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Foreword



Extensive work was done on the implementation of our five year strategy “Connections that Count” despite ongoing challenges from COVID-19 in 2021. During the year the Board also approved a new IT strategy for the IBTS and work is already underway to transform technology at the IBTS, recognising that it is a key enabler for many of the projects contained in our five year plan.

Many of the transformational changes planned in Connections that Count are multi-year large-scale projects that will only be visible at the end of their implementation. The Board of the IBTS is pleased to see the progress made on a number of important projects such as implementing the recommendations from the Social Behaviours Review Group. The group was established by the IBTS to review a range of deferrals including those relating to men who have sex with men (MSM).

Following a report to the Board, various changes agreed by the Board will be introduced in two phases with the initial phase introduced in early 2022 and the second phase being introduced later in 2022.

In April we were delighted to publish our first Research and Development Strategy. Over the next three years the IBTS aims to position itself as a research leader in blood transfusion medicine, providing insights into the factors impacting donor health, welfare and donation. We recognise the critical contribution of transfusion in our healthcare system and our research programme will provide the evidence for developing our services to all of the communities that we serve – donors, recipients and clinicians.

One of the key pillars of our strategy is improving customer experience and there are several initiatives underway to improve the experience for our donors, including an online donor portal where donors will be able to make online appointments to donate at a time that suits them. We expect online appointments will be available in the coming months and later this year, donors will be able to complete large parts of the donor questionnaire online ahead of their appointment to make the process of blood donation more efficient for them.

Linda Hickey’s term as Chairperson of the IBTS came to an end in October. Linda is a strong and progressive leader and she showed great ambition for the IBTS, evidenced in our five year strategy. Over the coming years we will see many of the initiatives Linda spearheaded come to fruition.

The Board recently wished Professor Stephen Field a happy retirement from his role as Medical and Scientific Director after almost five years with the IBTS during his tenure, Steve was primarily responsible for keeping our number one objective “a safe and sustainable blood supply” a reality.

He also worked hard at making sure the IBTS stays current and innovative and was the driver behind very thoroughly researched and considered changes such as the removal of the ban on UK residents donating blood in Ireland on foot of the extensive research done on vCJD and more recently the recommendations of the Social Behaviours Review Group. No doubt Steve would have preferred to have seen those latter recommendations implemented before his retirement but our new Medical & Scientific Director, Prof Tor Hervig, has already taken up the baton. We wish Tor every success in the role.

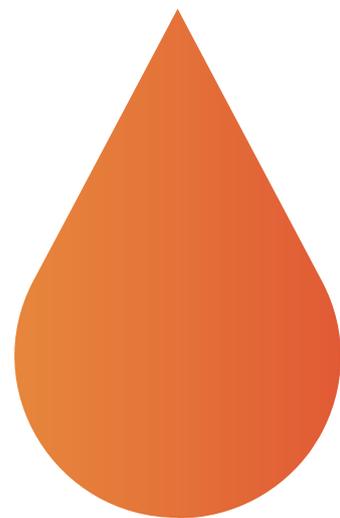
From the beginning of 2021 and throughout the year, the IBTS continued to deal with the challenges presented by the COVID-19 pandemic. Like so many colleagues in the healthcare community, many of our staff were not in a position to work remotely but of necessity were on site ensuring that the IBTS was in a position to provide a safe and continuous blood supply. The wider health service worked hard to catch up on “normal” healthcare which had been paused on several fronts during the early months of 2020 and in 2021 we saw an increased demand for blood products. In order to maintain the blood supply we activated our contingency arrangements twice during the year to import limited stocks of blood from the UK.

Despite multiple challenges during the year typified by “Storm Barra”, the perfect storm in December, when COVID-19 fatigue and very high COVID-19 case numbers combined with Red weather warnings necessitating the cancellation of donor clinics, donors and staff worked extremely hard to ensure the continuity of our blood supply. The Board extends a heartfelt thank you to all donors and IBTS colleagues around the country for this achievement.

We look forward to being able to thank our donors in person again at Donor Award Ceremonies which had to be suspended during the COVID-19 restrictions.

The IBTS depends on our donors. We need new donors more so now than ever and encourage anyone who has considered donating blood to contact us. We extend our thanks to Paschal Sheehy for showing the audience of the Claire Byrne Live just how easy and life-affirming it is to be a blood donor.

Deirdre-Ann Barr
Acting Chairperson



Chairperson's report

Report of the Acting Chairperson of the Irish Blood Transfusion Service regarding the assessment of internal financial controls of a State body for the year ended 31st December 2021 in accordance with Appendix D of the Code of Practice for the Governance of State Bodies 2016.

1. I, as Acting Chairperson, acknowledge that the Board is responsible for the Body's system of internal financial control
2. The IBTS system of internal control can provide only reasonable and not absolute assurance against material error, misstatement or loss
3. The Board confirms that there is an ongoing process for identifying, evaluating and managing significant risks faced by the IBTS. This process is regularly reviewed by the Board via reports from the Chief Executive and updates from the Audit Risk and Compliance Committee
 - i. Management are responsible for the identification and evaluation of significant risks applicable to their areas of business together with the design and operation of suitable controls. These risks are assessed on a continuing basis and may be associated with a variety of internal or external sources including control breakdowns, disruption in information systems, natural catastrophe and regulatory and compliance requirements
 - ii. Management meets twice monthly on operational issues and risks and how they are managed. The Executive Management Team's role in this regard is to review on behalf of the Board, the key risks inherent in the affairs of the IBTS with the Risk and Resilience Manager and the system of actions necessary to manage such risks and to present their findings on significant matters via the Chief Executive to the Board.
 - iii. The Chief Executive reports to the Board on behalf of executive management on significant changes in the work of the IBTS and on the external environment which affects significant risks. Where areas for improvement in the system are identified the Board considers the recommendations made by the Executive Management Team
 - iv. The Director of Finance provides the Finance Committee, which is a sub-committee of the Board, with monthly financial information which includes key performance indicators
 - v. An appropriate control framework is in place with clearly defined matters which are reserved for Board approval only or, as delegated by the Board, for appropriate Executive approval. The Board has delegated the day-to-day management of the IBTS and established appropriate limits for expenditure authorisation to the Executive. The Chief Executive is responsible for implementation of internal controls, including internal financial controls

- vi. The system of internal financial control is monitored in general by the processes outlined above. In addition, the Audit, Risk and Compliance Committee of the Board reviews specific areas of internal control as part of its terms of reference.

The Audit, Risk and Compliance Committee of the Board have satisfactorily reviewed the effectiveness of the system of internal control on behalf of the Board. The Audit, Risk and Compliance Committee carried out a formal review of these systems in respect of 2021 at its meeting on the 8th February 2022.

Additional Reporting Requirements

Compliance with the Code of Practice for the Governance of State Bodies

The Board is committed to complying with the relevant provisions of the Code of Practice for the Governance of State Bodies, published by the Department of Public Expenditure and Reform in August 2016 and amended in September 2020.

A code of business conduct for the Board and an employee code of conduct are in place. The Board has adopted a detailed travel and subsistence policy which complies with all aspects of Government travel policy.

The IBTS Board reviewed reports on internal controls during the year along with regular reviews of the reports of the Health Products Regulatory Authority on operational and compliance controls and risk management. The Board will continue to review these reports and to work closely with the HPRA to ensure the highest international standards.

The IBTS has complied with disposal of assets procedures, as outlined in the 'Code of Practice for the Governance of State Bodies 2016 - 2020.' The IBTS complies with all relevant obligations as defined under Irish taxation law.

Corporate Governance

The Board's policy is to maintain the highest standards of corporate governance, in line with generally accepted policies and practices. The Board is accountable to the Minister for Health.

The Board has a manual for Board members.

The Audit, Risk and Compliance Committee reviewed its terms of reference in 2021 and a revised terms of reference for the Committee was approved at the Board meeting in June 2021.

Workings of the Board

The Board is comprised of twelve members including a non-executive Chairperson appointed by the Minister for Health.

The Board met on 6 occasions for ordinary meetings during the year. Attendance by Board members was as follows:

Table 1: Board attendance at Board meetings 2021

	February	April	June	September	November	December
Linda Hickey	X	X	X	X		
Deirdre Cullivan	X	X	X	X	X	X
John Malone	X	X	X	X	X	X
Kate Williams		X	X	X	X	X
Brian O'Mahony	X	X	X	X	X	X
David Gray	X	X	X	X	X	X
Deirdre Ann Barr	X	X	X	X	X	X
Dr Liz Kenny	X	X	X	X	X	X
Dr Ronan Desmond		X		X		
Dr Satu Pastila	X	X	X	X	X	X
Dr Sarah Doyle		X				
Prof Sharon Sheehan	X	X	X	X	X	X

All members receive appropriate and timely information, to enable the Board to discharge its duties. The Board takes appropriate independent, professional advice as necessary. Guidelines for the payment of Board member fees and expenses are observed.

Members of the Board

Ms Linda Hickey (Chairperson)*
 Mr Brian O'Mahony
 Ms Kate Williams
 Dr Elizabeth Kenny
 Dr Ronan Desmond
 Ms Deirdre Cullivan
 Mr John Malone
 Dr Satu Pastila
 Dr Sarah Doyle
 Ms Deirdre-Ann Barr (Acting Chairperson since October 3rd 2021)
 Mr David Gray
 Prof Sharon Sheehan

*Term of office ended on October 3rd 2021.



Table 2: Schedule of Attendance, Fees and Expenses

A schedule of attendance at the Board and sub committee meetings for 2021 is out below including the fees recieved by each member:

	Board	Medical Advisory Committee	Audit, Risk & Compliance Committee	Finance Committee	Performance Development Committee	Research & Development Committee	Board Fees 2021 €
Number of Meetings	6	6	5	5	4	2	
Ms L Hickey* (Chairperson)	4	-	-	-	3	-	16,179
Ms DA Barr** (Acting Chairperson)	6	-	5	-	1	-	11,970
Mr B O' Mahony	6	-	-	-	-	2	-
Dr E Kenny	6	6	-	-	-	-	-
Ms K Williams	5	-	-	5	-	-	11,970
Dr R Desmond	2	5	-	-	-	-	-
Ms D Cullivan	6	-	-	4	4	-	11,970
Mr J Malone	6	-	-	5	-	2	11,970
Dr S Pastila	6	5	-	-	-	-	11,970
Dr S Doyle**	1	0	-	-	-	-	-
Mr DW Gray	6	-	5	-	-	-	11,970
Dr Sharon Sheehan	6	-	5	-	-	-	-
							87,999

* Term Expired on the 3rd October 2021.

** The Board approved Deirdre Ann Barr as Acting Chairperson until a new Chairperson is appointed by the Minister for Health

*** Dr Doyle's absence is due to her public health responsibilities for COVID-19 There were five Board members who did not receive a Board fee under the One Person One Salary (OPOS) principle

There were no expenses incurred by Board members in 2021

The Public Spending Code

The Board is committed to complying with the provisions of the Public Spending Code and Circular 14/21 Arrangements for Oversight of Digital and ICT related initiatives in the Civil and Public Service.

The IBTS has implemented a project management methodology, suitable for adaptation, depending on the size of the project in question.

The Board has activated a committee structure to assist in the effective discharge of its responsibilities.

Performance and Development Committee

The Board has established a sub-committee to deal specifically with matters regarding the performance and development of the Chief Executive, and the Executive Management Team. The Board complies with Government policy on pay for the Chief Executive and employees. The Board also complies with guidelines on the payment of director's fees. The Chief Executive's salary in 2021 was €147,072. The Performance and Development Committee met four times in 2021.

Medical & Scientific Advisory Committee

The Medical and Scientific Advisory Committee is comprised of some of the medically qualified members of the Board and the medical consultant staff of the IBTS, also members are scientific officers of Consultant equivalent status (PhD or FRCPath) as well as a number of external medical consultants and met 6 times in 2021. Its function is to monitor developments relevant to the field of transfusion medicine and related fields, to inform the Board of any such developments and to advise the Board on appropriate action.



Table 3: M&SAC Attendance 2021

Name	Feb	Apr	May	Aug	Nov (1)	Nov (2)	Total 6 Meetings
E Kenny	✓	✓	✓	✓	✓	✓	6
R Desmond	X	✓	✓	✓	✓	✓	5
S Pastila	✓	✓	✓	✓	X	✓	5
Sarah Doyle	X	X	X	X	X	X	0
B O'Mahony *	✓	✓	✓	✓	✓	✓	6
S Field	✓	✓	✓	✓	✓	✓	6
D Ó Donghaile	✓	✓	✓	✓	✓	X	5
L Pomeroy	X	X	✓	✓	✓	✓	4
E McSweeney	✓	✓	✓	✓	✓	✓	6
J Power	✓	X	✓	✓	✓	✓	5
I Hann **	X	✓	✓	-	-	-	2 out of 3
N O Flaherty	✓	✓	✓	✓	✓	✓	6
N O'Connell	✓	✓	X	✓	X	✓	4
C DeGascun	X	✓	✓	✓	✓	X	4
K Morris	X	✓	X	✓	X	X	2
R Hagan	✓	✓	✓	✓	X	✓	5
S Thomas *	✓	✓	✓	X	✓	X	4

* Brian O'Mahony is in attendance at M&SAC meetings not a full member of the M&SAC

** Prof Ian Hann retired in May 2021

Finance Committee

The Finance Committee met five times during the year and is comprised of three members of the Board. It is also attended by the Chief Executive, Director of Finance and Management Accountant. The Committee may review any matters relating to the financial affairs of the Board. It reviews the annual capital and operating budgets, Statutory Financial Statements and monthly management accounts, financial KPIs, capital expenditure, working capital and cash flow.

It also reviews business planning, costing exercises, procurement, insurance arrangements, contracts, banking, financing arrangements and treasury policy. The Committee also reviews the funding and performance of the Board's pension fund. The Committee reports to the Board on management and financial reports and advises on relevant decision-making. The Finance Committee operates under formal terms of reference which are reviewed by the Board regularly.

Table 4: Finance Committee Attendance

Finance Committee Meetings 2020	January	May	July	September	November
Ms K Williams	✓	✓	✓	✓	✓
Ms D Cullivan	✓	✓	✓	✓	✓
Mr J Malone	✓	✓	✓	✓	✓

Audit, Risk & Compliance Committee

The Audit, Risk and Compliance Committee met five times during the year and is comprised of three members of the Board and one independent external member. It is also attended by the Chief Executive, the Medical & Scientific Director, the Director of Finance, the Operations Director, Director of Quality & Compliance, the Internal Auditor, Risk and Resilience Manager and the Assistant Accountant acts as Secretary to the Committee. The Committee may review any matters relating to the financial, risk, regulatory or compliance affairs of the Board.

It reviews the annual Statutory Financial Statements including the accounting policies and notes to the financial statements, compliance with accounting standards and the accounting implications of major transactions reports of the Internal Auditor, quality reports both internal and from the HPRA, Risk management including reviews of the corporate risk register. The external auditors meet the Committee to review the results of the annual audit of the Board's Statutory Financial Statements. The Audit, Risk & Compliance Committee operates under formal terms of reference, which are reviewed by the Board regularly.

Table 5: Audit, Risk & Compliance Committee Attendance

Board Members Attendance Audit, Risk & Compliance 2021	09/02/2021	13/04/2021	08/06/2021	07/09/2021	07/12/2021
Mr D Gray	✓	✓	✓	✓	✓
Ms D A Barr	✓	✓	✓	✓	✓
Ms S Sheehan	✓	✓	✓	✓	✓

Research & Development Committee

The Board approved the establishment of a Research and Development Committee

to oversee the implementation of the IBTS Research and Development Strategy. The Research and Development Committee met twice in 2021.

Table 6: Research & Development Committee attendance

Name	6th May 2021 (1st meeting)	7th September 2021	Total
Members			
Brian O'Mahony (Chairperson)	✓	✓	2 / 2
John Malone	✓	✓	2 / 2

Risk Register

The risk register identifies various types of risks including strategic, reputational, clinical, IT, financial and operational risks to the organisation and the existing controls and further actions necessary to minimise the impact on the organisation, in the event of the risk occurring. The Risk and Resilience Manager has responsibility for overseeing the risk register and contingency arrangements. A set of inherent risks have been identified which are monitored by the Audit, Risk and Compliance Committee and the Board on a regular basis. At present the risk register is reviewed and updated by the Executive Management Team.

This monitoring ensures that the identified risks and controls are current and that new and emerging risks are identified and control measures put in place.

Going Concern

After making reasonable enquiries, the Board members have a reasonable expectation that the IBTS has adequate resources to continue in operational existence for the immediate future. For this reason, they continue to adopt the going concern basis in preparing financial statements. In light of the pension deficit and the potential for further post reporting date changes in the value of the pension scheme's assets and liabilities, the Board in evaluating the appropriateness of the going concern concept to the current set of Financial Statements considered all of the pension fund valuations and cash flow for the twelve months from the date of approval of the financial statements and is of the opinion that the Board can meet all its liabilities including funding of the IBTS pension scheme as they fall due.

In these circumstances the Board considers the going concern concept appropriate to the preparation of these set of Financial Statements.

Internal Control

The Board is responsible for internal controls in the IBTS and for reviewing their effectiveness. The Board's system of internal financial control comprises those controls established in order to provide reasonable assurance of:

- ◆ The safeguarding of assets against unauthorised use or disposition; and
- ◆ The maintenance of proper accounting records and reliable financial information used within the organisation.

The key elements of the Board's system of internal financial control are as follows:

- ◆ A comprehensive system of financial reporting
- ◆ Annual budget prepared and presented to both the Finance Committee and the Board
- ◆ Monthly monitoring of performance against budgets by Finance Committee and Board
- ◆ Sign off by budget holders on individual budgets
- ◆ Budget reviews with budget holders
- ◆ Clearly defined finance structure
- ◆ Appropriate segregation of duties
- ◆ Clear authorisation limits for capital and recurring expenditure approved by the Finance Committee
- ◆ Key financial processes are fully documented in written procedures

- ◆ Regular stock takes and reconciliations carried out by staff independent of stores staff
- ◆ Financial system possesses verification checks and password controls
- ◆ Issues of products are reconciled to ensure all of the Board's activities are fully billed
- ◆ Regular monitoring of credit control function
- ◆ Purchase orders signed by Purchasing Officer or authorised substitute
- ◆ Stock items are requisitioned by means of automatic ordering
- ◆ All non stock invoices signed and coded by budget managers or their authorised signatories
- ◆ All stock invoices are independently matched with stores Goods Received Notes (GRN) and purchase orders
- ◆ Payment verification checks of supplier invoices by staff independent of accounts payable staff.

The Board is aware that the system of internal control is designed to manage rather than eliminate the risk of failure to achieve business objectives. Internal control can only provide reasonable and not absolute assurance against material mis-statement or loss.

The Financial Statements for the year ended 31st December 2021 have been prepared under FRS102.

Statement of Board Members' Responsibilities

The Board is required by the Blood Transfusion Service Board (Establishment) Order 1965, to prepare financial statements for each financial year which, in accordance with applicable Irish law and accounting standards, give a true and fair view of the state of affairs of the Irish Blood Transfusion Service and of its income and expenditure for that year. In preparing those financial statements, the Board is required to:

- 🔥 Select suitable accounting policies and then apply them consistently
- 🔥 Make judgements and estimates that are reasonable and prudent
- 🔥 Disclose and explain any material departure from applicable accounting standards
- 🔥 Prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Irish Blood Transfusion Service will continue in business.

The Board is responsible for keeping proper books of account, which disclose with reasonable accuracy at any time, the financial position of the Irish Blood Transfusion Service and to enable it to ensure that the financial statements comply with the Order. It is also responsible for safeguarding the assets of the Irish Blood Transfusion Service and hence taking reasonable steps for the prevention and the detection of fraud and other irregularities.

Procurement

The IBTS is in compliance with current procurement rules and guidelines as set out by the Office of Government Procurement with the exception of procurement related to the purchase of PPE where the Irish Blood Transfusion Service has linked in with the HSE and a process is now underway in relation to securing a national contract for personal protective equipment.

Asset Disposal

The Irish Blood Transfusion Service sold its fleet of staff buses at auction in 2021.

