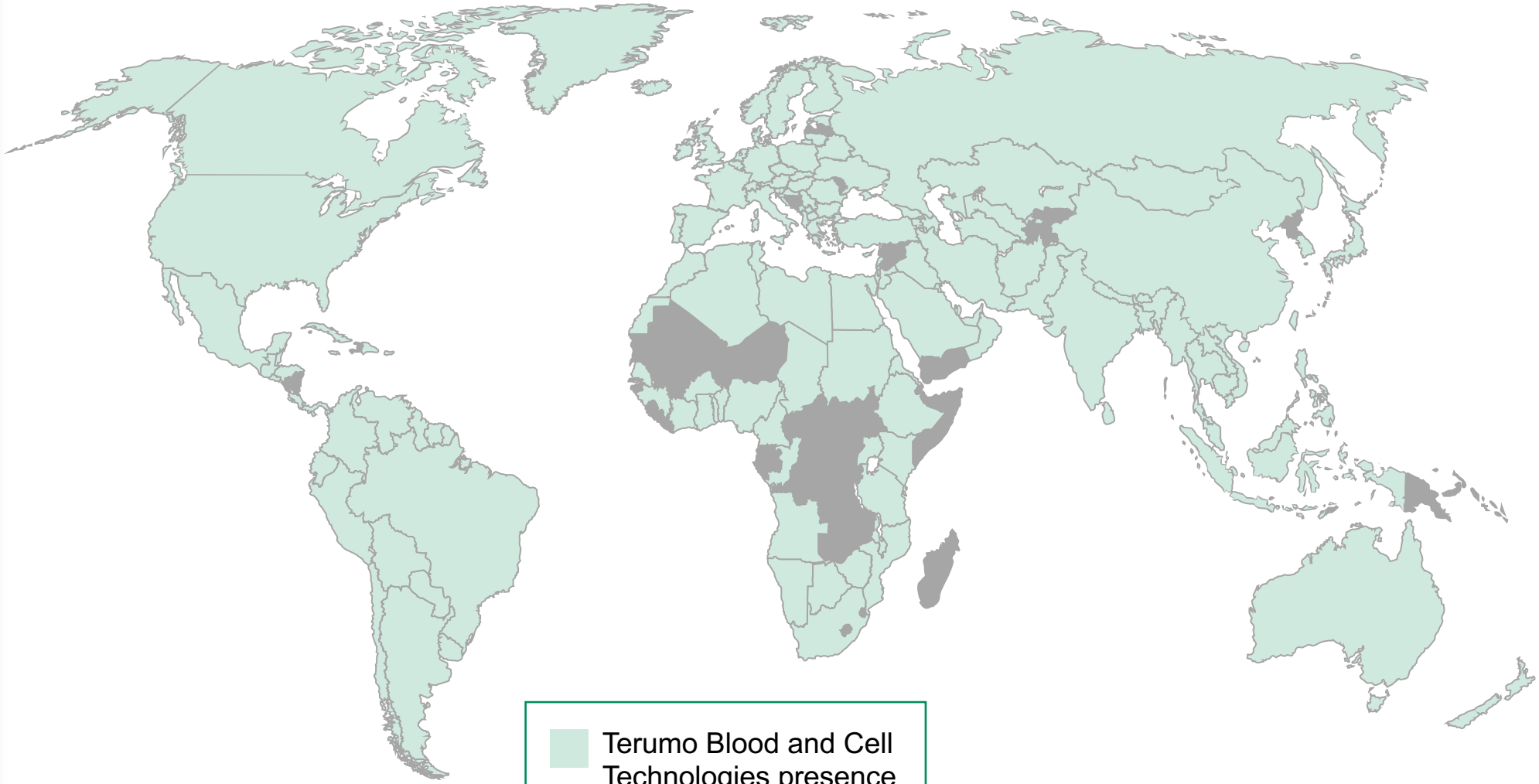
Founded in
1964

Serving customers in
150+
countries

Our reach
7,900
associates

400+
distributors

- Headquartered in U.S.
- 7 Manufacturing sites
- 4 Regional offices



Core Values Drive Our Culture and Business Decisions

RESPECT
Appreciative of others

