Gwasanaeth Gwaed Cymru
Welsh Blood Service

Research Development & Innovation Report

August 2022

Our Vision

Welsh Blood Service will advance donor care and transfusion and transplantation medicine through the inception and participation in high quality health services research.

Foreword

It's great to report that we received formal recognition of our efforts to the COVID-19 pandemic with a nomination for the NHS Wales Awards. The nomination is for *Providing Services in Partnership Across the NHS in Wales.* This category reflects the realisation of our research strategy aim of “be open to collaboration”, supporting a range of partners. We are very proud of our achievements and believe this recognition reflects the hard work of all staff involved in completing this project.

We are also shining a light on a department within the Welsh Blood Service which goes beyond blood donation. The work of the nurses, scientists and clinicians of the Welsh Bone Marrow Donor Registry is exemplary. It provides the means to treat blood cancers, blood, the immune system, and metabolic disorders.

The Registry is a collaborative partner in research. This is shown by being sought out by transplantation research centres and providing the Cellular Therapy RD&I theme. Their recent move to the Velindre Cancer Centre will sustain them in new frontiers of advanced cellular therapies, providing high quality donor management systems for transplant centres worldwide. This is truly where our service makes a real difference to people's lives.

Siân James

RD&I Facilitation Lead
Welsh Blood Service

About this document
This document has an up-to-date summary of all planned, ongoing or completed research, development and innovation activity within the Welsh Blood Service.

This version of the document has been specially adapted so the donors, patients and the public can see the Research, Development and Innovation activity they support through the gift of blood, stem cell and organ donation.

COVID-19 Serosurveillance Scheme Shortlisted for NHS Wales Award

Wales's national serosurveillance of COVID-19, in which the Welsh Blood Service is a partner, has been nominated for an NHS Wales Award.

The COVID-19 serosurveillance scheme runs in partnership with four NHS Wales organisations. Our role at Welsh Blood is to provide blood samples and demographic information to the scheme for epidemiological analysis. The scheme updates Welsh Government on the changes in infection and vaccine-mediated immunity to the COVID-19 virus in the adult Welsh population, month-on-month. The project, which began during the first wave in 2020, has processed over 66,000 samples to date. The scheme supports effective decision-making about Wales' vaccination programmes and public health measures. It has won its nomination for 'Providing Services in Partnership Across NHS Wales'.

Dr Siân James leads the project for the Welsh Blood Service, which involves a broad multidisciplinary approach across the organisation. This cross-department work, in tandem with the partnership between Public Health Wales, Cwm Taf Morgannwg University Health Board and Swansea Bay University Health Board, has been recognised for its efforts by the award nomination.

The scheme has been featured in our previous reports and continues to be a mainstay of our Donor research theme. On the project's first anniversary, we gave a token of thanks to our colleagues who continue to provide this project. We recently celebrated this project's second anniversary and shared an update on the project and our plans for the future with colleagues. Our donors, who make this project possible were fully recognised in our submission to the awards.

Alan Prosser, Director of the Welsh Blood Service, had the following to say on the project:

"This project is a great example of how the Welsh Blood Service can make a greater contribution to the health and wellbeing of the Welsh population. We have taken steps to integrate the use of samples for public health initiatives into our processes. This will allow the Welsh Blood Service to use the learning from this project in future collaborations.

We are extremely pleased to have our positive approach to collaboration and creating strong partnerships acknowledged. Being shortlisted for an award such as this is a testament to our staff professionalism in ensuring the success of this project.

Well done to the team, and the best of luck with the awards in October 2022.'

Welsh Bone Marrow Donor Registry

Now in its 33rd year of operation, the Welsh Bone Marrow Donor Registry (WBMDR) continues to be a mainstay of the Welsh Blood Service RD&I efforts.

The WBMDR is a panel of donors who have volunteered to donate their stem cells if they match with a patient needing a transplant. Stem cell transplants can treat certain types of cancer and other blood and immune system diseases.

The WBMDR processes around 1,000 requests per month. Requests can be for patients in Wales, the UK and globally to look for a donor that closely matches the intended recipient's tissue type.

In the UK, around 2,000 allogeneic stem cell transplants are performed each year, and demand is increasing.

WBMDR are key players in our Cellular Therapies theme

Recently, we refined the name of this theme to Cellular Therapies. This refocus for the theme recognises the increase of stem cell product use in cell transplantation settings. It encompasses the specialities of operating a donor registry, cell retrieval and logistical operations. It also means that we can more easily make known that the Welsh Blood Service is interested in this area, drawing parallels with blood establishments and the groups that use this term.

We have updated all of our documents to reflect this change, but we wanted to ensure that you were also aware of it.

International collaboration for cell therapy research

The WBMDR are working alongside the South Wales Blood and Transplant Team at the University Hospital of Wales to support the provision of the “CAR-T” therapies. CAR-T or chimeric antigen receptor T-cells are an immunotherapy treatment that involves taking patients' cells and engineering them to recognise infected cancer cells. These re-engineered cells are then returned to the patient with the hope the CAR-T cells will fight off cancer and restore health.

In addition, the registry is joining forces with international associates to support the provision of Advanced Therapeutic Medicinal Products to international patients. Developing a new stem cell apheresis facility within Velindre Cancer Centre enables WBMDR to support various programmes and the provision of our vital service in the cell therapy supply chain.