Protected Disclosures

The IBTS complies with the requirements under the Protected Disclosures Act 2014 and confirms that procedures are in place for the making of protected disclosures in accordance with section 21(1) of the Protected Disclosures Act 2014. There were no protected disclosures in 2021.

Commercially significant developments

In April 2021 the Irish Blood Transfusion Service successfully implemented an upgrade to its blood establishment computer system.

Deirdre Ann Barr
Acting Chairperson

Chief Executive's Report



It is with great pleasure that I present the 2021 annual report for the Irish Blood Transfusion Service. As the COVID-19 pandemic continued into a second year, the demand for blood was as great as ever and it meant that at times we were issuing more blood to hospitals than we were able to collect. This trend was also encountered by most blood services internationally. The significant challenges we faced maintaining the blood supply meant that on two occasions we had to invoke our contingency agreement with the NHSBT and import blood.

The IBTS published its new strategic plan ***Connections that Count: Developing the IBTS 2021 - 2025*** which had been approved by the Board in December 2020. *Connections that Count* sets the organisation's strategic direction for the next five years and will ensure that the IBTS remains at the forefront of transfusion medicine. Implementation commenced immediately and our achievements in 2021 are reported on separately in this annual report. The publication of *Connections that Count* also presented an opportunity to examine the organisation structure which has been in place since 2008. This work commenced in 2021 and will be completed in the first half of 2022.

In 2021, we also developed two other significant strategies for the IBTS. Firstly, our ***IT Strategy*** was approved by the Board in June 2021 and will see the IBTS embarking on an ambitious programme of IT transformation, modernisation and reform with the key objective of becoming a digitally enabled and integrated service. The cyber-attacks on the Irish health system in 2021 brought the critical nature of IT systems in public sector organisations into sharp focus and underpinned the importance of a well-resourced, proactive and responsive IT function. The IT strategy sets out the transformation journey in the areas of underlying technology, business and technology operating model and people and capability. Fundamental to achieving our IT ambition is the establishment of the role of Chief Information Officer (CIO) in the IBTS, the role was approved in 2021 and we look forward to welcoming our new CIO in early 2022.

Secondly, we developed our very first dedicated IBTS People and Culture strategy statement, ***Transforming Together: People: Culture: Connections, 2021 to 2025***. Transforming Together represents a significant opportunity of growth for our people, our culture and our service over the coming years as we emerge and recover from the COVID-19 pandemic. Our four strategic pillars are enriching our culture; shaping our future workforce; putting safety and wellbeing first; and improving people experiences, and we are excited to work with everyone in the IBTS to achieve our ambitions.

Implementation also commenced on our first **Research and Development Strategy** (R&D). A Research and Development Sub-Committee consisting of Board members and external experts from Ireland and abroad was established to provide guidance and oversight of this programme of work. Progress made during the year is reported on elsewhere in this report.

Important advancement was also made in 2021 on the re-development of our centre in Cork. Following development of an Options Appraisal and Analysis Report, the Board approved the recommendations in November 2021 and we look forward to working with the Department of Health and our stakeholders to progress this project in 2022.

COVID-19 continued to test our contingency planning arrangements in real time and we have learned a lot from it – these lessons were incorporated into our Business Continuity Plan as part of its scheduled review during the year and further lessons will be incorporated as we emerge from the public health restrictions.

Donor awards ceremonies continued to be deferred because of the restrictions associated with the COVID-19 pandemic, we did however recognise the significant donation milestones achieved by our donors - silver pins were given out on clinic to people reaching their 10th and the gold pin for the 20th donation.

To recognise 50 and 100 time achievements, in June 2021, 1,600 personalised 50 time donor award packs containing an IBTS 50 time gold pin, certificate and card were sent out. A bespoke personalised 100 time donor award pack was also sent to 276 donors which included their pelican award and certificate. Despite all the challenges, our donors have been incredible in their support and continued to show up and donate in 2021 and we are truly grateful for that. We hope to return to a more personable way of celebrating our amazing donors in 2022.

I want to express my sincere appreciation to staff who gave loyal and dedicated service to the organisation who retired or moved on during the year. I would also like to thank the organisation’s outgoing Chairperson Linda Hickey for her guidance and support. I am indebted to the Board, Executive Management Team and staff for their extraordinary efforts and support throughout the year as we continued to provide our services to patients and donors in a challenging environment.

As we emerge from the pandemic into our new normal we will continue bring new ideas to our work in the interests of the patients and donors we serve, our suite of strategies sets out our direction and how we plan to get there and our values show why we do it.

Orla O’Brien
Chief Executive



We strive for excellence



We lead by example



We love our donors



We improve patients lives, together



We are the IBTS

Medical & Scientific Director's report



I am pleased that a recruitment campaign has resulted in the appointment of Professor Tor Hervig as the new Medical & Scientific Director. Prof Hervig is from Bergen, Norway and has over 35 years of experience in Transfusion Medicine. He will take up his post in February 2022 on my retirement.

I want to thank the IBTS Board and the Executive Management Team for their support during my tenure as Medical & Scientific Director.

Social Behaviours Advisory Group

In June 2020, the IBTS Board agreed to establish an independent Advisory Committee for the Social Behaviours Review. The remit of this Advisory Committee was to review the current evidence base for donor selection, deferral and exclusion in Ireland relating to social behaviours that may increase the risk of acquiring specific blood-borne infections (HIV, HBV, HCV and other sexually transmitted diseases). The present deferral period for these social behaviours was implemented in January 2017, and in the light of evolving international practice, a further review was required.

Professor Mary Horgan chaired the Group, and membership included IBTS donor Consultants, ID Physician, Public Health Physician, Epidemiologist, Stakeholders, Haemophilia representative, Sickle and Thalassemia representative, a representative from HIV Ireland, and IBTS Risk & Resilience Manager.

Unfortunately, due to the COVID-19 restrictions in 2020, the committee could only start its work in early 2021. Several meetings were held between January and August 2021.

The committee reported back to the IBTS Medical and Scientific Advisory Committee on 30th August 2021 and then to the Board. The Board accepted the recommendations at its meeting on 13th September 2021. The recommendations are summarised below

- ◆ The deferral from donation of men that have sex with men (MSM) will be reduced from 12 months to 4 months as an interim measure from March 2022. This will be changed to an individual assessment later in 2022 when an electronic health history replaces the present paper health and lifestyle questionnaire. This will allow a more inclusive selection of donors
- ◆ Donors that use pre-exposure prophylaxis (PrEP) to prevent HIV will be deferred for four months thereafter
- ◆ Donors, or their partners, who have ever had sex in parts of the world where HIV is very common would initially be subject to a four-month deferral, but this would be re-evaluated when the individual assessments were introduced
- ◆ The 12-month deferral for cocaine-snorting would be retained

- People with any history of non-prescribed intravenous or intramuscular drug use, including recreational drugs, bodybuilding steroids or hormones, would continue to be permanently excluded. This could not be changed as it is mandated in the European blood directive
- The IBTS would no longer defer donors who have been imprisoned as this information is not required to evaluate eligibility to donate.

The SARS CoV 2 (COVID-19) Pandemic

The pandemic moved into its second year in 2021, and our donors continued to respond magnificently to maintain stock to meet hospital demand. Vaccination against the virus was introduced throughout Ireland in 2021, with booster doses given towards the end of the year. This has had some effect on donor recruitment, and the Donor and Infection Advisory Committee has been kept busy ensuring the donor selection guidelines were updated in keeping with international and local practice. Despite our donors' exemplary efforts, it was necessary to import blood from the UK on two occasions during 2021. The first of these in June was due to a shortage of the Rh-negative blood types following a bank holiday. The second importation, in December, was due to a lack in most of the common blood groups and occurred after the cancellation of clinics for safety reasons during a red weather alert. This coincided with a surge in COVID-19 cases of the more infectious omicron variant that resulted in staff shortages and fewer donors presenting at clinics.

Plasma

The IBTS will be installing new rapid freezing equipment in January 2022, enabling the plasma recovered from whole blood to be processed in a GMP compliant state. This will enable third-party fractionation to products such as intravenous immunoglobulin, albumin, and coagulation proteins.

A small stock of COVID-19 Convalescent plasma (CCP) has been maintained, and some of this has been issued to patients that are immune incompetent. The use of CCP in the general treatment of patients with the infection has shown to be of no value in multiple trials worldwide.

Pathogen Reduction

The principle of pathogen reduction (PR) of platelets and plasma has been accepted in the IBTS and at the time of writing the procurement process is underway. It is hoped that a validated PR process will be in place by the third quarter of 2022.

Research & Development (R&D)

The R&D department has continued to grow during 2021 with several collaborative studies with BEST undertaken, along with some local research. Several peer-reviewed papers have been published. A full account of the R&D activities appears elsewhere in this annual report.

Eye Bank Ireland

In 2021 a comprehensive project plan was completed and approved by the EMT. The part-time Ophthalmic Director was appointed and will start in early 2022.

The office of the eye bank will be relocated which will allow more room with additional staff to be recruited in 2022. The next stage is to complete a more detailed implementation plan for approval of the Board.

Laboratories

The laboratories at the IBTS have continued through 2022 to function despite the evolution of the virus through to more transmissible forms. With the rollout of the vaccination throughout Ireland there has been no break in continuity in the processing and testing of components, however, this did come under pressure at the year-end when the number of Omicron variant infections peaked. Similarly, the patient-facing laboratories continued to function during the year and there was no break in the continuity of service. The Red Cell Immunology laboratory has continued in its preparation for ISO 15189 accreditation and hopes to be inspected by the Irish National Accreditation Board in 2022. The Red Cell Genetics laboratory continues to grow and the number of Rh-Negative mothers getting the Rh type of their babies determined is continuing to increase.

The National Histocompatibility & Immunogenetics, Reference Laboratory (NHIRL) was inspected in 2021 by the European Federation for Immunogenetics (EFI) and successfully retained its accredited status. The Irish Unrelated Bone Marrow Registry was successful in regaining accreditation by the World Marrow Donor Association (WMDA).

National Transfusion Advisory Group (NTAG)

NTAG continues to play an important role in transfusion medicine in Ireland although 2021 was a difficult year due to the ongoing pandemic.

The national red cell and platelet shortage protocol that was published in 2020 was utilised in 2021 with 2 pre amber states declared. This informed hospitals that the bloodstock was low and gave notice that if the trend was to continue this may lead to cancellation of non-urgent surgeries and restricting blood use to those cases of chronic need and in life-threatening situations. Fortunately, with intense donor recruitment and, on two occasions, importation of blood stocks, the progression to amber status was avoided.

NTAG also approved a national guideline for Unexpected Intraoperative Life-Threatening Haemorrhage. This guideline was commissioned, at the request of the Minister for Health, by the National Clinical Effectiveness Committee (NCEC) following an adverse patient event. This guideline is expected to get the final approval by NCEC in early 2022.

NTAG has several working groups that will continue to review and develop transfusion policies and guidelines in 2022. IBTS will participate actively and this will ultimately improve the practice of transfusion medicine in Ireland.

I would like to thank all of my colleagues at all levels within the IBTS for the support and collaboration given to me, during my term as Medical & Scientific Director over the past five years.

Dr Stephen Field

Medical & Scientific Director

OPERATIONS



Donor Services & Collections

Key achievements

- ◆ Maintaining the blood supply, with attendances up nearly 2%, in the face of many significant COVID-19 challenges
- ◆ With all donors required to make an appointment, Donor Services handled approx. 236,000 inbound calls in 2021, in addition to numerous outbound telerecruitment calls
- ◆ Ensuring the safety of donors and staff while continuing community based blood donation clinics.

Maintaining the blood supply during COVID-19

2021 was another extremely busy and challenging year in Donor Services and across the regional centres, facing constant issues caused by COVID-19. The teams worked hard to ensure clinics ran smoothly, venues were secured, safety of staff, donors and blood was guaranteed and donors were reassured. IBTS aims to have 7 days supply of blood to ensure there is a steady supply to hospitals throughout the country, and to do this it must undertake nearly 40 blood donation clinics countrywide each week. Donor Services and the regional teams handled an estimated 236,000 inbound calls, in addition to numerous outbound recruitment calls. Donor attendance and attempted donations were strong, showing an increase of 1.8% during a challenging year. The deferral rate was significantly improved in 2021, this was helped by the introduction of the appointment system and pre-screening carried out by Donor Services for every donor. There were 127,614 successful donations made in 2021.

Unfortunately during COVID-19 there have been significant restrictions on our ability to recruit First Time Donors (FTDs) due in part to reduced venue availability such as the colleges, limited capacity on clinic during COVID-19, and reduced advertising opportunities with the main focus of advertising on promoting upcoming clinics locally. We hope to be able to welcome more first time donors in to clinics in 2022.

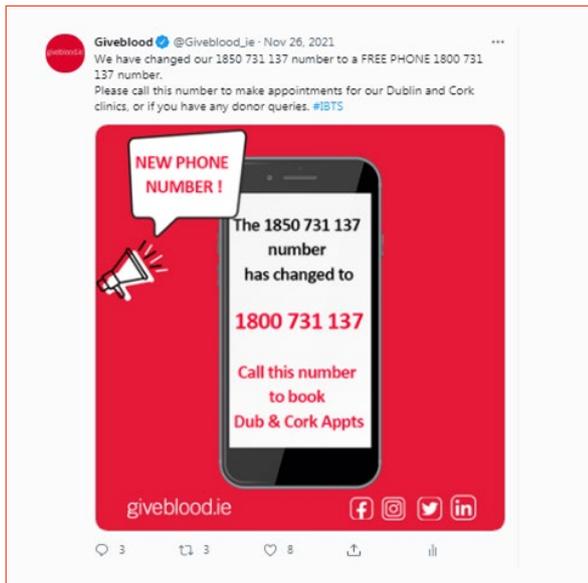
Another benefit from the introduction of appointments and other changes on clinics, as commented by many donors on social media, has been the reduced time it now takes for donors to complete their full blood donation. The percentage of donations that took less than an hour on Mobile Clinic (from the time it takes from registration to after you give blood) was 93.6% in 2021, a big improvement from pre-COVID-19 levels when it was close to 80%. We aim to continue the momentum in improving on this percentage.

Communication during COVID-19

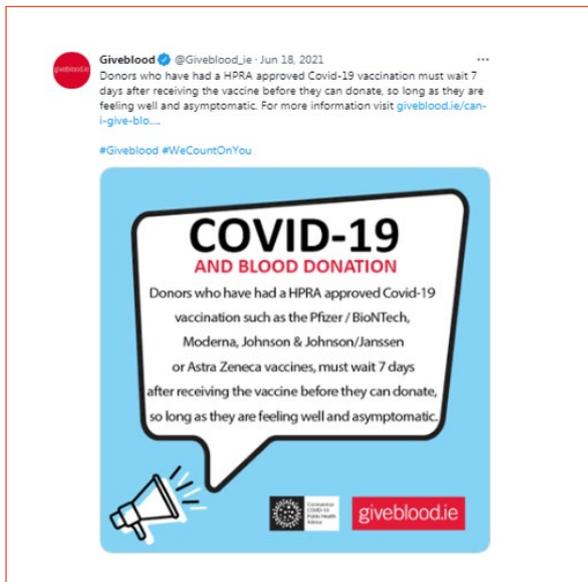
We continued to operate in an ever evolving environment of COVID-19 in 2021. Our communications with donors were focused on reassuring existing donors about safety on clinic while giving blood, and the constant need for them to make an appointment and attend clinics, as hospital demand continued. As new public health guidance was released, IBTS used social media to keep donors informed of changes to the clinic environment, call out for donors when we experienced low stock levels and to thank donors for their continued support.



The website was updated in line with policy updates so that key messages were highlighted on the COVID-19 pop up banner and website carousel. We continued to create social media information posts in response to the most frequently asked questions from donors on topics like safety and social distancing measures being taken in clinics, clinic appointments, and the policy on wearing masks in clinic.

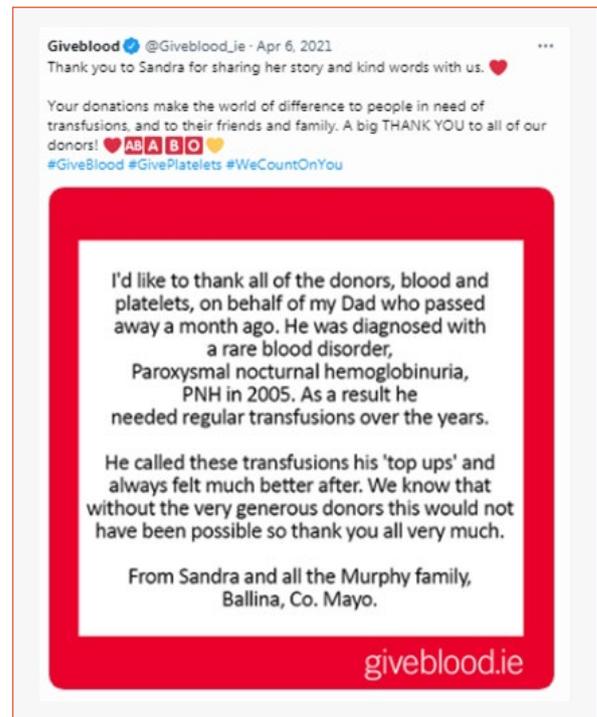


We started to send a clinic notification email to donors on the clinic panels each week to prompt them to respond to their Clinic text message and book an appointment. Information about COVID-19 safety measures, the set up on clinic and any new guidelines donors need to be aware of are included in this mail. We sent over 316k emails, of which 145k were opened (53% open rate) in 2021 and have a very low unsubscribe rate. (Anything over 22% is a good result for the open rate of emails.)



There has been steady growth in our social media channels throughout the year, our Facebook page had 131k plus fans at the end of 2021, our Twitter page had 21.9k followers and is used to reply to many donor comments and queries daily, as well as reaching out to mass media outlets and special interest groups to amplify our message.

The giveblood.ie Instagram followers grew by 42% to 12.4k in 2021 vs. the previous year. This is a growing social media channel and the objective is to continue doing more on this platform to engage with our younger donors. The IBTS LinkedIn page is growing organically with a business audience; we had 3.6k followers at the end of 2021.



We have seen some amazing stories and pictures sent in from staff and donors in clinics across the country about the milestones they have reached and reasons why they are donors. We encourage anyone with a donor or a recipient story to share it with us and let us celebrate the achievements in helping save lives.

Partnership

IBTS has a long standing partnership with Vodafone. Texting is our primary means of communicating with existing donors, particularly during COVID-19, and with the support of Vodafone, IBTS sent out over 6 million texts free of charge to donors about clinics and appointments. One text that has proven extremely successful with donors is a text sent when their blood has been dispatched to a hospital. With Vodafone's help this connects donors and patients, and closes that intangible loop for donors from their donation to the patient receiving their blood.



Give blood, save a life!
Using your charity time.



Vodafone and IBTS have a great partnership. During Covid 19 it has been challenging to keep donations going within workplaces. You can help by using your charity time to give blood and save lives.

D'Olier St Blood Clinic		Stillorgan Blood Clinic	
Mon	12.15pm-3.40pm	Mon	Closed
Tues	10.00am-6.00pm	Tues	10.00am-8.00pm
Weds	10.00am-7.00pm	Weds	01.00pm-8.00pm
Thurs	10.00am-7.00pm	Thurs	01.00pm-8.00pm
Fri	08.30am-2.30pm	Fri	Closed

Unfortunately not everyone is eligible to donate, it is important to check your eligibility before booking an appointment.

Check your **eligibility** and find your local clinic at giveblood.ie
Call **1850 731 137** to book an appointment.

Did you know?
1 in 4 of us will need a blood transfusion in our lifetime...
...and 1 blood donation can save 3 lives.




Partnership is an important part of engaging with and spreading the importance of blood donation in the community. In 2021, IBTS partnered with different organisations such as the GAA, Macra na Feirme, FAI Referees, and many community organisations who have continued to support us through the challenging times posed by COVID-19.

Macra na Feirme have supported us by sharing donor and recipient stories and encouraging their members to attend their local clinic and give blood. A number of amazing recipients shared their experiences of receiving blood, platelets and bone marrow as part of their treatment. Thank you to Elaine Scully for highlighting the role of blood and platelet transfusions as part of her cancer treatment on Daffodil Day.