INTEGRITY
Guided by our mission

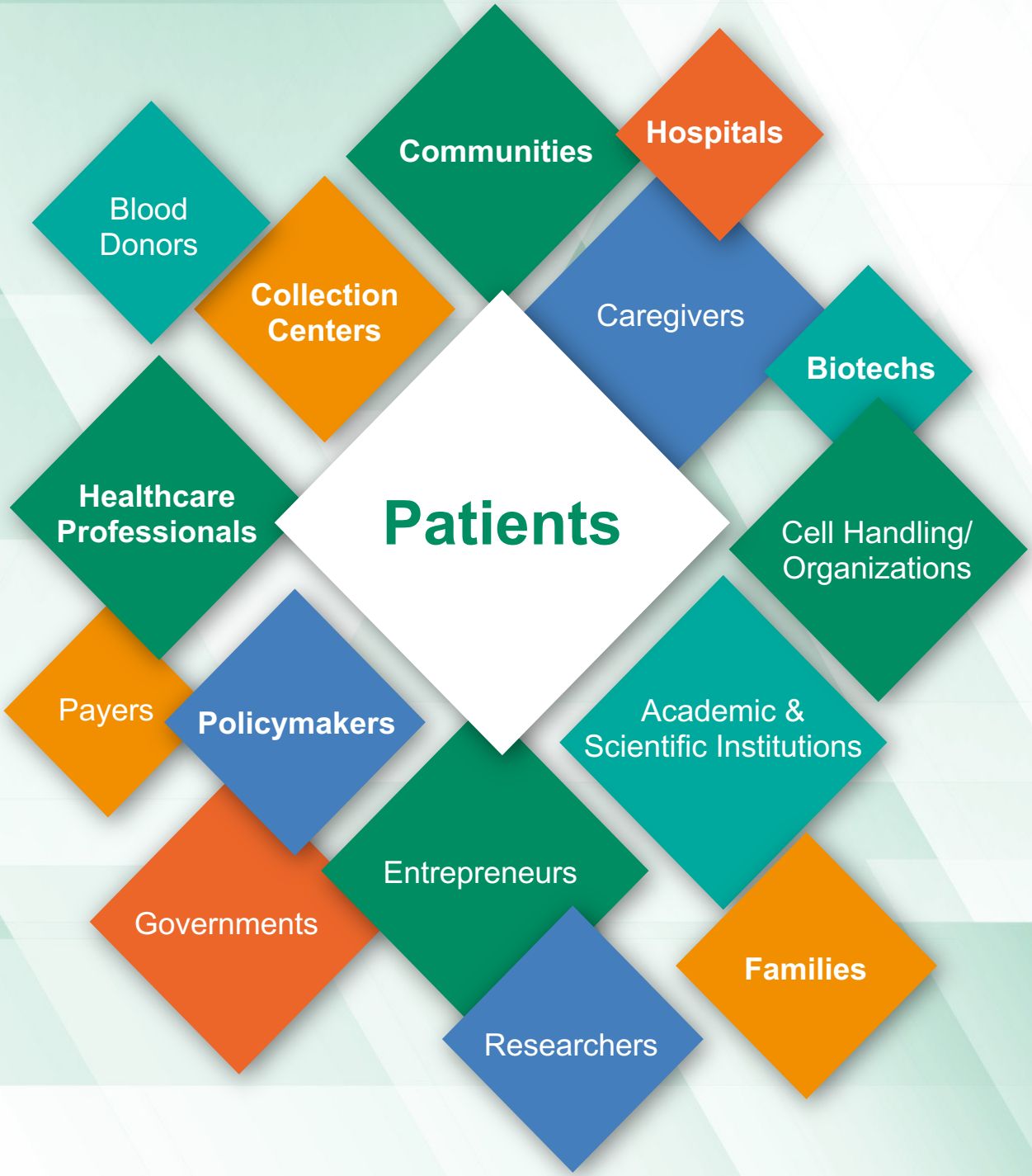
CARE
Empathetic to patients

QUALITY
Committed to excellence

CREATIVITY
Striving for innovation

Embracing Our Responsibilities to Others

We continually seek new ways to meet our commitments to