UK Health Security Agency

NHS Blood and Transplant

Safe Supplies 2025:
30 years of collaboration, surveillance and evidence

Collaboration has helped to facilitate 30 years of surveillance, surveys, and research.

Surveillance and surveys together join up testing and behavioural data to measure and understand the risk of infection in UK donors and recipients adding to knowledge and building evidence.

Evidence has provided assurance of safety and informed change while remaining vigilant to risks.

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Executive summary

I am pleased to introduce ‘Safe Supplies 2025: 30 years of collaboration, surveillance and evidence’, the annual review from the joint NHS Blood and Transplant (NHSBT) and UK Health Security Agency (UKHSA) Epidemiology Unit.

Given this marks our 30th year, we look back over the many changes in donor selection and donation testing, and the collaborations and surveillance systems established over the past 3 decades. While these developments have greatly improved safety for donors and recipients, including the greater emphasis on behavioural science, we must also look to the future and the potential challenges that new and emerging infections may bring.

The highlights for 2025 include assurance that changes to donor selection criteria for blood donors in 2021 have not impacted on blood safety. The number of donors with acute infection remain low, and we continue to see low rates of current and past infection in our blood donors, with 272 blood donors withdrawn for HIV, HBV, HCV, HTLV and syphilis. Our donor survey work shows that most donors disclose any potential risks of infection before donation, but at post-test discussion 25% of donors with markers of infections (excluding HEV) disclosed risks that made them ineligible, generally due to undeclared treated infection.

Routine HEV screening, for which there are no specific selection criteria, identifies around 300 donors each year with asymptomatic infection, allowing affected donations to be discarded. Our colleagues within the Serious Hazards of Transfusion (SHOT) team are also celebrating their 30th anniversary, and in 2025, none of the reported transfusion transmissions were confirmed. This year we have also provided summaries for tissue, cord and organs, all with slightly different approaches to selection and testing.

We remain vigilant to emerging infection threats, including the increasing number of chikungunya and dengue virus outbreaks in mainland Europe. In 2025, selective West Nile virus (WNV) testing identified the first blood donor with WNV since testing began in 2012; a second donor who was reactive on WNV screening was subsequently confirmed as Usutu virus. Due to the changing epidemiology of insect-borne infections, increasing numbers of donations are being selectively screened and/or donors temporarily deferred. Our close collaboration with UKHSA allows any changes in epidemiology internationally to be acted on quickly, and where necessary new policies introduced to maintain the safety of blood, tissues and organs.

The strong links we have developed with UKHSA, and its predecessor organisations, have helped ensure that data we collect on donors and donations contribute to wider public health surveillance. These data provide insights from an apparently healthy population and are particularly valuable where such information may not be easily available elsewhere.

In looking back and seeing the major changes in safety we must also look to the future and plan for potential challenges that new and emerging infections may bring. None of this work would have been possible without our many collaborators and my colleagues within the Epidemiology Unit.

As always, we are grateful to the thousands of donors and donor families who make transfusion and transplantation possible, helping to save and improve lives every year. I hope you will find this year’s report interesting and please do not hesitate to contact us at epidemiology@nhsbt.nhs.uk if you require further information.

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Collaboration **Surveillance** **Evidence**

Collaborating for safety

Since 1995, **The joint NHSBT/UKHSA Epidemiology Unit** has worked in **collaboration** with the UK and Republic of Ireland blood services, UK Health Security Agency, wider NHS, academia and other external partners to **protect** recipients from transfusion-transmitted infections and help ensure donor selection policies **respect** donors.

The Unit are responsible for collating and reporting national epidemiological data on blood-borne infections among donors and recipients, modelling the associated risk of non-detection through transfusion and horizon scanning for new and emerging infection threats. Along with behavioural studies and other research, the Unit has supported policy change across the UK for both blood donation and wider public health. Collaboration with public health enhances awareness of emerging infections and changes affecting donor and blood safety.

The Unit is made up of epidemiologists, public health specialists and a data manager working at both NHSBT and UKHSA.

Abbreviations defined in the glossary on p27.

Collaboration Surveillance Evidence

Assurance of UK blood safety in 2025

Most donors were negative on screening for 5 main viruses and syphilis

930,975 blood donors

1,765,017 donations

272 donations removed from the blood supply from donors confirmed with:

- **2** acute HBV (**1** repeat donor)
- **60** chronic HBV • **8** occult HBV
- **28** HCV • **3** HIV • **14** HTLV
- **162** syphilis (**32 recent**)
  Including **5** donors with dual syphilis plus HBV (1) • HCV (1) • HIV (2) • HTLV (1)

313 donors with HEV RNA deferred for 6 months

Some donors need help to give when eligible

25% of donors confirmed with HBV, HCV, HIV, HTLV or syphilis were ineligible under donor selection criteria including:

55 treated for syphilis

7 treated for hepatitis B or C

4 injected drugs in the past

2 had anal sex with new or multiple partners

1 took HIV medication

Estimated residual risk of non-detection on routine screening of whole blood donations remained extremely low

HBV
Around 1 in 1 million

HIV
Less than 1 in 10 million

HCV
Less than 1 in 100 million

0

Transfusion-transmitted infections reported and confirmed

UK blood services are vigilant to emerging infection threats

Local outbreaks of chikungunya and dengue in France and Italy closely monitored

1st donor identified with West Nile virus after travel since testing began in 2012

Travel survey of donors to inform risk assessments

Collaboration **Surveillance** **Evidence**

UK blood donation screening in 2025

2025 UK data shows continued safety

930,975 whole blood donors

1,765,017 whole blood and apheresis donations

272 donations detected and safely removed from the blood supply

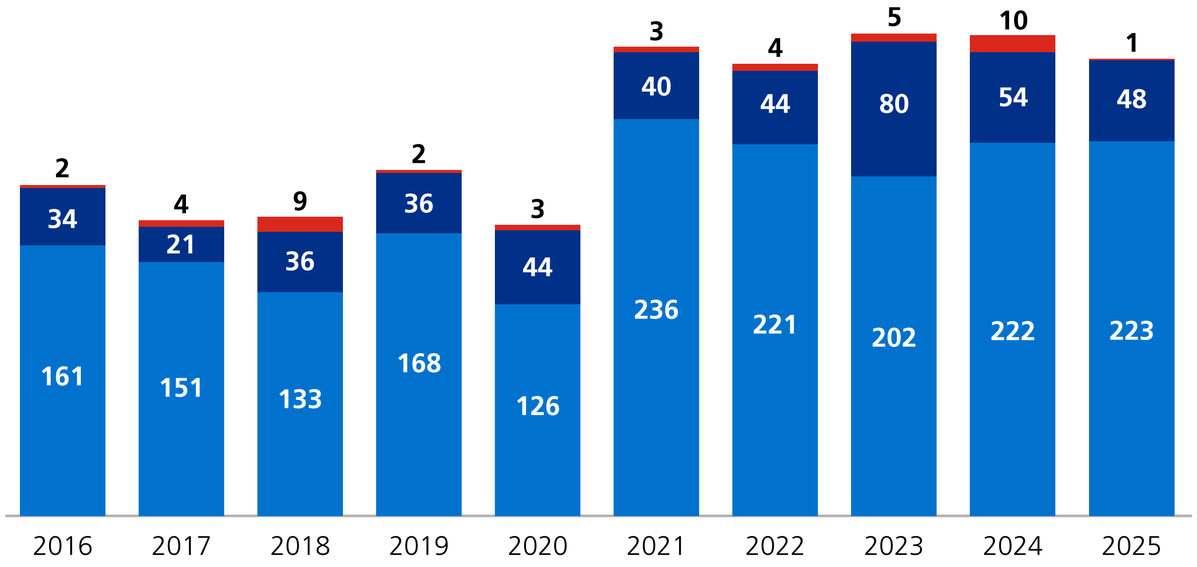


Figure 1: donors with confirmed positive donations removed from the blood supply for chronic HBV, acute HBV, occult HBV, HCV, HIV, HTLV or syphilis, UK 2016 to 2025

■ Small number of repeat donors with recent HIV, HCV or HBV means risk of non-detection very low. ■ Repeat donors mostly with syphilis which is not likely to be transfusion – transmitted in the current UK setting, increased in 2023 due to new assay. ■ First-time donors majority with chronic HBV or syphilis safely removed and into care, increased from 2021 due to recruitment drives and newly eligible donors under FAIR donor selection.

Donor selection helped keep the number of UK blood donors with markers of infection low. In 2025 there were 272 donors confirmed with chronic HBV (60), acute HBV (2), occult HBV (8), HCV (28), HIV (3), HTLV (14) or syphilis (162), including 5 donors with syphilis plus HBV (1), HCV (1), HIV (2), or HTLV (1) (Figure 1). These donations were safely removed from the blood supply. Confirmed positive rate for the UK in 2025 was 139 per 100,000 donations from first-time donors and 3.0 per 100,000 donations from repeat donors. There was only one repeat donor with markers of recent HIV, HCV or HBV (seroconversion) in 2025: a donor with attenuated HBV despite previous vaccination. They reported travel to Asia with no obvious exposure risks and were eligible to donate.

The donors with confirmed markers of infection were mainly first-time, male and White compared with the whole blood donor population. Of the 272 blood donors with markers of infection, 223 (82%) were first-time donors, 215 (79%) were male donors, and 148 (54%) identified as White ethnicity. In contrast to the donors with markers of infection, there were 930,975 whole blood donors made up of 16% first-time donors, 47% male donors, and in England 90% identified as White ethnicity. Among donors with markers of infection, 111 of 148 (75%) White donors had syphilis markers. Among repeat donors, 44 of 49 (90%) were of White ethnicity and 46 of 49 (94%) had markers of syphilis with 21 likely acquired within 12 months. Among 44 Black donors, all were first-time donors and 26 (59%) cases were identified with chronic HBV. Where known, 7 of 41 (17%) Black donors were born in the UK, while 30 (73%) were born in Africa: both groups had markers of either chronic HBV, HTLV or treponemal infection mainly past syphilis, also more rarely Yaws or Pinta (non-STIs, acquired through direct contact in rural tropical areas).

Most infection markers were associated with endemic areas or sexually acquired. Of the 272 blood donors with markers of infection, 66 (24%) were associated with being born in or to parents from an endemic area, 71 (26%) were reported as sex between men, 64 (24%) reported as sex between men and women and 63 (23%) did not have a probable reported source.