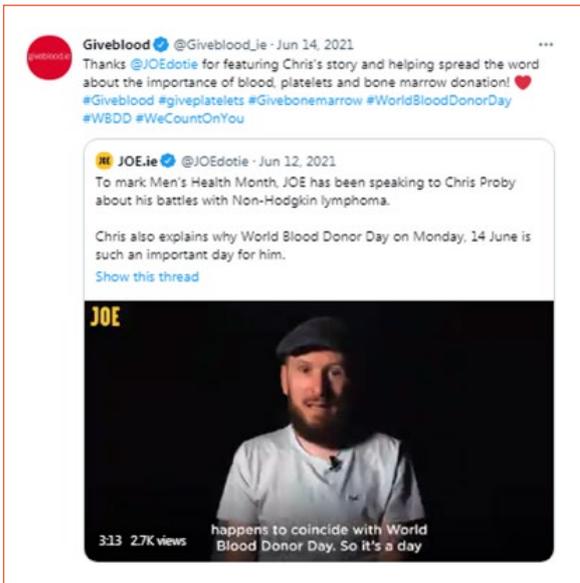
Another big thank you to Chris Proby who has been a massive advocate for the importance of blood donation and sharing how receiving blood, platelets and bone marrow made the

world of difference to him as a two-time cancer survivor. His remission date falls on June 14th (which is World Blood Donor Day). Chris did media interviews and social media posts highlighting the importance of blood donation and the impact donors have had on his life.

Kilcummin GAA really got behind blood donation and supporting their club mate, Sean O’Leary and his partner Emma as they required blood transfusions after a serious road collision.

Paschal Sheehy, one of our amazing long time donors, achieved a TV first by participating in a live blood donation in St Finbarr’s clinic. This was broadcast on the Claire Byrne Live Show to demonstrate how easy and painless the process of blood donation can be.





IBTS is so very grateful to all of these organisations and individuals for their on-going support, and we look forward to further developing these relationships in 2022.

Merchandise campaigns on clinic

IBTS have made a conscious effort to source more eco friendly merchandise items for donors on clinic. In 2021, we introduced a new 78% biodegradable pen (all biodegradable except the ball bearings and ink cartridge).





We also brought back everyone's favourite merchandise item, the jelly beans, but this time the pot holding the jelly beans was made of plant materials. A new felt blood drop shaped Christmas decoration was introduced on clinic and was a massive hit with donors, with many taking to social media to show their new decoration proudly displayed on their Christmas trees.

First Time Donor Card

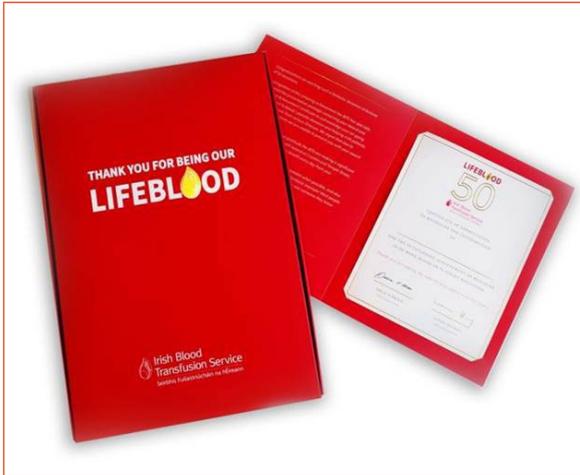
In 2021, first time donors got a welcome pack containing a card and personalised letter thanking them for their attendance and informing them of the next steps depending on their donor status – not deferred, temporary deferred or if they were a Sample Only New Donors (SONDs). IBTS staff made sure to capture the special moment where possible sending pictures for inclusion on our social media channels. We were especially delighted to see so many first time donors being brought to clinic by regular donors.



Donor Awards

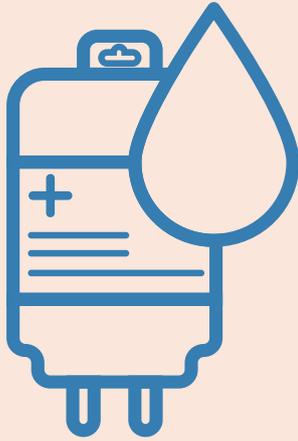
Unfortunately we were unable to hold donor award ceremonies in 2021, similar to the previous year. But a celebratory pack was developed and sent out to our 50 and 100 time donors to recognise their achievement on reaching a momentous donation milestone in 2021. In June, 1,600 personalised 50 time donor award packs containing an IBTS 50 time gold pin, certificate and a card with a congratulatory message from IBTS CEO, Orla O'Brien, were issued.

A bespoke personalised 100 time donor award pack was also sent to 276 donors which included their pelican award and certificate.



COVID-19 did not stop celebrations of this wonderful event on clinic for donors who reached these very special donation numbers, as clinic staff were on hand make sure this achievement and other donors milestones were recognised.

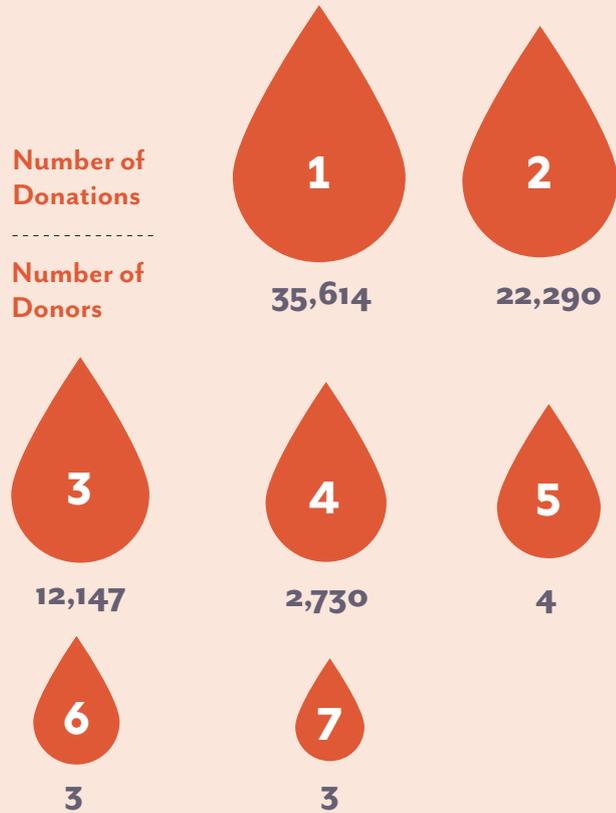
Overall Totals



127,614
Number of whole blood donations 2021

72,791
Number of donors who gave the above figure

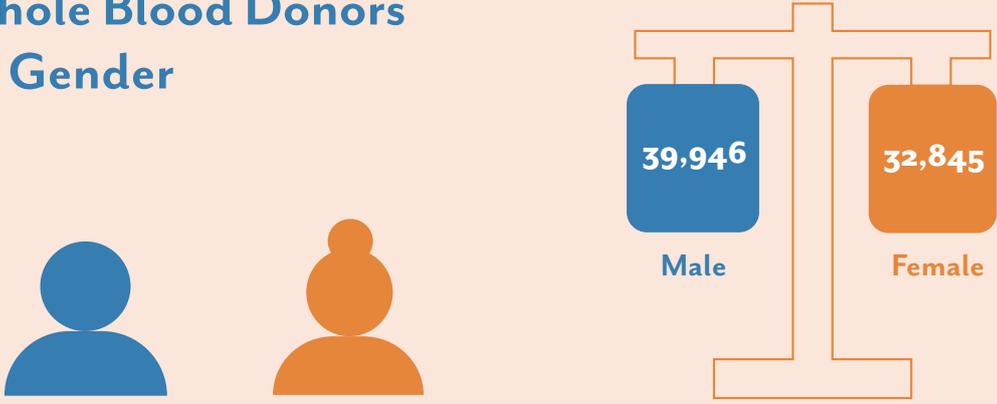
Whole Blood Donations by Donors



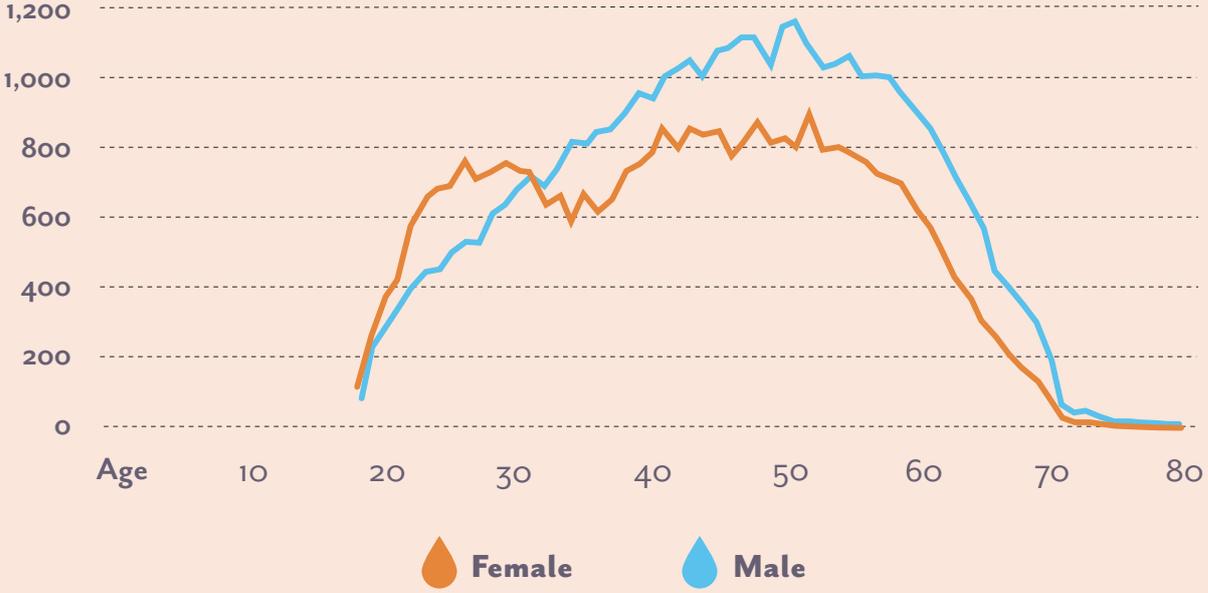
Whole Blood Donors by Blood Group



Whole Blood Donors by Gender



Whole Blood Donors by Age and Gender



Production, Hospital Services, Supply Chain & Logistics, Scientific Support and Component Development

Key achievements:

- ◆ Maintained blood stocks across the supply chain, ensuring blood and blood product availability to meet patient needs
- ◆ Maintained frontline functions throughout COVID-19 pandemic. A high level of commitment, adaptability and compliance was upheld by all teams
- ◆ Worked with internal and external healthcare partners to maximise and optimise the use of blood components for all patient groups
- ◆ Facilitated hospitals impacted by HSE cyber attack through the use of contingency manual blood ordering processes
- ◆ Improved platelet management and availability following introduction of optimal bacterial screening protocols
- ◆ Continued replacement of critical blood processing equipment to maintain state of the art processing capability and operational best practice
- ◆ Introduced new fleet of donor clinic staff coaches for regional centres.

The Components Production function is responsible for processing, labelling and banking of all whole blood donations, platelet pools and platelet apheresis donations nationally.

The Hospital Services function is responsible for inventory management, receipt and issuing of blood and blood product orders from hospitals.

The Supply Chain & Logistics functions are responsible for supporting internal and external business needs.

The Scientific Support and Component Development team are responsible for the management of all platelet products, non-routine whole blood and red cell products issued from the NBC. This team also provides day to day scientific support for numerous departments and encompasses the product development function.

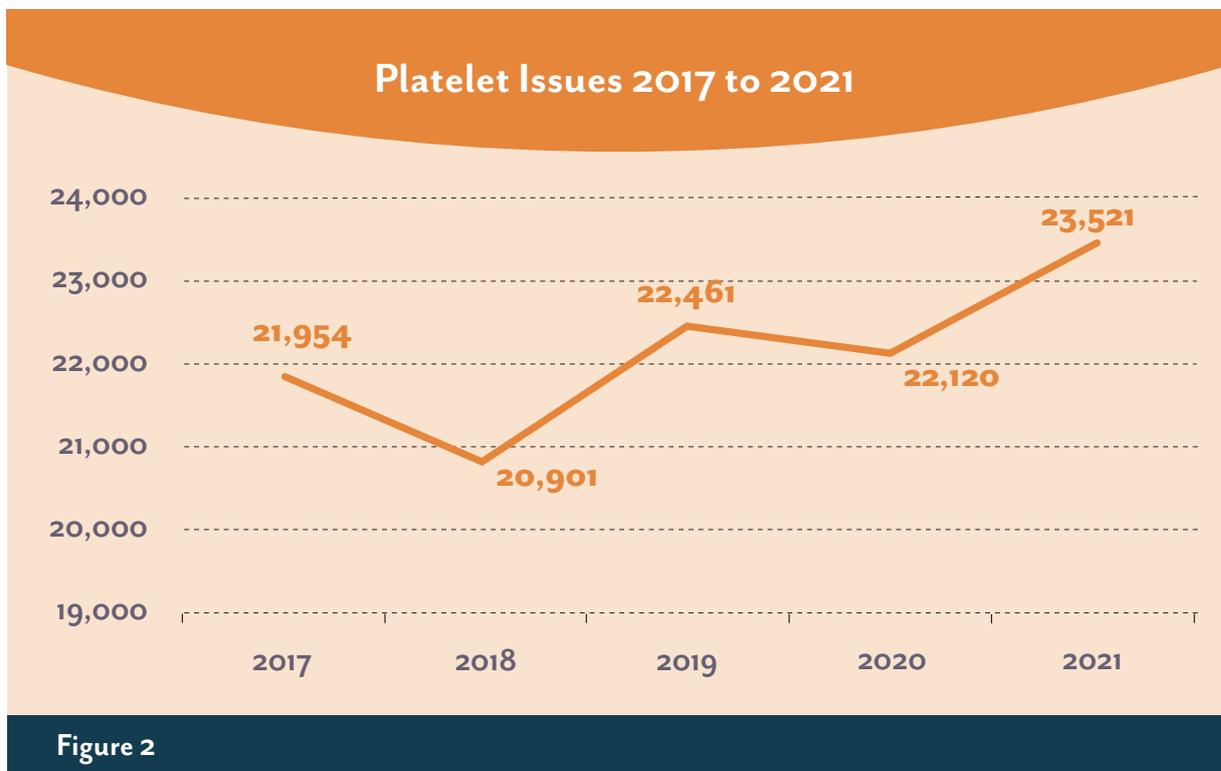
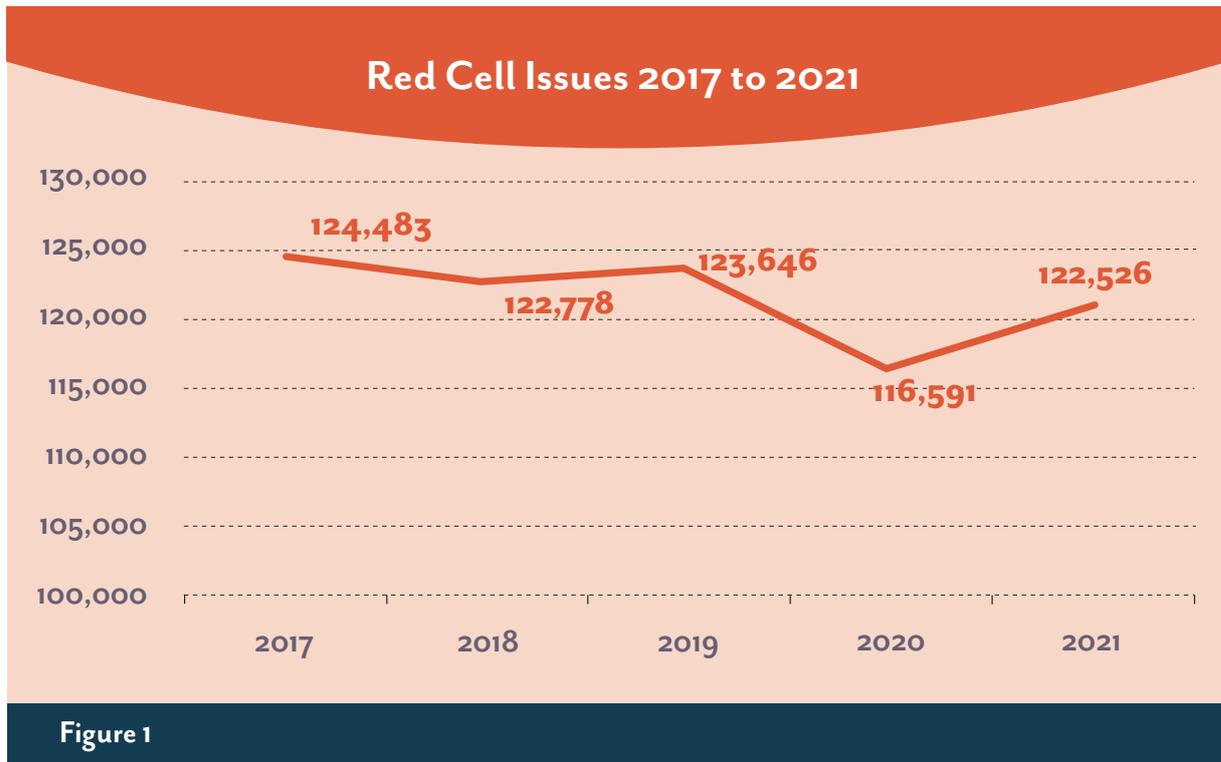
Blood Component Activity

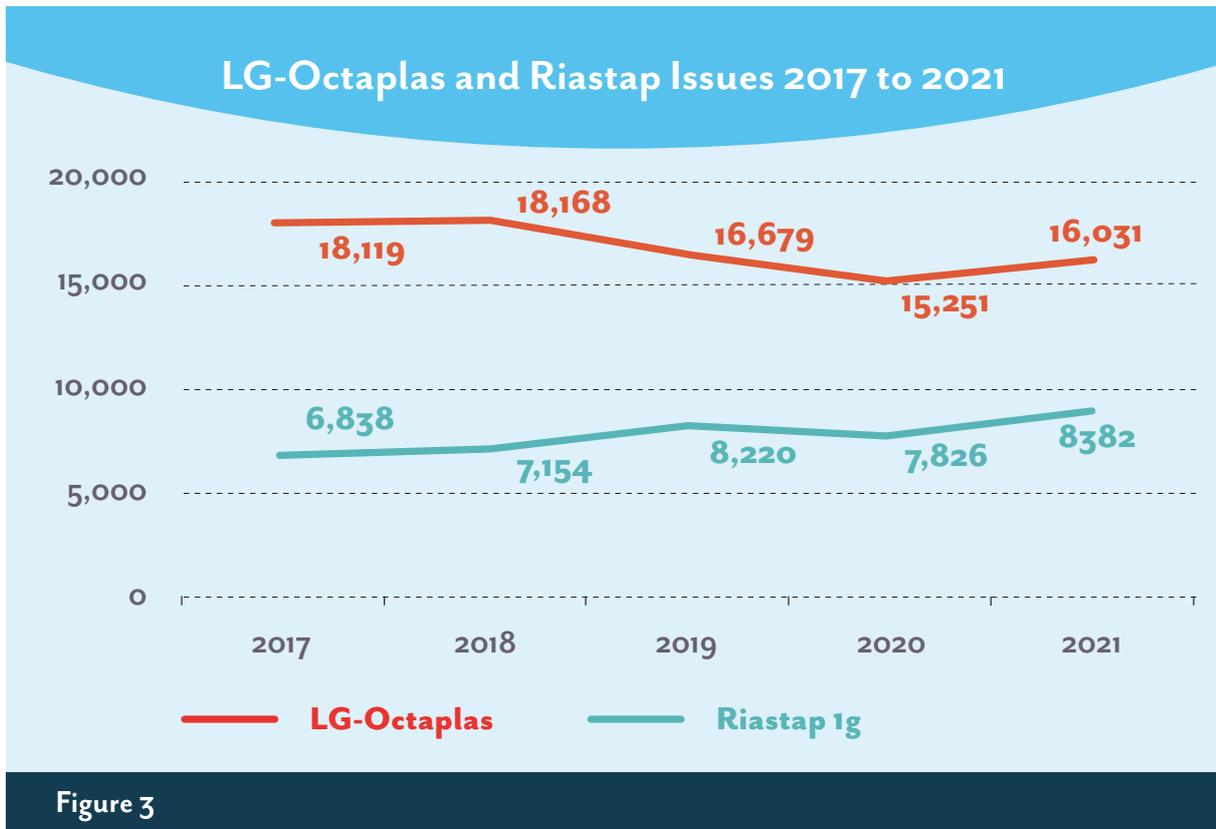
There was an increase in red cells (+5.1%) and platelets (+6.3%) issued to hospitals in 2021, compared to 2020. Demand varied throughout the year, due to the impact of COVID-19 on hospital activity and the HSE cyber attack. However, over the course of the year demand increased for both red cells and platelets compared to 2020.

