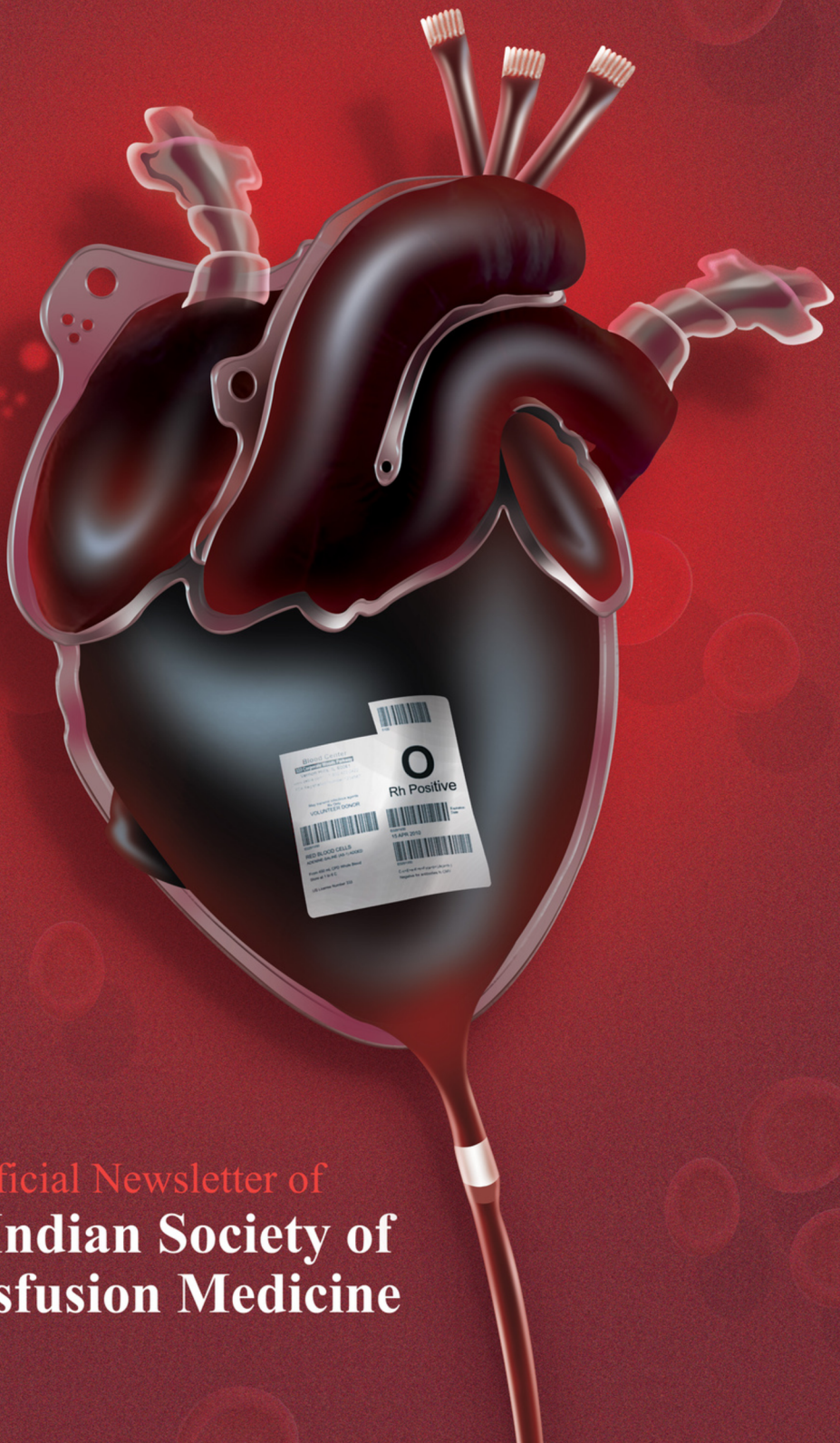
TRANSFUSION 360

Edition 5 | November 2025



The Official Newsletter of

The Indian Society of Transfusion Medicine

ISTM

Future Events

National

- **TRANSMEDCON 2025.** The 13th Annual National Conference of the Indian Society of Transfusion Medicine (ISTM). Jaipur, Rajasthan. November 28 - 30, 2025.
- **TRANSCON 2026.** The 51st Annual National Conference of the Indian Society of Blood Transfusion and Immunohaematology (ISBTI). Kochi, Kerala. September 18 - 20, 2026.

International

- **AATM 2025.** The 20th Annual Congress of the Asian Association of Transfusion Medicine (AATM). November 14 - 15, 2025. Mumbai, India.
- The 67th ASH Annual Meeting & Exposition 2025. December 6 - 9, 2025. Orlando, Florida, USA.
- **ISBT 2026.** The International Congress of the International Society of Blood Transfusion (ISBT). June 20 - 24, 2026. Kuala Lumpur, Malaysia.
- **AABB 2026.** Annual Meeting of the American Association of Blood & Biotherapies (AABB). October 17 - 20, 2026. Atlanta, Georgia, USA.