30 years of UK blood safety and hepatitis C

Non-A non-B hepatitis
27,000 recipients estimated to be infected

1991 **HCV screening begins**

1,285 repeat donors confirmed positive by December 1994

1995 **HCV lookback**

1,351 recipients identified by HCV lookback exercise for blood transfusion

1997 **HCV TTI**

Most recent reported HCV transfusion-transmitted infection

1999 **HCV NAT begins**

HCV NAT testing begins with 24 NAT yield early HCV removed by 2025

2020 **most recent NAT yield**

Most recent detection of repeat donor with recent HCV (seroconversion)

2025 **HCV risk 1 in 100 million**

Chance of non-detection and releasing an HCV infectious donation now very low

Hepatitis C virus (HCV) antibody screening began in 1991 removing hundreds of positive donations from the supply and reducing transfusion-transmission

By December 1994, 1,285 newly identified repeat donors had been asked to stop donating. A large-scale **lookback** to trace the recipients of previous donations given by these HCV positive repeat donors began in 1995 identifying and testing **1,351 recipients**, half of whom were HCV positive. This was a **fraction** of the Infected Blood Inquiry (IBI) estimate of 27,000 infected. People identified by the lookback were invited to join the public health **HCV register** informing progression of HCV infection.

The joint blood service/public health agency unit was set up in October 1995 to monitor infections in donors and their transfusion recipients. **The most recent HCV transfusion transmission was confirmed in 1997**, reported through Serious Hazards of Transfusion (**SHOT**). Some 30 years later the unit continues to search the original HCV lookback databases to assist with compensation claims related to the IBI.

HCV screening became more sensitive in 1999 when HCV Nucleic Acid Technology (NAT) began. A donation which is antibody negative and NAT positive (NAT yield) is a sign of early infection. HCV NAT reduced the window period from exposure to detection from 59 to 4 days. In the UK between 1999 and 2025 there have been just **24** HCV NAT yield donations detected and removed from the supply, most recently in a repeat donor in **2020**.

HCV has declined since screening began and with HCV NAT, the current risk of non-detection of a HCV window period donation is less than 1 in 100 million. Just 28 blood donors were confirmed for HCV in 2025, 10 with HCV RNA, all 10 were first-time donors. It is now rare to see a repeat donor who has recently acquired hepatitis C.

We remain vigilant to changing behaviour and risk in donors. People are asked not to give blood if they have ever injected non-prescribed drugs. In 2025, only 4 donors reported injecting history, all treated for HCV, but with HCV antibodies. Donations cannot be used from antibody positive individuals. Donor risk informs ongoing reviews of donor selection policy, for example the increased use of injectable treatments for health and well-being and any potential risks.

30 years of UK blood safety, HIV and donor selection

1980s permanent ban MSM

1985 HIV screening begins

2002 most recent HIV transfusion transmission

2011 12m wait time MSM

2014 survey shows 99.7% donors eligible

2017 3m wait time MSM

2019 WHO 90:90:90 targets met in UK for 3 years

2021 FAIR questions to all
removal of question on partner sub-Saharan Africa

2024 survey shows 99.6% donors eligible under FAIR

2025 HIV risk under 1 in 10 million

Blood donor selection policy has evolved over time, as collaboration with public health and behaviour experts built an evidence-base for change that doesn't compromise safety, leading the way worldwide

Donor selection moved from permanent deferral of men who had sex with men (MSM) to 12-months in 2011 and 3-months in 2017 to a more **individualised gender-neutral approach** (FAIR) in 2021 that is safe and acceptable to recipients and donors and influenced blood service policy world-wide. The FAIR work was extended to review and remove the deferral for donors whose partners might have had sex in sub-Saharan Africa. Data on infection in the general population as **treatment and prevention of HIV** meets and exceeds WHO targets provides a setting of low undiagnosed HIV in which our current individualised approach can work. Collaboration with behavioural scientists helps us understand **acceptability, effectiveness of pre-donation questions** and factors affecting disclosure of risk and eligibility. Stakeholder engagement and patient partnerships have helped **build trust** that the blood services will protect recipients while respecting donors.

Surveillance and surveys provide assurance that safety has been maintained with most donors donating while eligible and minimal impact on donation sessions. Low numbers of HIV continue to be safely removed from the blood supply following each change in policy at 3 donations from first-time donors or 1.8 per 100,000 donations and 0 from repeat whole blood donors in 2025. HIV NAT was rolled out from 2002 and **8** HIV antibody negative NAT positive donations have been detected, most recently in 2024 in a female donor. **Residual risk of non-detection of HIV has been under 1 in 10 million for over a decade** with the most recent transfusion-transmission of HIV in the UK in **2002**. Eleven HIV seroconversions have been detected between 2021 and 2025, including one newly eligible donor and four female donors. An increase in the low HIV risk in 2024 was thought due to COVID impacting on testing in heterosexuals and was not sustained in 2025. Large-scale donor surveys in 2014 and 2024 show high eligibility after each major change. Just 289 donors were deferred at donation under FAIR guidelines in England 2021 to 2023, indicating low impact on donation sessions.

We continue to monitor safety and remain vigilant to any unintended consequences of donor selection policy, such as people living in polyamorous relationships, application of the chemsex rule, the impact of HIV prevention medication or emerging sexually acquired infections.

Collaboration Surveillance Evidence

30 years of UK blood safety and hepatitis B

Hepatitis B core antibody screening was introduced in 2022 to mitigate the risk of transfusion-transmission from a donor with occult hepatitis B infection

1972 HBsAg screening begins
2,224 donors | 0.003% donations with chronic HBV and
156 acute HBV safely removed from 1996 to 2025
9 confirmed HBV TTI 1996 to 2008 before HBV NAT

2009 HBV NAT begins
17 early acute HBV cases and
46 occult HBV cases removed by December 2025

2019 SaBTO review occult HBV risk
Probable TTI due to occult HBV leads to anti-HBc recommendation

2021 HBV TTI
2 confirmed HBV TTI 2009 to 2022 | most recently in 2021
1 confirmed and 4 probable HBV TTI due to occult HBV

2022 Anti-HBc screening begins
30 occult HBV safely removed | no linked TTI identified
8,127 donors | 0.3% donations with past HBV exposure
28% of cases in Asian donors | 22% of cases in Black donors

2025 HBV risk 1 in 1 million
Chance of non-detection and releasing a very early acute HBV infectious donation is low
Risk of non-detection occult HBV mitigated by anti-HBc

UK blood donations have been screened for hepatitis B virus (HBV) since 1972 with HBV NAT screening rolled out from 2009 in pools of 24 when a triplex NAT assay was implemented.

Most HBV is detected in donations from first-time donors with chronic HBV who were born in areas of the world where HBV is more common than the UK. Just 173 acute HBV cases have been detected between 1996 and 2025 with 2 in 2025, 17 were NAT yield with 15 in repeat donors. In acute HBV cases, 116 (67%) were men, ethnicity was known for 161 (93%) cases of whom 136 (84%) were White while a probable exposure was only reported in 89 (51%) of whom 52 (58%) reported sex between men and women.

The significance of occult HBV for the recipient was not fully recognised until transfusion-transmitted HBV infections due to occult HBV started being identified. Occult HBV is defined here as absence of HBsAg, presence of anti-HBc and low viral load often below the level of detection of pooled NAT. **After reviewing the available evidence, SaBTO recommended the introduction of an additional anti-HBc screen** for all new donors and those who have not donated in the last two years. In practice, except in England, all donations were screened in 2025.

As of December 2025, 30 occult HBV had been removed from the blood supply due to anti-HBc testing with no further reported proven HBV transfusion transmissions since 2021. A probable TTI in 2022 was prior to anti-HBc testing. Lookback to previous donations of repeat donors with occult HBV did not identify any transmissions in the UK. 8,127 donors with evidence of past HBV without DNA have been withdrawn, where known, 1,754 (28%) were Asian and 1,363 (22%) were of Black ethnicity. Anti-HBc adds an extra layer of blood safety but is also an additional barrier to retention.

Acute HBV has a window period of 30 days which means that the residual risks of not detecting a very early acute HBV, while low, are higher than for HIV or HCV at around 1 in 1 million.

30 years of UK blood safety and Creutzfeldt-Jakob disease

1997 to 2025 the NCJDRSU and the UK blood services worked together to look for evidence of transfusion-transmitted CJD by linking donors to recipients

4 variant CJD TTI

In **2003** recipient diagnosed with vCJD linked to transfusion in **1996**

In **2004** recipient dies with pre-clinical vCJD linked to transfusion in **1999**

In **2006** 2 recipients diagnosed with vCJD linked to transfusions in **1997**

0 sporadic CJD TTI

First described in the 1920s no evidence of blood transfusion-transmission

2019 vCJD transfusion risk downgraded as data built up over time

Safety measures
with no further vCJD TTI after leucodepletion started in 1999

Follow up
shows no further vCJD in people at higher risk

vCJD outbreak over
178 cases most recent vCJD case in 2016 not a donor

UK blood services remain vigilant to CJD and prion threats

Surveillance continues
CJD notifiable in England from 2025

Horizon scanning
includes CJD and other prion disease

Surveillance data showing safety of transfusion from CJD nowadays informed the risk assessment which allowed plasma for medicines collection to restart

The Transfusion Medicine Epidemiology Review was a collaboration between the National CJD Research and Surveillance Unit and the UK blood services to look for evidence of transfusion-transmitted CJD. The TMER ran continuously from 1997 to 2025. CJD transfusion surveillance identified 3 clinical and 1 asymptomatic case of transfusion-transmitted variant CJD from transfusions before leucodepletion was introduced. No further links were made; the most recent vCJD case was in 2016 and not a donor. There has been no evidence of sporadic CJD transfusion-transmission. These data provided assurance that vCJD mitigation steps had worked and a DHSC report published in 2019 showed the estimated vCJD transfusion risk was decreasing as data built up over time. CJD selection criteria started to be relaxed world-wide. MHRA review allowed **plasma for medicines collection to restart in 2021** in the UK.

The UK blood services remain vigilant for any new cases of vCJD, novel threats from prions and other proteinopathies including disease caused by build-up of amyloid-beta (Aβ) protein. The safety criteria currently exclude persons who have been told that they have been put at increased risk of developing vCJD following surgery, transfusion or transplant of tissues or organs as well as persons who have been told that they may be at increased risk because a recipient of their blood or tissues has developed a prion-related disorder. People known to have received an allogeneic tissue or blood transfusion since 1980 are also deferred from donation in the United Kingdom, although this is under review.