society, patients, donors, communities, customers and other stakeholders, and each other.



Impact Across the Healthcare Ecosystem

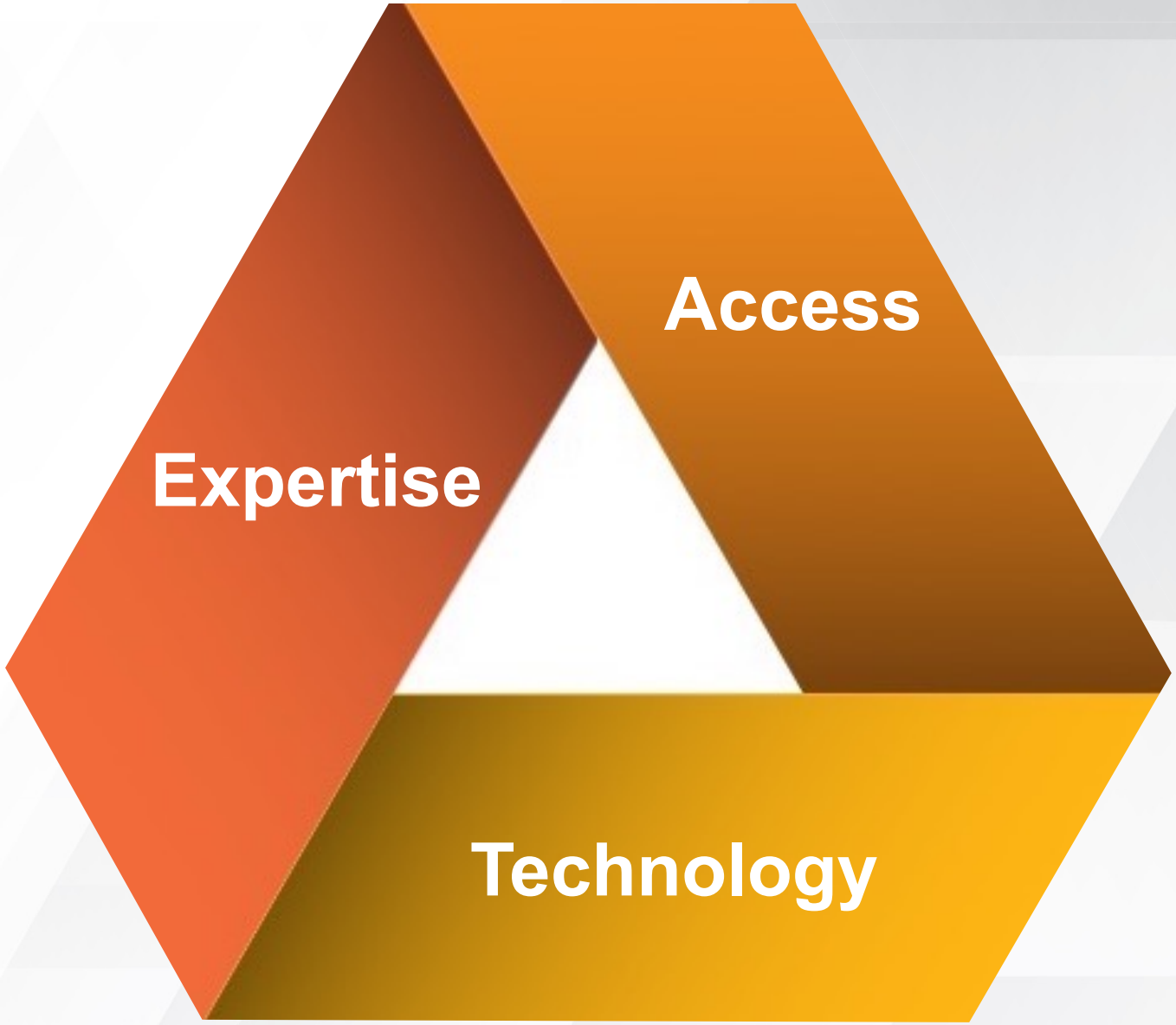
We support a wide range of stakeholders across a complex healthcare ecosystem, but everything we do begins and ends with patients.

