



Transfusion-transmissible
infections in Australia

2025

Surveillance Report

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Australian Red Cross Lifeblood

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Foreword

This report is jointly produced by Australian Red Cross Lifeblood (Lifeblood) and the Kirby Institute. This report summarises donation testing data, and incidence and prevalence trends for transfusion-transmissible infections (TTIs) among Australian blood donors. While it is an important Lifeblood resource, it is also intended to be a reference document for organisations and individuals interested in the occurrence of TTIs in Australia and the effectiveness of Lifeblood's infectious disease blood safety strategy. The data in the report are current at the time of publication and all efforts have been undertaken to confirm its accuracy, however subsequent data updates may occur, and users must consider this.

Ensuring donations do not transmit infectious diseases is a key priority of Lifeblood. Blood donors are required to complete a questionnaire every time they donate that includes an assessment of their exposure risk to significant TTIs. The questionnaire for first-time donors includes basic demographic information, as well as questions regarding lifetime exposures to certain risk events. Repeat donors within a two-year time frame are required to complete a shorter questionnaire. The questionnaire is reviewed and those assessed as being at higher risk of recent exposure are deferred from donating. Subsequent to satisfactorily completing the assessment process, donors proceed to donate.

Eligible donors can donate whole blood, plasma or platelets. Whole blood is processed and separated into red cells, platelets and plasma; while plasma and platelets can also be collected through apheresis. Information for the use of different blood components is available at [Blood components | Australian Red Cross Lifeblood](#). Plasma for fractionation is collected and sent to Australia's plasma fractionator to be specifically processed into plasma-derived medicinal products such as clotting factors (e.g., for bleeding disorders such as von Willebrand disease), immunoglobulins (for immune deficiencies or autoimmune diseases), and albumin (for burns or shock). In 2024, 46.3% of all donations were apheresis collections for plasma for fractionation.

The current regulatory standard applicable in Australia requires each donation to be tested for significant TTIs which can potentially cause infection in the donation recipient (see Other Supporting Information in the [Appendix for Transfusion-transmissible infections in Australia 2025 Surveillance Report](#) for details). A timeline of the introduction of specific screening tests for Australian blood donors is also provided in the [appendix](#). If a TTI is detected, the donation is discarded, and the donor undergoes a post-donation interview and is referred for clinical follow-up.

For this report, the term TTI refers to infections for which there is mandatory donation or donor testing. Mandatory tests differ between donations for fresh blood components (i.e. human immunodeficiency virus [HIV], hepatitis B virus [HBV], hepatitis C virus [HCV] and syphilis), and plasmapheresis donations that are exclusively sent to CSL Behring for fractionation (i.e. HIV, HBV and HCV only). Human T-lymphotropic virus (HTLV) is a mandatory donor test and as of December 2020, repeat donors are not required to be tested for HTLV, unless the donation is manufactured into a granulocyte component. In 2024, 205 TTIs were detected in 204 donations, representing a slight decrease from the 213 TTIs detected in 212 donations in 2023, which was the highest number recorded in the last 10 years (2015–2024). Of these donations in 2024, 75% were from first-time donors and 82% were either hepatitis B or hepatitis C. Reflecting the effectiveness of donor screening strategies, the prevalence of TTIs in first-time donors in 2024 continues to be substantially lower (12–187 times) than the estimated national population prevalence for 2023/2024 (the 2024 estimates of population level prevalence for hepatitis B were not available at the time of the report preparation, therefore comparisons were made with the 2023 data). There were five incident infections (newly acquired) based on a past negative test within the last 12 months for the same TTI, or for being a first-time donor with NAT 'yield' results (see incident donor definition in the [appendix](#)); three for hepatitis B, and two for hepatitis C. Incident infections are generally the most concerning from a blood safety perspective, as in contrast to prevalent infections a donation is more likely to be in the testing 'window period', making them undetectable by the screening test(s). Notably, there was no significant trend observed for incidence rates of any of the TTIs for the nine-year period, 2016–2024.

Window period infections cannot be detected by testing. However, risk of transfusion-transmission is mitigated if the donor discloses risk behaviour leading to deferral from donation. Of the TTIs detected in 2024, 27% had risk factors identified in their post-donation interview which were not disclosed in their initial donation interview (termed 'non-compliance'). As minimising non-compliance is an organisational imperative, Lifeblood continually reviews the donor assessment process for potential improvements.





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Supporting information

A glossary, the methodologies used for calculations, the screening tests used for transfusion-transmissible infections, and other supporting information are provided in the Appendix for Transfusion-transmissible infections in Australia 2025 Surveillance Report ([appendix](#)).





Summary of the main findings

General characteristics of blood donors in Australia

1. Over the 10-year period 2015-2024, there were almost 15 million blood donations in Australia with an average of 1.5 million donations per year. In this 10-year period, there has been an increasing trend in the total number of annual donations, from 1.27 to 1.66 million.
2. Of the 'age-eligible' Australian population (aged between 18-80 years), 2.8% donated blood during 2024. Male donors constituted 50.5% of all donors in 2024, slightly higher than their proportional representation of 49.5% among the Australian general population aged 18-80 years.
3. On average, first-time donors comprised 19.0% of all blood donors in Australia over the period 2015-2024. The percentage of first-time donors increased gradually, from 13.4% in 2015, to 17.5% in 2018 and 21.8% in 2022, before slightly decreasing to 19.1% in 2023, and further decreasing to 18.6% in 2024. The proportion of total donations made by first-time donors fluctuated between 5.8% and 7.4% during the past 10 years. The overall increase in total donations over the 2015-2024 period is mostly driven by an increased donation frequency among repeat donors.

Trends in transfusion-transmissible infections in Australian blood donors

A blood donation that is found to be positive on Lifeblood testing for a TTI is discarded and the donor is informed and referred for medical follow-up.

1. In 2024, a total of 204 blood donors were detected as positive for at least one of the TTIs for which testing is in place, namely, hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), human T-lymphotropic virus (HTLV), or potentially infectious syphilis, with a total of 205 TTIs detected (one donor was positive for both hepatitis C and HIV). In the 10-year period 2015-2024 a total of 1 804 TTIs were detected.
2. Consistent with the long-term pattern, the most common TTI detected was hepatitis B (n=92), followed by hepatitis C (n=76). Of all the donations positive for a TTI in 2024, 82.3% were positive for either hepatitis B or hepatitis C, slightly lower than the 83.5% in 2023.
3. In 2024, seven donors tested positive for HIV and four tested positive for HTLV. In the 10-year period 2015-2024, HIV was the least common TTI detected among all donors, with 46 donors, followed by HTLV, with 50 donors.
4. Although representing 19% of the donor population, first-time blood donors contributed to 75% of detected TTIs in Australia in 2024. This proportion has fluctuated since 2015 (75-85% range), except for in 2018 where the proportion went down to 68%.
5. No probable or confirmed transfusion-transmitted HIV, hepatitis B, hepatitis C, HTLV or syphilis cases were reported in Australia during 2024.
6. Consistent with previous years, in 2024, the prevalence of TTIs was substantially lower among first-time blood donors (12 to 187 times) compared with national prevalence estimates for 2024 (2023 for hepatitis B).



Hepatitis B-positive Australian blood donors

1. There were 92 hepatitis B-positive donors detected among all donations in 2024 (73 in first-time donors and 19 in repeat donors).
2. Of all TTIs detected in 2024, hepatitis B continued to have the highest prevalence among first-time donors.
3. During 2015-2024, no significant trend was observed in hepatitis B prevalence in first-time donors in Australia. The prevalence among first-time donors in 2024 has remained relatively stable at 69.8 per 100 000 donations. This equates to 0.07% of the total first-time donations in 2024, which is 12 times lower than the estimated ~0.8% prevalence reported in national hepatitis B surveillance data for 2023.
4. Among the 92 hepatitis B-positive donors, 27 (11 first-time and 16 repeat donors) were classified as occult hepatitis B (OBI) based on the detection of hepatitis B DNA without HBsAg. Of these OBI positive donors, more than half were repeat donors (59%), most were men (70%), had an average age of 55 years and almost half were Asian born (44%).
5. There were three incident hepatitis B donors in 2024. Two were likely to be vaccine breakthrough infections, likely less infectious due to the presence of neutralising antibodies. There was no significant temporal trend in hepatitis B donor incidence during the nine-year study period 2016-2024.
6. In 2024, hepatitis B-positive donors were roughly the same age as all donors (44 years versus the mean age 45 years), more likely to be male (72% in hepatitis B-positive donors versus ~50% in all donors) and more likely to be born in Northeast/Southeast Asia (50%). These characteristics are consistent with reporting in previous years.
7. The most common putative risk factor for hepatitis B-positive donors during the five-year period 2020-2024 was ethnicity/country of birth (75%). In Australia, an estimated 73% of people living with chronic hepatitis B were born overseas at the end of 2023.
8. No probable or confirmed transfusion-transmitted hepatitis B cases were reported in Australia during 2016-2024. The last probable case occurred in 2011.