In 2025, CJD was made notifiable and the joint Epidemiology Unit will continue to coordinate lookback for CJD cases notified via UKHSA.

Collaboration Surveillance Evidence

UK blood safety and hepatitis E screening from 2016

Screening for HEV safely removes hundreds of donations from the blood supply each year but may not detect very low level of virus so HEV-TTI still occur

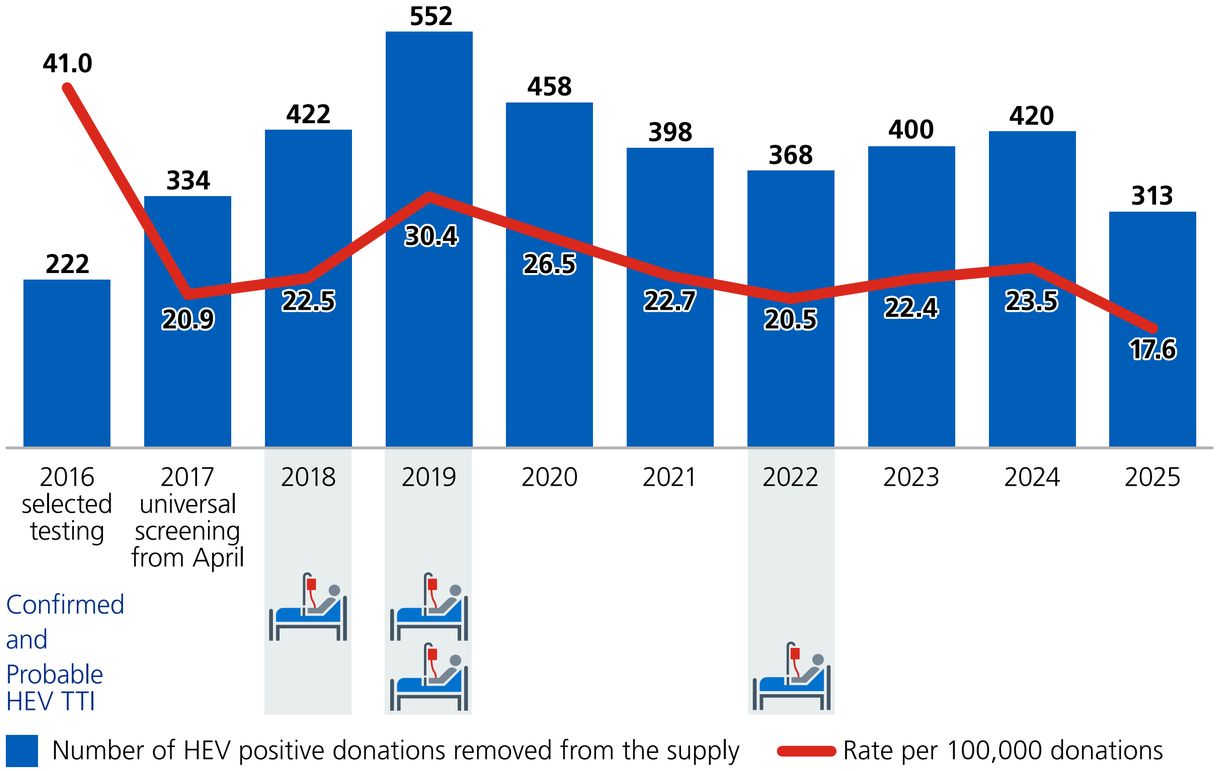


Figure 2: Number and rate of HEV RNA confirmed blood and apheresis donations removed from the blood supply and number of confirmed and probable HEV-TTI, UK 2016 to 2025

Evidence of increasing genotype 3 hepatitis E virus (HEV) in the general population and reports of HEV suspected TTIs to investigate led to SaBTO review. Data included collaborative research which identified 79 donors viraemic with genotype 3 HEV, giving an RNA prevalence of 1 in 2848. Screening for HEV using pooled NAT was introduced to supply specific patient groups in 2016. Further SaBTO review led to universal screening from April 2017.

Screening detects and removes hundreds of HEV RNA positive donations each year. In 2025 in the UK, 1,783,166 blood and apheresis donations were screened for hepatitis E virus (HEV) with 313 donations confirmed positive and removed from the supply, a rate of 17.6 per 100,000 donations or 1 in 5697. Whole blood donations are screened in pools of 24 or 16. Welsh Blood Service (WBS) confirmation is based on resolving minipool reactivity to the individual sample. Apheresis donations are tested in pools in England and on individual donation samples in Northern Ireland, Scotland and Wales. In 2025, 11,287 apheresis donations were tested individually and 1 confirmed positive, a rate of 8.9 per 100,000 donations. A further 5 plasma for medicines donations in England were detected with HEV RNA and removed or 13.8 per 100,000 donations.

HEV transfusion-transmission is now rare but may still occur. Prior to the introduction of HEV testing in 2016 there were 10 confirmed HEV TTI reported to SHOT, including 5 in 2015. Since HEV screening was in place, there have been 2 confirmed HEV TTIs in 2018 and 2019, and 2 probable TTIs, in 2019 and 2022. A SaBTO working group set up in 2020 to review HEV screening acknowledged the predicted benefit of individual NAT but the high cost of doing so compared to other medical interventions and did not recommend any change to current screening practice.

There is no specific donor selection policy for HEV. HEV RNA screening detects recent infection, mainly acquired in the UK via the food-borne route. Donors are asked not to donate if they think they have had an infection within 2 weeks and are asked to report post-donation infection. However, HEV can be asymptomatic, and donors may be unaware of their infection. Positive donations are discarded but donors can return to donate after 6 months once they have cleared their infection.

30 years of UK blood safety and syphilis

Donors with a history of syphilis are asked not to donate as an additional safety measure although syphilis is not a direct transfusion risk in the UK setting

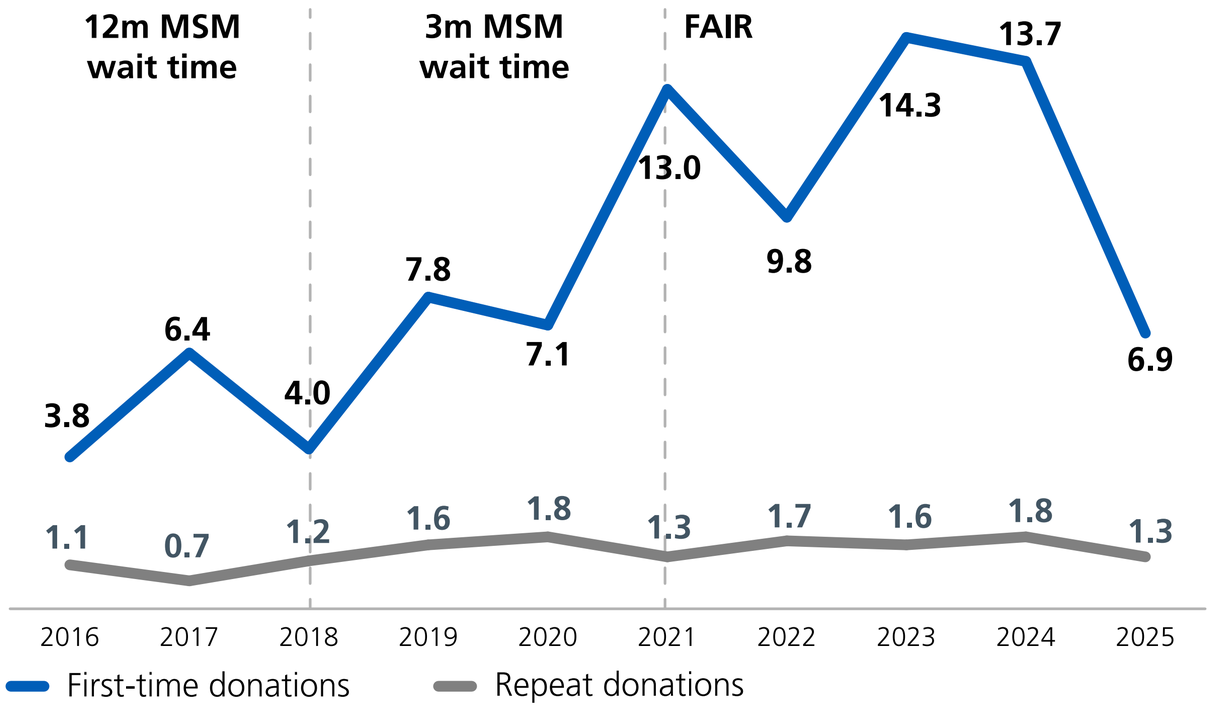


Figure 3: Rates of recent syphilis (acquired<12m) per 100,000 donations, UK 2016 to 2025

Treponemal antibody screening picks up treated, longstanding and recent syphilis and other related but rarely seen non-sexually transmissible infections like Pinta and Yaws. **Recent syphilis in the past 12 months is assigned by looking at confirmatory results (combination of high titre, RPR, IgM) and donor history.**

UK blood donations have been screened for treponemal antibodies, usually indicating syphilis since the 1940s. Syphilis antibodies are detected at higher rates compared with viral infections HIV, HCV, chronic, occult or acute HBV or HTLV. However, syphilis TTIs have not been confirmed in the UK since haemovigilance began in 1996, thought partly due to storage conditions for red cells.

Since 2016, all UK blood donors have been asked not to give blood if they have a history of syphilis. This is because they are likely to retain antibodies even after treatment gives the "all clear". Antibody positive donations cannot be used, even where the donor is no longer at risk.

There is evidence that a recent bacterial sexually transmitted infection (STI) such as syphilis or gonorrhoea may put an individual at higher risk of HIV and other STIs. Syphilis is especially common among gay, bisexual and men who have sex with men (GBMSM) but has also been increasing among heterosexuals in the UK. In 2021, the donor selection guidelines for blood donors were changed from a time-based deferral for MSM to a more individualised risk based, gender neutral approach called FAIR. Syphilis is being used to monitor eligibility after the introduction of FAIR.

Syphilis surveillance indicates that most GBMSM donating are eligible and at low risk of HIV and other STIs. In donors, the rates of recent syphilis have been increasing (Figure 3) in line with the general population, but at lower rates in male donors compared with men in the general population in England 2025 (7.4 vs 23.7 per 100,000 donors/population). In the UK between 2021 and 2025, 213 donors were removed with recent syphilis including: **51 GBMSM eligible under FAIR,** the majority with no partner or 1 regular partner within 3 months, **similar to other men and women** confirmed with recent syphilis; **21 GBMSM ineligible under FAIR,** 12 treated and 9 reporting new or multiple partners and anal sex. A small number of men with syphilis are also donating while ineligible because of recently taking HIV prevention medication (PrEP) with research showing 6 of 84 (7%) men with syphilis antibodies had evidence of HIV medication (PrEP or treatment) in a 2023 donation sample.