Red cell units were imported from the NHSBT to supplement blood stocks on two occasions to ensure blood support for patient care. A total of 525 units were imported, mainly RhD negative blood groups.

Medicinal Product Activity

There was an increase in medicinal products issued in 2021, compared to 2020. There was an 5.1% increase in LG-Octaplas issued and 7.1% increase in Riastap (Fibrinogen) issued.







TESTING



National Donor Screening Laboratory (NDSL)

The National Donor Screening Laboratory (NDSL) encompasses the three donor testing laboratories: Automated Donor Grouping (ADG), Virology (VIR), and Nucleic Acid Testing (NAT). This extensive collaboration between the three donor testing laboratories allows for optimum workflow analysis, strategic utilisation of key scientific personnel, up skilling of scientific personnel in multiple scientific disciplines, increased research and development in all areas and the increase of testing services available to the IBTS.

Key achievements

- ◆ Maintenance of testing of donations, processing of results to consistently high standards of quality and training of new staff members during the COVID-19 pandemic. This involved a huge amount of dedication and flexibility from the teams, significant changes to work practices to keep the teams safe, and in turn maintain the service of the NDSL
- ◆ The NDSL have attained the highest green certification with My Green Lab, a non-profit organisation that is leading the way in improving global laboratory sustainability. The NDSL is the first Medical Science lab and just the third lab in Ireland to attain this 'Green' status. A fantastic achievement and one of the strategic initiatives in our IBTS strategy 'Connections that Count'
- ◆ The continued roll out of the cross-training programme with support from the Training and Education Officer to provide cross functional support between staff in the three departments
- ◆ Successful performance of two contingency testing exercises with the Scottish National Blood Transfusion Service (SNBTS) under extremely challenging COVID-19 restrictions
- ◆ ADG moved to perform an extended Rh type (C, c, E, e) on all donors. This provides a greater selection of units in the hospitals for patients with commonly occurring red cell antibodies
- ◆ ADG received delivery of two new PK7400 analysers in December 2021. These are the primary blood group analysers in use in the IBTS, and will be used to assign ABO and Rh types to all donations. Validation will be completed in 2022
- ◆ The validation of two Malaria screening assays in the Virology department
- ◆ The publication of a SARS-CoV-2 seroprevalence study in Irish Blood donors, which looked at the prevalence of the SARS-CoV-2 virus in the Irish donor population from January 2020 until September 2020. This was the largest such study completed to date in Ireland
- ◆ In collaboration with the HPSC Seroepidemiology Unit team (SEU)- National Serosurveillance Programme, the Virology laboratory undertook the SARS-CoV-2 Antibodies in Young Blood donors of Republic of Ireland (SAYBRI) study
- ◆ An on-going study in collaboration with the SEU- which aims to estimate the seroprevalence of quantitative antibodies to SARS-CoV-2 in adult blood donors

- A review of all data retained in the NAT laboratory including data retention times and an on-going review of information recorded and retained on NAT documents
- The progression of the 10 year retention period for donor archive samples.

NDSL Laboratory Activity

In 2021 the NDSL tested 137,022 donations, with 131,370 coming from repeat donors (96%) and 5652 (4%) of these donations coming from first time donors. In addition, 741 sample only new donors were also tested.

All donations were tested for:

- ADG: ABO/Rh, extended Rh phenotype (CcEe), donor antibody screen and high titre A/B
- Virology: The presence of antibody to Human Immunodeficiency viruses (anti-HIV 1 / 2), antibody to Hepatitis C virus (anti-HCV), antibody to Human T-Lymphotropic virus type I and II (anti-HTLV-I / II), antibody to Hepatitis B core (anti-HBc), Hepatitis B surface Antigen (HBsAg), antibody to Treponema Pallidum (Syphilis)
- NAT: Human Immunodeficiency Virus type 1 and 2 (HIV-1/2), Hepatitis C virus (HCV) and Hepatitis B virus (HBV), Hepatitis E Virus (HEV).

Selected donations were tested for:

- ADG: Extended antigen types (see table 7), haemoglobin S, neonatal antibody screen. Donors are typed for extended antigen types (Fya/b, Jka/b, M, S/s) for routine hospital orders and also to identify rarer phenotypes or combinations of antigen negative types.

- These are typically for patients with complex transfusion requirements such as sickle cell disease or multiple red cell antibodies and for prophylactically antigen-matched blood for intrauterine transfusions and certain patients who are known red cell antibody producers
- Virology: Selected donations are tested for Cytomegalovirus (CMV) (approx. 80% of donations) in order to have a supply of CMV negative donations for those patients who are at risk of the complications of CMV infection e.g. immunocompromised patients
- NAT: Selected donors were screened for West Nile Virus (WNV) from August to December 2021. This testing was performed for donors who had travelled to a WNV at risk area within the previous 28 days. This testing is usually performed from May to December each year but a shorter testing season was implemented in 2021 due to the COVID-19 pandemic and associated travel restrictions.

Table 7: Percentage of red cell donations tested for extended antigen types

Fya	5%
Fyb	1%
M	5%
S	5%
Little s	1%
Jka	5%
Jkb	4%

ADG have two instruments in use: PK7300 as the primary blood group analyser and Ortho Vision as the secondary blood group analyser. Both instruments are immunohematology systems and utilise both hemagglutination and sensitisation techniques.

The PK7300 is a high-throughput microplate system and the Ortho Vision tests using column agglutination technology. Manual techniques are used for antibody identification and sickle trait testing.

The Virology laboratory performs screening on the Abbott Alinity s System, which is a high-throughput, fully-automated immunoassay analyser designed to determine the presence of specific antigens and antibodies using chemiluminescent immunoassay (CMIA) technology.

The NAT laboratory performs Individual Donation testing (ID-NAT) using the Panther testing instruments with the Ultrio Elite (UE), HEV and WNV assays. The Panther instrument is a fully automated closed system for NAT testing. The Procleix UE assay is a multiplex Transcription Mediated Amplification (TMA) assay for the detection of HIV-1/2 RNA, HCV RNA and HBV DNA in human plasma. The Procleix HEV assay detects HEV RNA. The WNV assay reliably detects low level WNV RNA (lineage 1 and 2) in blood donations.

The laboratory also performs screening tests for viral markers for various departments within the IBTS, including stem cell donors, heart valve tissue donors and samples from recipient tracing testing programmes.

Participation in External Quality Assessment Schemes

NDSL participate in several external quality assurance (EQA) schemes. All departments within the NDSL had satisfactory results for their relevant EQA.

ADG is a participant in 3 NEQAS schemes and 1 EDMS scheme annually. This consists of 19 separate serology exercises and 6 abnormal haemoglobin exercises.

The Virology department participates in three proficiency programmes: one circulated by the United Kingdom National External Quality Assessment Service (UK NEQAS) for Microbiology, the second by the NRL, Australia and the third one by the European Directorate for the Quality of Medicines & HealthCare (EDQM/NAT). Overall 25 proficiency exercises were completed in 2021 in Virology, assessing all Virology markers tested in the laboratory.

The NAT laboratory participated in five proficiency programmes: one provided by the NRL, Australia, one by the European Directorate for the Quality of Medicines & HealthCare (EDQM), one by Quality Control for Molecular Diagnostics (QCMD), UK and two by the National Centre for the Control and Evaluation of Medicines (CNCF), Italy. Overall 11 proficiency exercises were completed in 2021 in the NAT laboratory. The laboratory also participates in the surveillance programme run by National Health Service Blood and Transplant (NHSBT) Epidemiology Unit/Health Protection Agency UK. The repeat reactive rates and the confirmed positive rates for testing kits using various lot numbers of reagents with the NHSBT are monitored. A notifying report is generated which details assay performance and trends in reactive rates.

NDSL Contingency Testing

As the NDSL is a national testing facility, the IBTS has an external testing plan with the Scottish National Blood Transfusion Service in case of a critical failure of instruments or site. The NDSL succeeded in participating in 2 exercises in 2021 which involved sending samples from 24 donors for testing with favourable results. This plan has not had to be activated in a 'live' situation since the consolidation of testing at the National Blood Centre in 2010.

NDSL Audits

The Laboratory also participates in a number of Internal and External Audit programmes to ensure compliance within the Quality Management System (QMS). This auditing of the NDSL processes and procedures are undertaken by the Health Products Regulatory Authority (HPRA), the IBTS Quality Assurance (QA) department and the NDSL Laboratory.

National Histocompatibility and Immunogenetics Reference Laboratory (NHIRL)

The National Histocompatibility and Immunogenetics Reference Laboratory (NHIRL) provides a comprehensive range of clinical testing services designed to support the allogeneic haematopoietic stem cell transplantation (HSCT) programmes at St. James’s Hospital and Our Lady’s Children’s Hospital, Crumlin. HSCT can be used in the treatment of leukaemias, bone marrow failure syndromes and inherited metabolic disorders.

The laboratory determines the human leucocyte antigen (HLA) type of all patients and donors (related or unrelated) prior to transplantation to aid donor selection. The laboratory uses exclusively molecular methods based on the polymerase chain reaction (PCR) to define the genes that encode the HLA molecules. This technology can achieve a high level of resolution that distinguishes between individual alleles of the HLA genes. Since the 15th June 2020 the NHIRL performs high resolution HLA typing for 11 HLA loci (HLA-A, B, C, DRB1/3/4/5, DQA1, DQB1, DPA1, DPB1) by Next Generation Sequencing (NGS) using the Illumina MiSeq platforms.

The laboratory has an extensive quality assurance programme including participation in both internal and external proficiency testing programmes for HLA typing, human platelet antigen (HPA) genotyping and HLA antibody investigations. The NHIRL has been accredited by the European Federation for Immunogenetics (EFI) since 2001.

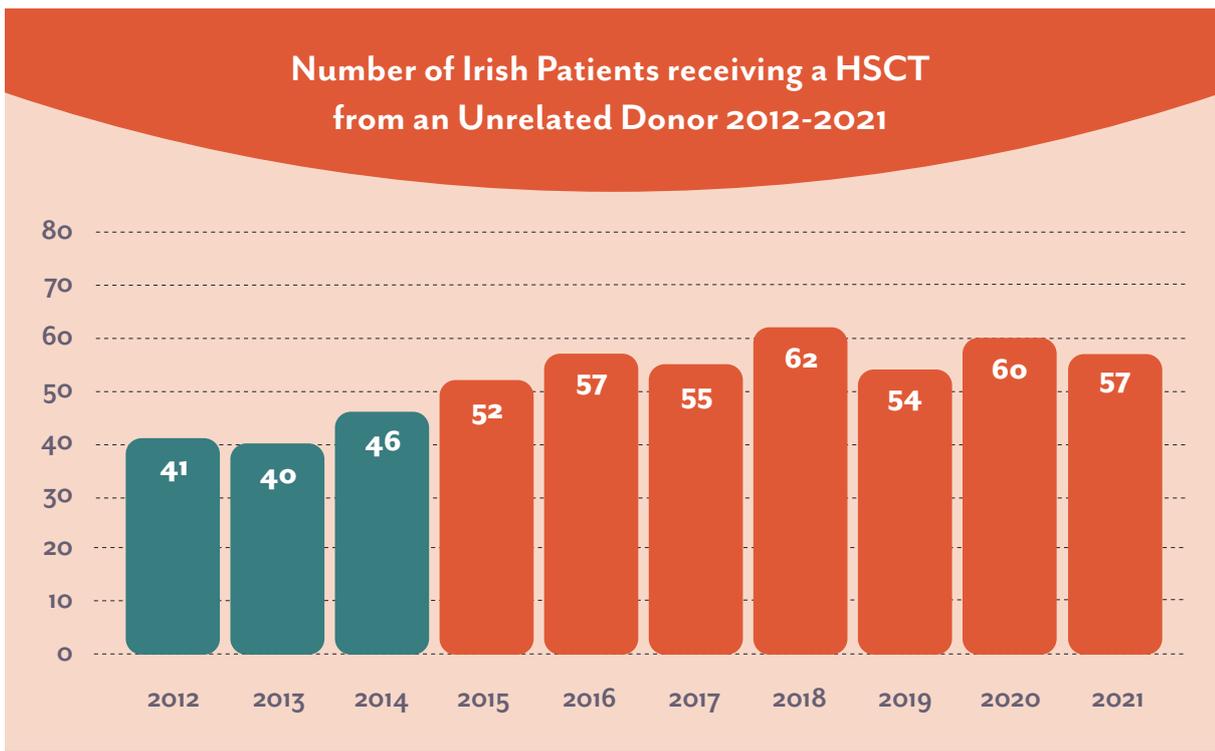


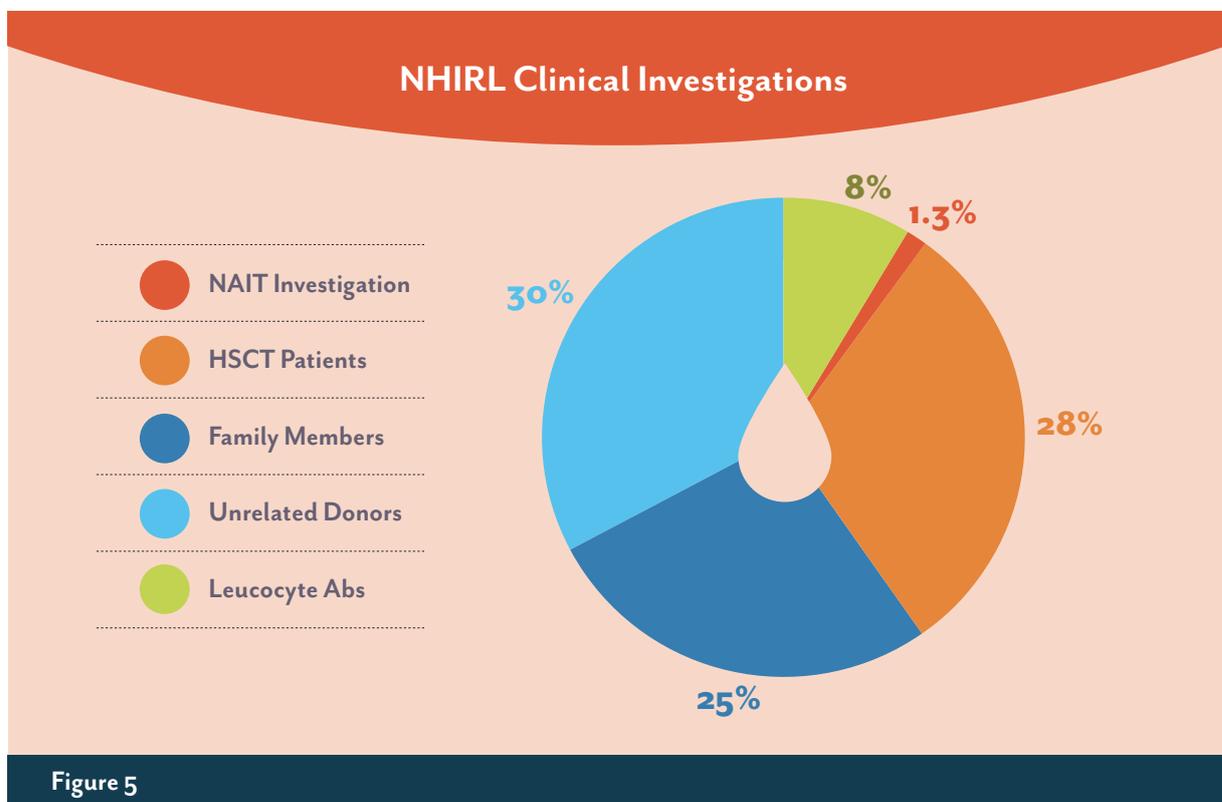
Figure 4

In 2021 samples from 281 Irish patients for potential haematopoietic stem cell transplants and their relatives were HLA typed by the NHIRL. For those patients without a suitable family donor, an unrelated donor may be identified from the registry of volunteer unrelated donors. The NHIRL provides an immunogenetics support service for the Irish Unrelated Bone Marrow Registry (IUBMR). From October 2019 the blood donor Health and Lifestyle Questionnaire (HLQ) included a question for donors aged between 18-25 asking if they would like to join the bone marrow registry. This has resulted in a very significant increase in the number of donors registering, with 3,423 new donors joining in 2021 and 9,765 new donors since October 2019.

In 2021 a total of 57 unrelated donor transplants were performed. In the last 10 years the IUBMR has facilitated 524 unrelated donor transplants for Irish patients **Figure 4**.

In addition, a total of 275 platelet donors were HLA-A, -B typed and included on the panel of platelet donors in order to support the provision of an optimal platelet product to the hospitals.

The NHIRL received 1,660 samples as part of clinical investigations in 2021 **Figure 5**. As well as supporting the stem cell transplant programmes the NHIRL provides a platelet immunology service for the serological investigation of neonatal alloimmune thrombocytopenia (NAIT), post transfusion purpura (PTP), platelet refractoriness, alloimmune thrombocytopenias and adverse transfusion reactions is provided. The number of investigations for NAIT in 2021 (n=23).



The NHIRL provides a routine disease association HLA typing service. This service represented 3,207 of the 9,023 samples received for testing by the NHIRL in 2021. The majority (86%) of samples are referred for determining the presence or absence of HLA-B27 which is associated with Ankylosing Spondylitis; a painful, progressive rheumatic disease mainly affecting the spine and sacroiliac joints. The service also provides HLA typing for Coeliac Disease (DQ2/DQ8, 1.6%), Behcet's Disease (B*51, 3.6%), Abacavir-induced hypersensitivity reaction (B*57:01, 6%), Narcolepsy (DQB1*06:02, 1.4%) and Birdshot retinochoroidopathy (A*29, 1.3%).

Blood Group Genetics Laboratory (BGGL)

Molecular Blood Group typing is performed by the Blood Group Genetics Laboratory of the Molecular Biology and Genetics Department at the National Blood Centre, with the purpose of providing a molecular diagnostic service for blood group determination.

The Blood Group Genetics Laboratory provides a service for:

- ◆ Fetal RHD Screen
- ◆ Weak D Genotype investigation
- ◆ *RHD* Variant investigation
- ◆ Full RBC Genotype investigation
- ◆ *RHCE* Variant investigation

DNA-based testing is increasingly being used to predict a blood group phenotype to improve practices in transfusion medicine. Red blood cells carrying a particular antigen, if introduced into the circulation (through transfusion or pregnancy) of an individual who lacks that antigen, can elicit an immune response. The resultant production of antibodies can have a significant effect on the patient's morbidity and even mortality.

Sensitive methods, such as quantitative polymerase chain reaction (qPCR), offer the ability to detect very low levels of DNA and are particularly applicable for the detection of fetal blood group genes in cell-free DNA extracted from maternal blood.

In 2021 3,174 samples were received by the Blood Group Genetics Laboratory for Fetal *RHD* screening **Figure 6**. The results for Fetal *RHD* screening identified 57.7% *RHD*-positive, 38.6% *RHD*-negative, and 3.3% inconclusive. The referrals for Fetal *RHD* screening increased by 81% from 1,751 samples tested in 2020. The electronic transmission of Fetal *RHD* screening results through Medibridge is available to referring hospitals and was validated for use with the Coombe Women & Infants University Hospital in 2021.