Hepatitis C-positive Australian blood donors

1. There were 76 hepatitis C-positive donors detected among all donors in 2024 (61 in first-time donors and 15 in repeat donors). In 2024, the proportion of RNA positive (considered infectious) donors was 28% (21/76) and over 90% of those (19/21) were first-time donors. The proportion of RNA positive donors has incrementally declined from around 75% when hepatitis C RNA donation testing was introduced in 2000.
2. In 2024, hepatitis C was the second most common TTI detected in first-time blood donors after hepatitis B.
3. During 2015-2024, a small but significant increasing trend was observed in hepatitis C prevalence in first-time donors in Australia. This increase is likely to be, at least in part, associated with prospective donors with 'resolved' hepatitis C (antibody positive / RNA negative) presenting to donate subsequent to successful treatment and donors being eligible five years after last injecting drugs.
4. The 0.001% first-time donor prevalence in 2024 is 187 times lower than the estimated 0.24% living with chronic hepatitis C reported for hepatitis C national surveillance data for 2024. The population estimate is based on modelling and therefore there are uncertainties.
5. There were two hepatitis C incident donors in 2024, both had NAT 'yield' (RNA positive / antibody negative) results, with one being a first-time donor. The average incidence rate of hepatitis C among previously negative repeat donors during 2016-2024 was low at 0.65 per 100 000 donor-years of observation. Hepatitis C incidence has shown no significant trend during the study period 2016-2024.
6. In 2024, the mean age of hepatitis C-positive donors was 52 years compared to 45 years for all donors. They were more likely to be male (55% versus ~50% in all donors), and the majority (72%) were born in Australia, a substantial increase compared to 2023, when 57% were born in Australia.
7. The most common putative risk factor reported by hepatitis C-positive donors during 2020-2024 was injecting drug use (30%), however, for 26% of hepatitis C-positive donors, the risk factor remained undetermined or unknown.
8. No probable or confirmed transfusion-transmitted hepatitis C cases were reported in Australia during 2016-2024.



HIV-positive Australian blood donors

1. There were seven HIV-positive donors detected among all donations in 2024 (five first-time and two repeat donors).
2. The prevalence of HIV-positive first-time donors during 2015-2024 remained very low at 2.7 per 100 000 donations (or 0.003% of total first-time donations) and comparatively much lower than hepatitis B (73.8 per 100 000 donations) and hepatitis C (54.5 per 100 000 donations). No significant HIV prevalence trend was observed during 2015-2024. The 0.003% HIV prevalence in first-time donors is 24 times lower than the 0.1% prevalence reported for HIV national surveillance data in 2024.
3. There were no incident HIV donors in 2024. There was no statistically significant incidence trend in the 2016-2024 period.
4. In 2024, the mean age of HIV-positive donors was 39 years, younger than the 45 years for all donors. Like hepatitis B and hepatitis C, HIV-positive donors were more likely to be male as compared to all donors (86% vs ~50%). In 2024, 71% (5/7) of the HIV-positive donors were born in Australia.
5. The most common reported route of exposure for HIV-positive donors during 2020-2024 was male-to-male sexual activity (22%), while for 48%, the risk factor was undetermined. In comparison, men who have sex with men accounted for 62% of cases of HIV first ever diagnosed in Australia in 2024 (including those who reported male-to-male sex and injecting drug use), followed by heterosexual sex (27%).
6. No probable or confirmed transfusion-transmitted HIV cases were reported in Australia during 2016-2024.

HTLV-positive Australian blood donors

1. There were four HTLV-positive donors detected among all HTLV-tested donations in 2024 (all four in first-time donors).
2. The prevalence of HTLV-positive first-time donors during 2015-2024 has remained low at 4.7 per 100 000 donations. The majority (78%) of these donors' risk factor was ethnicity or country of birth. Population prevalence for HTLV is unknown; therefore, meaningful comparison of prevalence rates among first-time donors and the general population is not possible.
3. In 2024, the mean age of the four HTLV-positive donors was 43 years. In 2024, 75% were female, noting that whilst an increase from previous years the numbers are small. One of the four HTLV-positive donors was born in Australia, one in Americas, and two were born in Southern and Central Asia.
4. The most common putative risk factor for HTLV-positive donors during 2020-2024 was ethnicity or country of birth (87%).
5. No probable or confirmed transfusion-transmitted HTLV cases were reported in Australia during 2016-2024.

Potentially infectious syphilis infection among Australian blood donors

1. There were 26 potentially infectious syphilis donors (10 first-time and 16 repeat donors) detected in 2024, the highest number recorded to date.
2. During the past 10 years, 2015-2024, the prevalence of potentially infectious syphilis in first-time donors and repeat donations has shown a significant increasing trend. Likewise, there has been an increase in the rate of notification of infectious syphilis in the general population between 2015 and 2024.
3. The mean age of donors with potentially infectious syphilis in 2024 was 39 years (compared to 45 years for all donors), and the majority (65%) were male.
4. The most common reported route of exposure by donors with potentially infectious syphilis during 2020-2024 period was having a partner with an unspecified risk (37%).



Donor compliance

1. Of the 997 TTI-positive donors in 2020-2024, 20.6% (205 donors) were identified as 'non-compliant' in that they had risk factors identified during their post-donation interview that would have deferred them from donating had they disclosed them at the pre-donation interview. Proportionally, first-time donors accounted for 78% (160 donors) of 'non-compliant' donors.
2. The detected non-compliance rate of all TTI-positive donors has fluctuated in the past decade between 15.4 and 27.0%, with the highest rate in 2024. The non-compliance rate among TTI-negative donors is not determined on a regular basis; however, results from a large national survey from 2012-2013 showed a comparatively much lower rate of non-compliance (in the range of 0.05-0.29%).

Malaria testing

1. In 2024, 95 576 donations were tested for malaria antibody, higher than the number of donations tested in both 2023 (78 638) and 2022 (50 560) but remains substantially lower than the 132 338 donations tested in 2020. Of the tested donations, 1 335 (1.4%) were repeatedly reactive for malaria antibodies, representing a decrease from the rates observed in 2023 (1.7%) and 2022 (3.0%).
2. There were no reported cases of transfusion-transmitted malaria during 2024 with the last reported Australian case occurring in 1991.

Bacterial pre-release testing for platelets

1. In 2024, 135 826 platelet donations were screened for bacterial contamination. Among these, 177 (0.13%) and 171 (0.13%) had confirmed or indeterminate bacterial contamination, respectively.
2. Consistent with previous years, by far the most common species isolated was *Cutibacterium* species (80.0%, 278 donations), commensal skin organisms of low pathogenicity which are rarely (if ever) associated with septic transfusion reactions. The next most common group was coagulase-negative staphylococci (8.0%, 28 donations), which are usually considered skin contaminants.
3. Of the platelet donations with confirmed bacterial contamination, 20 contained potentially pathogenic species (one donation each unless stated):
Staphylococcus aureus (six donations), *Streptococcus dysgalactiae* (two donations), *Campylobacter fetus*, *Enterococcus faecalis*, *Granulicatella (Abiotrophia) adiacens*, *Pseudomonas aeruginosa*, *Serratia sarumani*, *Serratia ureilytica*, *Acinetobacter calcoaceticus-baumannii* complex, *Staphylococcus intermedius* group, *Streptococcus agalactiae* (Group B), *Streptococcus bovis*, *Streptococcus pneumoniae*, and *Streptococcus pyogenes* (Group A).
4. In 2024, there were four confirmed cases of transfusion-transmitted bacterial infection. Two each, with *Bacillus hominis* (from one platelet donation) and *Staphylococcus aureus* identified.

Emerging infections

1. During 2024-2025, multiple infections including mpox and local outbreaks of dengue were monitored. The increased cases of Oropouche virus and Chikungunya virus observed overseas and the seasonal outbreak of West Nile virus in Europe were also monitored. The risk to blood safety in Australia remains negligible.
2. In 2024, there were two hepatitis E transfusion-transmissions (from a single donor). In both cases, infection resolved without ongoing complications.