Unlocking the potential of blood and cells through:

- Investing in **innovation**
- Advancing **automation**
- Expanding **access** to care
- Building for the **future**

Innovating at the Intersections

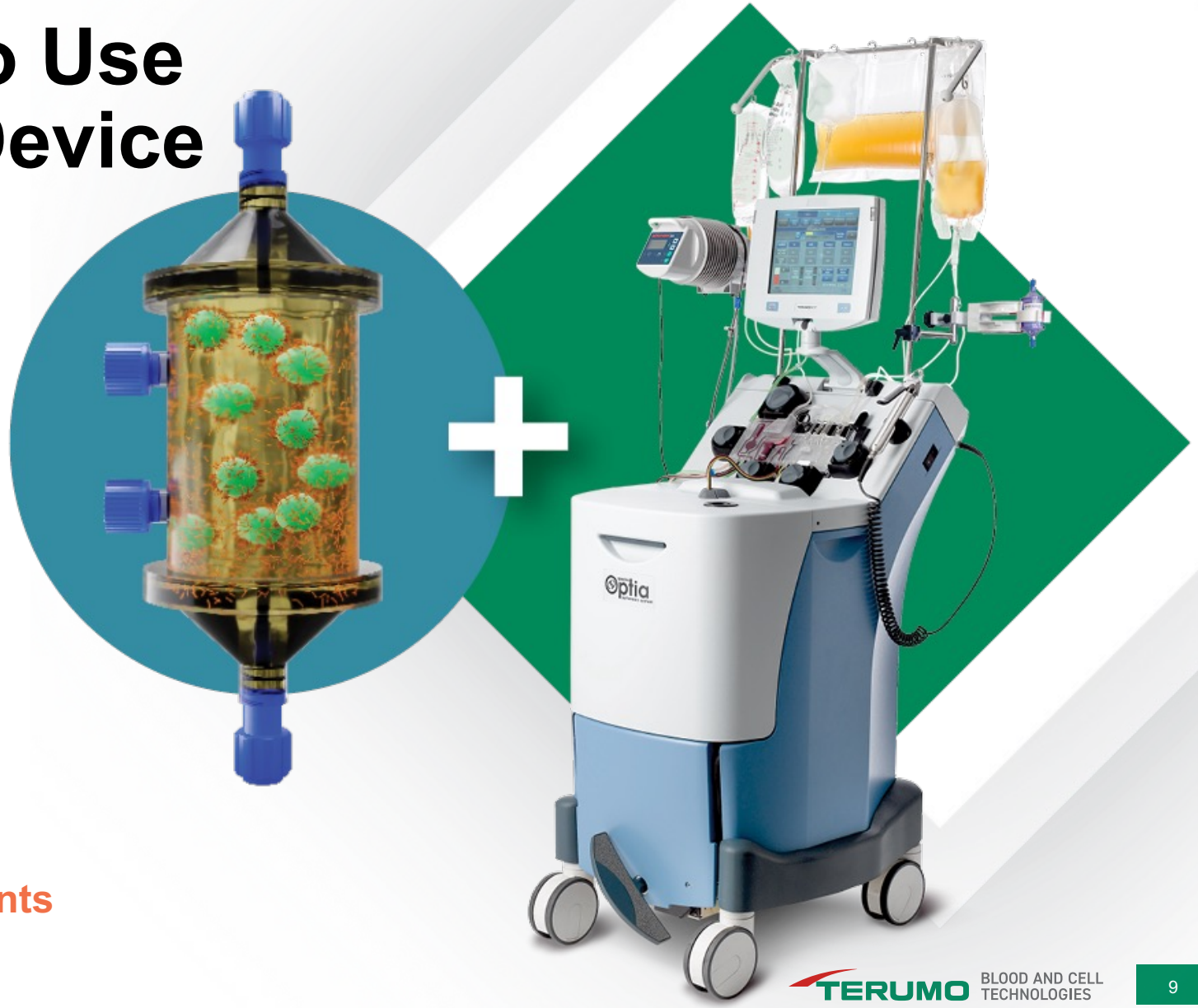
- **Sharing**: Working shoulder-to-shoulder to create breakthroughs through expertise
- **Reimagining**: Leveraging existing technology in novel ways while creating transformative new technology
- **Leading**: Joining with policymakers and organizations to expand access by setting standards



