

# RESPONSE TO THE 10 YEAR HEALTH PLAN FOR ENGLAND

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HELP BUILD  
**a health service  
fit for the future**

**CHANGE**  
**NHS**

# What does NHS Blood and Transplant want to see included in the 10 Year Health Plan and why?

Blood products, organs, tissues and stem cells are **essential infrastructure for the NHS**. NHS Blood and Transplant (NHSBT) is an NHS organisation which provides high quality, innovative, safe products at cost price to the NHS.

The NHS relies on NHSBT to deliver many life-saving products but there are areas where NHSBT is not the preferred provider and faces commercial competition. Being able to deliver our products at scale as a sole or preferred provider would bring **efficiencies and increased productivity** as well as further **self-sufficiency** of plasma and tissue products **reducing reliance on imports** which can be subject to supply disruption and price fluctuation.

NHSBT is also a **world-leader in innovation and transformation** – with further NHS and Government support we could be even more so. We are leading a **cutting-edge Genomics programme** with NHS England to deliver our commitment to genotype all Sickle Cell and Thalassemia patients for better matched blood components. Our Therapeutic Apheresis services supported a double hand transplant patient to **undergo plasma exchange treatment** in an attempt to stop rejection, in what is thought to be a **world first**. We are working with the Ministry of Defence and

Air Ambulances to look at **new blood products that can help people survive major trauma**. And we have recently conducted a **UK first trial to fly blood packs by a drone** which might mean that an urgent bag of blood gets to a patient quicker and with less impact on the environment.

**NHSBT has the ability to save and improve more lives, reduce health inequalities and deliver more services to the NHS**. As essential infrastructure to the NHS, NHSBT should be central to the 10 Year Health Plan. Including the following specific areas which need Government and/or wider NHS support, will help save and improve more lives and mean investment can go back into innovation and research and development to find new and better treatments for more patients.

Every life-saving product NHSBT provides **can only be made from donated 'substances of human origin'** (SOHO). The NHS relies on altruistic donations from members of the public (and agreement from families in the case of organ and tissue donation) to deliver these products.

Four areas that need the support of Government and/or the wider NHS to transform patient care and the UK's self-sufficiency in blood and tissue products which we would like to see in the 10 Year Health Plan are:

1. **Systemic changes that shift the dial on reducing the organ and tissue transplant waiting list.**
2. **A transformation in the way we speak to the public about donation to embed altruistic donation in the nation's psyche.**
3. **NHS-wide interoperability on blood supply to increase resiliency, efficiency and safety.**
4. **Support for innovation and development – creating new treatments and services at scale for NHS patients and becoming more self-sufficient in blood and tissue products.**

Archie relied on blood transfusions for 10 years

***"Archie was kept alive by the generous act of giving blood."***

- Craig Ramshaw, Archie's dad



# Systemic changes that shift the dial on reducing the organ and tissue transplant waiting list

**Organ transplant waiting lists are a growing cost to the NHS, the broader economy, and society** and surviving on the transplant waiting list is a daily struggle for patients with advanced organ failure. There is a growing gap between the number of patients requiring a transplant, and the number of organs available for transplant in the UK – resulting in additional waiting list deaths each year, and increased costs of medical management for those remaining on the waiting list.

Hundreds will die this year before they can receive a life-saving transplant – 418 people died in 2023/24

waiting (up by 11 per cent since 2019/20). Despite progress and innovation in organ donation, the waiting list continues to grow. Right now, more than 7,500 patients are waiting for a life-saving organ – the active waiting list has grown by 31 per cent since 2019/20. Many of these lives can be saved by the NHS.

Kidney patients represent the majority (79%) of those on the waiting list, followed by liver patients (9%), lung (4%), and heart (4%). **Patients listed for transplants today will be on the waiting list until at least 2026.** We have an ethical and moral duty to save these lives.