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Abbreviations

ACCESS	the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance
BCS	bacterial contamination screening
CHIKV	Chikungunya virus
DENV	dengue virus
DNA	deoxyribonucleic acid
DQ	donor questionnaire
DYO	donor-years of observation
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus
HCV	hepatitis C virus
HIV	human immunodeficiency virus
HTLV	human T-lymphotropic virus
IDU	injecting drug use
Lifeblood	Australian Red Cross Lifeblood
MPXV	monkeypox virus
PI	pathogen inactivation
NAT	nucleic acid testing
PrEP	pre-exposure prophylaxis
RNA	ribonucleic acid
OBI	occult hepatitis B virus infection
OROV	Oropouche virus
TTBI	transfusion-transmissible bacterial infection
TTI	transfusion-transmissible infection
vCJD	variant Creutzfeldt-Jakob disease
WNV	West Nile virus
WP	window period
MVEV	Murray Valley encephalitis virus



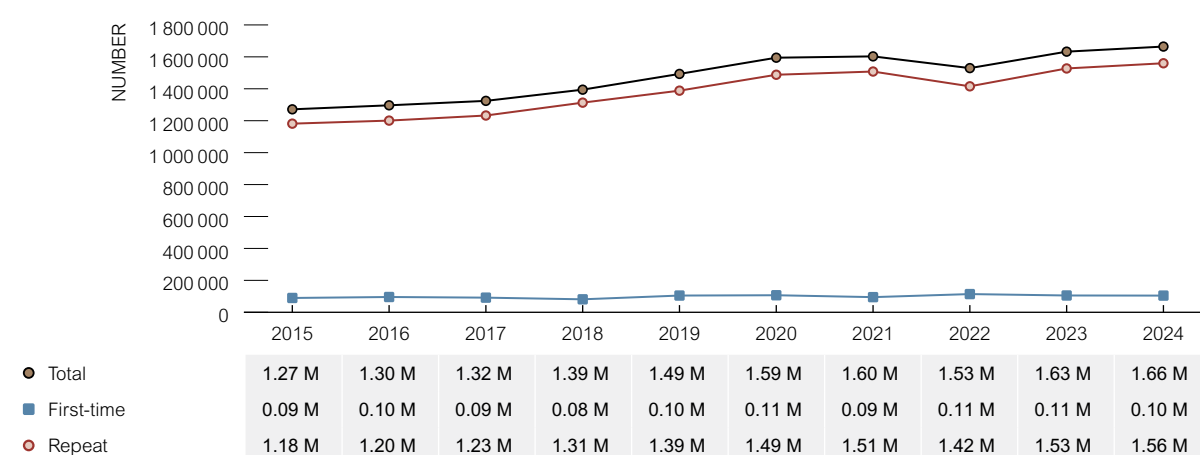


Main Findings

Blood donors in Australia

Almost 15 million donations were tested for transfusion-transmissible infections (TTIs) in Australia during the 10-year period 2015-2024, with an average of 1.48 million donations per year. There were 1.7 million donations in 2024, an increase of 1.8% as compared to 2023. Over the 10-year period, aside from a small decrease in 2022, there has been an increasing trend in the number of donations, from 1.27 million in 2015, to 1.66 million in 2024 (Figure 1). Donations undergo mandatory testing for specific TTIs including hepatitis B, hepatitis C and HIV, and selective testing for HTLV and syphilis. From mid-September 2016, repeat donors donating plasma for fractionation are not tested for HTLV and syphilis. There are different denominators for HTLV and syphilis; from December 2020, repeat donors, with some exceptions, do not require HTLV testing irrespective of the type of donation, and from June 2024, first-time donors donating plasma for fractionation are not tested for syphilis. Therefore, a total of 1.66 million donations were tested for hepatitis B, hepatitis C and HIV in 2024, as compared to around 0.11 million donations for HTLV and 0.91 million donations for syphilis.

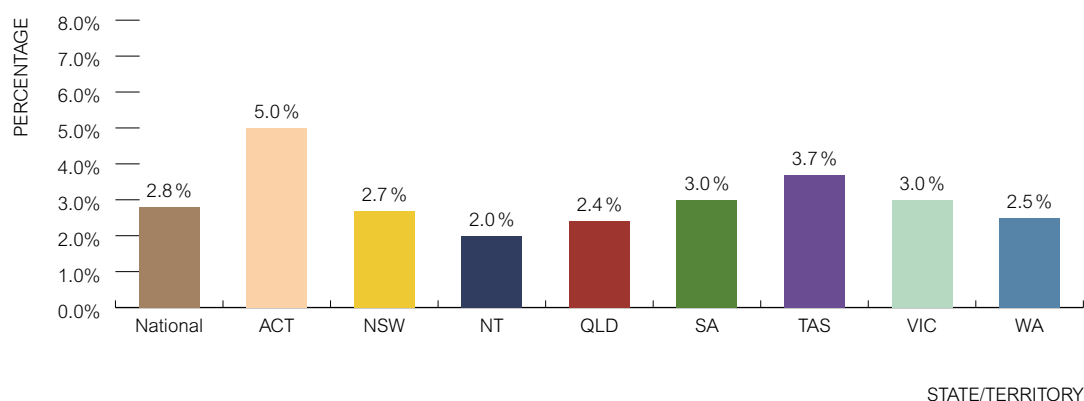
Figure 1 Number of blood donations in Australia, by year of donation, 2015-2024



In 2024, 2.8% of the general population aged 18-80 years (age-eligible to donate*– see Figure 2 note) donated blood in Australia. Together, New South Wales, Queensland and Victoria accounted for 76% of all blood donations. The jurisdiction where the greatest proportion of the age-eligible local population donated blood in 2024 was the Australian Capital Territory (5.0%), followed by Tasmania at 3.7% (Figure 2).

The number of first-time donors decreased slightly from 0.105 million in 2023, to 0.103 million in 2024. This follows a decline of over 8% between 2022 and 2023, when first-time donors decreased from 0.114 million in 2022 to 0.105 million in 2023. However, since 2016, there has been a steady increase in repeat donors each year, with the highest number of repeat donors recorded in 2024 (494 124). This notable increase in repeat donors in 2023 may be attributed to the removal of the vCJD geographical deferral for United Kingdom donors in July 2022. This policy change led to a significant rise in first-time donors in 2022, with 42% of the new donors coming from this cohort. This suggests that many of these individuals returned as repeat donors in 2023 and 2024, contributing to the observed increase.

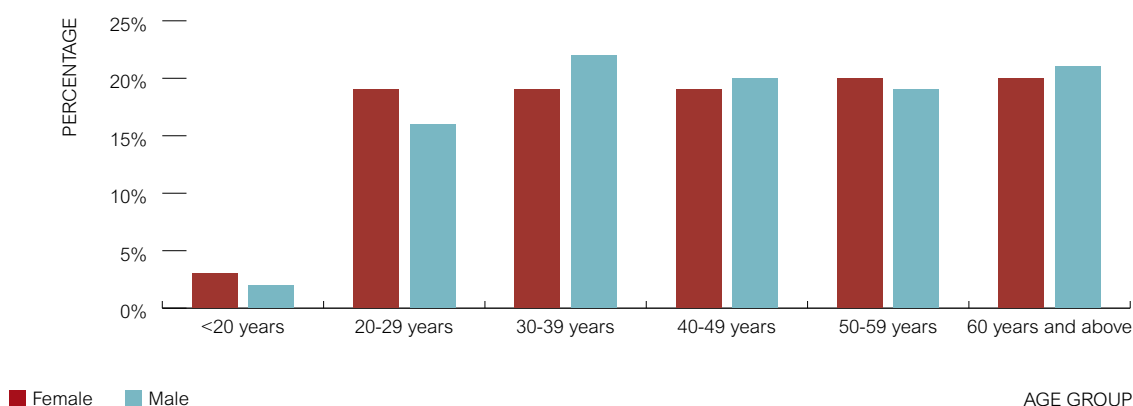


Figure 2 Percentage of age eligible* general population who donated blood in 2024, by state/territory

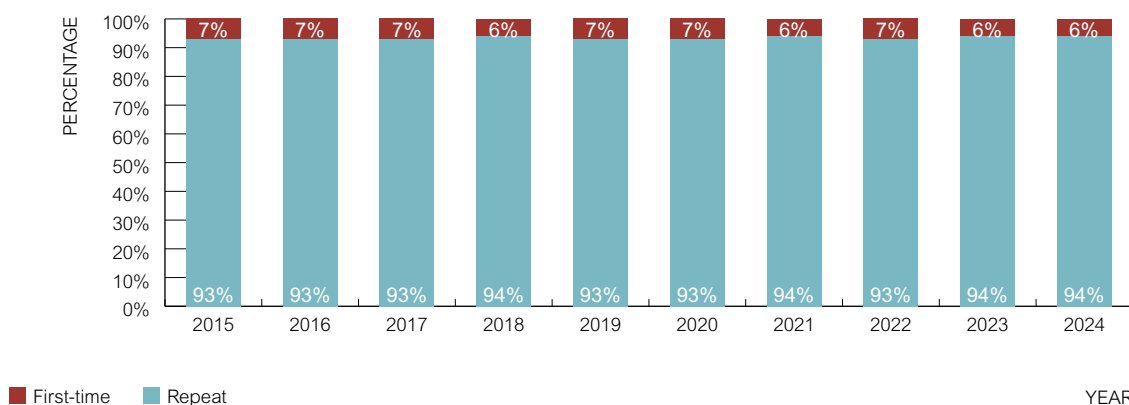
Note: For 30 donors, their state/territory of residence was unknown

* There is no upper age restriction for existing donors but donors over 80 years only make up a small proportion of total donors. New donors are eligible if aged <76 years

Among all blood donors who donated in 2025, 50.5% were male (Figure 3). Just over 40% (40.2%) of donors were aged 50 years and above; the median age of male and female donors was 45 and 44 years, respectively.