The WBMDR 1400th donation took place in the WBMDR’s flagship collection centre within the Velindre Cancer Centre

Supporting Research

The Registry has been participating in a research study led by Cardiff University since 2017, assisting in the care of patients with acute myeloid leukaemia.

The study compares bone marrow samples from healthy volunteer donors with samples of patients with acute myeloid leukaemia to assess the role of the supporting cells in the bone marrow in the protection of leukaemia cells. The registry has recruited 34 bone marrow donors for the study to date.

WBMDR also looks at the unmet need surrounding patients of ethnic minority backgrounds. The challenge is to find suitable HLA-matched donors. The WBMDR's Communication and Engagement Co-ordinator will analyse existing recruitment materials to identify social marketing strategies that can develop the panel's diversity and tackle barriers to becoming a donor within under-represented communities.

The acting Head of WBMDR also recently co-authored a paper published in the Bone Marrow Transplantation journal, on the effect of the COVID-19 pandemic on global unrelated stem cell donations.

What's in the research pipeline?

The WBMDR would like to carry out a future study into the effect of storage on haematopoietic stem cells. This would review long-term liquid nitrogen storage and how fresh cells are shipped for immediate transplant. Cell quality will be assessed in terms of cell count and cell viability. This study would inform how we store haematopoietic stem cells following collection prior to transplantation.

Additionally, it is speculated that the HLA profile of younger people may be changing from the historic population HLA characterisation. It would be beneficial to the Registry to explore these genetic profiles and donor characterisations as it will affect the diverse requirements of a donor registry service.

The WBMDR Collection Co-ordinator will also be undertaking an academic project commencing early 2023.

RD&I Project Portfolio

We have 9 open projects

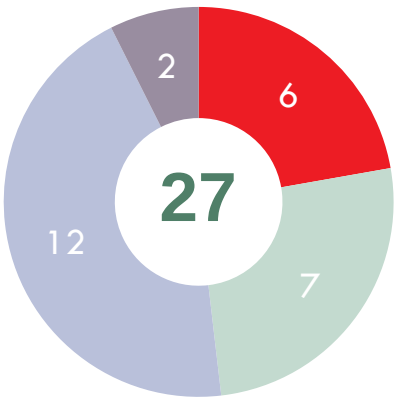
Projects by Theme




Transplantation	Products	Donor	Cellular Therapies
Includes solid organ and stem cell transplantation, histocompatibility, immunogenetics and donor registries	Includes blood components, immunohematology, testing, component and product manufacturing, quality management, and the evaluation of equipment and materials	Includes donor recruitment and retention, eligibility and care and public health surveillance	Includes topics surrounding cellular and other blood therapies
2	3	3	1

Publications
in last 12 months

We publish in journals and present at conferences to share findings and build our reputation in the research community. Staff undertaking academic qualifications produce student theses that contribute to scientific literature.



37 **Colleagues currently involved in delivering RD&I**

Colleagues can undertake WBS led research or provide service support of others' research. This figure also includes those performing research as part of a qualification.

Publications

Impactful publications from the Welsh Blood Service colleagues and our collaborators in the previous three months

Journal Articles

In vitro storage characteristics of neonatal platelet concentrates after addition of 20% PAS-E

Christine Saunders

Citation: Saunders, C., Pearce, N. and George, C., 2022. In vitro storage characteristics of neonatal platelet concentrates after addition of 20% PAS-E. *Vox Sanguinis*,.

The Platelet Storage Lesion - Novel Approached to Optimise the Function and Quality of Stored Platelet Concentrates

Jamie Nash

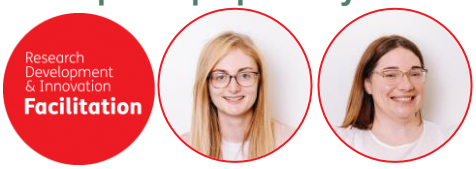
Citation: Nash, Jamie 2022. *The platelet storage lesion - Novel approaches to optimise the function and quality of stored platelet concentrates.* PhD Thesis, Cardiff Metropolitan University

Mathematical Modelling to Support Blood Collection for the Welsh Blood Service

Emily Williams

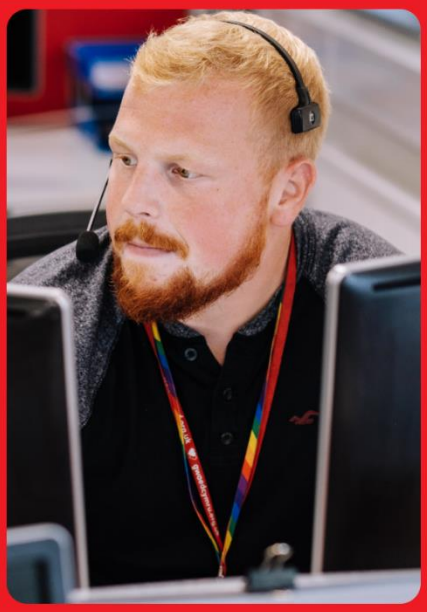
Citation: Williams, Emily Paige 2022. *Mathematical modelling to support blood collection for the Welsh Blood Service.* PhD Thesis, Cardiff University

This report is prepared by



NHS Wales Award nominee Courtney Morris &
NHS Wales Award nominee Sian James

Valid until January 2022



We thank the blood, platelet and cell donors who make our research possible.

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