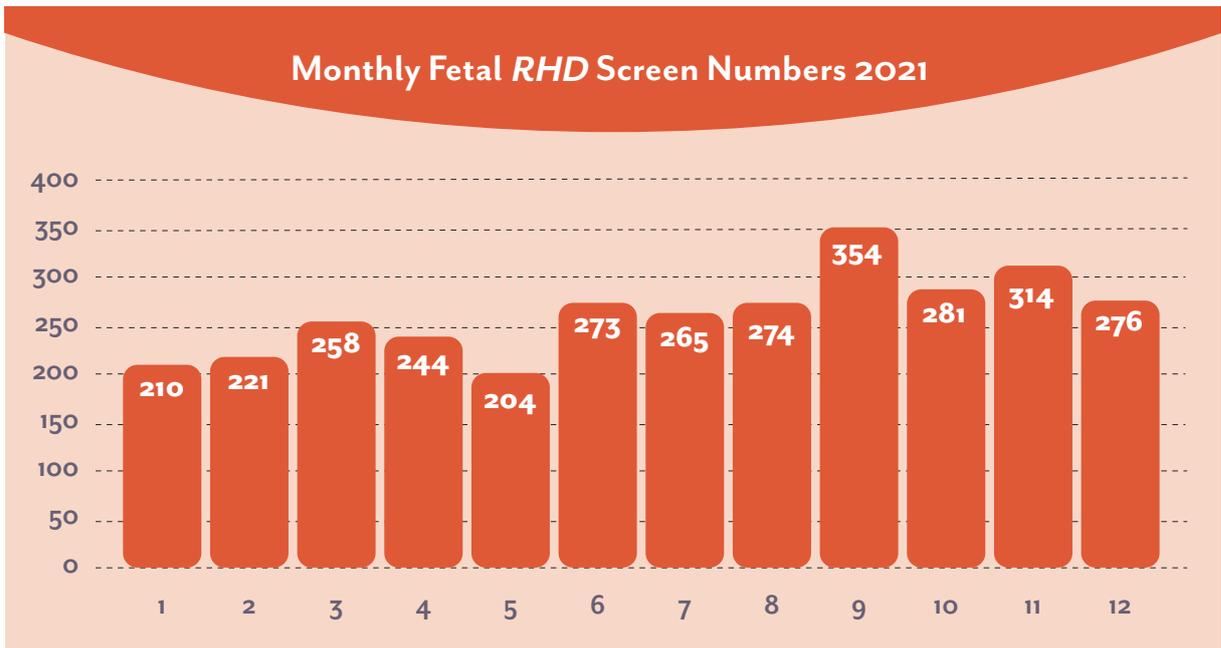


Figure 6

Molecular determination of blood groups offers a powerful method that overcomes many of the limitations of, and often offers higher resolution blood group typing than serological methods (e.g. *RHD* and *RHCE* variants, *FY_{GATA}* mutation).

Currently 43 Human Blood Group Systems have been identified, their genes cloned and the molecular basis associated with individual

antigens determined; there are well over 300 individual blood groups recognised in the 43 Blood Group Systems. In 2021 the Blood Group Genetics Laboratory tested 657 samples in total for Weak D Genotype investigation; *RHD* variant investigation; Full RBC Genotype investigation; and *RHCE* Variant investigation **Figure 7.**

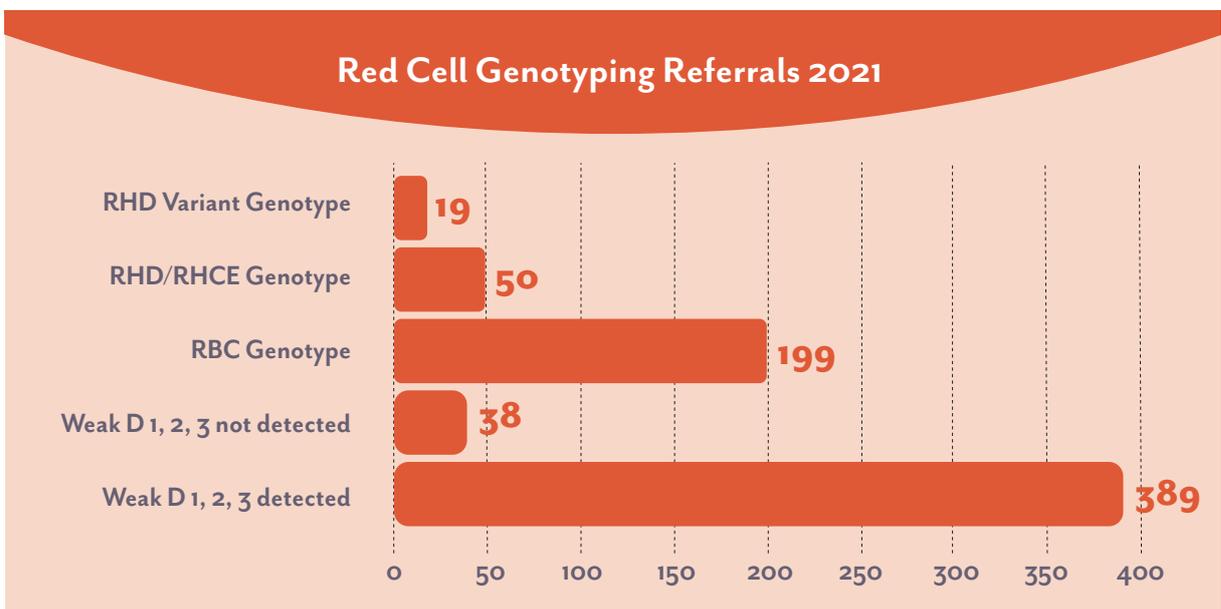


Figure 7

Red Cell Immunohaematology (RCI) Laboratory

The RCI laboratory provides extensive pre-transfusion and antenatal referral services for hospitals nationwide.

Key achievements

Research and Educational Achievements

The staff in the RCI laboratory are passionate about research and education and despite the persisting challenges posed by the pandemic, 2021 saw a number of achievements in this area.

- ◆ RCI laboratory staff presented at both the Haematology Association of Ireland Conference and at the Ortho User Group meeting in 2021
- ◆ A poster presentation highlighting *“The Challenges facing provision of rare blood groups for patients of ethnic minorities in Ireland”* was presented at the HAI conference by RCI laboratory staff in conjunction with the IBTS medical department
- ◆ A poster presentation on “Bombay in Ireland” was accepted for poster presentation at the BBTS Conference
- ◆ The RCI laboratory values user engagement and customer relationships. Following the success of the first RCI User Symposia held in November 2020, RCI hosted another RCI User Symposia in December 2021 where Senior RCI staff presented on a range of interesting cases that the laboratory has dealt with over the year

A Q&A session was also held which allowed users of the laboratory to interact with the RCI staff. The event was well received and the feedback from the day was extremely positive.

Laboratory Achievements

The RCI team continued to rise to the challenge posed by the global COVID-19 pandemic, ensuring continuity of service and testing samples from COVID-19 positive patients.

- ◆ The validation and introduction of the Ortho Vision automated analyser met the go live date of Q1 2021
- ◆ The RCI LIMS system, eTraceline was upgraded
- ◆ The validation of CE marked AB serum and the validation of a new Hamilton Diluter for antibody quantitation were completed
- ◆ A new process for customer requests was created
- ◆ Major developments and improvements were made in preparation for INAB inspection/ISO15189 accreditation in 2021 including the following achievements:
 - ◆ A RCI Laboratory Manual was written and the RCI Customer Manual was updated. Both are available on the giveblood.ie website
 - ◆ An internal audit programme for the RCI laboratory was developed

- ◆ Risk management procedure was developed incorporating the new ISO 22367 standard. This included completing FMEA risk assessments for pre examination, examination, post examination processes and specific risk assessments for the automated analysers
- ◆ Data collection & measurement of Quality KPIs implemented
- ◆ The RCI laboratory completed ISO 15189 accreditation pre-inspection in Q1 2022.
- ◆ A customer satisfaction survey was distributed to all hospital blood banks at the end of 2020 to obtain feedback on the service provided and to help shape the RCI laboratory strategic plan for 2021.
- ◆ antenatal screening for red cell antibodies to identify at risk pregnancies; (antibody quantitation and / or antibody titration as appropriate)
- ◆ provision of suitable blood at delivery for at risk pregnancies
- ◆ extended phenotyping for transfusion dependent patients and for patients with complex red cell antibodies
- ◆ phenotyping of donor red cells when requested
- ◆ clinical and scientific advice to hospital colleagues
- ◆ importation of rare blood for named patients, and
- ◆ out of hours emergency on-call service
- ◆ provision of hospital blood bank services for Our Lady's Hospice and Care Services and the Royal Victoria Eye and Ear Hospital.

Laboratory activity

The services provided by the RCI laboratory include:

- ◆ provision of crossmatched blood for patients with complex antibodies
- ◆ investigation of red cell antibodies including serologically complex cases
- ◆ investigation of haemolytic transfusion reactions
- ◆ ABO/Rh typing, including the investigation of blood group anomalies
- ◆ investigation of patients with positive direct antiglobulin tests
- ◆ investigation of autoimmune haemolytic anaemia
- ◆ investigation of monoclonal antibody interference
- ◆ investigation of haemolytic disease of the fetus & newborn (HDFN)

In 2021 a total of 2712 samples were tested in the RCI laboratory, a 19.3% increase on 2020 figures. 2021 saw a further increase in referrals from patients receiving the drug Daratumumab to treat multiple myeloma. This drug was licenced for use in Ireland in April 2018. 2021 also saw a marked increase in compatibility testing and on-call samples with a 24.06% and out of hours requests increased by 16.22%.

Table 8: Comparison of 2020 and 2021 sample numbers

	Total No. of Samples tested	RhD Type Workup	Antibody ID	Anti-D Quant	Anti-c Quant	Monoclonal Interference	Total Compatibility Test	Complex Compatibility Test	On-call Samples
2020	2274	5	2071	426	134	256	927	880	185
2021	2712	3	1844	394	171	312	1150	1140	215
(%)	+19.26%	-50%	-11%	-7.5%	+27.61%	+21.88%	+24.06%	+29.55%	+16.22%

As in previous years, there was a continued high level of serologically difficult or rare samples received. In 2021 the following complex samples some with rare allo-antibodies were identified by the RCI Laboratory:

**Table 9:**

Antibody Identified	No. of Samples	No. of Patients
Anti-Ce	10	5
Anti-cE	2	2
Anti-Ch/Rg	48	12
Anti-f	1	1
Anti-G	57	11
Anti-H	1	1
Anti-Kna	1	1
Anti-P1	4	3
Anti-PP1Pk	9	1
Other HTLA Antibodies	15	8
Immune Anti-B	4	3
System Specific	15	13
CR1 Related	1	1
Anti-Wra	9	4
Anti-Yta	1	1
Anti-Lua	20	8
Total:	198	75

Many of these patients are antenatal and in conjunction with identification of the red cell antibody, the risk of HDFN and possible blood requirements for both mother and baby were managed. The outcome for both mother and baby were successful to date.

The laboratory continued to develop its inventory of Rare Reference Cells and Antisera (through membership of the International Serum, Cell and Rare Fluid (SCARF) Exchange network and the UK Cell Exchange) and optimised its testing methodologies to adapt to the changing demographics of the Irish population.

Importation of rare blood/ products

In 2021, four units were imported from abroad for RCI patients.

Participation in external quality assurance schemes

The RCI laboratory participates in three different quality assurance schemes; four exercises in IEQAS, four exercises in AQQAS and 10 exercises in NEQAS along with pilot NEQAS schemes in red cell phenotyping, DAT and antibody titration. In addition, the RCI laboratory is involved in Interlaboratory comparison schemes for elution techniques, antibody titrations and adsorption techniques. All results obtained were satisfactory.

Diagnostics laboratory Cork

The diagnostics laboratory at MRTC provides both routine and reference immunohaematology and laboratory services. The former to South Infirmity University Hospital (SIVUH), St. Finbarrs', Mater Private Cork and Marymount University Hospital & Hospice, and reference immunohaematology & laboratory services to the Munster region. Medical Scientists and despatch officers are on-site 24/7 supported by Specialist Medical Staff and a Consultant Haematologist.

The services provided by the Diagnostics laboratory include:

- ◆ As hospital Blood Bank for several city hospitals: MRTC undertakes blood grouping, antibody screening, provides cross-matched red cells and other components for individual patients. Provides laboratory and clinical advice for these patients. Investigates possible transfusion reactions, participates in Patient Blood Management and transfusion practice planning and review through the hospital transfusion committees and audit, and manages component traceability.
- ◆ As a reference laboratory MRTC investigates complex or anomolous red cell typing, extended typing for transfusion dependant patients, positive direct antiglobulin tests, auto-immune haemolytic anaemia, haemolytic disease of the fetus/newborn, and complex antibodies providing extended matched (phenotyped) and crossmatched red cells for these patients. Individual samples in these cases may take several hours to investigate fully and may require donation screening where matching red cells are not available on the shelf.

8 patient samples required further specialist referral to the International Blood Group Reference Laboratory (IBGRL) Bristol, and a further 55 samples were sent to the NBC for genotyping. Advice is provided to colleagues in the region.

- As a reference laboratory MRTC investigates ante-natal patients with red cell antibodies and tracks their care through the pregnancy to plan availability of matched blood for mother and baby at delivery.
- The Diagnostics' laboratory staff manage special component stock for the region. This includes all platelet components and all orders received by the electronic order system (EOS) for antigen typed red cells, irradiated blood components and blood components for babies.

- As the scientists on duty out of hours the diagnostics laboratory contributes to the service by undertaking secondary processing of blood components, and are the first point of contact for clinical queries which are referred on to the medical staff.

- Performance in External Quality Assessment Schemes was satisfactory throughout the year.

Diagnostics Laboratory Activity 2021

Total samples received 2021: 3509 (2020 : 3007) This increase in sample numbers was a direct consequence of COVID-19 in 2020 which resulted in cancellation of hospital procedures and subsequent blood requirements.





OTHER SERVICES



Tissue

The IBTS tissue bank is located at the National Blood Centre in Dublin. The facilities include a suite of clean rooms essential for processing and distributing donated human tissue. The service provides tissue nationwide to a variety of hospitals for ophthalmic and cardiovascular surgery. Tissue products available are corneas, sclera, amnion, fascia lata, pericardium, heart valves and skin.

2021 was once again dominated by COVID-19. Supply of tissue was problematic with shortage of donated tissue experienced globally due to the unavailability of donors. This was primarily due to COVID-19 infections and restrictions on access to theatre and ICU space. Despite this the number of heart valve donors received and the number of valves issued was on par with 2020 while the number of ocular tissues distributed saw a 30% increase on those issued in 2020.

The validation of the production of allogeneic serum eye drops was completed and approval by the HPRA to commence the service is expected in early 2022. This will be a new service provided by the IBTS for Ophthalmologists who are treating patients with extreme dry eye that are not responding to conventional treatment.

Approval was also granted during 2021 to restart the Irish Eye bank, which will see Irish donors once again able to donate their corneas following their death. Recruitment of additional staff to plan for the implementation of this project will commence in early 2022.

Irish Unrelated Bone Marrow Registry

Key Achievements:

- ◆ Provision of stem cell products continued despite COVID-19 restrictions on international travel
- ◆ Donor assessments and international sample shipments continued despite COVID-19 restrictions
- ◆ Recipient safety was maintained in unpredictable situations through implementation of cryopreservation of stem cell products upon arrival at Cryobiology Laboratory SJH, or when necessary, was cryopreserved prior to travel at the country of donation and collection
- ◆ IUBMR achieved re-accreditation with the World Marrow Donor Association.

Haematopoietic progenitor cell transplantation is a lifesaving therapy for certain patients with leukaemia, bone marrow failure syndromes, and for particular inherited metabolic disorders. For the many patients who do not have the preferred option of a fully matched sibling, an unrelated donor from one of the thirty eight million volunteer donors available worldwide can provide a suitable alternative.

To meet the need for haematopoietic progenitor cell donors for both Irish and international patients, the Irish Unrelated Bone Marrow Registry (IUBMR) was set up in 1989.

The Irish Registry searches and selects donors for patients in need of a transplant in Ireland. It also hosts a database of donors in Ireland who are willing to donate blood stem cells.

Tissue typing of donors registered on the unrelated panel is performed by the National Histocompatibility and Immunogenetics Reference Laboratory (NHIRL). The registry is licenced by the HPRA under the EU Tissue Directive 2004/23/EC.

National activities

The IUBMR searches for suitable donors on the Irish panel and through the World Marrow Donor Association (WMDA) database, on behalf of the Irish transplant centres at St. James's Hospital, Dublin and Children's Health Ireland at Crumlin. In 2021, the number of patients referred to the IUBMR for unrelated searches was 105.

Sixty-one Irish patients received stem cell transplants from an unrelated donor in 2021.

The majority of these were from international donors.

In 2021, the registry facilitated 63 cell collections. This included 16 bone marrow, 42 peripheral blood stem cells and 2 cord bloods. Three Donor Lymphocyte infusions were also performed.

International activities

The IUBMR is connected to European Marrow Donor Information System (EMDIS), a communication system which allows international registries to search each other's panels and select donors for extended testing with ease. Thirty-seven IUBMR donors were selected for additional testing in 2021.

Irish donor recruitment

In 2021, 3,556 new volunteers gave blood samples to join the IUBMR, which will be added to the current registry of over 23,000 potential donors.

National Haemovigilance Office (NHO)

Haemovigilance is internationally recognised as essential to the development of safe clinical transfusion practice. It collects and assesses information on unexpected or undesirable effects resulting from blood transfusion, and develops strategies and systems to prevent their occurrence or recurrence. Haemovigilance in Ireland is co-ordinated by the National Haemovigilance Office (NHO), based at the Irish Blood Transfusion Service (IBTS). Since the programme commenced in 1999 a total of 8,131 serious adverse transfusion reactions and events have been reported.

The NHO liaises with and supports hospital based Haemovigilance Officers (HVOs) throughout Ireland and also Medical Consultants with Haemovigilance responsibilities. In addition, the NHO maintains links with colleagues internationally through the International Haemovigilance Network (IHN) and the UK Transfusion Network (SHOT).

Serious Adverse Events (SAEs) – mandatory and non-mandatory

Mandatory SAEs relating to the quality and safety of blood under EU Blood Directive 2002/98/EC and non-mandatory SAEs relating to the clinical aspects of blood transfusion are reviewed by the NHO. These reports come from blood establishments, hospital blood banks and facilities. During 2021, 134 mandatory SAEs were reported (52% of all SAEs). In addition, 124 non-mandatory SAEs, (48% of all SAEs) primarily relating to errors in clinical areas, were also reported. This figure includes Wrong Blood in Tube events (WBIT) (n=58) which were collected by the NHO.

Serious Adverse Reactions (SARs) - mandatory and non-mandatory

At the time of writing, a total of 124 reactions that meet the criteria have been reported in 2021. Mandatory SARs (78) reported to date is an increase on those recorded in 2020 (62).

Annual Notification of Serious Adverse Reactions and Events (ANSARE)

In compliance with Commission Directive 2005/61/ EC Annex II D and III C, all hospitals transfusing blood together with all blood establishments must complete and return an ANSARE form to the NHO. 179 mandatory reports were reported by the NHO in 2021 (for the reporting year 2020), with the compilation of 2021 ANSARE report on-going at time of writing.

Health Products Regulatory Authority (HPRA)

The Competent Authority for implementation of all aspects of the EU Blood Directive is the HPRA and, as in previous years regular case review meetings were held with the NHO to discuss reported incidents.

Education, promotion and developments

The NHO supports the on-going development of hospital in-service training programmes by working closely with hospital based HVOs. On-going education of undergraduate and post graduate medical scientists and specialist registrars also continued during the year.

e-Learning

The IBTS continued to provide 'Learnbloodtransfusion' e-learning programme under licence to hospitals via LearnProNHS.

The majority of Irish hospitals and a number of third level institutions are registered on the programme. This includes hospital staff and health care undergraduates in several universities undertaking the modules as a mandatory course requirement. The NHO have seen an increase in use of LearnProNHS as a result of the COVID-19 pandemic.