Figure 3 Distribution of blood donors in Australia, by age group and sex, 2024

As in previous years, more than 90% of all donations in 2024 were from repeat donors (Figure 4). In the past 10 years, 2015-2024, the percentage of donations by first-time donors remained stable, between 6 and 7%.

Figure 4 Percentage of donations made by first-time and repeat donors among all blood donations in Australia, 2015-2024

Trends in TTIs in blood donors –prevalence, incidence, demographic characteristics and risk factors

This section focuses on national and jurisdictional trends in prevalence and incidence of TTIs during the 10-year period 2015-2024 and the nine-year period 2016-2024, respectively. In addition, the association of demographic characteristics with the presence of TTIs for the year 2024 and the five-year period 2020-2024 are discussed. Putative risk factors associated with positive blood donors in Australia are also reported for the five-year period, 2020-2024. The findings are presented in respective sections by TTI.

Blood donors are a subset of the general population, so to provide context for the report the epidemiology of each relevant TTI in Australia is also discussed in respective sections. Where available, this includes a brief description of the estimated number of people living with TTIs in Australia by the end of 2024, trends in the 10-year period 2015-2024, notifications of newly diagnosed TTIs in Australia, and risk exposure categories associated with HIV. Of note, the 2024 estimates of number of people living with hepatitis B in the general population in Australia were not available at the time of preparation of this report. Therefore, for hepatitis B, comparisons were made with the 2023 estimates. The information is drawn from the Kirby Institute's report - HIV, viral hepatitis and sexually transmissible infections in Australia: Annual Surveillance report 2025.¹

In this report, prevalence is the rate of positive donations per 100 000 donations, and is calculated separately for all donations, new donors and repeat donations. Incidence, however, is the rate of new test-positive among repeat donors. Given the low donor incidence rates nationally, and in all jurisdictions, individual year variation should be interpreted with caution. This is particularly relevant regarding the strict incidence definition. Poisson regression analysis was used to calculate incidence rate ratios (IRRs) and their 95% confidence intervals. A p-value of less than 0.05 was considered statistically significant (see Methodological Notes in [appendix](#) for details).

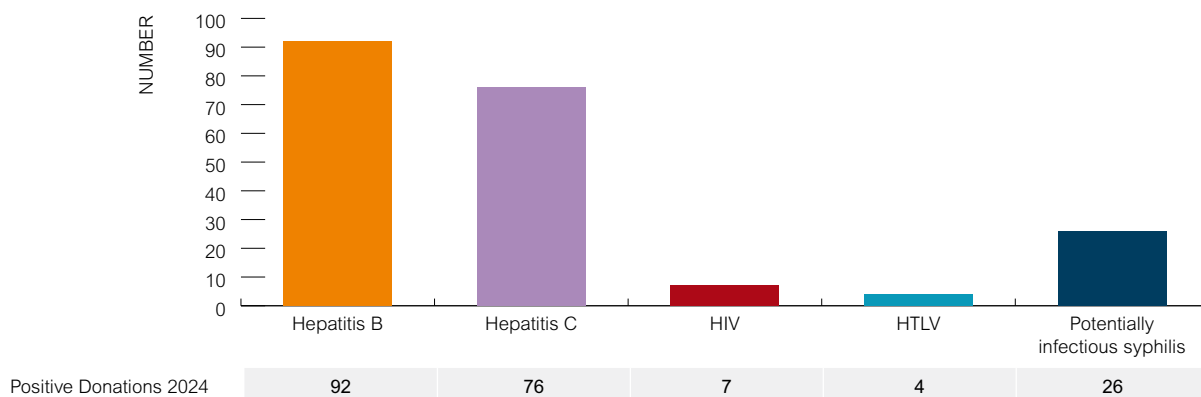
Lifeblood closely monitors donor incidence rates since these correlate directly with the risk of transmission in the window period. Incident donors are defined as positive repeat donors whose last donation tested negative for the same TTI within the last 12 months (with some exceptions; see Glossary in the [appendix](#)). The term 'incident donor' reflects that the definition encompasses a test pattern indicative of recently acquired infection.

In the 10-year period 2015-2024, a total of 1 804 donations (1 411 first-time and 393 repeat donations) were positive for at least one of the TTIs subject to donation testing. Of these, 1 585 were positive for hepatitis B, hepatitis C and HIV (10.7 per 100 000 donations), 169 (1.8 per 100 000 donations) were positive for potentially infectious syphilis and 50 (0.8 per 100 000 donations) were positive for HTLV. As noted above, due to a different total number of donations tested for these TTIs during the last 10 years 2015-2024, (14.8 million donations for hepatitis B, hepatitis C and HIV, as opposed to 6.0 million and 9.2 million donations tested for HTLV and syphilis, respectively), these data are presented separately (Table 1A, 1B and 1C). Of the positive donations during the 10-year period 2015-2024, 85.3% were positive for either hepatitis B or hepatitis C.



In 2024, a total of 204 donors were found positive for at least one of the TTIs subject to testing; one donor was positive for hepatitis C and HIV, making a total of 205 TTIs detected in 2024. Overall, hepatitis B and hepatitis C were the two most frequent TTIs identified in Australian blood donors in 2024, together contributing 82.3% of positive donations (Figure 5). This proportion has decreased by a relative 11.5% as compared to 93.0% in 2015.

Figure 5 Distribution of test positive blood donations in Australia, in 2024

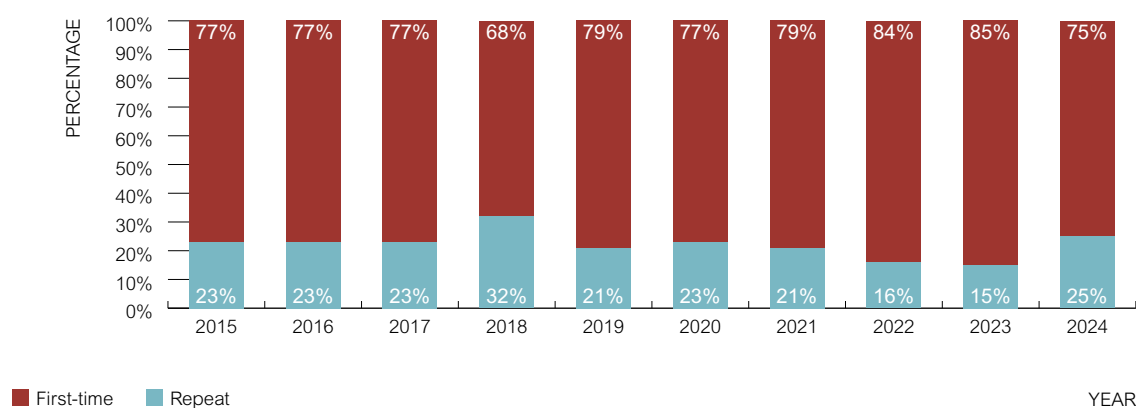


Note: Although a total of 204 donors were found positive for at least one of the TTIs, one donor was positive for hepatitis C and HIV, making a total of 205 TTIs detected in 2024

During 2015-2021, the proportion of repeat donors among all TTI-positive blood donations in Australia was generally stable (21-23%), except for 2018, where the proportion increased to 32% (Figure 6). In 2022 this proportion decreased to 16%, and 15% in 2023, the lowest in the past 10 years, 2015-2024. However, in 2024, this proportion increased to 25%.

While first-time blood donors represented only 19% of the donor population, and 6% of the total donations, they contributed the majority (75%) of TTIs in Australian blood donors in 2024, reflecting detection of prevalent cases rather than incident cases (Figure 6).

Figure 6 Percentage of first-time and repeat donations among all TTI-positive blood donations in Australia, 2015-2024



As outlined in previous reports, the method for calculating incidence has been updated over time, with the most recent change in 2020 (see [Transfusion-transmissible infections in Australia 2021 Surveillance Report](#)). Full details of the current methodology for calculating donor-years of observation (DYO) are provided in the Methodological Notes (see [appendix](#)). Due to the methodology changes, the incidence rates calculated cannot be directly compared to previous reports published prior to 2021. For this reason, updated data are presented for a nine-year period, 2016-2024, which retrospectively applies the updated DYO calculation method. During 2016-2024, a total of 35 incident donors were identified, 11 for hepatitis B, 13 for hepatitis C and 11 for HIV. In 2024, five incident donors were detected: three for hepatitis B, and two for hepatitis C.

Data on the demographic characteristics (sex, age group, state/territory and year of donation) for all blood donors was analysed (see Methodological Notes in the [appendix](#) for details) to determine any trends between demographic factors and presence of any TTI among Australian blood donors in 2024 and the five-year period 2020-2024 separately.