30 years of UK blood safety and donor eligibility

Donating while eligible is key to blood safety.

UK blood services need to support every potential donor to give blood when eligible

Eligibility remained high among donors

Eligibility survey 2014

225,000
invited donors UK

65,439
responders (**29%**)

99.7%
donated while eligible
under 12m MSM wait time

Eligibility survey 2024

146,445
invited donors
England, Scotland
and Wales

23,861
responders (**16%**)

99.6%
donated while eligible under FAIR

But each year, donors with markers of infection disclose ineligible history at the post-test discussion. In 2025, the ineligible history later disclosed by 68 donors included:

syphilis treatment
hepatitis diagnosis
Injected non-prescribed drugs
anal sex and new or multiple partners <3m
took oral HIV prevention medication <3m

Eligibility requires support

- **Collect** blood donation session information **accurately** and **efficiently** to guide and monitor safety
- **Understand** which **prompts** can help donors **disclose** their history more accurately
- **Use** electronic questionnaires to clearly **explain** the rationale and duration of any wait time needed before donation

Donors are selected to be at lower risk of blood-borne infections (BBIs) and donating while eligible is key to blood safety. We measure this by auditing the number of donors who were turned away at session, surveying donors who successfully donated and assessing information reported by donors with confirmed markers of acute HBV, HCV, HIV, HTLV or syphilis at their post-test discussion.

Low impact of FAIR at donation but some evidence of non-disclosure. NHSBT audit showed 9 donors deferred at donation under FAIR guidelines for every 100,000 donations made.

Eligibility to sexual behaviour questions measured by donor surveys has remained high at 99.7% in 2014 and 99.6% in 2024. However, the 2024 survey only had a 16% response rate and may be biased towards eligible donors. Further work is required to allow easier extraction of information given by donors on session, which would benefit donors and recipients.

UK blood services need to support every potential donor to give blood when eligible. In 2025, 68 of 272 (25%) donors with markers of chronic HBV, acute HBV, occult HBV, HCV, HIV, HTLV or syphilis were ineligible to donate due to: history of syphilis (55), history of hepatitis (7), history of injecting drugs and hepatitis C treatment (4), new or multiple partners and anal sex, plus history of syphilis (2) and taking oral HIV prevention medication (PrEP) within 3 months (1).

Collaboration with the University of Nottingham on the PROMPT study will help us understand how to help donors disclose information before donating. It is important to enable donors to postpone their donation if appropriate and to disclose information at the donation session. Blood services can enable appropriate self-deferral and full disclosure by prompting donors to review their eligibility, providing information in various formats and by providing inclusive confidential settings to review the donor questionnaires. The UK blood services are working towards electronic donation questionnaires which should provide more opportunity to explain the questions and help donors understand when and why they should sometimes wait before coming to give blood.

30 years of UK blood safety and human T-cell lymphotropic virus

UK HTLV blood safety policy evolved through successive reviews. Testing continues to identify low numbers of donors with HTLV, many join the HTLV Register to report their health and wellbeing

1996 **Initial HTLV blood safety assessment; no change recommended**

1999 Leucodepletion of cellular components by UK blood services

2000 **JPAC review:** Transfusion transmission and infection among donors confirmed. Testing recommended, plus lookback.

2002 Anti-HTLV testing (pools of 48); donors referred to specialist clinics

2003 **HTLV National Register** established to inform public health

2008 **JPAC review:** Low anti-HTLV prevalence and rare seroconversion rate among donors, but leucodepletion efficacy unclear as lookback outcome awaited. No change recommended

2015 **JPAC review:** Universal screening assessed as not cost-effective. Screening of first-time donors and non-leucodepleted components recommended

2017 First-time donors donor and non-leucodepleted component testing in England

2022 Register reached 8th follow up; HAM-like symptoms rare, 95% supported HTLV antenatal screening

2025 Unit collaborate on general population survey to inform the National Screening Committee review of HTLV screening in pregnancy

Over 30 years, UK blood safety policy for human T-cell lymphotropic virus (HTLV) has evolved through successive evidence reviews. A 1996 risk assessment concluded no change was needed, but by 2000 transfusion-transmission and donor infections were confirmed. Although uncommon in the UK, and the addition of leucodepletion from 1999 was expected to reduce transmission risk significantly, a 5-10% chance of severe disease remained. This resulted in a recommendation to test all donations for HTLV antibodies and a lookback to previous donations from positive donors

Testing began in August 2002 in pools of 48, with positive donors referred to specialist HTLV clinics. After an initial sweep of all active donors, by 2006 most infections detected were in previously untested donors, with annual donation prevalence around 5 per 100,000 in first-time donors, and below 0.1 per 100,000 in repeat, most were in previously untested lapsed donors rather than new infections. Despite low prevalence and rare seroconversion, the 2008 review kept screening unchanged, as leucodepletion's efficacy remained unconfirmed. A 2013 contract change moved screening from pooled to individual donations. With lookback data confirming leucodepletion's efficacy, and seroconversion still extremely low, the 2015 review concluded universal screening was not cost-effective, recommending instead from 2017 targeting first-time donors and donations manufactured into non-leucodepleted components. From 2003, donors and other clinic attenders were invited to join the HTLV National Register to track disease progression for public health, recruiting only symptom-free adults with HTLV since 2013. Recruiting centres share clinical data (with consent); participants self-report health and wellbeing at registration and 2–3-year follow-ups.

UK blood donation screening 2002-2025

330 donors with HTLV among 50 million donations **| 228 (69%) female, 159 (48%) UK born, 192 (58%) Asian, Black or Caribbean ethnicity | 146 (44%)** probably infected in the UK | 6 cases associated with self-flagellation.

HTLV National Register 2003-2025

320 consented, including 133 blood donors | 240 (74%) female, 138 (43%) Black Caribbean ethnicity. Mean age 49 years | 8 follow-ups across 1,638 person years indicate HTLV-associated myelopathy (HAM) like symptoms are uncommon at 1% | Self perceived quality of life was good | Strong participant support for antenatal HTLV screening prompted a 2025 general population survey to inform the National Screening Committee's review.

Collaboration **Surveillance** **Evidence**

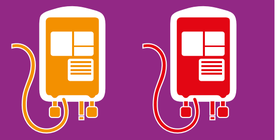
Plasma for medicines safety profile

Plasma for medicines collection in the UK safely restarted after variant CJD risk downgraded

Plasma can be collected in 2 ways

Source plasma: PFM donation

Recovered plasma: whole blood donation



Surveillance data for HIV | HCV | HBV

provided annually to the fractionator

1 HIV in repeat plasma for medicines donor in 2025 | donation discarded

HAV and parvovirus B19 NAT screening

introduced in pools of 96 to avoid large-scale plasma batch wastage

Scotland

Universal

from 29 July 2024

England

PFM | Whole blood

Tested backlog of stored frozen samples to 21 April 2025

Testing current unfrozen samples from 1 April 2025

3.25 million donations screened to December 2025

4 donations confirmed HAV RNA positive 2023 to 2025

2 HAV infection | 2 recent HAV vaccination

Now donors wait 2 weeks after HAV vaccination before donating

350 donations confirmed parvovirus B19 positive

14 in 2023 donations | 291 in 2024 donations | 45 in 2025 donations

Surveillance data in donors and the general population led to a revised risk assessment for variant CJD which enabled the UK to restart collecting plasma for medicines (PFM). PFM was collected from 2021 in England, from 2024 in Scotland, and from 2026 in Wales.

To support the plasma programme in England and meet the regulatory requirements we provide detailed surveillance data for HIV, HCV and HBV in blood donors. Working with NHSBT Donor Insight we produced numbers and rates by collection team for 2018 to 2022 and ongoing annual data submissions. In 2025, a donation from an eligible repeat donor was confirmed as HIV positive and removed from supply and donor permanently withdrawn from donation (1 in 34,845 PFM donations from repeat donors in 2025).

Screening for hepatitis A virus (HAV) and parvovirus B19 was introduced to prevent large-scale contamination of batches. Plasma can be sourced directly from plasma donations or recovered from whole blood donations. Screening for HAV and parvovirus B19 is now included for plasma and whole blood donations in England. In Scotland all donations including apheresis donations are screened for HAV and parvovirus B19. Only four donations have been confirmed HAV RNA positive, including 2 due to recent vaccination. After these two vaccine pickups, donor selection criteria were changed, donors are asked not to donate for 2 weeks after HAV vaccination (and some other vaccines). Parvovirus B19 peaks in 3-to-4-year cycles with a peak year in 2024 reflected in the large number of donations confirmed positive (291) that year. Donors with confirmed HAV are deferred for 6 months whereas a positive parvovirus B19 donation results in a 4-week deferral.

There have been 5 confirmed HAV TTIs (1996, 2000, 2005, 2017, 2023) and 1 confirmed parvovirus B19 TTI (2012) in the UK, since 1996 in unscreened whole blood donations.

30 years of UK blood safety and residual risk

The small number of repeat donors detected with recent HBV, HCV and HIV (seroconversions) each year maintains the very low residual risk of non-detection, estimated at around 1 per million donations tested.