**Every extra organ donor leads to NHS savings of £0.24 million and 13 quality adjusted life years.**

**The NHS can save more of these lives by taking action on two fronts – increasing consent for organ donation and increasing the likelihood of organ donation being successful through investment in innovation in organ transplantation.**

## Consent

The greatest opportunity to increase levels of donation and transplantation is by increasing the number of people who opt-in to donation by recording a decision on the NHS Organ Donor Register (ODR). The opt-out legislation was introduced during the height of the pandemic and without the opportunity to run cut-through campaigns, the public are confused about what the legislation means. Families still have the final say on whether their loved one's organs can be donated. **When they know what their loved one wanted – they had signed up to the ODR – nine out of ten families support their donation decision. Without that ODR sign up, this drops to five out of ten.**

**You are more likely to need a life-saving organ than be asked to donate one. But the consent rate for organ donation is dropping.** We therefore suggest:

**Modernise the NHS Organ Donor register** to improve the data we gather. Like any leading brand, we should have accounts so people can check and update their decisions. This could be done through the NHS App but we need to make sure organ donation is prioritised and NHSBT keeps control of the data to be able to engage with donors.

**Re-think the opt out law.** People don't know they still need to sign the register. Ninety per cent of families agree to donation if they knew what their loved ones wanted. It drops to 50 per cent if they hadn't signed the register. Alternatively, introducing a mandate to make a choice would ensure that everybody would have to record a decision.

There are a number of options and mechanisms to deliver a system of mandated choice, this could be making it a legal requirement to record a decision or a softer option to write to everyone not on the register and ask them to make their decision, this could be part of a current public engagement activity such as a census (next census is in 2031). If people do not respond to their mandated obligation, then they will be deemed to have consented to be a donor (opt-in).

An alternative method could be to write into GP contracts that they are required to record an opt-in/opt-out decision on the NHS Organ Donor Register while registering new patients, with year-on-year targets stipulating how many of their patients have to have registered a decision. Another option would be to increase investment in marketing and engagement to ensure the public know they still need to register on the NHS Organ Donor Register.

# Innovation

**Innovation in organ transplantation is urgently needed.** The overall donor pool is reducing, we are increasingly needing to use innovative techniques to make less healthy / marginal organs successful in donation. Donors from circulatory death (DCD) now account for around half of all organ donors. DCD Heart and Abdominal Normothermic Regional Perfusion (ANRP) technologies are essential to utilise these organs effectively. Without it, transplants will decline. **Funding uncertainty over several years has contributed to service fragility and nationwide health inequalities.**

**Hundreds of potentially viable organs are not being accepted for transplant because proven and cost-effective machine perfusion techniques are not available equitably across the UK.** Uncertain investment remains unequally dispersed contributing to nationwide health inequalities. With the growing costs of care for those on the waiting list, and the impact of ill-health for patients, families and carers, **there is a strong economic case for the benefits of transplantation.**

We would like to see:

**Recurring investment in organ perfusion and machine perfusion techniques** which have matured and there is **now a strong evidence base for its safety and benefits.** Machine perfusion techniques can **create opportunities for successful transplantation** (and therefore savings to the NHS) using 'marginal' organs.

**A centralised model for organ assessment and repair** to level up the regionally dispersed investment and reduce the current geographical inequity of access issues across transplant services. The potential increase in transplant activity enabled by this represents the **equivalent of an 18 per cent increase in consent rates, or 460 additional deceased donors each year.**

Investing in the centralised delivery of Machine Perfusion technology and techniques through Assessment and Recovery Centres (ARCs) is an opportunity to drive efficiency and savings in transplantation, as well as economic and social benefits for the rest of the UK. Additional organs recovered through the ARCs could contribute to meeting the shortfall in organs for transplant in the UK, reducing waiting list times and waiting list mortalities.

ARCs may also contribute broader health system and societal benefits, through reducing costs to the NHS of medical management for patients successfully removed from the waiting list, as well as promoting productivity and investment attraction towards the UK. **This will save lives, reduce health inequalities and deliver up to £2.6 billion over 10 years in benefits to the UK economy, including through the reduced costs of care for those waiting for a transplant.**

The UK's hospitals and research institutions have been at the forefront of innovation in transplantation since the 1960s. Perfusion techniques can deliver the next step change in patient care, and a platform for further growth and innovation in future decades but this requires a coherent national programme.