Standardised national data on reported putative risk factors associated with donors positive for hepatitis B, hepatitis C, HIV and HTLV are available since 1999. Importantly, assessing the strength of association of disclosed risk factors is complex and this must be considered when interpreting the data. Risk varies based on a number of variables including the timing and location of the risk event. For the more commonly reported 'risk events', these represent the background population prevalence of the event and little inference on causation should be interpreted. Since 27 September 2020, donors who received tattoos at an Australian licenced/registered tattoo parlour or cosmetic clinic, are eligible to donate plasma for fractionation immediately afterwards.² Following a two-year post-implementation review of this change,² Lifeblood subsequently sought and was granted regulatory approval to accept donations for fresh blood components from seven days after tattoos received in licensed establishments in Australia. This change was implemented on 26 June 2023. Plasma for fractionation donations continue to be accepted with no waiting period.

This report presents risk factor data for the five-year period 2020-2024. A total of 997 positive donors with at least one of the TTIs were observed over the period 2020-2024 (representing a total of 1 001 TTIs). The data on these donors were analysed for the period 2020-2024 to determine the key characteristics of positive blood donors, stratified by year of donation, and findings are presented in the respective TTIs sections.



Table 1 Raw number and prevalence of positive donations in Australia, by state/territory, 2015-2024**Table 1A Hepatitis B, hepatitis C and HIV, by state/territory, 2015-2024**

	All tested donations			Hepatitis B			Hepatitis C			HIV			Total positive donations		
	First time	Repeat	All	First time	Repeat	All	First time	Repeat	All	First time	Repeat	All	First time	Repeat	All
NSW/ACT	325 492	4 295 671	4 621 163	231	49	280	197	43	240	7	7	14	435	99	534
Number (Number per 100 000 donations)				70.97	1.14	6.06	60.52	1.00	5.19	2.15	0.16	0.30	133.64	2.30	11.56
NT	6 861	98 649	105 510	10	2	11	2	3	5	0	0	0	12	5	16
Number (Number per 100 000 donations)				145.75	2.03	10.43	29.15	3.04	4.74	0.00	0.00	0.00	174.90	5.07	15.16
QLD	190 717	2 703 036	2 893 753	106	21	127	101	33	129	7	6	11	214	60	267
Number (Number per 100 000 donations)				55.58	0.78	4.39	52.96	1.22	4.46	3.67	0.22	0.38	112.21	2.22	9.23
SA	67 197	1 174 598	1 241 795	40	11	51	37	12	49	0	2	2	77	25	102
Number (Number per 100 000 donations)				59.53	0.94	4.11	55.06	1.02	3.95	0.00	0.17	0.16	114.59	2.13	8.21
TAS	28 739	509 594	546 544	18	4	22	26	2	28	0	0	0	44	6	50
Number (Number per 100 000 donations)				62.63	0.78	4.03	90.47	0.39	5.12	0.00	0.00	0.00	153.10	1.18	9.15
VIC	272 967	3 670 051	3 943 018	262	45	307	142	34	176	10	5	15	414	84	498
Number (Number per 100 000 donations)				95.98	1.23	7.79	52.02	0.93	4.46	3.66	0.14	0.38	151.67	2.29	12.63
WA	96 949	1 354 926	1 451 875	63	12	75	34	8	42	3	2	5	100	22	122
Number (Number per 100 000 donations)				64.98	0.89	5.17	35.07	0.59	2.89	3.09	0.15	0.34	103.15	1.62	8.40
National	988 922	13 814 736	14 803 658	730	143	873	539	127	666	27	19	46	1 296	289	1 585
Number (Number per 100 000 donations)				73.82	1.04	5.90	54.50	0.92	4.50	2.73	0.14	0.31	131.05	2.09	10.71



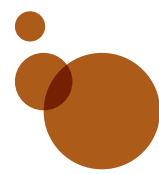
Table 1B HTLV, by state/territory, 2015-2024

State/Territory of donation	All tested donations			HTLV		
	First time	Repeat	All	First time	Repeat	All
NSW/ACT	325 093	1 624 670	1 949 763	17	3	20
Number (Number per 100 000 donations)				5.23	0.18	1.03
NT	6 852	29 984	36 836	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
QLD	190 506	1 025 264	1 215 770	4	0	4
Number (Number per 100 000 donations)				2.10	0.00	0.33
SA	67 127	421 651	488 778	4	1	5
Number (Number per 100 000 donations)				5.96	0.24	1.02
TAS	28 715	175 898	204 613	4	0	4
Number (Number per 100 000 donations)				13.93	0.00	1.95
VIC	272 657	1 308 810	1 581 467	14	0	14
Number (Number per 100 000 donations)				5.13	0.00	0.89
WA	96 828	453 434	550 262	3	0	3
Number (Number per 100 000 donations)				3.10	0.00	0.55
National	987 778	5 039 711	6 027 489	46	4	50
Number (Number per 100 000 donations)				4.66	0.08	0.83

Table 1C Potentially infectious syphilis, by state/territory, 2015-2024

State/Territory of donation	All tested donations			Potentially infectious syphilis		
	First time	Repeat	All	First time	Repeat	All
NSW/ACT	321 423	2 719 855	3 041 278	21	44	65
Number (Number per 100 000 donations)				6.53	1.62	2.14
NT	6 766	44 228	50 994	0	2	2
Number (Number per 100 000 donations)				0.00	4.52	3.92
QLD	188 757	1 610 069	1 798 826	10	16	26
Number (Number per 100 000 donations)				5.30	0.99	1.45
SA	66 565	652 394	718 959	4	3	7
Number (Number per 100 000 donations)				6.01	0.46	0.97
TAS	28 361	254 005	282 366	1	2	3
Number (Number per 100 000 donations)				3.53	0.79	1.06
VIC	268 630	2 199 935	2 468 565	24	28	52
Number (Number per 100 000 donations)				8.93	1.27	2.11
WA	95 546	740 012	835 558	9	5	14
Number (Number per 100 000 donations)				9.42	0.68	1.68
National	976 048	8 220 498	9 196 546	69	100	169
Number (Number per 100 000 donations)				7.07	1.22	1.84





Hepatitis B Virus (hepatitis B)

Epidemiology of hepatitis B in Australia

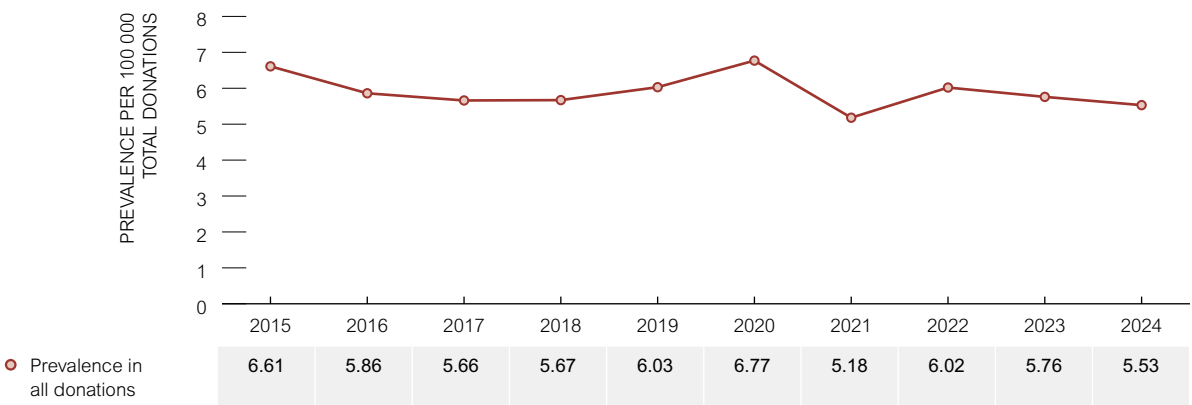
At the end of 2023 an estimated 219 800 people were living with chronic hepatitis B in Australia, of whom an estimated 68.8% (151 161) were diagnosed with chronic hepatitis B, 23.6% (51 840) and 22.7% (49 995) were born in Northeast and Southeast Asia, respectively, and 6.7% (14 785) were among Aboriginal and Torres Strait Islander peoples. In total, there were 5 594 notifications of newly diagnosed hepatitis B infections in Australia in 2024; of these, over half (53.5%) were male, and 93.0% were people aged 25 years and above. Australia has a concentrated hepatitis B epidemic among key populations: migrants from high prevalence countries, particularly Southeast Asia; Aboriginal and Torres Strait Islander peoples; and people who inject drugs. Over the 10-year period, 2014-2023, the population rate of diagnosis of hepatitis B in Australia has declined in younger age groups: 30-39 years (from 60.0 to 36.2 per 100 000); 20-29 years (from 44.8 to 17.5 per 100 000); and <20 years (from 4.1 to 1.6 per 100 000). This decline could be attributable to the successful implementation of immunisation programs for hepatitis B and high levels of vaccine coverage in younger age groups. The estimated prevalence of chronic hepatitis B among people living in Australia is ~0.8%, which is higher than for people living in the United Kingdom (<0.6%)³ but lower than many other countries in Southeast Asia and the Pacific.