Here you are requested to send your articles to *sudipta.sgpgi@yahoo.co.in* for TRANSFUSION 360

ARTICLE TYPE SPECIFICATIONS

Original Research
Short Reports
Viewpoints
Reviews

In this Issue

From The Editorial Office

Dr Sudipta Sekhar Das
Editor
Indian Society of Transfusion Medicine (ISTM)

Dear READERS

It gives me immense pleasure to reach out once again through the November 2025 edition of TRANSFUSION 360. Over the past months, our newsletter has continued to grow as a vibrant platform for sharing scientific perspectives, institutional experiences, and emerging ideas in transfusion medicine. This success has been possible only because of your enthusiastic participation and sustained engagement.

As we approach the close of 2025, the Indian Society of Transfusion Medicine (ISTM) is entering an exciting new phase. Preparations are well underway for the launch of our upcoming peer-reviewed journal, the Journal of Transfusion & Immunohematology (JOTI), scheduled for release in March 2026. JOTI will serve as a comprehensive forum for original research, innovations, and academic discussions spanning transfusion medicine, immunohematology, and allied sciences.

With this initiative, ISTM aims to further strengthen scientific communication, foster collaboration across disciplines, and provide global visibility to the outstanding work being carried out by our professional community. We invite all researchers, clinicians, and industry partners to contribute their expertise and help make JOTI a landmark publication in our field.

Thank you for your continued trust and support in making both TRANSFUSION 360 and JOTI valuable pillars of knowledge dissemination. Together, let us continue advancing the science and practice of transfusion medicine in India and beyond. Stay tuned for more updates!

"DONATE BLOOD SAVE LIVES"

EDITORIAL OFFICE
Department of Transfusion Medicine and Blood Centre
Apollo Multispeciality Hospitals,
58, Canal Circular Road
Kolkata - 700054

TRANSFUSION SAFETY: TTI TESTING, QC STRATEGIES & DOCUMENTATION STANDARDS

CME RECAPS

Date	**August 30, 2025**
Venue	**Apollo Hospitals, Kolkata**
Organized by	**Department of Transfusion Medicine, Apollo Hospitals, Kolkata**

We are pleased to announce the successful conduct of the CME on "Transfusion Safety: TTI Testing, QC Strategies & Documentation Standards", organized by the Department of Transfusion Medicine, Apollo Hospitals, Kolkata, on 30th August 2025 at the Main Auditorium. The day-long academic program, held from 9:00 AM to 5:00 PM, was attended by 93 participants, including transfusion medicine specialists, postgraduate students, technologists, medical officers, counselors, and nursing staff.

The CME was designed to highlight critical aspects of transfusion safety with a focus on TTI testing, quality control strategies, and documentation standards, which form the backbone of safe and effective transfusion practices. The scientific sessions included expert presentations that provided in-depth knowledge on evolving technologies and best practices. Panel discussions and debates created a lively academic environment, encouraging participants to critically analyze challenges in the field and propose practical solutions.