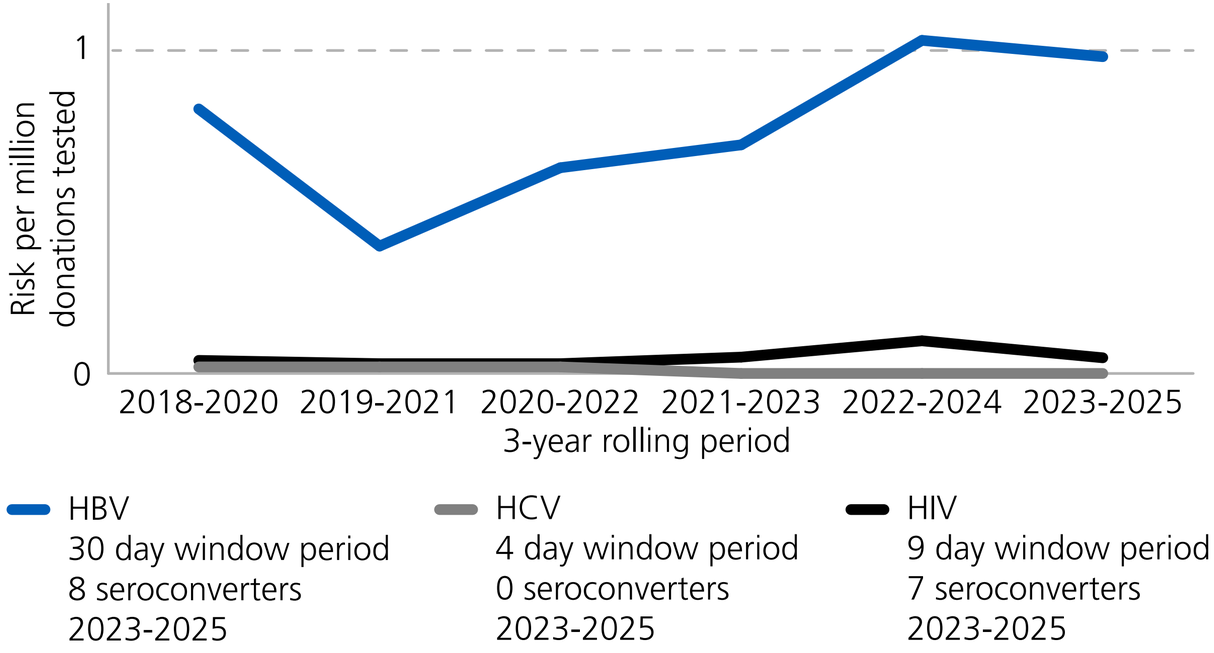


Figure 4: Rolling residual risk of non-detection of HBV, HCV and HIV, UK 2018 to 2025

In 2023–2025, the low estimated residual risk for whole blood donation remained highest for HBV at 0.97 per million (approximately 1 in 1 million), with HIV risk at 0.08 per million (less than 1 in 10 million). No HCV seroconversions were detected; however, as risk is unlikely to be zero, it is reported as <0.01 per million (less than 1 in 100 million). Calculations are based on incidence multiplied by window period. For 2023–2025: 30 days for HBsAg/HBV DNA NAT; four days for anti-HCV/HCV RNA NAT; nine days for HIV antigen/antibody and HIV NAT. Molecular NAT on pooled samples of 24 donations.

For more information, see JPAC position statement

Residual risk estimates are used to benchmark safety and support policy reviews on donor selection and testing. First estimated in 1996-1997 for hepatitis B virus (HBV), hepatitis C virus (HCV) and HIV, when window periods were 80.5, 15 and 59 days respectively. Calculations have been refined to reflect testing advances including NAT, combination HIV testing, barcoding and automation. Estimates are recalculated each year to benchmark safety. Parameters can be changed to test safety under different scenarios to support key policy decisions, including the removal of the lifetime deferral for sex between men in 2011 and further reduction from 12 to 3 months in 2017. Residual risk was not used to predict safety under individualised risk assessment policy (FAIR) because of a lack of incidence data in people with only one regular partner but continues to monitor safety after FAIR was introduced from Summer 2021. In 2024, 6 HIV seroconversions increased residual risk, donors reported lower-risk sexual activity, consistent with HIV testing among heterosexuals below pre-COVID levels, highlighting potential for ongoing HIV transmission among donors and the need for continued vigilance. In 2025 there were no HIV seroconversions in whole blood donors.

The residual risk estimates are the chance of not detecting HBV, HIV or HCV in a blood donation and releasing it, and do not directly reflect transmission risk.

The residual risk estimates are not relevant for all markers, but they can be used for different types of donor. HBV estimates cover acute infection only; anti-HBc screening, introduced across the UK in 2022, mitigates occult HBV infection risk. Hepatitis E virus (HEV) residual risk is not routinely calculated due to window period uncertainty and fluctuating donor incidence; when estimated using a 14-day window period it was considerably higher than for HBV, HCV, or HIV. Estimates for human T-cell lymphotropic virus (HTLV) are no longer considered relevant given effective leucodepletion and window period uncertainty. Estimates for tissue donors were difficult as incidence is not seen in practice but likely to be decades before non-detection of HBV using individual NAT.

Bacterial screening of platelets from 2011

Bacterial screening identifies very low rates of bacterial contamination in platelets in the UK since screening began.

Bacterial screening of platelets has been carried out in some UK nations since 2000 and in England since 2011. Following screening, packs are issued as 'negative-to-date', which can be before bacteria have multiplied sufficiently for detection on screening. In some cases, units will have already been transfused before reactivity is detected. If reactive, all units will be recalled. Platelet donations are manufactured from either 4 whole blood donations (pooled platelets) or a single-donor apheresis donation manufactured into 2 or 3 units. Pooling of donations gives rise to a higher chance of contamination and generally pooled platelets have a higher confirmed positive rate than apheresis platelets; in 2025, this was 73.9 versus 26.9 per 100,000 donations (119 pooled and 38 apheresis).

Surveillance data have been used to inform donation policy, evaluate arm cleansing systems and review new analyser machines.

The team collaborates with the NHSBT Microbiology Services Laboratory, other NHSBT teams, other UK blood services and NIHR Blood and Transplant Research Unit (BTRU) in sharing bacterial screening data and ensuring bacterial screening and other risk reduction methods remain effective in contributing to continued blood safety across the UK.

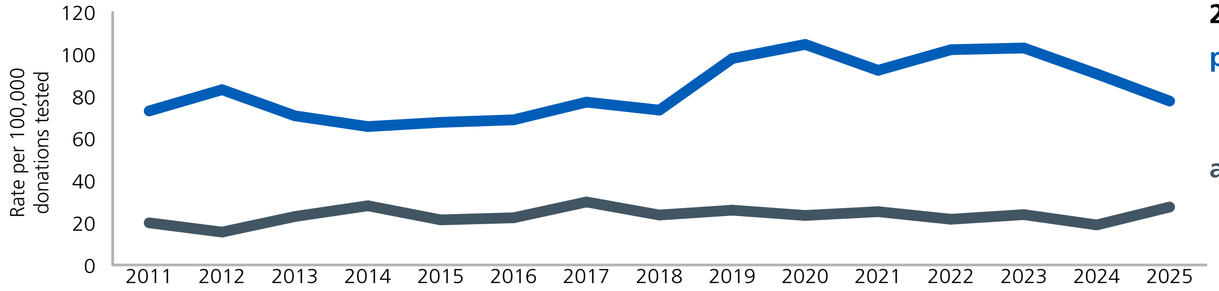


Figure 5: Rate of confirmed positive donations in apheresis and pooled platelet donations, England 2011 to 2025

Since screening began, there has been a low initial reactive rate with small numbers confirmed positive, mostly skin commensals. Surveillance data for England since 2011 show an almost fourfold higher rate of bacteria identified in pooled donations compared to apheresis donations. (Figure 5).

In England, most bacteria identified through bacterial screening were not clinically significant. In 2025, among 145 confirmed positive donations, 113 (78%) were skin-associated organisms (Cutibacterium spp. or *Staphylococcus saccharolyticus*) and were unlikely to be of clinical significance. The remaining bacteria were 15 (10%) other skin flora, 9 (6%) mouth/throat flora, 7 (5%) gut flora, and 3 (2%) from other sources. Each year, the likely source of organisms vary by platelet type (Figure 6).

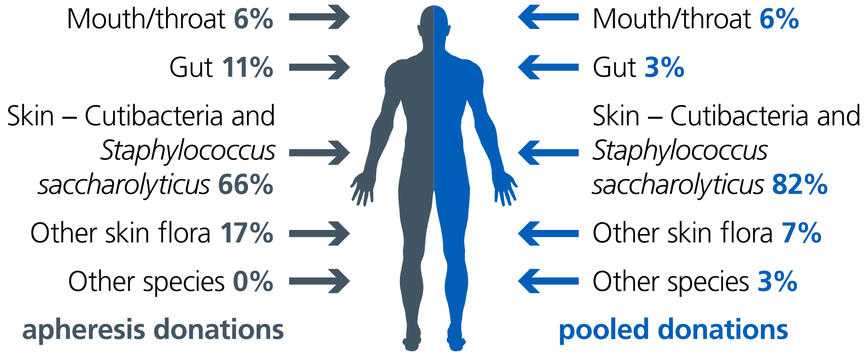


Figure 6 : Sources of bacterial species identified in confirmed positive donations, England 2025

Clinically significant bacteria continue to remain at low levels. In 2025, 19% (28/145) of the confirmed positive donations were identified with potentially clinically significant bacteria from gut (n=7), skin (n=11), oral (n=7) and environmental (n=3) sources. These donors have post-test discussions with clinical staff and are referred onwards, if necessary. For example, bowel cancer detected in an asymptomatic donor before any obvious symptoms. **Bacterial screening benefits donors as well as keeping recipients safe.**

Collaboration Surveillance Evidence

Bacterial transfusion-transmitted infections

The most recent confirmed bacterial TTI was identified in 2015. Continued clinical vigilance, visual inspection, and prompt reporting remain essential.