Trends in prevalence

All donations

In the past 10 years, 2015-2024, a total of 873 hepatitis B-positive donors have been detected (730 first-time donors & 143 repeat donors) (Table 1A). During this period, no significant trend was observed in hepatitis B prevalence among all donations (IRR 0.99; 95% CI: 0.97-1.01). Overall, in the past 10 years hepatitis B prevalence in all donations has fluctuated between 5.1 to 6.7 per 100 000 donations (Figure 7). However, the average prevalence among all donations for the period 2015-2024 shows a decline to 5.9 per 100 000 donations (0.01% of the total donations) (Table 1A) as compared to 8.6 and 7.1 per 100 000 donations for the 2006-2015 and 2010-2019 periods, respectively. This decline is not due to a decline in first-time donor prevalence or a decline in incident donors. Predominantly, it reflects the incremental identification and deferral of repeat donors with occult hepatitis B (OBI; n=180) since hepatitis B NAT commenced in 2010 (see OBI section below). Donors with OBI characteristically have very low hepatitis B viral loads (<200 IU/mL) which are often close to the limit of detection of the most sensitive hepatitis B DNA tests.⁴ For detail on the number and prevalence rate of hepatitis B-positive donors among all donations for 2024, see Supplementary Table 1.

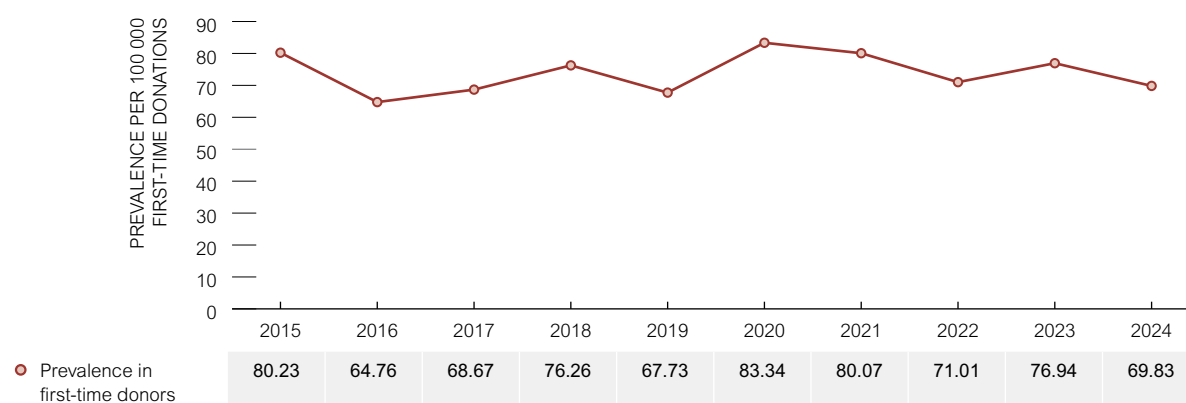
Figure 7 Hepatitis B prevalence in all blood donations in Australia, by year of donation, 2015-2024



First-time donors

Over the 10-year period 2015-2024, no significant annual trend is apparent among first-time donors (Figure 8) (IRR: 1.00; 95% CI 0.98-1.03). However, the average prevalence for the period 2015-2024 shows a decline to 73.8 per 100 000 donations (0.07% of the total first-time donations) (Table 1A) as compared to 81.6 and 75.5 per 100 000 donations for the 2006-2015 and 2010-2019 periods, respectively.

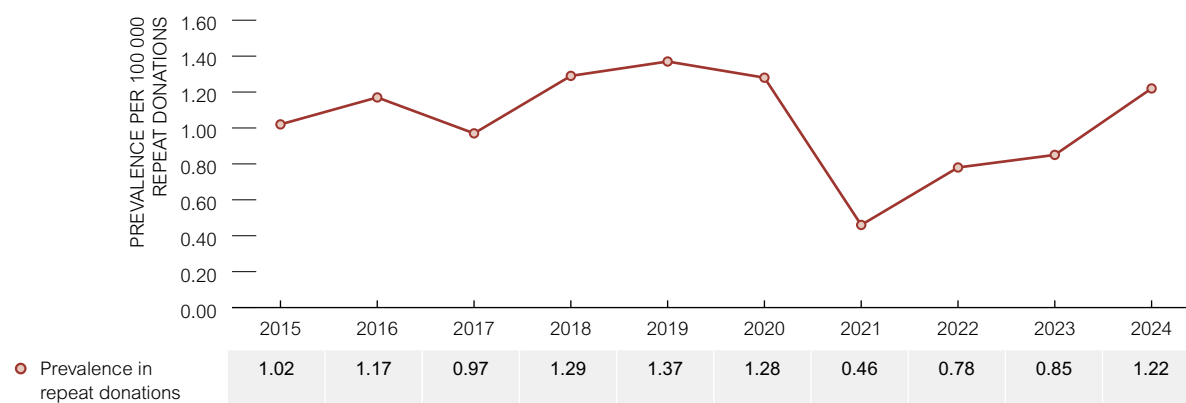
Figure 8 Hepatitis B prevalence in first-time blood donors in Australia, by year of donation, 2015-2024



Repeat donations

Overall, hepatitis B prevalence in repeat donations was 1.04 per 100 000 over the 10-year period 2015-2024 (Table 1A). Prevalence has fluctuated between 0.46 and 1.37 per 100 000 repeat donations (Figure 9), however there is no significant annual trend in hepatitis B prevalence among repeat donations (IRR: 0.98; 95% CI: 0.92-1.03).

Figure 9 Hepatitis B prevalence in repeat blood donations in Australia, by year of donation, 2015-2024

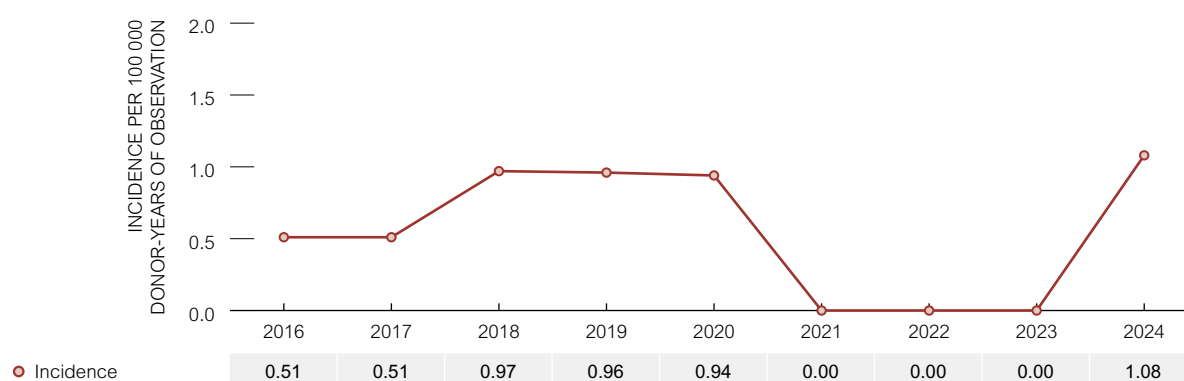


Trends in incidence

For the nine-year period 2016-2024, there was a total of 11 hepatitis B incident donors detected with no statistically significant trend observed for incidence rates (between 0.0 and 1.1 per 100 000 donor-years of observation; (IRR: 0.94; 95% CI: 0.75-1.18) (Figure 10). Three incident hepatitis B donors were detected in 2024, the first incident hepatitis B donors detected since 2020. Two of the three incident donors were likely to be vaccine breakthrough infections, are likely less infectious due to the presence of neutralising antibodies.

No probable or confirmed transfusion-transmitted hepatitis B cases were reported in Australia during 2016-2024. One probable case (in 2011) was reported in the 2010-2019 period. For details on this case, see [Transfusion-transmissible infections in Australia, 2017 Surveillance Report](#).