Therapeutic Apheresis

The Munster Regional Transfusion Centre (MRTC) Therapeutic Apheresis Service (TAS) provides therapeutic apheresis for patients in the Munster region at Cork University Hospital (CUH), Mercy University Hospital (MUH) and Bon Secours Hospital Cork (BSHC) on a 24/7 365 day basis. Patients in other hospitals in the region requiring TAS are transferred to these facilities, as appropriate.

MRTC TAS is led by Consultants in transfusion medicine, supported by Specialist Medical Officers (SpMOs), Specialists Registrars (SpRs) and nurses trained in therapeutic procedures. Procedures are carried out at the patients bedside using mobile apheresis equipment; Terumo Spectra Optia. Individualised apheresis protocols are prepared for each patient in conjunction with the requesting attending clinical hospital team, guided by the American Society for Apheresis 'Guidelines and Indications for Treatment' (ASFA-2019), and cognisant of the other guidelines including those from the British Society of Haematology (BSH-2015).

MRTC TAS operates within the Irish Blood Transfusion Service (IBTS) quality management system, with trained personnel, controlled documentation, standard operating procedures (SOPs), validated technology and adverse event monitoring, subject to Human Product Regulatory Authority (HPRA) inspection. Adverse events are subject to on-going review and changes are incorporated into the IBTS Therapeutic SOPs, relevant hospital policies and procedures. TAS staff attend national and international meetings and comply with continuing professional development (CPD), including audits. International meetings and access to CPD were restricted from March 2020 due to the COVID-19 pandemic, with access limited to remote communication through 2021. TAS SpMO Dr. Lorraine Lester, presented “*MS Relapse in Pregnancy: Therapeutic Plasma Exchange*” as an oral presentation at the Haematology Association of Ireland (HAI) 2021 annual conference.

During 2021 there were 20 patient referrals and 97 procedures undertaken. This included Therapeutic Plasma Exchange (TPE) and Red Cell exchange (RCE) all at CUH. As displayed in the following tables and figures, the demand for TAS is varied and unpredictable. The trend in increasing neurology referrals is balanced by a reduction in haematology and to a lesser extent, renal referrals over recent years.

MRTC TAS and COVID-19

The COVID-19 pandemic necessitated significant changes to the delivery of our service. Several local hospital infection outbreaks, together with delayed presentation to hospital, may have influenced patient referrals. Each patient referred was assessed for infection risk on an individual basis.

All staff completed online PPE training on HSELand, attended in-person training in BSHC and had active liaison with hospital infection prevention and control.

During 2021 IBTS blood donation clinics remained mostly appointment-only with a pre-appointment eligibility selection process. Where TAS demand allowed, TAS registered nurses (RGNs) provided the first-line assessment of medical and travel queries for donors in the Munster region. In addition TAS nurses audited clinics with high donor deferral rates. This analysis led to the recognition of frequent deferrals, such as tattoos and piercings, which informed amendment of the donor recruitment questionnaire. In addition, assessment of donors with multiple low haemoglobin (Hb) deferrals was undertaken with a view to a reduction in deferral rates. TAS RGNs were technologically enabled to facilitate undertaking this work remotely. TAS RGNs also provided support for the management of donor microbiology laboratory testing results.

Service demand trend

Variability in service demand is captured below by ‘requesting hospital’, ‘clinical specialities’, ‘referring consultants’, ‘degree of urgency’, ‘ASFA category’, and ‘service trends by month, weekend and out of hours’.

Our service typically provides 100 to 125 procedures per annum. Trends and variability in service demand over recent years are shown in **Figure 8** and **Figure 9**.

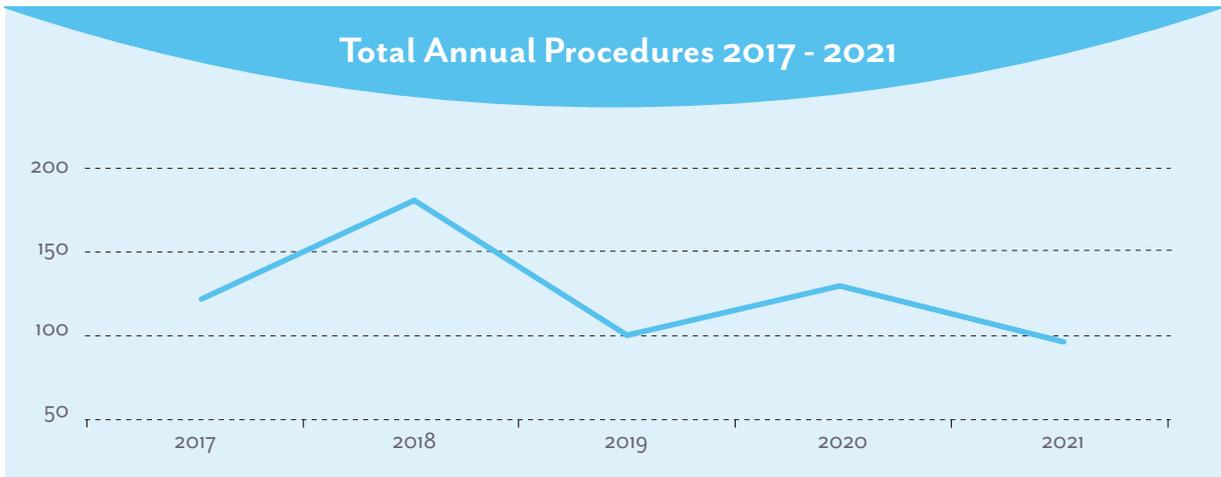


Figure 8

Note: The 181 procedures for 30 patients carried out in 2018 reflected a particularly high demand for neurology patients (N=20 patients, 10 neuromyelitis optica (NMO)).

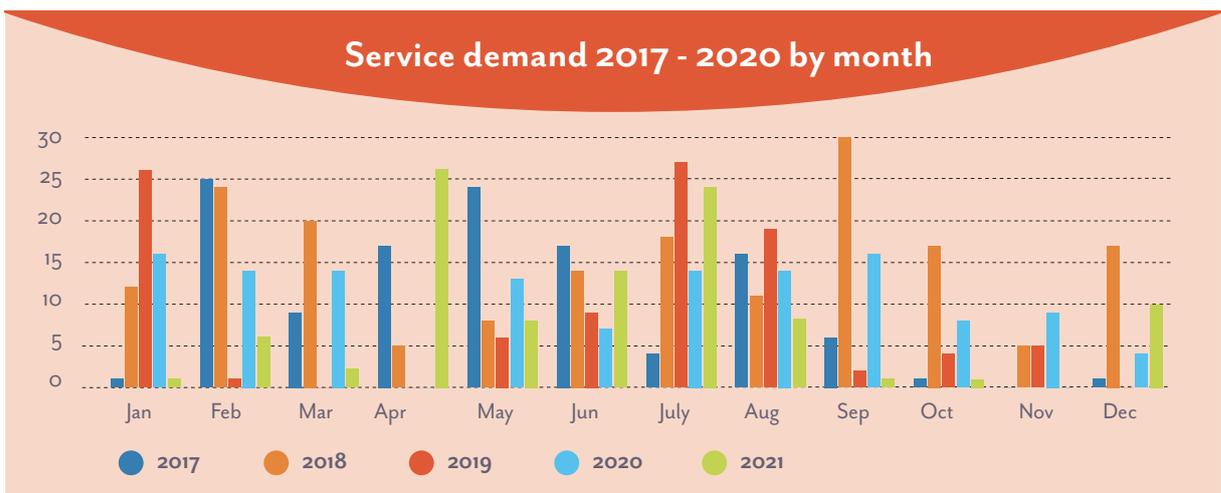


Figure 9

Weekend, Bank Holiday and Out of Hours Service.

Patients may present for emergency, out of hours care when their diagnosis is acutely life or organ threatening. Of the 97 procedures carried out in 2021, 17 (18%) were performed at the weekend and 5 (5%) were commenced out of regular hours during the week. The trend in demand (by quarter year) for weekend/bank holiday and out of hour's service is set out in **Figure 10**.

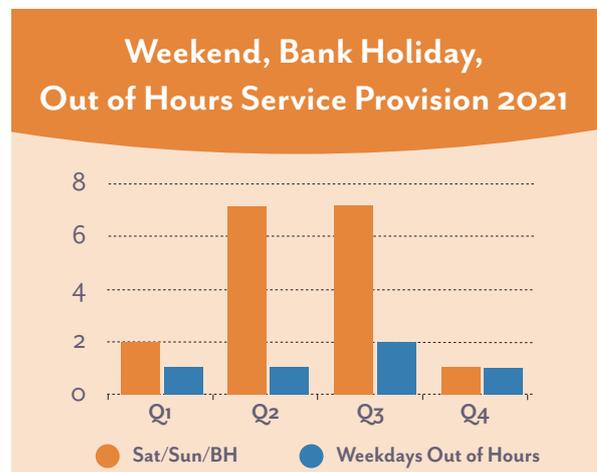


Figure 10

Clinical speciality service referral by patient and procedure

In line with recent trends the majority of referrals were for patients presenting with neurological conditions (70%), followed by renal (15%) and haematology (15%) as per **Figure 11** below.

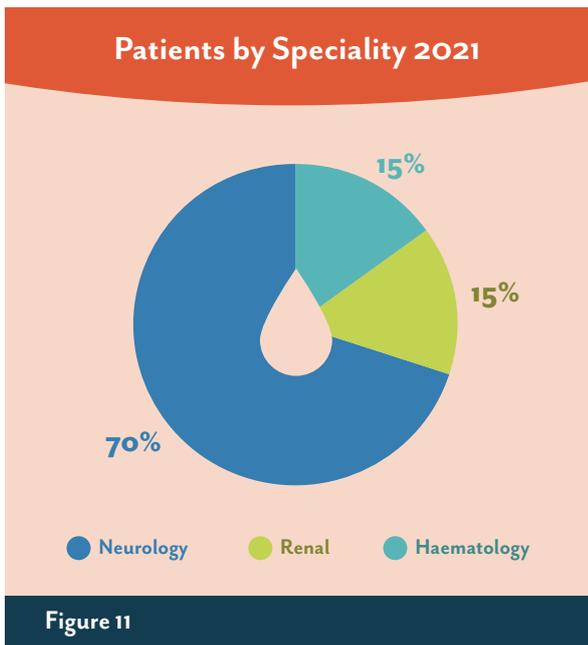


Figure 11

Sickle Cell Disease support

MRTC TAS continued an elective RCE programme for a patient with sickle cell disease (SCD) from 2020, guided by laboratory and clinical parameters. It is anticipated that this demand will increase as the regional paediatric patient cohort, who currently have RCE undertaken outside the region, matures into adulthood. The RCE program in St. James’s Hospital, Dublin, supports MRTC TAS staff training. The service intends to participate in international data gathering, once available.

Service Provision by hospitals

CUH referred all 20 patients in 2021. Four of these referrals were not converted (2 neurology, 1 renal, 1 haematology). Patients presenting acutely may have an initial diagnosis revised with further investigation or an alternative treatment course followed.

Figures 12 and 13: A comparison of service provision to CUH, MUH and BSHC.

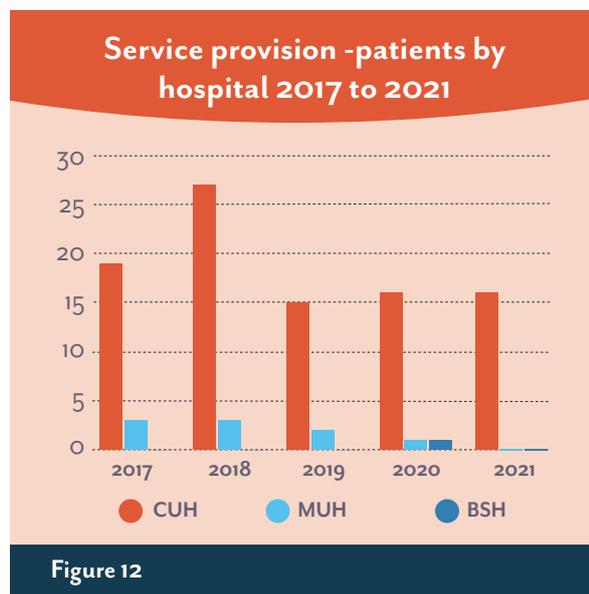


Figure 12

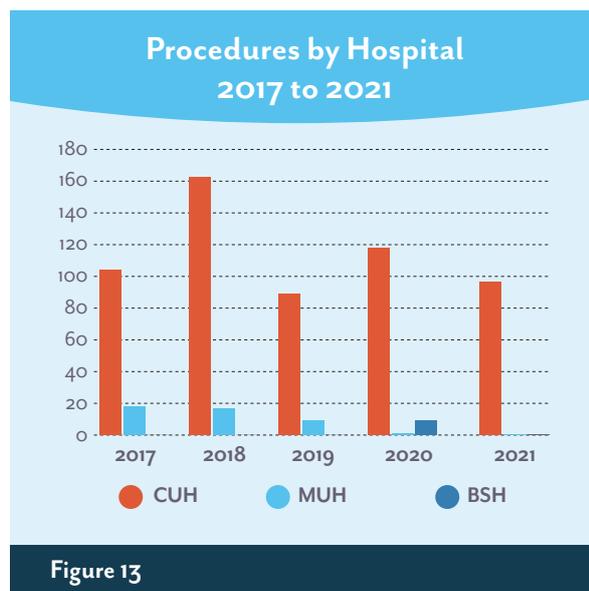


Figure 13

The American Society for Apheresis (ASFA) guidelines

Individual patient treatment protocols are informed by the ASFA guidelines. These are based on both quality of supporting evidence as well as the strength of the recommendation derived from that evidence. The most recent guidelines (8th Ed.) were published in 2019.

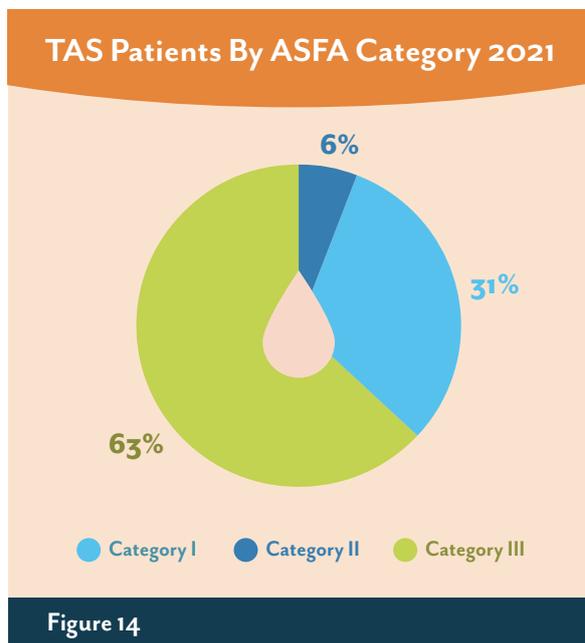
Category I – Disorders for which apheresis is accepted as first-line therapy, either as a primary standalone treatment, or in conjunction with other modes of treatment.

Category II – Disorders for which apheresis is accepted as second-line therapy, either as standalone or in conjunction with other treatments.

Category III – Optimum role of Apheresis is not established – decision making is individualised.

Category IV– Disorders in which published evidence demonstrates or suggests apheresis to be ineffective or harmful.

Figure 14 Patients treated by ASFA category 2021(%).



Degree of urgency of Therapeutic Apheresis Service required

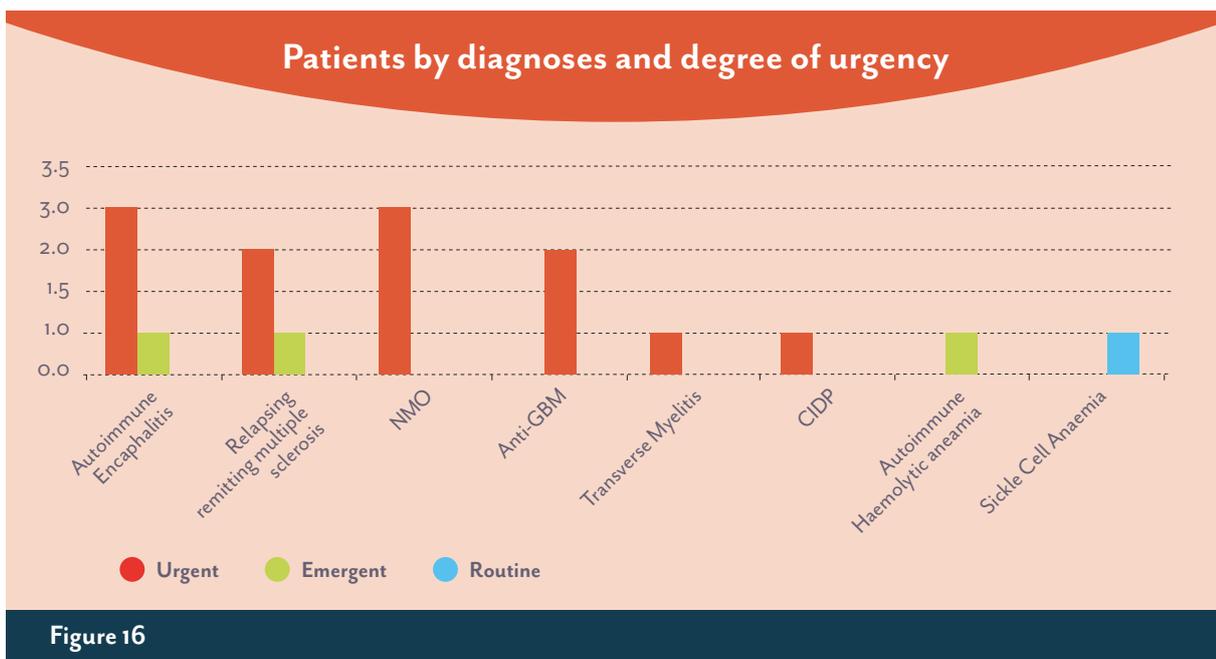
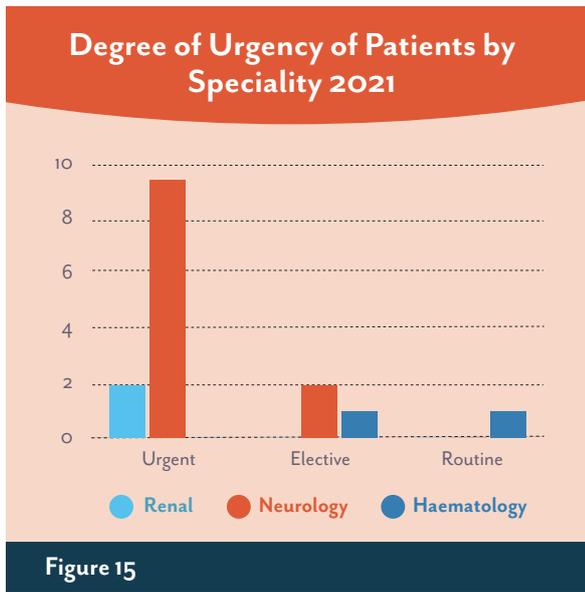
Therapeutic apheresis may form part of the urgent clinical response to patient presentation. Early apheresis can reduce the threat to life or organs. Three patients (19%) presented as emergent cases, twelve patients (75%) presented with urgency and one (6%) presented as routine in 2021.

Figure 15 and Table 9-Degree of urgency by patients and speciality.

Table 10: Patient care requirements

Urgency	Referred Patients 2021
Emergent	3
Urgent	12
Routine	1
Total	16



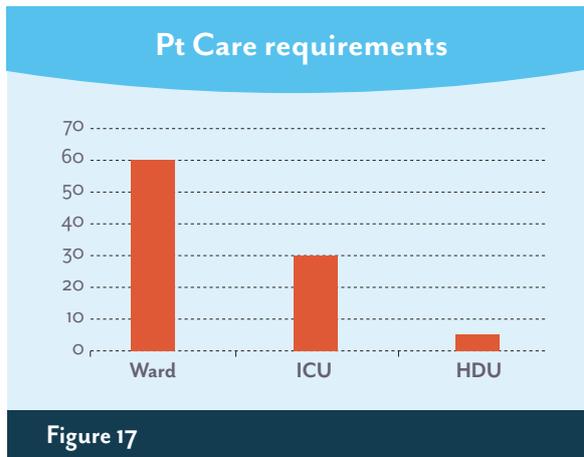


Service delivery by patient care requirements

Many patients referred for TAS are acutely unwell and require intensive or high dependency care, in particular for initial procedures. **Table 10** and **Figure 17** – Location of procedures by patient care.