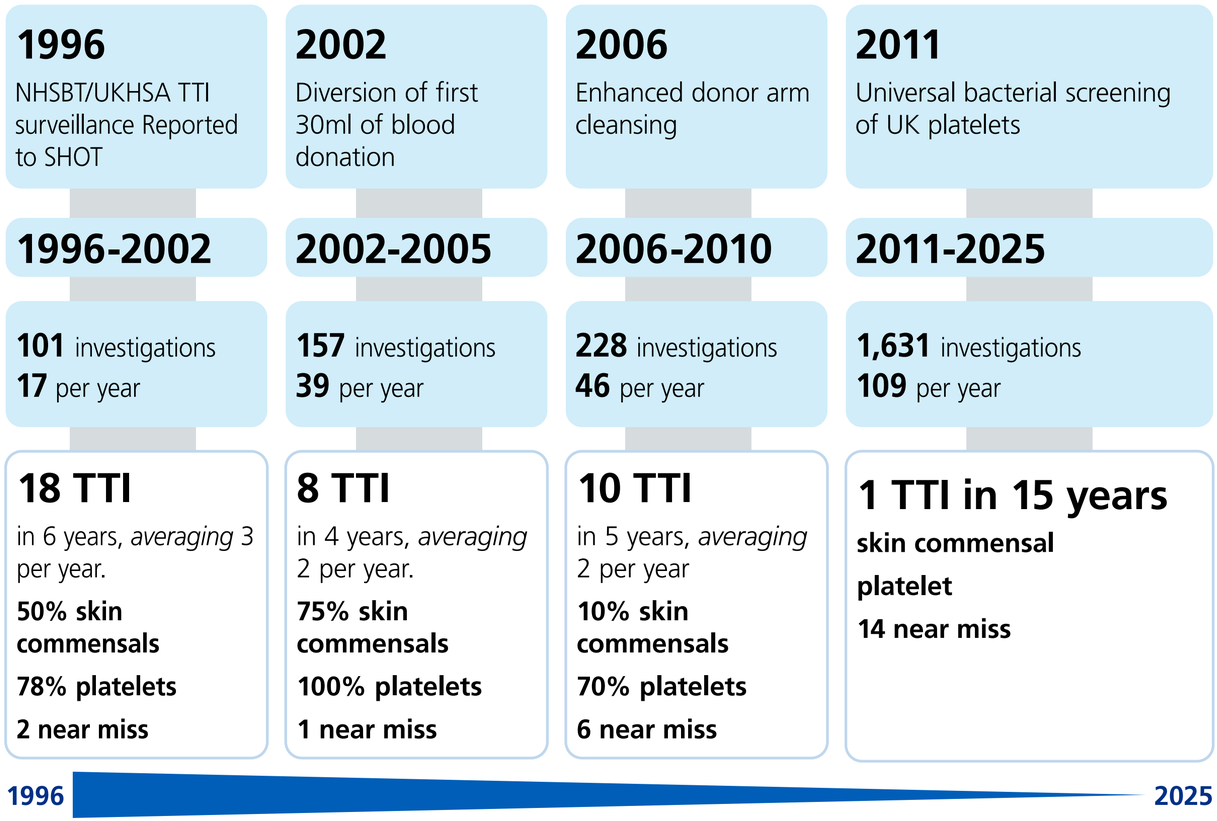


Figure 7: Safety measures, confirmed bacterial TTI and near miss incidents, UK 1996 to 2025

Figure shows the decrease in bacterial TTIs as safety measures introduced despite the increase in investigations, while near miss incidents show vigilance required.

Bacterial transfusion-transmitted infections (TTIs) are rare nowadays with no confirmed bacterial TTI in 2025 but continued clinical vigilance, visual inspection, and prompt reporting remain essential

Reporting of suspected TTIs is passive, based on clinical suspicion. Bacterial TTI investigations are initiated following hospital reports of **reactions in transfusion recipients**, with most concluded as not a TTI. Investigations are undertaken collaboratively by UK blood services and hospitals, while surveillance is coordinated by the Epidemiology Unit and reported to SHOT.

In 2025, there were no confirmed bacterial TTIs, 101 investigations of potential transmissions were requested following an adverse reaction in the recipient. Three investigations of visually abnormal platelets were concluded as near-misses, all resulting in culture of *Staphylococcus aureus* from the donation packs.

Bacterial TTIs have become extremely rare, reflecting the cumulative evidence for the effectiveness of safety interventions. Initially fewer than ten suspected bacterial TTIs were investigated annually from 1996, rising to over 100 since 2011, coinciding with the introduction of platelet screening. **Since 1996, 2,117 suspected bacterial TTIs were investigated, with 37 (2%) confirmed transmissions reported**. Following the introduction of universal platelet screening in 2011, only **one confirmed transmission was reported in 2015**.

As transmissions decline, increased reporting and near-miss surveillance become more important for bacterial surveillance, highlighting a change from reaction-based detection to prevention and early identification. Continued clinical vigilance, visual inspection, and prompt reporting remain essential to sustain blood safety.

Non-bacterial transfusion-transmitted infections

Hospital engagement and collaboration are key to ensure those affected are promptly identified, tested, and referred for appropriate care.

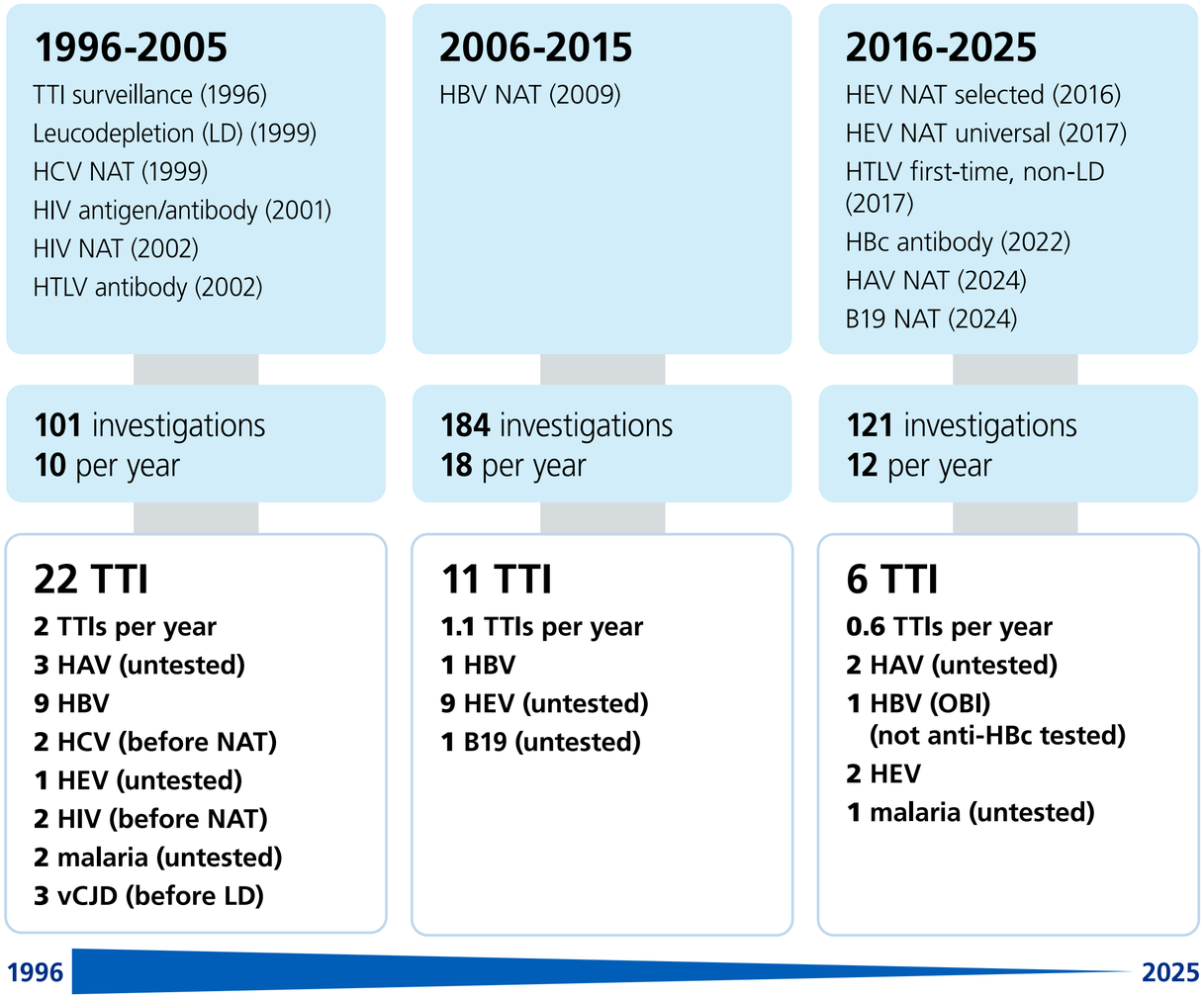


Figure 8: Safety measures and confirmed non-bacterial TTI, UK 1996 to 2025

Figure shows the decrease in TTIs seen in each 10-year period as safety measures introduced.

Non-bacterial transfusion-transmitted infections (TTI) are extremely rare in the UK nowadays, in 2025, there were 0 confirmed viral TTI.

Non-bacterial TTIs are extremely rare in the UK nowadays, reflecting sustained effectiveness of donor selection and testing, particularly for HCV and HIV, yet TTIs can still occur, including from infections that are not part of routine screening, making surveillance essential. Suspected TTIs in the UK, are **reported via passive systems**, investigated by blood services collaboratively with hospitals, monitored by NHSBT/UKHSA Epidemiology Unit and reported to SHOT. Chronic infections may be detected years after transfusion; molecular typing and donor lookback investigations have improved case confirmation.

In 2025, there were no confirmed non-bacterial TTIs identified, among 10 investigations of suspected transmission (2 investigations pending).

Of 412 suspected non-bacterial TTIs investigated between 1996 and 2025, where transfusion took place in 1996 or later, 39 (10%) were confirmed. Two HCV and 2 HIV TTIs were reported and confirmed; prior to the introduction of HCV NAT, combined HIV antigen/antibody and HIV NAT. Eleven confirmed HBV TTIs were reported; 10 associated with acute infection in the donors (9 predating HBV NAT, 2009), and 1 with occult HBV infection (OBI) in 2021 with very low DNA levels, before anti-HBc testing. A further 2 probable HBV TTIs due to OBI in the donor resulted in the introduction of hepatitis B core antibody screening in 2022; no confirmed HBV TTI due to OBI have been reported since. Of 12 HEV TTIs, 10 were identified prior to universal HEV NAT in 2017. Three malaria TTIs were confirmed, the most recent due to Plasmodium malariae. Five HAV TTIs and 1 parvovirus B19 TTI occurred before routine screening for whole blood and plasma donors introduced in 2024. Three vCJD transmissions were identified, all before leucodepletion and donor exclusion measures.

Surveillance data are essential to inform and assess blood safety policy review, benefitting donors and recipients.

For more information – access annual reports on the Serious Hazards of Transfusion (SHOT) website, and the TTI dashboard at UKHSA

Collaboration Surveillance Evidence

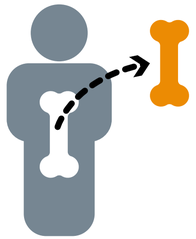
NHSBT cord blood, living surgical bone and deceased tissue donor surveillance from 2006

Markers of infection in donors remained rare in 2025, with no evidence of recent infection.

FAIR blood donation policy extended to living surgical bone donors since November 2023, and deceased tissue donors since 2025.

Living surgical bone

Low number, rarely positive for markers of infections



2025
674 donors
2 HBV, 1 syphilis
445 per 100,000

2006-2025
54 positive

Deceased tissue

Donated bone, skin, heart valves, corneas and tendons

2025
2,892 donors
6 HBV,
2 HCV,
5 syphilis
450 per 100,000

2012-2025
175 positive

Cord blood donors

Ethnically diverse population targeted. Previous antenatal screening

2025
130 donors.
No positives

2006-2025
41 positive – including 12 HTLV

NHSBT manages living and deceased tissue donors, and cord blood donors, using donor selection and testing processes like those used for blood donors, with some exceptions. Living tissue and cord blood donors complete a pre-donation questionnaire, while information for deceased donors is obtained from their next of kin or GP.