Leadership and Collaboration Delivers New Way to Use Industry-Standard Device

We work closely with industry partners to pair our Spectra Optia® Apheresis System with **highly selective filtration devices** that help remove cancer-promoting components from whole blood or plasma before returning it to the patient.

This enables the patient's own immune system to attack cancer more effectively and **without the side effects typical of other treatments**.



Transforming Therapy Options for Patients With Triple-Negative Breast Cancer

Setting New Standards for Advancing Automation

Many steps in blood and cell processing remain manual, even in advanced healthcare systems.

Our automation solutions and insights support high performance and high efficiency across the blood and cell handling infrastructure, from blood processing to cell expansion in cell therapy manufacturing.

With automation:

- Supply, safety, and quality can be optimized
- Processes can be faster and more consistent
- Human errors can be reduced
- Costs and waste can be decreased
- Access can be improved

Automation Helps a Single Blood Center Support Transfusion Needs of 3 Mexican States

One Reveos device with one operator can process four whole blood bags in 23 minutes — that's 18,000 bags per year.[1]

Reveos can deliver a 35% reduction in hands-on steps vs. semi-automated whole blood processing methods.[1]

Dr. Yolanda Ibarra Pichardo
Blood Bank Manager
National Medical Center IMSS
Puebla, Mexico

Challenge:
A single blood center provides blood to every hospital in the state with a small staff and limited donations.

Solution:
The Reveos® Automated Blood Processing System helps blood centers improve lab efficiency, blood component quality, and process control with one platform.

[1]Data on file at Terumo Blood and Cell Technologies.
Product availability varies by country.

Automation Study Finds Dominance of Stem-Like Memory T Cells

- While studying modular automation in cell therapy manufacturing, our scientists made a surprising discovery.
- Research published in a peer-reviewed paper found an unexpectedly high yield of stem-like memory T cells, known for their promise in treating cancer.

- Findings like this support biotechs as they seek ways to lower manufacturing costs to make therapies more accessible for more patients.

"In the field, scientists are trying to figure out how to generate these cells, using very expensive reagents and genetic modifications. We were able to generate them automatically."

– Annie Cunningham, Field Application Scientist, Terumo Blood and Cell Technologies

Workflow performed in the study:

Cells collected from donor's or patient's blood

Cells expanded to increase to numbers needed for therapy development

Expanded cells harvested for use in therapy

Therapies packaged in dose-sized containers and prepared for transportation to patient/provider

Doses frozen with liquid nitrogen and placed in storage

Product bags thawed, rested, and assessed

Cunningham A, et al. *Cytotherapy.* 2022;24:1148-1157.