Table 11: Patient care requirements

Location of patient during procedures	ICU	HDU	Ward
Procedures N=	30	5	61



Vascular access for patients and procedures

Therapeutic Apheresis requires excellent blood flow which, especially for an intensive programme over a short number of days, may require support by the placement of a central line by anaesthesiology or radiology services at the referring hospital. Most patients required a central line in 2021. Some had a combination of vascular access types including peripheral and femoral lines.

Quality Framework

A quality management system is defined as a 'formalised system that documents processes, procedures and responsibilities for achieving quality policies and objectives'. MRTC TAS is compliant with ASFA guidelines (2019) and BSH (2015) and undertakes internal audits and continuous professional development to assure good practice.

Communication with other apheresis services and attendance at UK and international conferences also ensures that service is evidence based. Due to the COVID-19 pandemic interaction with other apheresis services remained remotely enabled.

Education and Training:

The MRTC TAS team are licensed medical practitioners and registered nurses who undertake all mandatory training and continuous professional development to ensure practice is current and evidence based. A weekly TAS Journal Club is in place for TAS staff to review and present relevant published articles which would benefit the TAS service. With Pandemic Public Health measures in place, most training was remotely enabled. TAS staff registered with ASFA online, which provided online webinars. However, on-site visits to the Haemoglobinopathy service at St. James's Hospital, Dublin, were undertaken by all staff. Haemovigilance service in CUH provided 'Blood Track' training, which is of particular assistance to the RCE programme. TAS staff also undertook updating training at MRTC, facilitated by an IV nurse specialist from the CUH, in use of the latest edition of Baxter pumps utilized throughout CUH and necessary for IV Calcium Gluconate and IV fluids administration during therapeutic apheresis.

Our service researched and submitted an abstract "*MS Relapse in Pregnancy: Therapeutic Plasma Exchange*" which was chosen for oral presentation at the Haematology Association of Ireland (HAI) annual conference 2021.



Quality improvement:

The national 'Transfusion patient information leaflet', recently developed by the National Transfusion Advisory Group NTAG, was made available to inform TAS patients as it provides clear and comprehensive information for patients receiving a blood component.

The use of IV Calcium Gluconate increased in 2021 (N=66/97 procedures, 68%) over 2020 (N=8/129 procedures, 6%). Intravenous calcium gluconate proved to be extremely beneficial in preventing symptoms of citrate toxicity i.e. hypocalcaemia, compared with oral calcium preparations.

This has now become a standardised prophylactic approach within the service for patients who have symptoms or signs of citrate toxicity for all subsequent procedures.

The service also took the first step to convert written documentation to electronic format. This development of an electronic practice management system (PMS) will be progressed further through 2022.

Facilities and technology:

The MRTC TAS uses two Spectra Optia technologies which are stored in CUH and transported to the MUH and BSHC as required. The machines are validated and have a bi-annual routine preventative maintenance. RCE software was enabled onto the second Optia technology in January 2021.

Clinical outcome communication

One hundred per cent of referrals complied with service request requirements. In addition, the BSH guidelines recommend that "*The clinical outcome of apheresis procedures should be documented*". MRTC TAS records the outcome at time of treatment and relevant clinical data at later timelines. Additionally MRTC TAS requests outcome details from service user consultant referring patients.

We will continue to work with clinical colleagues referring patients to improve the clinical outcome capture.

Table 12: Clinical data communication by speciality.

Speciality	TAS referral service request form received (N)	TAS completed service overview sent to referring physicians (N)	Patient outcome status received from referring physician (N)	Compliance (%)
Neurology	12	12	3	25%
Haematology	2	2	1	50%
Renal	2	2	1	50%

TAS Clinical Users Survey

TAS clinical service users were surveyed during summer 2021. Eighty two per cent of respondents were CUH based. Overall, 73% of users were 'extremely satisfied' with the service.

Patient care, patient review and close out showed the highest 'extremely satisfied' rating of 82% each, responsiveness 73%, responsiveness to procedure scheduling and communication 64%.



QUALITY & COMPLIANCE



Quality & Compliance

The Quality and Compliance function remains committed to delivering the highest standards of quality by making this part of everything we do. Our processes continue to meet regulatory requirements to ensure we maintain safe, high-quality products and services for our customers.

Quality is a key enabler which underpins our strategic goals to support better healthcare, achieve operational excellence and improve customer service. Our ambition is to be an industry leader in implementing and supporting a culture of quality which supports the organisation and continually meets its objective of delivering value to our donors and patients.

Our key objectives are to:

- ◆ Support our medical laboratories and other departments in meeting international standards
- ◆ Improve efficiencies across a range of quality activities
- ◆ Introduce a flexible risk based approach.

What we achieved in 2021:

- ◆ In preparation for the ISO 15189 - Medical Laboratories accreditation of the Red Cell Immunohematology (RCI) laboratory, IBTS registration and application was successfully completed with the Irish National Accreditation Board (INAB)
- ◆ Improvements continued on documentation management processes with review of the RCI Laboratory Manual to align with the requirements set out under the ISO 15189 standard

- ◆ Quality systems training went online via the Eazysafe application
- ◆ Training videos for users of our document management system, SmartSolve, were also launched by the Quality Systems Development Team
- ◆ Quality continued to partner with the Learning and Development function to develop new training policies
- ◆ Phase 1 of the implementation of an electronic Quality Management System (eQMS) was completed. This included detailed stakeholder engagement through facilitation of multiple quality workshops. Phases 2 & 3 are on track for implementation early in 2022
- ◆ Improvements to our existing risk frameworks were also implemented with development of laboratory Quality Risk Management approach through RCI, introduction of a Product and Test Matrix and development of a Test Method Impact Assessment
- ◆ Implementation of new equipment such as an automated immunohematology analyser in both the Dublin and Cork sites, X-Ray Irradiator, Sterile Connecting Devices, Blood Donation Separators and Centrifuges
- ◆ Validation and IT Quality support for the successful patch upgrade on our Blood Management System
- ◆ BEST Collaborative Coagulation Study
- ◆ Improvements to reagent management for Haematology analysers and product evaluations for Serum Eye Drops production (Tissue Bank)

- The Blood Complaints procedure was revised in the third quarter of 2021. Updates included improvements from inspection findings and also to align with the requirements of ISO 15189. All hospitals were notified and a copy of the revised procedure was provided nationally. The blood complaint form is available to all hospitals for submission of complaints on www.giveblood.ie.
- The Quality Business Partnering initiative was further extended to key departments during 2021. The following departments now have regular partnership meetings: Practice Development, Processing/Platelet Issue, Hospital Services/Despatch, Donor Grouping, RCI, Tissue Bank, IUBMR, and IT. Quality Business Partnering was presented to HPRA in November 2021 and a new procedure to further support this initiative is planned to become effective early in 2022.
- Work commenced on the introduction of a more streamlined process for Incident Reports. This was also presented to HPRA November 2021 and will include improved investigation and root cause analysis tools and a new approach to risk assessment to ensure the level of investigation is commensurate with the level of risk. This is planned for implementation during the first half of 2022.

Regulatory

The Health Products Regulatory Authority (HPRA) is the regulatory body who authorise the Irish Blood Transfusion Service (IBTS) to manufacture Blood and Tissue products. It is responsible for administering the provisions under the EU Directives for Blood and Tissue products. We also seek accreditation for our activities through other regulatory bodies, which includes plans to attain ISO 15189 accreditation by INAB in our RCI laboratory in 2022.

During 2021 the HPRA resumed their inspection programme with inspections of the following areas completed:

Table 13:

2021	Inspection Area	Compliance Actions
July	Tuam (and Gorey Clinic)	6
August	MRTC	7
August	Carlow (and Athy Clinic)	4
November	Tissue Establishment NBC	6 (1 Major*)
November	Blood Establishment NBC	5

*Major deficiency related to the management of incident reports within the quality system. This deficiency consisted of a combination of 8 minor incident report deficiencies.

- A total of 29 inspection days (No. inspectors x No. days) was completed by the HPRA
- A new system for the evaluation of International Tissue Suppliers was developed and successfully implemented. These evaluations will support our applications to vary the Tissue Establishment Authorisation for the Importation of Tissue
- Despite the extremely challenging conditions arising from the COVID-19 pandemic, the Internal Audit programme completed 21 audits. This led to the completion of 122 Corrective Actions which are driving continuous improvement across the organisation
- A variation to the IBTS Manufacturing Authorisation was completed and submitted to the HPRA to progress the implementation of Allogeneic Serum Eye Drop processing.

Quality Key Data

Table 14: Quality Assurance

2021	Inspection Area	Compliance Actions
Incident Reports	569	573
Customer Complaints*	797	764
Change Controls	363	362
Serious Adverse Events (Reportable)	71	62
Serious Adverse Reactions (Reportable)	28	35
Product Recalls	338	293

*Approximately 45% attributed to post donation notifications.

Table 15: Validation

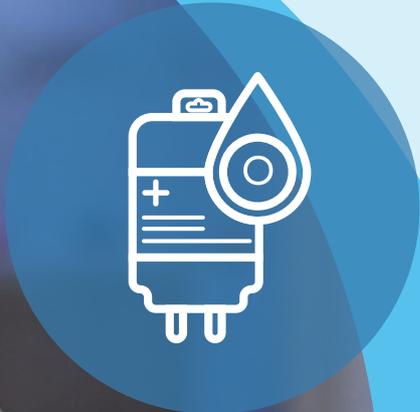
2021	Open (Year)	Open (Overall)	Closed	Interim Approval
Validation Plans	15	46	17	12

Table 16: GMP Service Support

2021	PM/Cal Processed	Corrective Maintenance	SLA's Processed	RQ's Processed
NBC	1656	225	32	417
MRTC	405	33	N/A	102
Total	2061	258	32	519



ACADEMIC ACTIVITIES, RESEARCH AND INNOVATION



Academic activities, Research and Innovation

In April 2021, our first-ever dedicated research and development strategy was published (R&D strategy), and emphasised the role of research in maximising the ability of blood and tissue donation to improve the health of patients. We committed to providing the evidence-base from which to build future improvements to our blood and tissue services, ultimately helping position us as a key leader in the field of blood donation and transfusion.

Throughout the past year, the effective implementation of research best-practice, a research governance structure and a supportive research culture has led to the creation of a positive and innovative environment for all engaging in research. We have contributed to a total of 11 peer-reviewed publications and presented our research findings at numerous international and national conferences. We also further developed our research profile through collaboration on 5 different international studies alongside our international blood establishment partners.

In light of the on-going COVID-19 public health emergency, a significant proportion of our research investment funded SARS-CoV-2 epidemiological investigations which examined the changing antibody profiles in healthy donors from the beginning of the pandemic.

Furthermore, successful acquisition of European funding supported the production of high-titre COVID-19 convalescent plasma, which also successfully enabled the production of plasma from Irish donors for the first-time in over two decades. Other research focused on profiling the red cell antigens in the Irish donor population providing baseline

Irish blood group data. Investigations on blood components gained insights into the mechanisms impacting the function and activation of cold-stored platelets, as well as red blood cell oxygen saturation.

Our focus now moves to effective research communication and building on the innovative research culture foundations laid throughout the last year. We aim to launch a research, learning and development website, specifically targeted at our clinical, scientific and academic partners. In addition, we will hold the inaugural BloodHIT conference (www.bloodhit.com), which is a future-focused blood donation and haematology research symposium.

Key achievements

The key priorities driving a successful research programme were identified as collaboration, leadership, culture, engagement and communication. This year each of these priorities was progressed through the following initiatives:

- ◆ A research governance structure, and a pathway for project oversight from inception to completion, was successfully implemented
- ◆ Three research collaboration agreements, which outlined our collaborative role with academic third-level research partners, were signed
- ◆ Our clinical partners at St. James's Hospital and the Trinity Translational Medicine Institute supported the development of our cellular therapy capabilities. We are delighted to co-supervise a PhD project in this area

- ◆ Continued engagement with the National Transfusion Advisory Group helped develop clinical practice guidelines
- ◆ Active involvement with the Biomedical Excellence for Safer Transfusion collaborative resulted in our contribution to 5 different international research studies, publication of the findings will follow
- ◆ Our representation on EBA working groups progressed our leadership on issues impacting European Blood Establishments
- ◆ We were awarded research funding in collaboration with Technical University Dublin for a PhD project investigating platelet-derived extra cellular vesicles in donated blood. We are delighted to collaborate and co-supervise this fundamental research project which will commence in 2022
- ◆ European Support Instrument funding was secured and supported our COVID-19 convalescent plasma production capacity
- ◆ We were delighted to contribute to a total of 11 peer-reviewed academic publications and 18 presentations at numerous national and international conferences.

Our Research and Development activities encompasses 4 main research themes.

1. Disease and Genetic Epidemiology

COVID-19 seroepidemiology investigations confirmed the circulation of SARS-CoV-2 antibodies in Irish blood donors prior to first national notification of Infection (Butler et al, 2022). Investigations in this area have continued as part of the SeroEpidemiology Unit (SEU), a collaborative initiative led by the Health Protection Surveillance Centre. Lastly, international collaboration collated and assessed the different policies surrounding donation deferral for underlying medical conditions (manuscript in preparation).

Further work under this research theme resulted in the publication of red cell antigen frequencies in an Irish donor population (Browne et al, 2021) and the impact that the very low detection rate of Human T-Lymphotropic Virus antibodies in Irish blood donors may have on future blood screening strategies (Williams et al, submitted for publication).

2. Blood Donation and Deferral

Collaboration on international studies included contribution to a project investigating the changes to donor demographic, blood supply and demand during the COVID-19 pandemic, (BEST). Lastly, the factors impacting blood donation from transgender individuals were determined (Larkin et al, Manuscript in preparation).

3. Applied Diagnostics & Technical Advancement

Two projects, undertaken as part of Master's degrees, were completed. McMahon et al describes the development of an algorithm which can estimate the impact of storage on red blood cell oxygen saturation. A second project assessed the function and activity of an alternative and contingency blood component, cold-stored platelets. Interestingly the blood donor was found to significantly impact the quality of this product (Lorusso et al, manuscript in preparation).

Clinical Evaluation of Blood Transfusion

European instrument funding supported the production of COVID-19 convalescent plasma as an emergency response to the COVID-19 pandemic. International collaborations investigated the deviations required for hematopoietic progenitor cells (HPCs) during the pandemic, as well as, the relationship between non-specific serologic reactivity in antenatal women and haemolytic disease of the foetus and newborn (HDFN).



RISK & RESILIENCE



Risk and Resilience

The IBTS continued to navigate the risks and potential threats to business continuity from the ongoing COVID-19 pandemic. COVID-19 related risks were continually managed through the corporate risk register and quarterly risk reporting to the Executive Management Team, Audit, Risk and Compliance Committee and the IBTS Board. The cross-functional COVID-19 Coordination Group continued to meet on a weekly basis to oversee the implementation of ever-evolving measures on the ground to keep our donors, staff and recipients safe. The group includes “Lead Worker Representatives” as key members, which has ensured that staff can communicate the effectiveness of new measures, and indeed suggest their own ideas from experience on the ground. The strategic response to the pandemic was led throughout by the Business Continuity Planning Group, Chaired by the Chief Executive Officer.

In April the IBTS COVID-19 Recovery Taskforce was set up, with the mandate to put together a “Roadmap to Recovery” for the organisation when circumstances allowed. The group had representation from all areas of the organisation and began by conducting an impact assessment of all protective measures and changes introduced to the organisation in response to the pandemic (79 in total). From this, the group identified which measures were positive changes to be maintained in the long term post-pandemic, and the remainder to be removed when safe to do so. A gradual unwinding of measures began in Autumn 2021, with a limited return to the workplace for staff working from home, however the emergence of the Omicron variant late in the year required a rapid response to change the focus temporarily from recovery back to response once again.

The flexibility of the Roadmap produced by the group allows for this adaptability in an ever-changing situation.

Early in the year, the newly formed Emergency Blood Management (EBM) Group put in place the *IBTS Emergency Blood Management (EBM) Plan for Managing Shortages of Red Cell Components*. This plan dovetails with the *National Transfusion Advisory Committee (NTAG) Plan for IBTS, HSE and Hospitals in the Republic of Ireland to address Red Cell Shortages*. These plans were put to the test throughout 2021, as COVID-19 pressures placed strain on the blood supply. A risk-based decision making approach was employed when assessing the option to import blood products from NHSBT on two occasions in 2021. The Alliance of Blood Operators Risk-Based Decision Making Model was utilised to assess all options available to ensure the continuity of the blood supply.

In addition to COVID-19, 2021 brought its share of more “traditional” business continuity issues, such as Storm Barra and Storm Eunice, which were managed effectively using the IBTS Business Continuity Plans.

An exciting development for risk management in the IBTS came in the form of an electronic risk management solution, which was procured and introduced to the organisation in 2021.

This marked a move away from a paper based system, and all risks are now recorded, reviewed and reported on electronically. This is a significant step forward and brings many benefits to the IBTS, including a more real-time approach to risk management and more time available to focus on managing and mitigating risks. The new system will continue to be embedded and optimised over the coming year.

Strategy - what we achieved

The IBTS statement of strategy ***Connections that Count*** was launched in early 2021 and set out an ambitious strategic direction focusing on new products and services; research and development; innovation and agility; as well as placing an emphasis on our donors, our people and our healthcare clients.

To support our work in strategy implementation, we amended our processes to facilitate strategic reporting every six weeks. This has enabled us to respond quickly to issues and reassess plans as necessary which has been critical during the pandemic particularly at times when blood donation and resources were impacted. Given the challenges of the past year, the IBTS is happy to report a successful first year under '***Connections that Count***' with over 70% of strategic initiatives being implemented.

The Strategy Implementation Group is an internal group comprising senior managers and is tasked with tracking and monitoring our delivery of strategic initiatives. At the beginning of 2021 the implementation plan identified 103 initiatives to support the overarching goals and objectives across the three pillars and four enablers of the strategy. This was further refined with 23 of these initiatives identified for delivery in 2022. The IBTS set out to deliver 78 strategic initiatives in 2021 and was successful in completing 57 of the initiatives.

It is expected the majority of the remaining initiatives will be completed in 2022.

Highlights include our National Donor Screening Laboratory (Donor Grouping, Virology and NAT) attaining the highest green certification with My Green Lab (a non-profit organisation that is leading the way in improving global laboratory sustainability), the approval of the project plan for the re-establishment of the National Eye Bank, the installation of an x-ray irradiator in our Cork site, successful transition to a managed service provider for our IT support and the establishment of an innovation working group.





HUMAN RESOURCES



Human Resources

Key achievements

People and Culture

Transforming Together – People: Culture: Connections

2021 continued to be a disruptive year for our people and culture services. Despite the disruption and uncertainty everyone in the IBTS worked tirelessly, demonstrating their unwavering dedication and commitment to our donors, our patients and our service. With a renewed focus our efforts were focused on developing our first dedicated people and culture strategy aligned to our corporate strategy. This was published in August.

To devise our ambitious plan we adopted a co-creation approach, listening to our people and benchmarking our practices against emerging best practice in the marketplace and healthcare. All of these inputs are fully reflected in the priorities we have attached to our strategy. Our four strategic pillars are enriching our culture, shaping our future workforce, putting safety first and improving people experiences.

As with the development and launch of any strategy it is important to ensure that the organisational structures are fit for purpose, to support the successful delivery of the strategic priorities and ensure organisational effectiveness. We engaged with a service provider to help us commence a review of our leadership and management structures and our Project Management Office. The outputs of this review will be finalised in 2022. In parallel with our strategic development and our focus on people and culture we also revitalised our core values and work commenced on developing the underpinning behaviours that will enable all of our people to live our values.