The FAIR policy, introduced for blood donors in June 2021, was extended to living tissue donors and cord blood donors in November 2023 and to deceased tissue donors in 2025. Testing is broadly aligned with blood donation testing, including serology for mandatory markers and pooled HEV NAT, with individual-sample NAT for HBV, HCV and HIV.

Living surgical bone donors give surgical bone (femoral heads) when undergoing elective primary hip replacement and typically have only 1 opportunity to give. Donors are generally older than new blood donors and prevalence of infection markers higher. In 2025, 3 of 674 donors tested positive for infection markers (2 HBV and 1 syphilis), a rate of 445 per 100,000, which was 3.2 times higher than in new blood donors. Donor numbers have fallen from around 3,000 annually in 2006-2014 to around 700 in recent years; small numbers of positive donors result in marked year-to-year variation in rates.

Deceased tissue donors give bone, skin, heart valves, corneas and tendons, and are also generally older than blood donors. In 2025, 13 of 2,892 donors tested positive for infection markers (6 HBV, 2 HCV and 5 syphilis), a rate of 450 per 100,000, also 3.2 times higher than in new blood donors. Since surveillance began in 2012, 175 donors have tested positive, with an average annual rate of 385 per 100,000.

Cord blood collection targets ethnically diverse populations around London to ensure a diverse supply, with donations made immediately post-partum. Donors are expected to have been routinely screened for markers of HBV, HIV and syphilis, during antenatal testing. In 2025, 122 donors were tested (all self-identified as female, 70% under 35 years), none tested positive for markers of viruses or syphilis. Donor numbers have fallen from around 2,000 annually in 2006-2016 to around 100 more targeted donations since 2021 to maintain appropriate stock. Since 2006, 41 donors positive for markers of infection have been detected, including 12 for HTLV where donors were followed up as soon as possible to reduce risk of transmission to their baby.

Some data for stem cell and amnion donors are available, but these donors are not fully integrated into the surveillance scheme, so information is limited.

Deceased organ donor surveillance from 2012

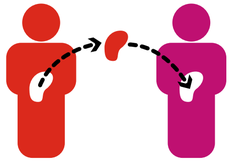
A shortage of donated organs means people are spending longer time waiting and some die before a suitable organ becomes available.

Consented donors undergo **mandatory testing for markers of infection,** and some donors will **also** undergo **discretionary testing** depending on their **exposure to risks, including travel.**

Consented donors are tested for certain markers of infection

Before donation:

HBsAg and HIV antigens
Antibodies to
- hepatitis B core,
- HCV, HIV, HTLV,
- *Treponema pallidum* (syphilis),
- *Toxoplasma gondii*,
- CMV, EBV



After donation:

HEV RNA
HHV-8
Additional criteria dependent:
- HBV, HCV and HIV NAT
- Malaria,
- *Trypanosoma cruzi*, WNV

Before donation, consented deceased organ donors undergo **mandatory testing** for markers of infection (See fig) for: hepatitis B virus surface antigen (HBsAg); combined antibody and antigens for HIV; and antibodies to hepatitis B core, hepatitis C virus (HCV), Human T-lymphotropic virus (HTLV), *Treponema pallidum* (syphilis), *Toxoplasma gondii*, cytomegalovirus (CMV) and Epstein-Barr virus (EBV). **After donation,** hepatitis E virus **(HEV) RNA testing** occurs. In 2023, human herpes virus 8 (HHV-8) testing was introduced.

HBV, HCV and HIV NAT is conducted based on initial reactivity from hospital-based testing and a history of increased risk behaviour, to inform post-surgical management of the recipient. Additional criteria for screening of malaria, *Trypanosoma cruzi*, and West Nile virus (WNV) RNA include country of birth, transfusions whilst abroad and travel to affected areas.

In **2025**, following a comprehensive donor health and clinical history assessment, 78% (**1,347**) of the 1,716 donors consented to donate became **actual donors with at least one organ** retrieved. Since surveillance began in 2012, 18,482 donors donated at least one organ, this number of utilised deceased organ donors has not recovered to pre-Covid levels.

Low levels of reactivity in mandatory markers were observed in 2025 and throughout the surveillance period. In 2025 screening identified **13 HCV, 2 HEV, 18 HHV-8, 2 syphilis and 2 malaria reactive** markers of infection in **donors** where **organs were** transplanted. The most common detected markers in donors whose organs were transplanted were for EBV (934 per 1,000 donors) and CMV (472 per 1,000 donors), both circulate widely in the general population. HCV rates in deceased organ donors are increasing; advances in treatment have enabled policy changes allowing organs from HCV-infected donors to be transplanted into uninfected recipients.

Blood safety in the UK, and additional testing after travel

Additional testing for travel associated infections safely averted up to 7% loss of donations*, in the UK in 2025 and increasing.↗

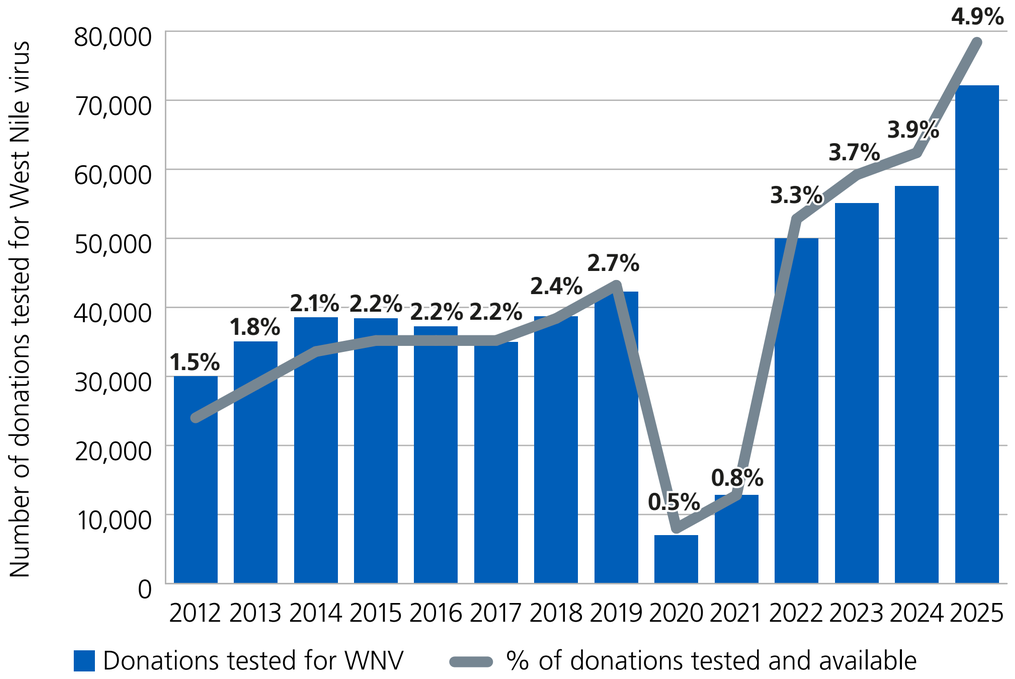


Figure 9: Number and percent of donations tested for WNV, England 2012 to 2025

The graph shows donation testing in England for WNV after travel, recovering rapidly after COVID travel restrictions, and increasing as more areas in Europe become affected by WNV.

*Noting this does not take into account any overlap in testing for the same donation or discard for other reason.

The first West Nile virus (WNV) positive donation detected since testing started in 2012 was confirmed in a donor returning from Italy in 2025. In 2025, 79,668 UK donations (England, Scotland and Wales) were tested for WNV with two confirmed to be positive for the first time since testing began in 2012. The remaining donations were available for release subject to other tests. As the WNV assay reacts with other flaviviruses, other laboratories including the Rare and Imported Pathogens Laboratory (RIPL) helped to identify one sample as WNV and the other as Usutu virus (USUV) positive. Both donors were tested because of recent travel to Italy in the Summer, where WNV and USUV are commonly seen. These data informed One Health surveillance for WNV in the UK in 2025.

3 donors were positive for malaria parasites in 2025, but over 1000 more donors were deferred for past exposure. Additional testing for malaria antibodies was performed for 45,828 UK donations (England, Scotland and Wales) with 2,195 reactive and the rest available for release subject to other tests. Of the reactive, **1,094 (50%) were confirmed** antibody positive indicating past exposure while a further 3 donors in England were also PCR positive and referred for care. Additional malaria antibody testing has been performed routinely since 2001 enabling more donations to be safely taken from donors with travel to, or previous residency in, malarious areas. In 2025 additional malaria testing was applied to 2.6% of donations, similar to 2024 and an increase from 1.8% in 2019. Since the 1980s there have been 6 malaria transfusion-transmissions in the UK due to untested donations, the most recent in 2023. Most antibody positivity and donor loss is seen in donors tested for residency and new RNA tests are being evaluated for their utility in retaining these donors who are mainly of Black and Asian heritage to help grow the diverse donor base needed for clinical care of patients.

1 donor was found to have Chagas disease in 2025. Testing for Chagas disease (*Trypanosoma cruzi*) was performed for 2,825 UK (England and Scotland) donations. One donor was confirmed positive, born in Bolivia, South America and referred for treatment and family testing. Five donors with Chagas disease have been identified in England out of 67,375 samples tested between 1998 and 2025, all born in South America (Argentina, Bolivia (2), Brazil, and Uruguay).

UK blood safety and emerging infections in 2025

Since 2007, the joint Unit has collaborated closely with UKHSA to provide infection horizon scanning for the UK blood services.

In 2025, the joint Unit monitored spread of arboviruses and measured donor travel to inform preparedness.

The joint Epidemiology Unit produces a monthly Emerging Infections Report (EIR); a horizon scanning list of global outbreaks, emerging and re-emerging infections with potential to affect the UK blood and tissue supply. Collaboration and links to public health surveillance are crucial. The Unit scans daily and weekly UKHSA reports and other information against the Geographical Disease Risk Index (GDRI) and escalates urgent items for review without delay. The EIR is sent to the JPAC Standing Advisory Committee on Transfusion-Transmitted Infections (SACTTI) for review. The assessment notes are added to the EIR and any actions communicated to the relevant team. EIR is then stored by Joint Professional Advisory Committee (JPAC). The report format is regularly fine-tuned based on feedback from SACTTI and has been externally audited 3 times (See infographic on next page).