Expanding Access: Because Technology That Does Not Reach Patients Is Wasteful

Enabling the first bone marrow transplants in sub-Sahara and expanding access to other blood-based therapies

Investing in the next generation of providers to advance blood supply safety

Building infrastructure to support new therapies

Serving Unmet Needs: Access to Life-Changing Sickle Cell Disease Therapy

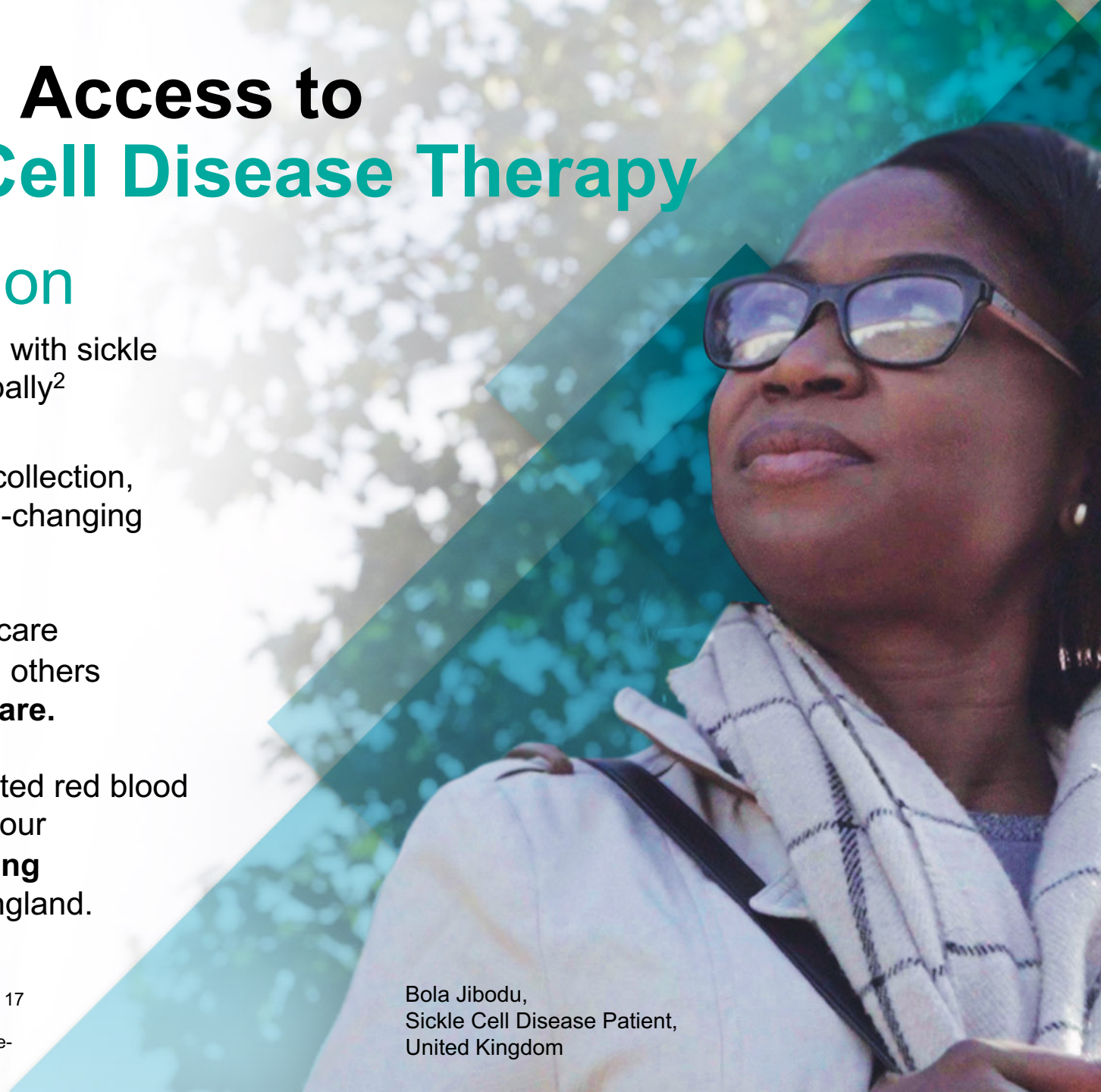
300,000

babies are born with sickle cell disease worldwide every year[1]