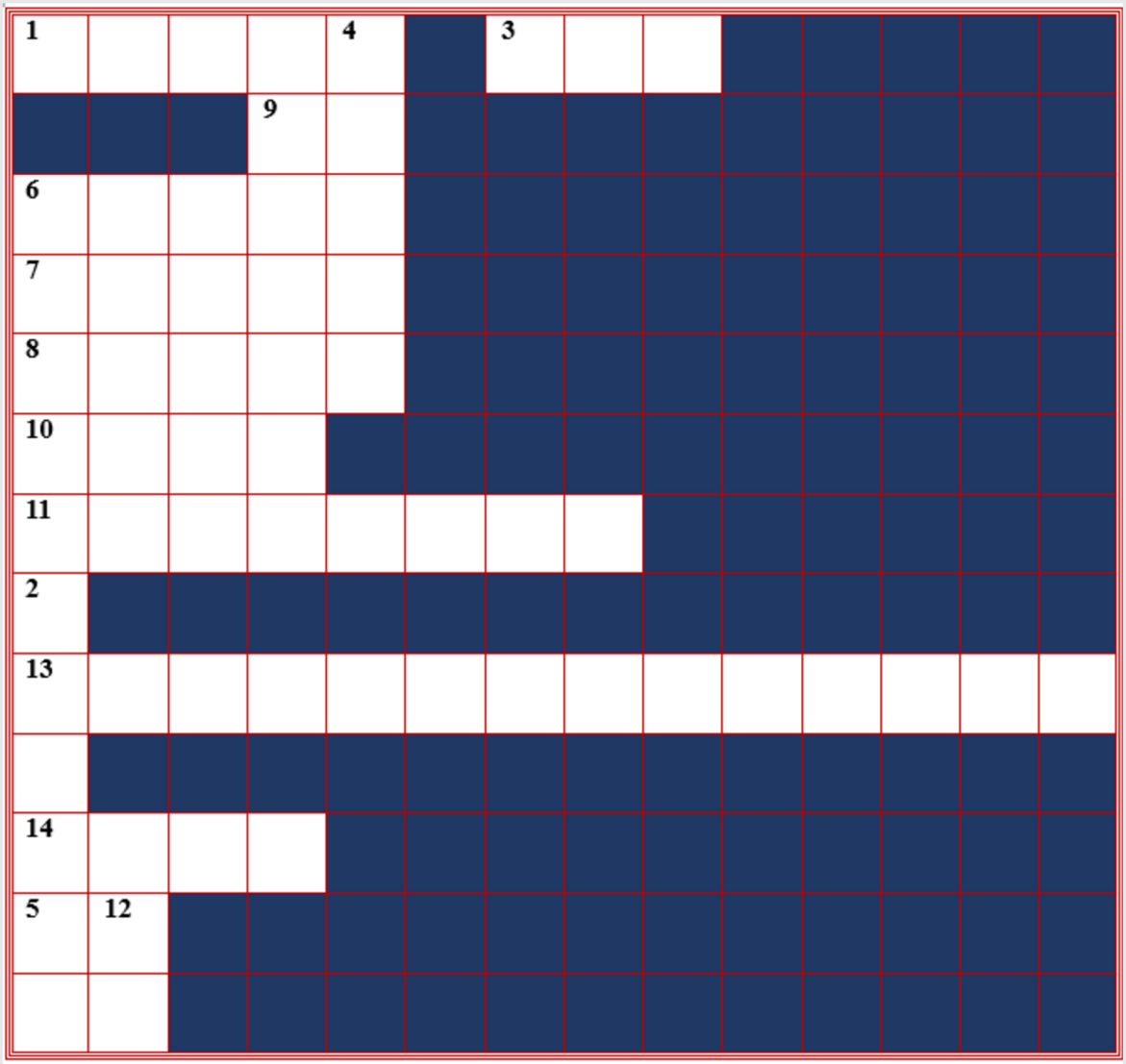
A special highlight of the CME was the oral paper on TTI presentations by students, which showcased emerging research,

innovative approaches, and the enthusiasm of young minds in advancing transfusion medicine. The event served as a platform for academic exchange, collaboration, and interactive learning, bringing together diverse perspectives and strengthening the collective commitment toward ensuring transfusion safety. The active engagement of all participants reflected the relevance of the topics discussed and the need for continued dialogue in this vital area of healthcare.

We extend our heartfelt gratitude to the distinguished faculty, participants, and students for their contributions, which made this CME an enriching and memorable academic success.

TM Crossword

Test Your Transfusion Knowledge!



Across

1 Red cell component used for chronic anemia management

3 Technique to remove patient plasma and replace with donor plasma or albumin solution

6 Immunoglobulin responsible for hemolytic disease of the fetus and newborn

7 Storage lesion mainly affects this type of cell

8 Immediate spin crossmatch detects this antigen-antibody reaction

10 Coagulation factor-rich product obtained by thawing FFP at 4°C

11 Common cause of non-immune hemolysis during transfusion (mechanical cause)

13 Screening test for unexpected antibodies in patient serum

14 Preservative solution commonly used in red cell storage

down

2 Test used to detect in-vivo coating of red cells with antibody or complement

4 Antibody that can cause severe HDFN, even affecting erythropoiesis

5 Blood group system with antigens C, c, E, e

9 Transfusion reaction with hypotension, fever, and hemoglobinuria

12 Universal donor plasma group

CRIMSON TRUTHS
THE JOURNEY OF AIHA

Autoimmune Hemolytic Anemia (AIHA) reminds us that even the body's own defenses can lose their way. Through science, compassion, and careful transfusion, we restore balance-and life-to every drop of red.

When our own blood cells are hurt by mistake,
And the body fights the life it helps to make,
The Coombs test shows, with gentle crimson art,
Antibodies hidden, tearing cells apart.

Warm ones attack when fever fills the skin,
Cold ones strike when winter chills within.
Doctors prepare blood, careful and slow,
To give what heals, not harm that may grow.

Steroids calm storms the immune winds start,
Rituximab helps the healing to chart.
Plasma exchanged, when crises may appear,
Brings back the hope that illness stole in fear.

Each drop transfused a promise to restore,
A rhythm of life that beats once more.
Science and care walk hand in hand,
To guard the gift that crimson strands command.

Through skill and heart, we light the way,
To save the red and bring back the day.