***"It's only because of people with a big heart, like my donor's family, that recipients like me are alive today."***

***-Sheeba***





# A transformation in the way we speak to the public about donation to embed altruistic donation in the nation's psyche

All NHSBT products and services – organs, tissues, plasma medicines, platelets and transfusion services, save and improve lives. They are critical infrastructure for the NHS but are **only possible because of the generosity of members of the public** who come forward to donate. We are seeing the numbers of organ donors declining. This could be due to several factors including people being less happy with the care they or a loved one has received from the NHS (NHS satisfaction levels are at record low levels with only 24% of the public saying they are satisfied) and/or society's changing attitudes to charity and donation.

## **Donation plays a huge role in health inequity.**

Patients get better outcomes when they are treated with ethnically matched blood, organs and stem cells. But family consent is much lower for potential organ donors from ethnic minority backgrounds – 32 per cent compared with 65 per cent for white potential donors. And we are only able to supply hospitals with 50 per cent of the blood they need to treat sickle cell patients who require a sub type of blood – RO – mainly found in Black African and Black Caribbean heritages because we do not have enough donors of Black heritage. The rest of the patients need to be given O negative – the universal blood type – which is medically safe but the patient risks building up harmful antibodies.

## **Donation needs to be a society-wide conversation.**

It should be the responsibility of all public services to get behind donation using all our combined channels

**All Government agencies should have a duty to promote donation** through their communications with the public with a better join up of digital services. And all **public servants should be allowed time off to donate** blood and be encouraged to sign the NHS Organ Donor Register.

**Donation should be a mandatory part of the curriculum** for primary and secondary school children. Young people approaching their 17th birthdays should **automatically be invited to sign the NHS Organ Donor Register and donate blood / plasma / stem cells** – make it as routine as receiving their National Insurance Number or provisional driving licence.

Increasing the available pool of blood, stem cell and organ donors will save lives and reduce health inequalities by ensuring our donors are representative of the UK population.

*“I often talk to people about giving blood, the system is brilliant, the staff are wonderful and it costs you hardly anything in time and energy. After I gave blood once and thought about how essential it is that people like me carry on donating, I realised that there was no good reason to stop. As long as I am healthy, I will carry on giving blood.”*

*- Barry, blood donor for over 50 years*

and respected voices to engage with the right audiences who will help us save lives.

**We know trusted sources and raising awareness at the right time can make a big difference** and, as a public service, we believe it should be the role of Government and all its agencies to use all interactions with citizens to help inspire and mobilise donors. This could be through any touch points with members of the public, such as through passport applications or childcare benefit applications and a statutory obligation to let their staff donate blood during working hours, adding opting in or out of organ donation to a public servants' contract, and donation messaging and links in all appropriate forms of public facing communication.

**The wider NHS can help too.** If families and relatives are made aware of blood and plasma products used to save their loved ones' lives, they could capture their willingness to donate and spread the word. Better access to patient records could help identify eligible and credible donors. Organ and blood donation could also be central to the NHS App.

**Education can play a big role in normalising donation.** Having matter of fact conversations with young children will have a big impact on decisions later in life. Those conversations will also be taken home and influence parents, carers and grandparents.

In the 10 Year Health Plan, we would like to see:



# NHS-wide interoperability on blood supply to increase efficiency, productivity, safety and resilience

And end to end, or vein to vein, blood supply would **increase efficiency, productivity, safety and resilience** meaning the blood shortages we have seen over the past few years should be a thing of the past.

NHSBT does not have visibility of individual hospitals blood stocks or how they are using blood and plasma. Pathology systems do not align meaning a lot of data has to be manually entered.

**More integrated ways of working are key** to enabling health professionals to better manage patient care and for patients to be involved in decisions about their care. The need for more effective information sharing between care providers, organisations and networks to optimise patient outcomes and quality of care cannot be more apparent. This is also key to the recommendations of the Infected Blood Inquiry (IBI) report published in June 2024.

This is reliant on the ability of IT systems across care

pathways to be interoperable with one another. The NHS Long Term Plan states that the NHS cannot fully embrace the opportunity offered by new technologies if many hospitals and services remain largely paper based.

In addition, the implementation of technology from bedside to laboratory to support best transfusion practice will provide assurance to patients that their safety is the highest priority.

Despite innovations, there are many challenges to progress within transfusion if benefits are to be realised and these include the need to work across multiple Laboratory Information Systems and providers to enable change, hindered by the lack of agreed and mandated data sets. The infrastructure to access data is inconsistent and requires significant development with appropriate IT human resource to support.