COVID-19

The COVID-19 pandemic continued to evolve throughout the year. A key priority for the HR function was the protection of the health, safety and wellbeing of all of our people. The development and ongoing revision of internal guidance and policy in collaboration and partnership with key internal and external stakeholders, including our Occupational Health Providers, has been crucial in maintaining our successful response to the pandemic while continuing to support and enable our staff to work safely.

Regular, clear, targeted communication and consultation mechanisms in the IBTS have been essential for the continued successful response to managing COVID-19. In response to the Governments Return to Work Safely Protocols a number of roles and forums were established and sustained. Three staff members from clinical, laboratory and support services have been trained as Lead Worker Representatives (LWR). A COVID-19 Co-Ordination Group comprising of representatives from across the organisation meet weekly, with Lead Worker Representatives to lead the implementation of actions arising from employee feedback, government guidelines and revised protocols.

The establishment of a COVID-19 Recovery Taskforce assisted the IBTS to commence the process of easing of restrictions in line with government guidance and this group will continue to function into 2022 until recovery is fully implemented. The outputs of both the COVID-19 Co-Ordination Group and the COVID-19 Recovery Taskforce are communicated to the COVID-19 Business Continuity Planning (BCP) Group of IBTS Directors and senior managers.

Nursing resources were redeployed to join our contact tracing team, further ensuring that everyone was supported to continue to work safely throughout the COVID-19 pandemic. Occupational Health case management, that included COVID-19 related triage, absences and risk assessments, increased by 49% on 2020 and is representative of an immense 500% increase in activity.

The ONEHR function has been vital to the success of COVID-19 internal communications and engagement processes. COVID-19 guidance and important policy and protocol updates were delivered through channels such as internal email, FAQs, local departmental social media groups, remotely managed meetings and workshops. A dedicated ONEHR email was created to address staff queries and assist with the streamlining of our Occupational Health referral process.

The maintenance of our in house 'Credit to the Crew' publication, which was developed in response to the pandemic, continued to be driven by staff across the country sending in submissions to our Library department. 20 issues were published and this extremely successful initiative will continue into the future.

All of these factors contributed to successfully navigating the disruption caused by the global pandemic and ensuring we continued to provide a safe and sustainable supply of blood and blood products to patients in Ireland.



Environmental, Health and Safety

Focus on Occupational Health

Occupational health provides an important role in the health and wellbeing of our people in the workplace. We worked closely with our Occupational Health Provider to support the needs of our people and our donors to assist the organisation in the implementation of policies and procedures pertaining to COVID-19. A live webinar on COVID-19 vaccination was delivered for all staff in Q1 followed by an interactive Q&A session, to support education and knowledge sharing around the importance of the vaccination programme, resulting in an extremely positive response from our people to the COVID-19 vaccinations. In support of our vaccination programmes the IBTS also ran 24 Hepatitis B and seasonal influenza vaccination campaigns in conjunction with our Occupational Health Providers.

Compliance programmes

A review of Dangerous Good Safety Advisory (DGSA) services was undertaken this year and a DGSA was appointed to work with the organisation into 2022 on our compliance and training programmes. As part of our programme of continuous improvement and compliance a total of 6 external audits was undertaken in conjunction with managers within clinical and laboratory environments throughout the year.

Staff Information updates

Quarterly internal Health & Safety Staff Bulletins were published to raise people's awareness of topical issues relating to putting safety first. Focus topics included Fire Safety, Chemical Safety, Personal Protective Equipment and Equipment in the workplace.

People Services - Human Resources Operations

In fostering a partnership approach the Human Resources Operations team provided a range of programmes and services, as well as qualified and expert advice and guidance on a multitude of staff employment situations at all stages of the employment life-cycle starting at strategic workforce planning through to retirement.

Aligning with our strategic priorities we developed a strategic workforce plan to ensure that we had the necessary talent to support the delivery of our overall strategic ambitions. Our strategic workforce plan identified some key roles that would be required to drive our transformation and change agenda. These were subsequently approved through the appropriate public sector governance channels.

Human Resource Information Systems (HRIS)

Similarly supporting our corporate strategic focus of 'Achieving Operational Excellence' and improving people experiences we upgraded our HR Operating system and commenced upgrading our HR document and records management system. We introduced a new HR data reporting tool to optimise people analytics and further enable more efficient and effective management decision making.

Implementing Public Sector Equality & Human rights duty

Development of the IBTS 'Public Sector Equality & Human Rights Duty' implementation plan progressed during 2021.

The plan includes an annual framework to assess needs, action plan and report progress. Key to the success will be building partnerships to support and verify our on-going action plans. We have been included as a member on the Department of Health Disability Monitoring Committee to support improvements and provide stakeholder input on enhancing disability monitoring in the public sector.

Great Place to Work

We closed out our final phase of our staff engagement initiative, aligned to our 2018 Great Place to Work staff survey. Action areas were grouped as follows:

- 🔥 Visible Values
- 🔥 Back to Basics
- 🔥 Frontline Online
- 🔥 IBTS Village
- 🔥 Reward & Recognition
- 🔥 Pop Up HR
- 🔥 Vein-To-Vein

In total 43 Corporate Action Plans were progressed through the Executive Management Team; Staff Matters Group; and at department level. 91% of these action plans were closed out or are operational / scheduled, while 9% had to be reprioritised due COVID-19. There were 28 Team Action Plans and all are closed out or are operational / scheduled.

Learning

Leadership

Embedding a strong leader identity remains a key focus for our organisation and ensuring that our people have the necessary supports and systems at all levels to enact leadership is crucial. The L&D department continued to work in partnership with Dr. Nuala Ryan from University of Limerick to develop management and leadership capabilities through the delivery of the iLEAD and weLEAD programmes. A continuous improvement approach is applied where the needs of the learners are considered alongside the organisational needs resulting in programme evolution.

To support leader formation we have looked at organisational structures and systems that effect the formation of a leader in the organisation. At the organisational level we developed a charter for leadership in the organisation which sets the vision and objectives for how IBTS Leaders behave and how they are supported.

Talent Management

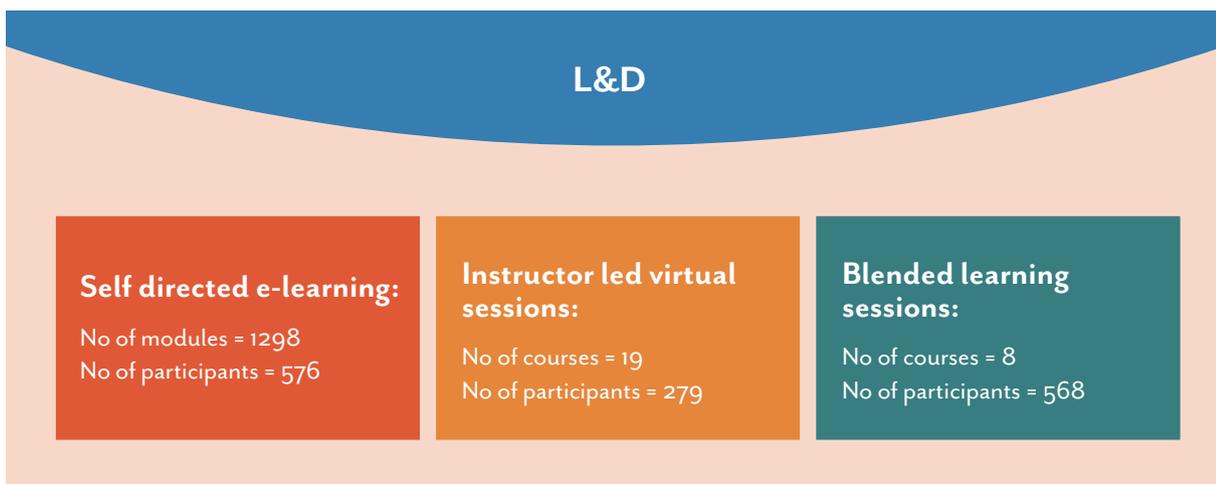
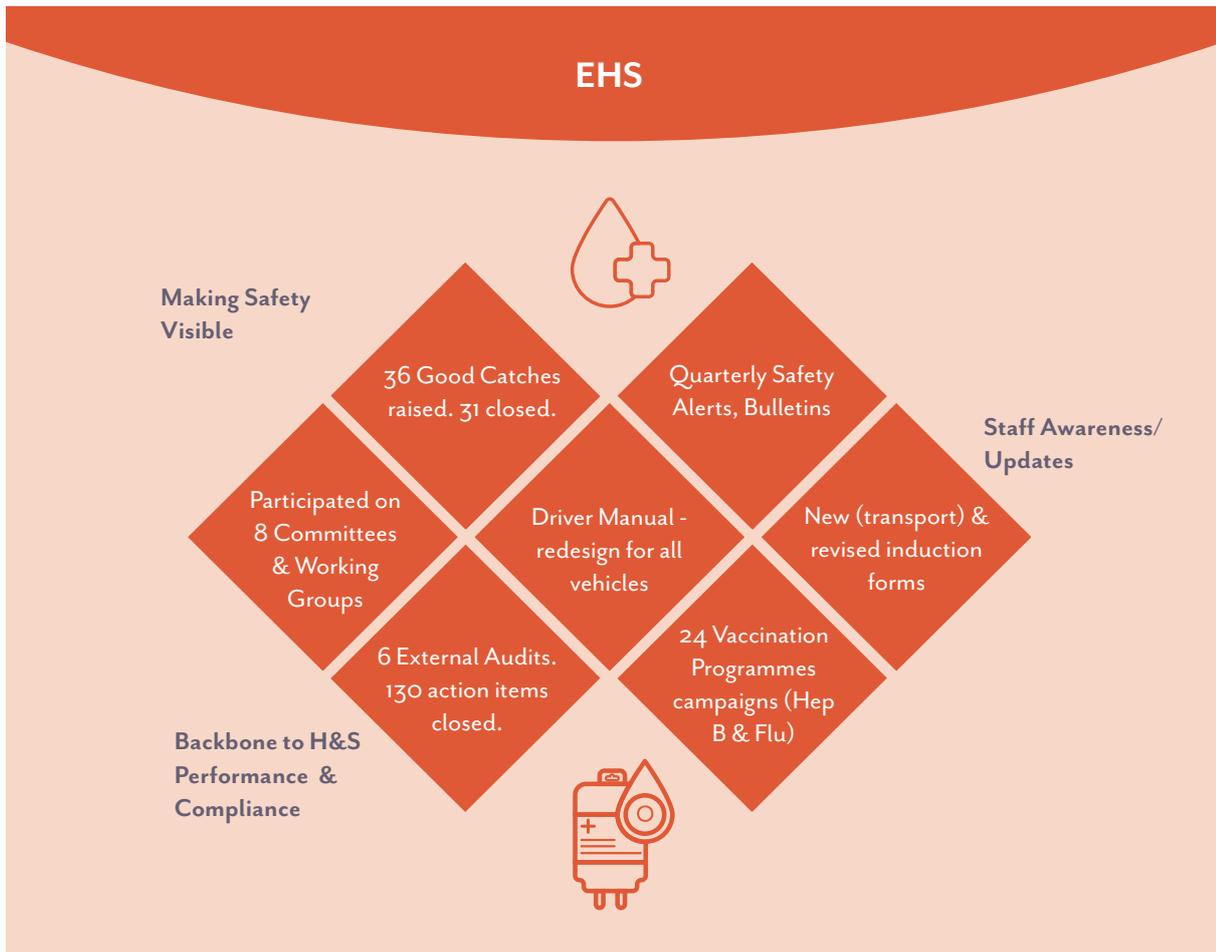
With talent being such a key driver in organisations L&D led the steering group that worked the HR Research Centre at University College Cork to develop an evidence-based talent management framework that encompasses the employee life cycle, builds people capability and maximises employee potential which results in improved organisational performance. The framework presents a future focused approach to talent legitimisation based on the current strategic ambition of the IBTS. L&D also partnered with UCC as an industry partner to two MSc students who conducted research on the development of a robust on-boarding process for the IBTS for their MSc applied research project.

Performance Development

Our Performance Development process was moved to one cycle in 2021 to allow for increased alignment of individual personal development goals with work plans and activities. To support the process the L&D department provided virtual training sessions to both staff and managers on how to complete the process and for managers on how to have effective coaching and PD conversations. This resulted in excellent engagement with 90% compliance for the self-evaluation stage.

The L&D team held end-of year review sessions with managers to review the process and identify any opportunities for improvement or additional supports required. Feedback from these sessions led to the development of a bespoke e-learning module on the IBTS performance cycle as a training resource for all staff which will be rolled out in 2022.



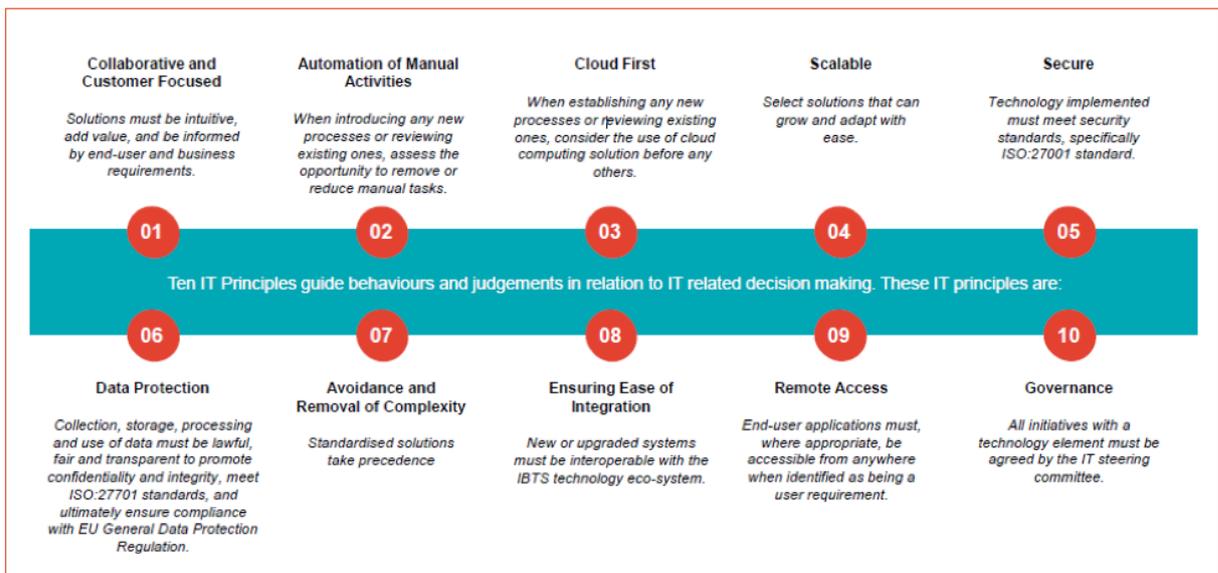


Information Technology

IT continued to support a blended working model for the organisation, with clinic, laboratory and some office staff continuing to work at their normal places of work throughout lockdowns and IT providing them and the staff who were working from home with the support required.

One of the most significant achievements during the year was a major upgrade to our key Blood Establishment Computing System, eProgesra, and associated changes to other systems.

Another significant deliverable in 2021 was the development and launch of our IT strategy. The strategy sets out the road map for IT from 2021 to 2025, and its implementation will be a key enabler of Connections That Count. The strategy covers the process, technology and capability changes that will be required over the time period – several of these enhancements were started in 2021. The strategy also included the development of a set of IT guiding principles which will be used when making IT decisions in future.



In addition we implemented Manage Engine for IT Service Management, upgraded our JasperReports reporting server and completed numerous enhancements to other applications and systems.

Finance

Summary Accounts for the year ended 31st December 2021		
	2021 €000	2020 €000
Income		
Recurring income	69,166	64,760
Non-recurring income	3,347	2,138
Total income	<u>72,513</u>	<u>66,898</u>
Expenditure		
Total expenditure	<u>74,779</u>	<u>70,304</u>
Surplus / (Deficit) for year	(2,266)	(3,406)
Actuarial gain / (loss) on pension schemes	13,024	(15,632)
Transfer to Capital Reserves	-	(2)
Transfer to Research Reserve	(164)	(443)
Accumulated Deficit at 1st January	<u>(83,457)</u>	<u>(63,974)</u>
Accumulated Deficit at 31st December	<u>(72,863)</u>	<u>(83,457)</u>

Income

The Board's total income for 2021 of €72.5 million (2020 €66.9 million) is analysed into recurring and non-recurring income. Recurring income consists of revenue generated from sales of products and services provided to hospitals of €69.2 million (2020 €64.76 million). Non-recurring income of €3.3 million (2020 €2.1 million) includes a grant from the Department of Health in respect of HEV testing and deferred funding for the single public service pension scheme. The increase in recurring income represents increased volumes in 2021 following the impact of COVID-19 in 2020 with reduced demand from hospitals particularly in relation to Red Cell demand. Testing volumes also increased significantly on the previous year.

Expenditure

Expenditure for 2021 amounted to €74.8 million (2020 €70.3 million).

The increase in expenditure is partly due to the increase in sales volumes and testing reagents and also an increase in staff numbers to maintain services as a consequence of COVID-19. Some additional costs for personal protective equipment and transport costs were offset by savings in reduced travel costs.

The Board accounts for pensions in accordance with financial reporting standard 102.

Reserves

The Board has a Capital reserve for the development of new facilities in Cork. The balance in the fund at the year ended 31st December 2021 was €10.60 million.

At the 31st December 2021 the balance of research funds was €2.9 million. (2020 €2.7 million).

Capital Expenditure

The Board invested €1.3 million in capital projects and equipment during 2021 (€1.2 million 2020).

The main capital investments during the year were new and replacement equipment in our component processing laboratory and an IT upgrade to our blood bank computer system.

Prompt Payment Legislation

The Board complies with the requirements of Prompt Payment Legislation except where noted below. The Board's standard credit taken, unless otherwise specified in specific contractual arrangements, are 30 days from receipt of the invoice or confirmation of acceptance of the goods or services which are subject to payment. It is the Board's policy to ensure that all accounts are paid promptly. During the year ended 31 December 2021, under the terms of applicable legislation, invoices to the value of €410,732.02 were late, by an average of 22.07 days. These invoices constituted 1.19% by number and 1.05% by value of all payments to suppliers for goods and services during the year. Total interest and fines paid in respect of all late payments amounted to €9,149.

The Board continuously reviews its administrative procedures in order to assist in minimising the time taken for invoice query and resolution and the approval and payment process.

Contact Details

Auditors

Comptroller and Auditor
General
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Dublin Castle
Dublin 2

Solicitors

Byrne Wallace
88 Harcourt Street
Dublin 2

Bankers

Allied Irish Bank
Dame Street
Dublin 2

Irish Blood Transfusion Service

National Blood Centre
James's Street, Dublin 8
t: 01 4322800
e:contactus@ibts.ie
D08 NH5R

www.giveblood.ie

Donor infoline 1850 731137
www.facebook.com/giveblood
www.twitter.com/giveblood.ie

Cork Centre

St Finbarr's Hospital
Douglas Road
Cork
t: 021 4807400
T12 Y319

Dublin Blood Donor Clinic

2-5 D'Olier Street
Dublin 2
t: 01 4745000
D02 TK51

Stillorgan Blood Donation Clinic

6 Old Dublin Road
Stillorgan
Co Dublin
t: 1850 808 808
A94 NX47

Ardee Centre

John Street
Ardee
Co Louth
t: 041 6859994
A92 HCP4

Carlow Centre

Kernanstown Industrial Estate
Hackettstown Road
Carlow
t: 059 9132125
R93 AC82

Tuam Centre

Unit 2
Beechtree Business Park
Weir Road
Tuam
Co Galway
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H54 P229

Limerick Centre

Carrig House
Cloghkeating Avenue
Raheen Business Park
Limerick
t: 061 306980
V94 AH97



Irish Blood Transfusion Service

Seirbhís Fuilaeistriúcháin na hÉireann

National Blood Centre
James's Street, Dublin 8.
D08 NH5R

Tel: 00 353 1 4322800
Fax: 00 353 1 4322930
Email: contactus@ibts.ie

www.facebook.com/giveblood
www.twitter.com/giveblood.ie
www.giveblood.ie
Donor Infoline 1800 731 137

Registered Charity Number: RCN 20006280