Dr (Prof) Sudipta Sekhar Das
Head of Transfusion Medicine, Apollo Hospitals, Kolkata

ADVANCING TRACEABILITY IN INDIA: SCIENTIFIC & OPERATIONAL ROLE OF THE ISBT 128 STANDARD IN BLOOD & CELLULAR THERAPY

Dr Shivanand Kumatagi
Development Officer for India, International Council for Commonality in Blood Banking Automation (ICCBBA)

Mr Eoin Mcgrath
Executive Director, ICCBBA

Introduction

Traceability in transfusion medicine and cellular therapy is not merely a regulatory requirement - it is a cornerstone of patient safety, hemovigilance, and quality assurance. The ISBT 128 standard [1], developed and managed by ICCBBA since 1995, provides a globally harmonized system for the identification, labeling, and electronic tracking of blood components and cellular therapy products. In India, where over 4000 licensed blood centers operate within diverse infrastructure and regulatory frameworks, ISBT 128 offers a transformative opportunity to unify traceability practices and align with international accreditation standards such as FACT - JACIE and AABB.

Scientific Basis for Traceability

Traceability enables bi-directional tracking - from donor to recipient (lookback) and recipient to donor (traceback) [2] - and is essential for:

- Hemovigilance and biovigilance systems [3].
- Product recalls and adverse event investigations [4].
- Accreditation compliance with FACT-JACIE, AABB, and NABH standards.

International accreditation bodies mandate the adoption of the ISBT 128 labelling standard for blood and cellular therapy products to ensure machine-readable, standardized identification, a mechanism that is known to reduce transfusion errors and enhance bedside safety compared to manual alternatives. [5,6,7]

ISBT 128: Core Features Supporting Traceability

ISBT 128 provides [1]:

- Globally unique Donation Identification Numbers (DIN) valid for 100 years.
- Standardized Product Description Codes (PDC) for blood components and cellular therapies.
- Barcoding specifications whether linear or 2D.
- Data structures for encoding ABO/Rh typing, red cell phenotyping, HLA typing, and special testing.
- Electronic messaging standards compatible with HL7 FHIR and XML in support of end-to-end information exchange including hospital Electronic Health Record systems.

These features ensure interoperability across institutions and geographies, enabling seamless traceability including inter-site exchange of blood and cells, and transplant networks.

Indian Case Study: Medanta – The Medicity, Gurgaon

A landmark implementation of ISBT 128 in India was documented by Aggarwal et al. [8] at Medanta - The Medicity, Gurgaon. Their step-by-step journey included:

- Facility registration with ICCBBA and acquisition of a Facility Identification Number (FIN).
- Development of a four-quadrant label integrating ISBT 128 standards with Indian regulatory requirements.
- Generation of DINs and product codes for whole blood and components.
- Integration of local licensing details, such as Drugs Controller General of India license numbers, into ISBT 128-compliant labels.

This implementation demonstrated that ISBT 128 can be successfully adapted to Indian regulatory and operational contexts, paving the way for broader adoption. It is also pertinent to note that there are a small number of other facilities in India applying or preparing to apply for
ISBT 128.

Cellular Therapy: A Growing Frontier

India's expanding bone marrow transplant (BMT) and cellular therapy programs require robust traceability systems. ISBT 128 supports:

- Traceability of the collected cell therapy product
- Chain of Identity (CoI) for patient-specific therapies.
- Product coding for hematopoietic progenitor cells (HPCs) and somatic cell therapies
- Compliance with FACT-JACIE and AABB Cellular Therapy Standards, which mandate ISBT 128 labeling for traceability and safety. [5,7]

The ICCBBA Technical Advisory Groups ensure that ISBT 128 evolves to meet the needs of this rapidly advancing field.

Challenges and Opportunities in India

CHALLENGES

- Limited digital infrastructure in rural blood banks
- Fragmented regulatory oversight across states
- Lack of trained personnel in the implementation of digital infrastructure

OPPORTUNITIES

- Integration with e-RaktKosh (free blood centre software by the government of India) and hospital information systems.
- FACT-JACIE and AABB accreditation pathways incentivize ISBT 128 adoption.
- Training modules and pilot projects in BMT units and regional blood centres.

Recommendations for National Adoption

1. POLICY INTEGRATION:
NBTC and CDSCO should include ISBT 128 in national guidelines, making the case for standardized terminology as a support for regulation.

2. CAPACITY BUILDING:
ISTM and academic institutions should offer certified training programs in traceability needs in general and ISBT 128 in particular.

3. TECHNICAL SUPPORT:
ICCBBA's resources, staff and advisory groups can assist Indian facilities.

4. PILOT PROGRAMS:
Demonstration projects in high-volume centers can showcase feasibility.

Conclusion

ISBT 128 is not just a terminology and labelling standard - it is a support for scientific and operational frameworks enhancing traceability, safety, and global interoperability. For India, its adoption in blood and cellular therapy services is a strategic imperative to elevate quality, ensure patient safety, and align with international best practices.