We would like to see the following areas which would make a big difference to patient care and safety and to the blood supply chain:

## Hospital Blood Data Integration

NHSBT collects hospital component stock and wastage data from all hospitals, but this **relies heavily on manual input and extrapolation**. The data available is not comprehensive in its coverage; it is incomplete and not regularly updated. A snapshot survey by the NHSBT Blood Stocks Management Scheme from November 2021 to October 2022 found that **only 8 per cent of hospitals achieved submission of 100 per cent of red cell stock entries and only 54 per cent of hospitals provided 100 per cent wastage data annually**. Without complete datasets, it is difficult to understand the level of blood stock across the whole system and therefore make informed decisions around the implementation of measures to conserve blood stocks. In addition, national benchmarking is difficult to achieve, limiting the opportunities for improvement as well as identifying and learning from exemplar practice within hospitals.

**Better hospital electronic blood management systems** such as **electronic systems for patient identification, blood sample collection and blood administration; blood fridges with integrated electronic tracking** ideally with remote blood issue capability; and **electronic blood ordering** with clinical decision support.

The NHSBT Transfusion 2024 Hospital Blood Data Integration project aims to provide an IT solution to automate data collection to understand the national blood stock profile and also deliver high quality benchmarking insights to drive improvements for NHSBT and hospitals alike. **Benefits to hospitals would include improvements in both resource and operational efficiency**. A proof-of-concept implementation project is underway with the expectation of further roll out, but **this will need the mandating of data sets and the standardisation of hospital laboratory systems**.

## Better Matched Blood

A major challenge in transfusion is the need for better typing of blood. Improved typing for antigens/blood groups on surface of red blood cells is needed to ensure better matching of blood from recipients to donors. **Around 20,000 patients require regular blood transfusions every year. For each antigen not matched there is a risk of antibody formation**. There are more than 300 blood types and at least six more antigens should be matched on a routine basis for patients that are regularly transfused.

Inclusion of **better digital matching analytics aligned with technological advances in typing and allocation can reduce harm** and improve the personalisation of blood allocation and sustainability of blood supply. For some patients with more specific typing requirements there is limited blood available for emergencies and very limited exchange transfusion possible.

The use of technology to better match blood will aid the identification of more appropriate blood and the prevention and reduction in subsequent alloimmunisation. **Innovation has resulted in improved typing methodologies, including genotyping and genomics.**

We would therefore like to see **better digital matching analytics** and **continued investment for the NHSBT genotyping programme.**

## Pathology Interoperability

Specialist transfusion and transplantation testing is referred from hospitals to NHSBT Pathology laboratories across England. Traditionally requests for these tests have been made on paper forms with the results generated by NHSBT returned on paper reports.

**Many hospitals still rely on the delivery of paper reports that are then manually transcribed into their IT systems.**

Until recently there has been no electronic requesting service available and no mechanism for automatic transfer of NHSBT results into hospitals' IT systems. A recent pilot of electronic requesting and reporting of fetal RHD screening has allowed transfer of requests and reports to and from a hospital site through an interfacing system. This is now being rolled out to further hospitals throughout this year.

The early implementing sites have shown that electronic requesting/reporting reduces manual intervention in the process which saves lab time (in both hospital and NHSBT) and reduces the risk of transcription error, reduces risk of rejection due to incorrect or absent demographic information and reduces risk of incorrect return of results to wrong location. **By removing manual transcription of the result into hospital systems the result availability to clinical area is improved.** The standardisation of laboratory information systems is a prerequisite for efficient and successful implementation.

To support all of this, we would like to see strengthening scientific expertise in the NHS a key part of the long-term workforce plan.

**Mum-of-one Chanel Taylor, aged 36, from Wandsworth was first diagnosed with sickle cell at the age of nine months.**

***"If it wasn't for the donors, I wouldn't be here today. I'm able to be a role model to my child and for that, I'm extremely grateful. I want to say a massive thank you to all the donors."***



# Support for innovation and development – creating new treatments and services at scale for NHS patients, becoming more self-sufficient in blood and tissue products

NHSBT has the ability to create services and treatments from blood and tissue products. Three areas that NHSBT currently has the ability and potential to scale up are Cellular and **Gene Therapies Services, plasma for medicines** (with the first UK patients receiving UK sourced plasma for the first

time in a quarter of a century in the New Year) and **tissue products**. We do not currently have estimates of how many patients this could help or how much it could save the NHS but **the opportunities and global markets are huge** and we therefore believe these opportunities should be included in the 10 Year Health Plan.