120 million

people are living with sickle cell disease globally[2]

- **Red blood cell exchange**, performed via a blood collection, separation, and transfusion therapy, can deliver life-changing treatment for sickle cell disease patients.
- With data and clinical insights, we work with healthcare professionals, advocacy groups, governments, and others around the globe to **help shape the standard of care.**
- In the U.K., NHS England has selected the automated red blood cell exchange procedure specifically performed on our Spectra Optia system as a **best practice for treating sickle cell disease** — improving access across England.



Bola Jibodu,
Sickle Cell Disease Patient,
United Kingdom

[1]World Health Organization. https://www.afro.who.int/health-topics/sickle-cell-disease. Accessed 17 April 2023.
[2]World Health Organization. https://www.afro.who.interviews/african-health-minsters-launch-drive-curb-sickle-cell-disease-toll. Published 23 August 2022. 2016. Accessed 17 April 2023.

Building for the Future: Connectivity, Data Analytics, and Clinical Insights

Our teams are going beyond devices to help enable efficiencies, connect data for valuable analytics, and transform business models — helping customers answer questions like:

- How can we better manage disease and get care to patients faster?
- How can we optimize operations to support a more sustainable blood and plasma supply?
- What new areas of research are needed to advance care?
- How can we gain better visibility into procedures and processes?

Data-Driven Improvements Support Access to Lifesaving Cellular Therapies

Challenge

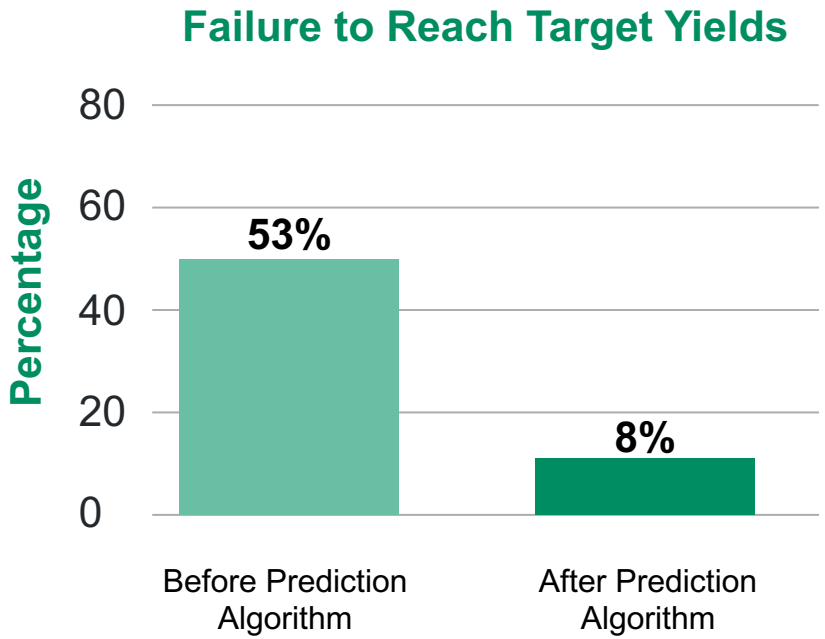
- Cell collection is one of the critical first steps in cell therapy development.
- Over half of the cell collections at Avera McKennan Hospital were falling short of target yields (number of desired cells), leading to increased time and cost for additional patient procedures.

Solution

- Our data analysts developed a custom prediction algorithm to more accurately calculate the volume of blood that needed to be collected from each patient to achieve the desired therapy dose.