As India moves toward digital health integration and global accreditation, ISBT 128 offers a proven path forward. The time is ripe for collaborative action among regulators, professional bodies, and healthcare institutions to make standardized traceability a reality for every donor and recipient.

References

1. ICCBBA. ISBT 128 for Blood Components and Cellular Therapy. San Bernardino (CA): ICCBBA; [cited 2025 Oct 18]. Available from: https://www.isbt128.org

2. Joint UKBTS Professional Advisory Committee. Definitions of lookback and traceback. Manchester (UK): JPAC; 2019 Mar [cited 2025 Oct 18]. Available from: https://www.transfusionguidelines.org/document-library/documents/look-back-and-trace-back-2019/downloadfile/Look%20Back%20and%20Trace%20Back%20%20March%202019.pdf

3. World Health Organization. Global haemovigilance report. Geneva: WHO; 2016 [cited 2025 Oct 18]. Available from: https://www.who.int/teams/health-product-policy-and-standards/standards-and-specifications/blood-and-products-of-human-origin/haemovigilance

4. Centers for Disease Control and Prevention (CDC). Transmission of hepatitis C virus through transplanted organs and tissue - Kentucky and Massachusetts, 2011. MMWR Morb Mortal Wkly Rep. 2011;60(50):1697–1728. Available from: https://www.cdc.gov/mmwr/index2011.html

5. Chou SS, Chen YJ, Shen YT, Yen HF, Kuo SC. Implementation and effectiveness of a bar code–based transfusion management system for transfusion safety in a tertiary hospital: Retrospective quality improvement study. JMIR Med Inform. 2019;7(3):e14192.doi:10.2196/14192.

6. Bolton-Maggs P. SHOT: Learning from error, understanding the causes, delivering a safer future. Manchester (UK): Serious Hazards of Transfusion; 2018 [cited 2025 Oct 18]. Available from: https://www.transfusionguidelines.org/document-library/documents/null-1-/download-file/Paula%20Bolton%20Maggs.pdf

7. AABB. Labeling requirements for blood and cellular therapy products [Internet]. Bethesda (MD): AABB; [cited 2025 Oct 18]. Available from: https://www.aabb.org/regulatory-and-advocacy/regulatory-affairs/regulatory-for-blood/labeling

8. Aggarwal G, Tiwari AK, Pabbi S, et al. Implementation of ISBT 128 and integration with Indian regulations: A step-by-step journey. Asian J Transfus Sci. 2023;17(2):256–263. Available from: https://europepmc.org/article/PMC/10807540

ABO – THE FIRST IDENTITY

In ruby drops a secret lay,
Landsteiner found the hidden way.
A, B, O, and AB speak,
The language of the blood we seek.

On chromosome nine the blueprints hide,
Where glycosyltransferase enzymes guide.
A adds acetyl, B galactose too,
While O leaves silence, its chain left true.

Antibodies rise without command,
Mostly IgM, with IgG at hand.
Potent in plasma, they swiftly defend,
Guarding each vessel from foreign blend.

Subgroups whisper in subtle streams,
A2, A3 fulfill hidden schemes.
Their weaker voices still play a role,
In blood group testing they shape the whole.

They steer transfusion, they alter disease,
They balance immunity with quiet ease.
ABO the system first defined,
A cornerstone of blood, in science enshrined.

Dr Bhavyaa Beriwal
MBBS, PG Resident; Department of Transfusion Medicine & Blood Bank, All India Institute of Medical Sciences, Patna

ADVANCES IN ARTIFICIAL BLOOD: INSIGHTS FROM JAPAN'S HEMOGLOBIN VESICLE RESEARCH

Dr (Prof) Sudipta Sekhar Das
Head of Transfusion Medicine,
Apollo Hospitals, Kolkata

Introduction

Blood transfusion is an indispensable component of modern medicine; yet, global challenges persist in ensuring a safe and adequate supply. Short shelf life, dependence on voluntary donation, risk of emerging pathogens, and compatibility issues remain major hurdles. Against this backdrop, the concept of "artificial blood" has drawn worldwide attention. In early 2025, news from Japan reported promising advances in the development of a hemoglobin-based artificial blood substitute, sparking renewed interest in the field. This article summarizes what has been confirmed about the Japanese initiative, places it in the context of global transfusion medicine, and outlines the opportunities and challenges that lie ahead.

The Japanese Initiative: Hemoglobin Vesicles

Research teams led by Professor Hiromi Sakai at **Nara Medical University, Japan**, have been working for decades on **hemoglobin vesicles (HbVs)**, nanoscale liposomes encapsulating purified human hemoglobin. The hemoglobin is typically derived from **expired donor red blood cells**, purified to remove stroma and other potentially harmful components, and then enclosed within a biocompatible lipid bilayer. This design mimics the oxygen-carrying function of natural erythrocytes, while eliminating surface blood group antigens that normally determine ABO and Rh compatibility [1].