In 2025, outbreaks of chikungunya, dengue and West Nile virus (WNV) in Europe were closely followed and reported weekly to SACTTI to assess if new areas should be added to the "tropical" deferral or for WNV testing in the GDRI. The first local detection of WNV in England in mosquito samples from 2023 led to regular One Health surveillance meetings to join up data in mosquito, birds and humans for early warning of further detection published in the first Vector-Borne Disease report by UKHSA. Other arboviruses being closely monitored include the Oropouche virus outbreak and potential for harm during pregnancy, Crimean-Congo haemorraghic fever (CCHF) and babesia in Europe, potential for viral haemorrhagic fever (VHF) importation and emergence of rat hepatitis.

The joint unit ran a donor travel survey in 2025 to better understand regional travel patterns in popular destinations to help inform deferral and testing strategies to prepare for spread of arboviruses. The top 6 countries that UK residents visit also have potential for arbovirus outbreaks: France, Spain, Italy, USA, Portugal and Greece. We asked donors if they could tell us which parts they had visited during both the European transmission season May to November, and the rest of the year. The overall percentage travelling is subject to bias, but patterns of travel within these top 6 countries are clear and will help inform planning and risk assessment. **Better retention and extraction of donor travel on a routine basis is warranted**.

UK blood safety horizon scanning process for emerging infection from 2007

Data on emerging infections provided from wide range of credible sources

→

Transformed into monthly **Emerging Infection Report (EIR)**

→

Reviewed by blood services committee on transfusion-transmitted infection

→

Any actions flagged with relevant blood services committee

→

Annotated EIR records decision and stored for future audit

UK Health Security Agency (UKHSA)

European Blood Alliance (EBA)

Joint NHSBT / UKHSA Epidemiology Unit

Standing Advisory Committee on Transfusion-Transmitted Infection (SACTTI)

JPAC and standing advisory committees: SACTTI, SAC Care and Selection of Donors

JPAC records.

Government internal audit agency

Key sources

UKHSA Emerging Infections & Zoonoses team use WHO EIOS platform for daily agency-wide report and weekly specialised report for EIR. Underlying sources include ECDC, CDC & WHO

UKHSA daily all hazards report

EBA report any issues directly to SACTTI Chair

Format

Excel lists with summary and link for assessment or for information

Urgent items emailed to SACTTI Chair immediately then added to EIR

Emerging situations may be tracked by more frequent report Eg weekly list of local arbovirus outbreaks in Europe

Review process

EIR is circulated to SACTTI Chair and deputies for assessment at monthly meeting to discuss and decide action. Assessment note and colour coding added to EIR

Feedback provided by SACTTI for joint Unit to refine format & content

Action

JPAC notify the relevant committee of any action:

- No action required
- Monitor
- Change to areas for deferral or additional test post travel
- Position Statement
- Update risk assessment
- Full risk assessment

Record

EIRs held by JPAC

Audit outcomes 2014: streamline and document process to clarify who **responsible** for action, **scoring system** for prioritising, **concise** reports for clarity

2021: **review** sources annually

2025: ensure items sent to Chair are **documented** in EIR for audit trail

US Centers for Disease Control and Prevention (**CDC**) Epidemic Intelligence from Open Sources (**EIOS**) European Centre for Disease Prevention and Control (**ECDC**) Joint Professional Advisory Committee (**JPAC**) World Health Organization (**WHO**)

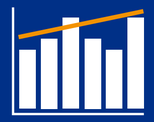
Evidence for public health

Anonymous data on routine donation testing results provides information for public health on an apparently healthy sentinel low risk blood donor population while their donation samples may also provide material for surveillance, research and assay validation.

Donors often consent to research studies, surveys and registers and in times of need they have volunteered to give convalescent plasma for patient use.

The joint unit provide data for surveillance, including antenatal testing to 2011, and cases to understand disease progression. The unit also support and collaborate with other colleagues on research and outbreak response.

Data for public health surveillance



Routine surveillance data on infection in UK and ROI donations & donors

Joint blood service and public health epidemiology unit set up in 1995 **via Memorandum of Understanding**
Eg numbers, rates and exposures for HBV, HCV, HEV, HIV, HTLV, syphilis, B19, HAV, West Nile virus, Malaria, Chagas Disease, CJD and **included in national reports** on hepatitis, HIV, syphilis and One Health

Research material

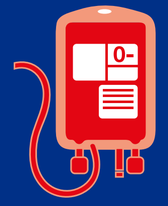
Funded research collaborations with ethics
Partnerships (BTRU) between Blood service / Academia / Public Health:

Eg CODONET study run by BTRU GEMS testing selected donations for emerging infection WNV, tick-borne encephalitis (TBE) and the **Bio-archive** of residual samples held by blood service for future testing as infection threats emerge for blood supply

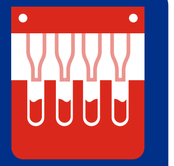
One off studies with ethics
Eg HEV case-control study to identify exposure routes

Residual samples using **material transfer agreement:** generic for use across range infections, includes demographic data on gender, age-group, ethnicity Eg COVID exposure & vaccination effectiveness

Discard packs – apply for use of confirmed positive donation packs eg HTLV confirmed packs for assay validation



Testing capacity beyond blood donation



Contracted service provides economy of scale and consistency eg antenatal testing (previously supplied to 2011, with data collection allowing evaluation of rubella antibody levels)

Cases to understand disease progression

Donors invited to disease registers with ethics and consent to track health outcomes: HCV, HTLV

Support for outbreak response

Testing capacity
Research material
Convalescent plasma trigger point agreed with public health Eg Swine flu, COVID
Unit members volunteer for incident response

Collaboration Surveillance Evidence

Impact and outputs of the joint Epidemiology Unit

1995 Our journey begins → **Building robust surveillance and reporting** → **Generating evidence and publishing research** → **Influencing policy and practice nationally and internationally** → **Developing people and the next generation** → **Recognised excellence and impact** → **2025** Continuing our impact together

Surveillance and reporting in 2025

Clinical reports
3 Microbiology Services Clinical Group

Epidemiological analysis
1 annual review produced
5 national dashboards maintained

Operational reports
12 monthly donation testing reports
12 monthly bacterial screening reports
4 quarterly bacterial screening reports

Haemovigilance
1 annual SHOT report Transfusion Transmitted Infection chapter

Horizon scanning
12 monthly Emerging Infection Reports
12 weekly arbovirus tracker reports

Research and surveys

101 peer reviewed publications across 30 years

Collaborations on research projects
eg PROMPT and BTRU-GEMS
1 research cohort study – HTLV National Register
1 attitudes survey on HTLV screening
2 large scale behaviour surveys
2 travel surveys

Training and education in 2025

28 teaching hours
2 masters degree supervision
2 STEM students hosted
1 UK Public Health Register practitioner assessment

Policy and international practice

Policy review
Regular contributions to blood safety policy reviews through SaBTO and JPAC

Conferences
regularly invited to speak at the leading national and international conferences and workshops

Expert Group membership
ISBT working groups, JPAC, SaBTO, SHOT

Regular contribution to international surveys and audits
of blood service policy and practice, eg BEST, ISBT

Recognition

10 awards received (2021-2025)

7 Current team members

30 years of collaboration, surveillance and evidence

Collaboration Surveillance Evidence

Glossary

Aβ	Amyloid Beta
anti-HBc	antibody to Hepatitis B Core Antigen
ATLL	Adult T-cell Leukaemia/Lymphoma
B19	Parvovirus B19
BBIs	Blood-borne infections
BEST	Biomedical excellence for safer transfusion
BSE	Bovine Spongiform Encephalopathy
BTRU	NIHR Blood and Transplant Research Units
CCHF	Crimean-Congo haemorraghic fever
CDC	Centre for Disease Control and Prevention
CMV	Cytomegalovirus
CJD	Creutzfeldt–Jakob disease
DNA	Deoxyribonucleic acid
EBA	European Blood Alliance
EBV	Epstein-Barr virus
ECDC	European Centre for Disease Prevention and Control
EIOS	Epidemic Intelligence from Open Sources
EIR	Emerging Infections Report
FAIR	For the Assessment of Individualised Risk
GBMSM	Gay, bisexual and men who have sex with men
GDRI	Geographical disease risk index
HAM	HTLV-Associated Myelopathy
HAV	Hepatitis A Virus
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HEV	Hepatitis E virus
HHV-8	Human herpes virus 8
HIV	Human Immunodeficiency Virus
HTLV	Human T-cell lymphotropic Virus
IBI	Infected Blood Inquiry
ISBT	International Society of Blood Transfusion
JPAC	Joint Professional Advisory Committee to the UK Blood Transfusion and Tissue Transplantation Services
LGBTQ+	Lesbian, gay, bisexual, transgender, queer/questioning, intersex, asexual, and more
mIU/ml	milli-international units per millilitre
MSM	men who have sex with men
NAT	Nucleic Acid Technology
NCJDRSU	The National CJD Research & Surveillance Unit
NIBTS	Northern Ireland Blood Transfusion Service
NHSBT	NHS Blood and Transplant
OBI	Occult Hepatitis B Infection
OTDT	NHSBT Organ and Tissue Donation and Transplantation
PCR	Polymerase Chain Reaction
PFM	Plasma for medicines
PrEP	Pre-Exposure Prophylaxis
PROMPT study	Prompts to Reduce Omissions in deferral or testing for Malaria, Past infection and Travel
RIPL	Rare and Imported Pathogens Laboratory
RNA	Ribonucleic Acid
ROI	Republic of Ireland
SaBTO	Advisory Committee on the Safety of Blood, Tissues and Organs
SACTTI	Standing Advisory Committee on Transfusion Transmitted Infection
SNBTS	Scottish National Blood Transfusion Service
SHOT	Serious Hazards of Transfusion
STI	Sexually transmitted infection
TBE	tick-borne encephalitis
TMER	Transfusion Microbiology Epidemiology Review
TTI	Transfusion-Transmitted Infection
UK	United Kingdom
UKBS	UK Blood Services
UKHSA	UK Health Security Agency
UKPHR	UK Public Health Register
USUV	Usutu virus
vCJD	variant Creutzfeldt-Jakob disease
VHF	viral haemorrhagic fever
WBS	Welsh Blood Service
WHO	World Health Organisation
WNV	West Nile virus

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