## Cellular and Gene Therapies Services

NHSBT income from cellular and gene therapies (Advanced Therapy Medicinal Products - ATMPs) is around £6 million per annum. **The UK market is estimated to be £180 million for Pre-Clinical/Clinical Trials and £600 million for Approved Products.**

**The UK is well placed to be a leader in this space** with a year-on-year increase in the number of approved products available to patients and a growing share of the global clinical trials market, with over 80 per cent of these being industry sponsored.

Advanced Therapy Medicinal Product delivery, growth and commercialisation, for the benefit of patients and making the UK a key player in the field are priorities in the UK's Life Sciences Vision (2021), NHS Long Term Plan (2019) and NHS Accelerated Access Collaborative Advanced Therapy Medicinal Products (ATMPs).

Recent investments that highlight this priority include £17.9 million for the Advanced Therapy Treatment Centre Network to enhance the UK environment for ATMP clinical trials. This will help roll out revolutionary medical products more quickly, potentially treating the root cause of disorders and diseases like Alzheimer's and cancer.

NHSBT also directly supports the delivery of ATMPs into frontline NHS care both for approved products and investigational products through clinical trials. **We have a unique national infrastructure and geographical reach covering the whole supply chain, enabling us to simplify the supply chain and deliver economy of scale.** Maximising the potential of these assets by increasing our capabilities and capacity will impact frontline care, meaning **faster delivery of novel innovative treatments to patients and fairer equity of access.**

There is an opportunity to identify **commercial opportunities** to grow NHSBT Cellular, Apheresis and Gene Therapy services and income, **to support innovation, drive improvements in patient experience and outcomes** over the short, medium and long term and **contribute to improved resilience of services.** These opportunities help advance all three 'big shifts' needed to deliver the 10 Year Health Plan.

Our initial assessment is that **investment in infrastructure (e.g. apheresis capacity), data platforms and workforce training are required** for effective delivery of advanced cell and gene therapies at the scale that is anticipated to be required in the next five years. We are currently engaging external expertise that will enhance our market knowledge of commercialisation opportunities and assist us in pursuing those opportunities.



## CAR T Cell Therapy

CAR (chimeric antigen receptor) T cell therapy is a new treatment for some types of cancer. White blood cells are collected from the patient's blood before being modified in a laboratory to target their cancer. The modified immune cells are then given to the patient to treat, or in some cases cure, cancer where other treatments have failed.

Nitya was the first patient to receive CAR T cell therapy at the University of Bristol and Weston NHS Foundation Trust.



## Plasma for Medicines

From early 2025, UK patients will start to receive life-saving medicines made from UK sourced plasma for the **first time in a generation**. This is the result of a highly successful collaboration between NHSBT, NHS England and the Department of Health and Social Care.

The NHS currently relies on imported plasma medicines as a lasting legacy of variant Creutzfeldt-Jakob Disease (v-CJD). The current plasma supply chain is fragile with an overreliance on the US, which provides around 70 per cent of the global supply of immunoglobulin (globally, **the industry is valued at more than \$30 billion, and it is projected to reach over \$45 billion by 2027**).

There is a global shortage of immunoglobulin and instability in the global albumin supply, and **increasing national self-sufficiency is a strategic priority across most high and middle-income countries**. In England around 17,000 people rely on immunoglobulin medicines to save or improve their lives each year. Thousands of patients rely on albumin – another plasma-derived medicine – which is used in childbirth, trauma, and to treat liver conditions. NHSBT set and reached an ambitious target to collect 250,000 litres of plasma by April 2024 and in the summer, plasma was shipped to Austria to be turned into life-saving immunoglobulin and albumin medicines.

Our ambition initially is to achieve a level of 23 per cent immunoglobulin and 80 per cent albumin self-sufficiency in 2025. To do that we are now able to save all the plasma collected through whole blood donations (plasma makes up 55 per cent of our blood) and we have opened three new donor centres specifically to collect plasma – collecting plasma on its own gives us a much higher volume per donor.