By removing blood group antigens, HbVs are expected to behave as a **"universal" transfusion product**, avoiding the logistical complexity of blood-type matching. Moreover, the vesicle membrane is engineered to reduce oxidative stress and prevent the release of free hemoglobin, which has historically been a limitation of hemoglobin-based oxygen carriers (HBOCs) [2].

Confirmed Advances

1. COMPATIBILITY AND UNIVERSALITY

Because the vesicles do not carry A, B, or Rh antigens, HbVs are inherently free of the immunogenic structures that normally limit blood compatibility. Japanese researchers emphasize this as a major advantage for emergency medicine, trauma, and battlefield situations where crossmatching may not be feasible [1,3].

2. EXTENDED SHELF LIFE

One of the most striking claims is the **potential shelf stability of two years at room temperature**, compared with 35 - 42 days under refrigeration for conventional red blood cells [3]. Although peer-reviewed data remain limited, such extended stability would be transformative, particularly for disaster relief, remote areas, and low-resource settings.

3. EARLY HUMAN STUDIES

Reports indicate that HbVs have progressed beyond animal models into early **human safety trials**. Initial studies in healthy

volunteers tested small infusion volumes, with planned escalation up to 100 - 400 mL [3,4]. These "mini-dose" transfusions are designed to evaluate tolerance, survival, and pharmacokinetics before larger-scale trials in patients.

4. PROJECTED TIMELINE

According to media coverage and statements from the research team, the goal is to make artificial blood clinically usable by **around 2030**, assuming trials demonstrate safety, efficacy, and regulatory approval [3].

Remaining Uncertainties

CLINICAL EFFICACY

While HbVs carry oxygen in principle, whether they can **match the oxygen delivery efficiency of natural red cells in critically ill patients** remains unproven. Larger clinical studies in trauma, surgery, and chronic transfusion populations are necessary.

SAFETY CONCERNS

Previous HBOCs were associated with hypertension, oxidative stress, and renal toxicity. Encapsulation is intended to mitigate these issues, but long-term data on immunogenicity, clearance, and tissue effects are still lacking [2].

PRODUCTION AND COST

Scaling up production to levels comparable with national blood supplies remains a major challenge. Manufacturing under GMP conditions, sourcing expired red cells, and ensuring quality control may prove costly. Without competitive pricing, widespread use will be limited.

REGULATORY PATHWAYS

Even if successful in Japan, HbVs will require rigorous review by regulatory authorities worldwide. Each jurisdiction may have different standards, and safety concerns from prior HBOC failures may slow acceptance.

Context within Global Artificial Blood Research

Japan's progress is notable, but not isolated. Globally, research into **enzymatic antigen conversion, recombinant hemoglobin**, and **synthetic oxygen carriers** is ongoing. Most previous HBOCs failed due to toxicity or short half-life [2]. What distinguishes HbVs is the **liposomal encapsulation strategy**, which shields hemoglobin and mimics red cell structure more closely than earlier free-hemoglobin solutions.

Potential Applications if Successful

1. EMERGENCY AND MILITARY MEDICINE:

Rapid universal transfusion without cross matching.

2. DISASTER RESPONSE:

Stockpiles with long shelf life, deployable in austere environments.

3. RARE BLOOD GROUPS:

Support for patients with multiple alloantibodies or rare phenotypes.

4. RESOURCE-LIMITED SETTINGS:

Reduced dependence on cold chain infrastructure.

Balanced Perspective

The announcement from Japan rightly generated excitement, but caution is essential. Media headlines about "artificial blood discovery" risk overstating what is, at present, an early-stage innovation. Confirmed progress includes development of HbVs, early human safety testing, and promising shelf-life and compatibility data. However, until peer-reviewed clinical trials demonstrate efficacy and safety at transfusion volumes, HbVs remain an **experimental substitute** rather than a clinical reality.

Conclusion

Japan's development of hemoglobin vesicles represents one of the most promising advances in the long quest for artificial blood. If proven safe, effective, and scalable, this technology could revolutionize transfusion practice by eliminating compatibility barriers and extending shelf life. For transfusion professionals, it highlights both the pace of innovation and the continuing need for

vigilance in balancing enthusiasm with scientific evidence. As further clinical data emerge in the coming years, transfusion medicine specialists should follow this field closely, given its potential to reshape global transfusion strategies.

References

1. Sakai H. Hemoglobin-vesicles as artificial oxygen carriers. J Artif Organs. 2017;20(4):323–333. doi:10.1007/s10047-017-0989-0

2. Alayash AI. Hemoglobin-based blood substitutes: oxygen carriers, pressor agents, or oxidants? Biochem Mol Biol Educ. 2014;42(3):197–205. doi:10.1002/bmb.20773

3. Tokyo Weekender. Japanese Scientists Develop Artificial Blood. March 2025. Available at: https://www.tokyoweekender.com/entertainment/tech-trends/japanese-scientists-develop-artificial-blood

4. Al Jazeera. How close are scientists to producing artificial blood? March 2025. Available at: https://www.aljazeera.com/news/2025/3/8/how-close-are-scientists-to-producing-artificial-blood

MNS
THE RHYTHM OF RED CELLS

In 1927, the path was clear,
Landsteiner, Levine drew M and N near.
Later S and s were brought to light,
By Walsh, Montgomery, and Race in sight.