Result

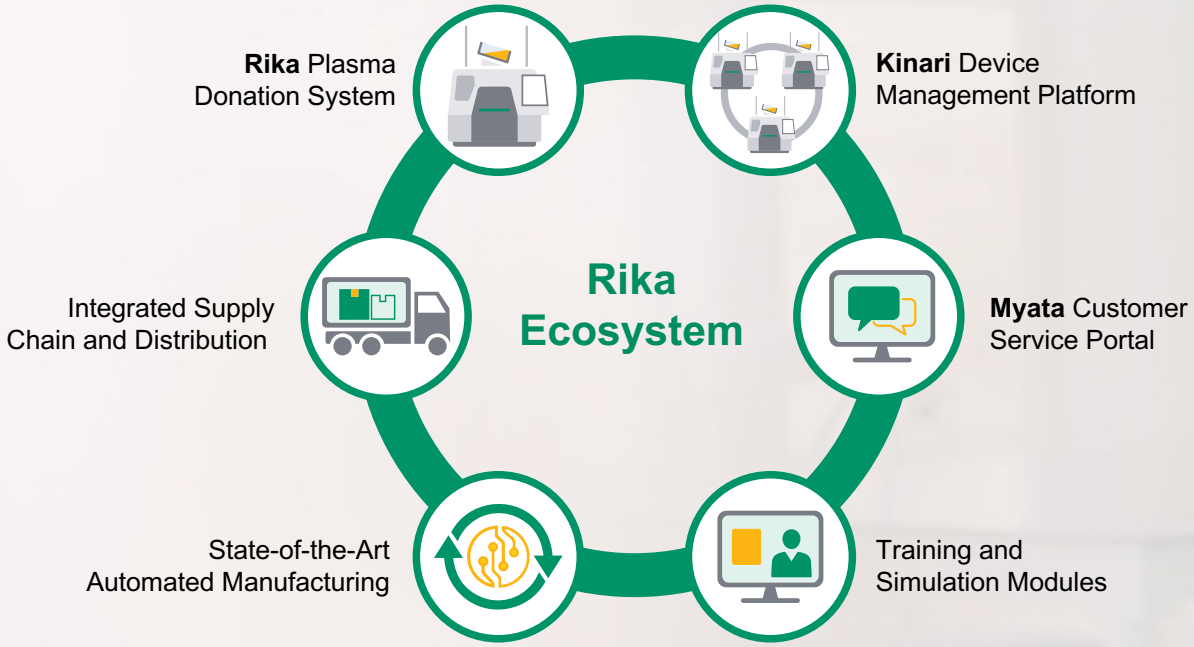
- **Number of collection procedures hitting their target yields jumped from 47% to 92%.**[1]



The Spectra Optia Apheresis System enables 400,000+ therapeutic apheresis procedures worldwide each year.[1]

[1]Data on file at Terumo Blood and Cell Technologies.

An Ecosystem Designed to Advance Plasma Therapies



Challenge

- Patients like Peter need monthly infusions derived from donor plasma; **it can take 130 donations to treat one patient for a year.**[1]
- Only a small number of people who are eligible to donate actually do, so plasma centers need to make the most of every donation — and deliver an improved donor experience.

Solution

- The **industry's first end-to-end ecosystem** designed for efficiency and to advance plasma-derived therapies.
- What better efficiency and donor experience look like: **One plasma donation now takes less than 35 minutes on average.**

Peter Atherton
Common Variable Immune Deficiency Patient, U.S.

We Touch a Patient's Life Every Second of Every Day

Blood delivers lifesaving therapies.

Lilian
Postpartum Hemorrhage Survivor

Modified cells can cure diseases and improve quality of life.

Bola
Sickle Cell Disease Patient

Treated cells can offer alternative treatment options for patients.

Julius
Skin Graft Recipient

Processed blood can treat diverse illnesses.

Peter
Common Variable Immune Deficiency Patient

Thank You

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