Figure 10 Hepatitis B incidence in repeat blood donors in Australia, by year of donation, 2016-2024



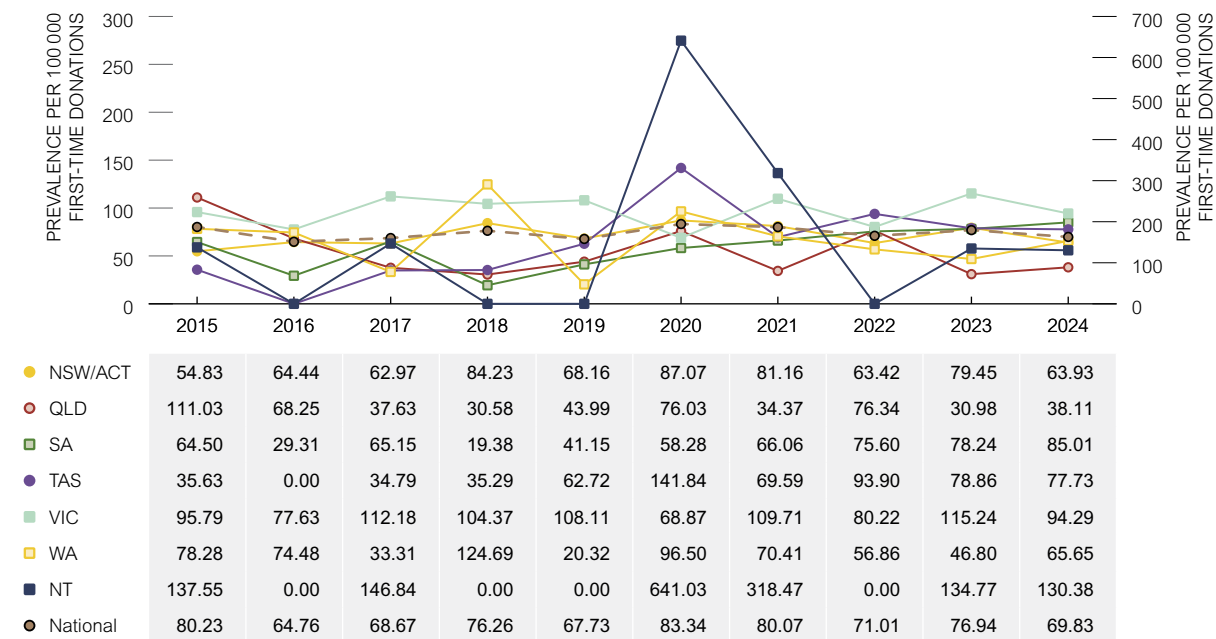
Trends in hepatitis B by state/territory

Consistent with previous TTI surveillance reports, the hepatitis B prevalence among first-time donors varied markedly by jurisdiction in 2024, which is expected given random variation with small numbers. While the national prevalence was 69.8 per 100 000 donations, this ranged from 38.1 (Queensland) to 130.4 (Northern Territory) per 100 000 donations across jurisdictions (Figure 11).

For the 10-year period 2015-2024, highest average prevalence among first-time donors was observed in the Northern Territory, at 145.8 per 100 000 donations, followed by Victoria at 96.0 per 100 000 donations; given the small number of positive donors for the Northern Territory, which ranged between 0-4 per year, this should be interpreted with caution. In comparison, the Northern Territory had the highest rate of diagnosis of hepatitis B reported in national surveillance data for the 2015-2024 period (between 63.0 per 100 000 in 2015 and 43.4 per 100 000 in 2024), followed by New South Wales (between 29.1 per 100 000 in 2015 and 20.7 per 100 000 in 2024) and Victoria (between 29.0 per 100 000 in 2015 and 20.7 per 100 000 in 2024).¹

Generally, hepatitis B incidence in repeat donors has remained low across most Australian jurisdictions during the past nine years. There were three incident hepatitis B donors detected in 2024 (New South Wales [$n=2$], Queensland [$n=1$]), the first since 2020. Among donors in South Australia and Western Australia, hepatitis B incidence has been zero since 2016. Prior to 2024, Queensland also had no incident donors detected since 2016.



Figure 11 Hepatitis B prevalence among first-time donors, by state/territory and year of donation, 2015-2024ⁱ

ⁱ Prevalence in the NT is provided according to the scale on the secondary axis on the right-hand side

Occult hepatitis B

As noted, the implementation of hepatitis B virus DNA testing for all donations from 2010 has facilitated the identification of OBI among the donor population.⁴ To the end of 2024, 277 donors with OBI have been detected, notified and referred for external clinical assessment which reduces the residual risk of hepatitis B and contributes to the identification of undiagnosed hepatitis B in Australia. In 2024, 27 of the 92 (29.3%) hepatitis B-positive donors detected were classified as OBI, as compared to 16 of 94 (17.0%) in 2023. Of the 27 OBIs, 19 (70.4%) were men and eight (29.6%) were women, and more than half (16/27; 59.3%) were repeat donors, with an average age of 55 years. Almost half (12/27; 44.4%) of donors with OBI in 2024 were born in Asia (Southeast/Northeast Asia [n=11], Southern and Central Asia [n=1]).

Comparison of hepatitis B prevalence among blood donors and the general population

This section presents a comparison of hepatitis B prevalence among first-time blood donors and the general population. As noted above, the 2024 estimates for people living with hepatitis B in general population were not available at the time of report preparation, therefore although blood donor data are presented for 2015-2024 and 2024, comparison with the general population was made with a combined period of 2014-2023 and 2023, separately. Subsequently, a discussion is presented on the prevalence reduction in first-time donors as compared to the general population.

The prevalence of hepatitis B is much higher in the general population than in blood donors (Table 2), which is consistent with previous Lifeblood studies^{5,6} and expected, based on effective donor selection/education. Hepatitis B prevalence is substantially lower in blood donors than the estimated prevalence in the general population, with 12-times lower prevalence in first-time donors during the period 2014/2015-2023/2024 and for the year 2023/2024. Given blood donors are drawn from the general population, the lower prevalence observed in first-time donors is interpreted to predominantly reflect the combined effectiveness of donor education and donor selection policies.



Table 2 Comparison of hepatitis B prevalence in blood donors with population prevalence,* 2023/2024 and 2014/2015-2023/2024

TTI	Estimated population prevalence (per 100 000 people)		Prevalence in first-time blood donors (per 100 000 donations)		Comparison of hepatitis B prevalence in first-time blood donors with population prevalence	
	2014-2023	2023	2015-2024	2024	2014/2015- 2023/2024	2023/2024
Hepatitis B	862	825	73.82	69.83	12 times lower	12 times lower

* The 2023 hepatitis B prevalence in the general population was calculated by taking the estimated number of people living with chronic hepatitis B in 2023,¹ and dividing it by the estimated mid-year resident Australian population in 2023 as reported by the Australian Bureau of Statistics. For the period 2014-2023, an average of the 10 years' prevalence rates was calculated. Due to updated modelling methods for calculating estimated number of people living with chronic hepatitis B, estimates may be different from those presented in previous years of reporting.

Characteristics of hepatitis B-positive blood donors

Demographic characteristics (sex, age group, and state/territory) for all hepatitis B-positive blood donors in 2024 and the five-year period 2020-2024 are listed in Supplementary Tables 3 and 4 respectively. In 2024, most hepatitis B-positive donors were male (72%), and 64% of hepatitis B-positive donors lived in New South Wales or Victoria. However, the rate of hepatitis B infection was highest among donors in the Northern Territory (26.9 per 100 000 donations).

In the five-year period 2020-2024, most hepatitis B-positive donors were male (71%). Most were aged 30-39 (32%), and most were in Victoria (32%) and New South Wales (31%). However, the rate of hepatitis B of infection was highest in the Northern Territory (45.9 per 100 000 donations).

Nationally, hepatitis B notification rates in Australia have been consistently higher in males (28.4 per 100 000 in 2015 to 22.0 per 100 000 in 2024), than females (24.1 per 100 000 in 2015 to 18.4 per 100 000 in 2024). Notification rates declined in all age groups; however, the greatest declines were seen among the younger age groups (aged under 35 years, likely as a result of universal hepatitis B vaccination), with relatively stable rates in those aged 35+ years. The rate has consistently been highest in the Northern Territory between 2015-2020 (63.0 per 100 000 in 2015 to 36.0 per 100 000 in 2020) but fell by ~50% in 2022 to 18.1 per 100 000 population before increasing to 43.4 per 100 000 population in 2024. In all other jurisdictions the rate of hepatitis B diagnosis has also declined during the 10-year period 2015-2024, with the greatest decline observed in South Australia (32%) where the rate decreased from 21.1 per 100 000 in 2015 to 14.3 per 100 000 in 2024.¹

Risk factors associated with hepatitis B-positive donors

Of the 469 hepatitis B positive donors during 2020-2024, 85% were first-time donors, 71% were male, and the mean age was 41 years with a wide range (18-76) (Table 3). Most (93%) of the hepatitis B positive donors were born overseas, which reflects the epidemiology of hepatitis B in the general population. Ethnicity or country of birth (75%) was the most frequent risk factor for hepatitis B positivity, with 50% born in Northeast & Southeast Asia in 2024 (Figure 12). There were only five incident hepatitis B positive blood donors in the last five years, consistent with a low and stable incidence rate.