Two glycophorins hold their place,
GPA and GPB in the red cell's space.
M and N on GPA reside,
While S and s on GPB abide.

Codominant alleles define the way,
Linked together, they rarely stray.
In most, the U stands bold and true,
But rare its absence – in just a few.

Papain, bromelain, and ficin take aim,
Breaking M, N, S, and little s by name.
Trypsin, too, joins the antigen fight–
M and N fall, S and s retain their might.

Most anti-M and N are mild, benign,
Allo-formed, they rarely confine.
But when they react with clinical might,
We match blood carefully to make it right.

Anti-S, anti-s, and anti-U warn,
IgG weapons in transfusion born.
They cross the womb or transfusion stream,
Causing harm where life should dream.

Dr Bhavyaa Beriwal
MBBS, PG Resident; Department of Transfusion Medicine & Blood Bank, All India Institute of Medical Sciences, Patna

MY SEVEN-DAY JOURNEY INTO THE WORLD OF BLOOD DONATION & TRANSFUSION

Deepanshu Sekhar Das
Class XI, Apeejay School,
Salt Lake, Kolkata

A few months back, I had a wonderful opportunity to spend seven days in a blood centre as part of a project on **blood donation, testing, and transfusion**. It was one of the most memorable learning experiences of my life. Until then, I had only read about blood groups, transfusion, and blood banks in textbooks. But during this project, I saw everything with my own eyes - the donors, the machines, the staff, and the whole process that ensures patients get safe blood.

First Impressions

On the first day, as I entered the blood centre, I was amazed by the **calm yet busy atmosphere**. Donors were registering themselves, nurses were guiding them, and in every room I saw large, powerful machines silently working. It was like stepping into the heart of a hospital, where every beat matters.

Donor Registration and Screening

The process begins with **donor registration**. Every voluntary donor fills in their details and undergoes basic checks like hemoglobin level, weight, blood pressure, and medical history. I was surprised to see how carefully this was done, because only healthy donors can donate safe blood.

Some donors came with friends, others came alone, and a few even came on their birthdays. That touched me deeply - celebrating a birthday by giving blood to save someone's life!

Whole Blood and Platelet Donation

I learned that there are two main types of donations:

1. WHOLE BLOOD DONATION
where about 350 - 450 ml of blood is collected.

2. PLATELET DONATION (APHERESIS)
a special process where only platelets are collected and the rest of the blood is returned to the donor.

In the platelet room, I saw big apheresis machines working like magic, carefully separating platelets while the donor rested on the couch.

Separation into Components

One of the most fascinating things I saw was how **one unit of whole blood is separated into different components**. In the processing room, machines spun the blood at very high speed. From a single donation, they made **red cell concentrate, plasma, and platelets**. This way, one donor can help not just one, but **three different patients** with different needs.

The separated components are then stored under strict conditions: red cells in refrigerators, plasma in freezers, and platelets at room temperature with continuous gentle shaking.

Automation and Big Machines

In every room, there were advanced

automated machines. Some tested for blood grouping, some for infections, and one very robust machine called the **NAT machine**. I learned that NAT can detect infections like HIV, hepatitis B, and hepatitis C at a very early stage, much earlier than traditional tests. This ensures that the blood given to patients is absolutely safe. The staff explained how automation reduces human error and increases both speed and accuracy. I realized that behind every bag of blood, there is **a huge amount of science and technology** working silently.

The Busy Crossmatch Room

The **crossmatch room** was always bustling with activity. Here, the donor's blood is tested against the patient's sample to check compatibility before transfusion. The staff there told me that this is a critical step, because giving mismatched blood can be dangerous.

I often saw housekeeping staff rushing in and out, carrying blood bags along with a paper called the **crossmatch sheet**, hurrying towards the wards where patients were waiting. It was teamwork at its best - laboratory staff, doctors, nurses, and housekeeping, all playing their part.

The Human Side of Blood Donation

While the machines impressed me, what touched me most were the **blood donors**. Some of them were regulars, coming every three months. A few were donating blood for the first time, a little nervous but still determined. And yes, a few came on their birthdays, smiling proudly after the donation. Their simple act of kindness reminded me that behind every machine and test, the real heroes are the donors who give selflessly.

Lessons Learned

In just seven days, I learned so much:

- Blood donation is safe, simple, and saves lives.
- Automation and advanced machines ensure accuracy and safety.
- Every unit of blood is tested thoroughly before reaching a patient.
- The process involves not just doctors, but technicians, nurses, and even housekeeping staff, all working silently to keep the system running.