This is a great foundation which will enable us to realise our ambitions of increasing UK national immunoglobulin self-sufficiency much higher – **we are aiming to build to 30-35 per cent self-sufficiency from 2026 then beyond 35 per cent from 2030**. To expand the programme, we will need to increase plasma collection significantly beyond the three donation centres that are currently in operation.

Doing so will mean **patients are at far less at risk from global shortages caused by rising demand and fluctuations in market prices** and it reduces our reliance on costly imports of US medicines. To do this we will need to increase the number of plasma donor centres and be able to educate the public about plasma.

These are life-saving NHS medicines, sourced by NHSBT (thanks to our amazing blood and plasma donors) for the benefit of NHS patients.

**Diagnosed unusually young, aged just 10, Candi has myasthenia gravis. Myasthenia gravis is a life-threatening condition that stops nerve cells communicating with muscles, leaving them weakened.**

***"If I stopped receiving the medicine, I would deteriorate quickly and probably end up in intensive care."***



## Tissue products

Many NHS hospitals are supplied with tissue products by private companies who import tissue. In recent years, NHSBT has lost market share in many areas. If donation opportunities were to grow, through initiatives such as Routine Referrals or new ways of working, we would be able to both increase production of our products and produce efficiencies of scale.

We would like to see **routine referral of all deaths to increase tissue donation** - a system whereby hospitals are mandated to routinely notify and refer all deaths to NHSBT. This would allow us to assess all patients who die in hospital for tissue donation and contact more families to give them the option of tissue donation, **leading to reducing the cornea transplant waiting list and providing opportunities to expand in**

**other areas of tissue transplantation**, where currently products are imported.

This would **enable NHSBT to supply more tissue products to the NHS and support increased self-sufficiency** - many NHS hospitals are supplied by private companies which import tissue, with complex provenance and supply chains. If donation opportunities grew, through initiatives such as routine referrals, NHSBT would be able to **increase production of our products and produce efficiencies of scale**. If it was then mandated that NHSBT is the preferred supplier for NHS organisations, **NHSBT could grow the domestic supply of tissue products, reduce the reliance on imports (drive prices down) and create greater income to reinvest into organ and tissue donation and transplantation.**



**Karl needed five years of skin grafts after suffering burn injuries**

***“Without tissue donors I would still be suffering and so would other troops who are risking their lives.”***

**-Karl**

# Genomics

And finally, **we can play a bigger role in spotting illnesses earlier and tackling the causes of ill health** through increased investment and regulatory agility for genomic testing.

The term genomics broadly refers to the determination of DNA coding sequences to predict what proteins are expressed by an individual on any given cell of interest. Genomic testing enables earlier detection and treatment of diseases and thus has a significant role in helping shift our health system towards a preventative model.

As Genome UK: the future of healthcare makes clear, the UK is already a global leader in genomics, but this status will only be maintained in this rapidly developing field with continued investment and thriving partnerships between public and private sector.

At NHSBT, **we possess world-leading expertise and infrastructure that uniquely position us to play a systems-leadership role** in this field.

We are already performing genotyping on donors of Black or Southeast Asian heritage to address health inequalities associated with sub-optimal blood and organ matching.

We are also partnering with other organisations in this field. Our collaboration with the National Institute for Health and Care Research (NIHR) **enabled us to genotype over 80,000 blood donors and subsequently patients with sickle cell disease and thalassaemia**. We also partner with Our Future Health – the UK's largest ever health research programme – to recruit and consent blood donors to participate in genomic testing, **using this data to achieve better matching of blood products to patient recipients**.

With investment and subject to suitable technologies achieving regulatory approval for use, NHSBT would fully (or largely) replace current serological testing methods with high throughput, genomic testing. This would have several significant benefits:

- **Unlock significant productivity improvements**, through greater automation and rationalisation of testing regimes.
- **Enable improved health outcomes**, especially for ethnic minority groups currently experiencing health inequalities, through enabling better product matches for recipients of red cells, platelets, stem cells and organs.
- **Personalising care of blood donors** to detect illness, promote wellness and optimise individual donation frequency.