Most importantly, I learned that **every drop of blood counts**. Behind every transfusion, there is a story - of a donor who gave, of a patient who received, and of the many people who made the journey possible.

Conclusion

My project on blood donation and transfusion opened my eyes to a world that usually remains hidden behind hospital walls. It showed me science, teamwork, discipline, and above all, humanity. As a Class XI student, it was an unforgettable experience that has inspired me to become a **voluntary blood donor myself once I turn 18**. If every healthy person donates blood regularly, no patient will ever suffer due to shortage. That is the simple but powerful truth I carried home from my seven-day journey.

P1PK – THE ANCIENT CODE

Red cells may carry the P1 sign,
Or lack its strength along the line.
So P1 and P2 both appear,
Two phenotypes in testing clear.

At birth the antigen's faintly shown,
With age its surface strength is grown.
The very rare "p" leaves cells bare,
No P, no Pk, no trace is there.

Anti-P1 is often cold,
An allo form, yet seldom bold.
But when it warms to body's heat,
Transfusion danger it may meet.

It spares the fetus, no harm conveyed,
Yet transfusion must be carefully weighed.
Crossmatch testing lights the way,
To choose safe blood without delay.

Beyond the blood, in nature wide,
The P1 substance loves to hide.
In worms, in birds, exposures bring,
Immune responses antibodies sing.

Dr Bhavyaa Beriwal
MBBS, PG Resident; Department of Transfusion Medicine & Blood Bank, All India Institute of Medical Sciences, Patna

ROCHE'S INTEGRATED NAT & SEROLOGY PLATFORMS: A COMPLETE SOLUTION FOR BLOOD SCREENING

From
Team, Roche Diagnostics India Pvt Ltd

Roche is a leader in the Blood Screening space because it is one of the only companies to offer a complete, integrated TTI solution that covers both of the required testing technologies: Nucleic Acid Testing (NAT) and Serology.

The portfolio covers

1. The Core - Platform Analyzers

A. NAT (MOLECULAR) PLATFORM:
cobas® 5800/6800/8800 Systems
This is the fully automated, high-throughput system for NAT, which directly detects the virus's genetic material (DNA or RNA). This is crucial for catching infections in the "window period" before the body has created antibodies.

- **What it looks like:** A fully automated mid to high-throughput "sample in – results out" analyzer.

- **Function:**

1. Fully automates the entire process: sample handling, nucleic acid extraction, PCR amplification, and detection.
2. cobas 5800 System: Medium-throughput (up to 144 results in 8 hours).
3. cobas 6800 System: Medium to High throughput (up to 384 results in 8 hours).
4. cobas 8800 System: High-throughput (up to 960 results in 8 hours).

- **Key Feature:** Requires minimal user interaction ("walk-away" time), Ready to Use Reagents, No Freezing of Reagents during storage, Customizable control concept & true walkaway time

B. SEROLOGY (IMMUNOASSAY) PLATFORM:
cobas® e411, pure & pro integrated solutions
This platform runs the serology tests, which look for the body's response to an infection (antibodies) or parts of the virus itself (antigens).

- **What it looks like:** A standalone (cobas e411) or modular system (cobas pure & pro) often in a long line. The key component for blood screening is the cobas e411, e402 & e801 module, which is the immunoassay analyzer.

- **Function:**

1. Uses ECL (Electrochemiluminescence) technology, which is known for its high sensitivity and fast results.

- **Key Feature:** Fast TAT, can run single test also, Ready to use Reagents& No freezing of reagents on storage.

2. The Key Assays (The Tests)

These are the specific test kits that run on the platforms.

A. NAT ASSAYS

for the cobas 5800/6800/8800

- **cobas® MPX Test:** This is the flagship blood screening test. It is a multiplex test that simultaneously detects four viruses from a single sample:

1. **HIV - 1** (Groups M & O)
2. **HIV - 2**
3. **Hepatitis C (HCV)**
4. **Hepatitis B (HBV)**

B. SEROLOGY ASSAYS

for the cobas e411, e402 & e801

These are from the Elecsys® assay family. The core tests used in blood screening are:

- **Elecsys® HIV combi PT:** A highly sensitive 5th-generation test that detects both the HIV p24 antigen and **HIV-1/HIV-2 antibodies**.

- **Elecsys® HBsAg II:** Detects the **Hepatitis B surface antigen**.

- **Elecsys® Anti-HCV II:** Detects **Hepatitis C antibodies**.

- **Elecsys® Syphilis:** A test for syphilis.

Crossword Answers

ACROSS

1 PRBC

3 TPE

6 IgG

7 RBC

8 ABO

10 CRYO

11 OVERHEAT

13 ANTIBODY SCREEN

14 CPDA

DOWN

2 DAT

4 ANTI K

5 RH

9 AHTR

12 AB