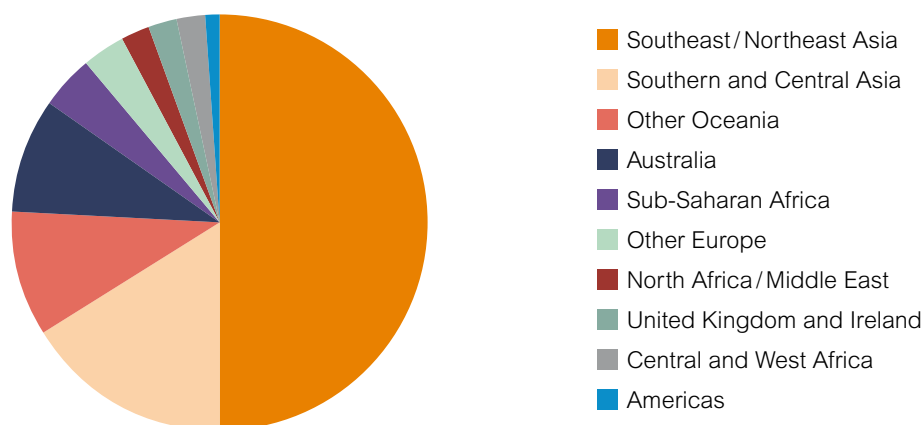
Table 3 Characteristics of hepatitis B-positive donors, by year of donation, 2020-2024

Characteristics	2020	2021	2022	2023	2024	2020-2024
Number of positive donors	108	83	92	94	92	469
Number of positive first-time donors (%)	89 (82%)	76 (92%)	81 (88%)	81 (86%)	73 (79%)	400 (85%)
Number of male donors (%)	68 (63%)	59 (71%)	71 (77%)	69 (73%)	66 (72%)	333 (71%)
Mean age (range) in years	41 (18-74)	41 (20-76)	39 (21-75)	40 (18-75)	44 (20-75)	41 (18-76)
Number of incident donors	2	0	0	0	3	5
Number of donors born in Australia (%)	9 (8%)	2 (2%)	6 (7%)	8 (8%)	8 (8%)	33 (7%)
Main reported risk factor	Ethnicity/COB ¹ 71%*	Ethnicity/COB ¹ 78%*	Ethnicity/COB ¹ 80%*	Ethnicity/COB ¹ 76%	Ethnicity/COB ¹ 73%	Ethnicity/COB ¹ 75%
Second reported risk factor	FH/HC ² 16%	FH/HC ² 18%	FH/HC ² 16%	FH/HC ² 19%	FH/HC ² 16%	FH/HC ² 17%

1 COB= Country of birth

2 FH/HC= Family history/Household contact

* 1 out of 9, 1 out of 2, 1 out of 6, 1 out of 8, and 3 out of 8 donors born in Australia had Ethnicity as their major risk factor in 2020, 2021, 2022, 2023 and 2024 respectively

Figure 12 Hepatitis B-positive donors, by country/region of birth, 2024 (n=92)

Over the past five years, 2020-2024, no discernible overall trend was seen in first-time and repeat or male and female donors.

For more information on the number and percentage of hepatitis B-positive donors by sex, age group, donor status and country of birth for the year 2024 and the period 2020-2024, see Supplementary Tables 3-7.

Major exposure categories among blood donors

Blood donors are asked about multiple potential sources of exposure. In the absence of another declared risk factor, e.g. if the blood donor reports they had an operation, then this will be listed as a potential health care exposure risk even though this may be a very unlikely route of infection.

Major exposure categories among hepatitis B-positive blood donors are listed in Table 4 (see [appendix](#) for the classification of key exposure categories). Consistent with previous years, the most frequent risk factor for hepatitis B-positive donors was ethnicity or country of birth, which accounted for 72.8% of the hepatitis B-positive donors in 2024. This finding also parallels the general population data that shows that country of birth is the strongest risk factor for chronic hepatitis B in Australia.⁴⁻⁶



Table 4 Major potential risk categories among hepatitis B-positive blood donors, 2024

Major risk category	Hepatitis B-positive blood donors (%)
Country of birth/Ethnicity	72.8
Household contact/Family history	16.3
Sexual contact ⁱ	6.5
Undetermined/unknown/not reported	2.2
Injecting drug use	1.1
Other	1.1

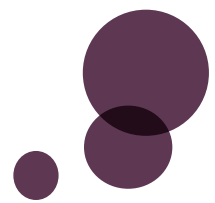
ⁱ Includes four sub-groups: Male-to-male sexual activity, partner with known risk or known to be positive, partners with unspecified risks, and engaged in sex work.
 Note: Percentages may not add to exactly 100% due to rounding.

For more information on the number and percentage of hepatitis B-positive donors by sex, donor status and exposure category for the year 2024 and the period 2020-2024, see Supplementary Tables 8-11.

Conclusion

- Hepatitis B prevalence in first-time blood donors has shown no significant trend since 2015 and is substantially lower (12 times) than the general population estimates for the period 2014/2015-2023/2024. The lower prevalence among blood donors supports the general effectiveness of the donor questionnaire and specifically that repeat donors understand what constitutes 'risk behaviour' for acquiring transfusion-transmissible infections.
- Hepatitis B prevalence in repeat blood donations has also shown no significant trend in the period 2015-2024.
- Three incident donors were detected in 2024, the first since 2020. Two were likely vaccine breakthrough infections, which are generally considered less infectious. There is no statistically significant trend observed for incidence rates for the past nine years.
- Screening for hepatitis B virus DNA continues to identify donors with occult hepatitis B, with 27 OBI among 92 hepatitis B infections in 2024.
- Ethnicity or country of birth was the most frequent risk factor identified among hepatitis B-positive donors in 2024.





Hepatitis C Virus (hepatitis C)

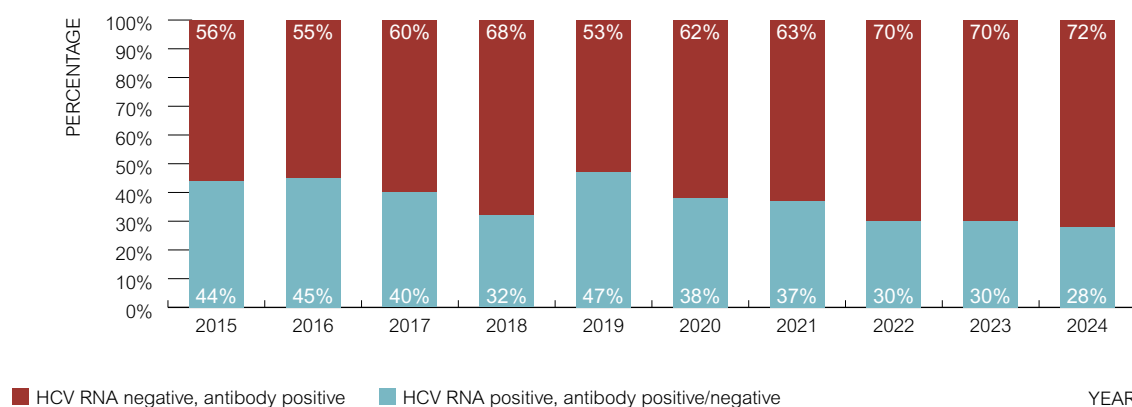
Epidemiology of hepatitis C in Australia

To the end of 2024, an estimated 62 880 people were living with chronic hepatitis C in Australia, of which an estimated 88% or 55 610 were diagnosed with chronic hepatitis C.¹ Australia has a concentrated chronic hepatitis C epidemic among key populations: people who inject drugs, prisoners, people from high prevalence countries and men who have sex with men living with HIV. The rate of diagnosis of hepatitis C in 2024 was 26.3 per 100 000, reflecting a 39% decline from 43.2 per 100 000 population in 2015.¹ The rate of diagnosis in those aged 15-24 years, which, as compared to other age groups, likely reflects recently acquired infection and is therefore taken as a proxy of incidence, has declined by 39% in the past 10 years, 2015-2024.¹ Between 2020 and 2024, the rate of diagnosis in the Aboriginal and Torres Strait Islander population aged 15-24 years declined by 18.7%, from 266.4 to 216.5 per 100 000 in 2024, whereas the rate in non-Indigenous people in the same age group declined by 22.8% from 24.5 to 18.9 per 100 000 in 2024.¹ Similarly, in 2024, the diagnosis rate of hepatitis C was more than seven times higher in the Aboriginal and Torres Strait Islander population (165.4 per 100 000) than that of the non-Indigenous population (22.7 per 100 000). In 2024, most cases (71.7%) of newly diagnosed hepatitis C were in male persons and 88% were in people aged 25 years and above.¹

Hepatitis C virus RNA detection rate in donors

It is generally considered that blood components sourced from hepatitis C virus antibody positive donors without detectable RNA pose a negligible risk of transfusion transmission. These donors are presumed to have past resolved infection but remain ineligible to donate because they will test positive for a mandatory test required for blood release and meet the public health hepatitis C notification criteria. Lifeblood continues to notify and refer these donors for medical follow-up. There had been a steady decline in the proportion of RNA positive (infectious) donors during 2010-2018 (from 72.6 to 32.1%). However, the RNA positive proportion increased to 47.3% in 2019 (Figure 13). This proportion then decreased steadily to 27.6% in 2024. The increase in 2019 may be at least in part explained by the September 2018 change in the deferral period for people who inject drugs from indefinite to five years, resulting in the subsequent attendance of newly eligible donors with undiagnosed hepatitis C.

Figure 13 Proportions of RNA negative, antibody positive and RNA positive, antibody positive/negative among hepatitis C positive donors, 2015-2024



Over 90% (19/21) of the RNA positive donors in 2024 were first-time donors, equating to a rate of RNA positive donors among first-time donors at 18.2 per 100 000 donations. No significant trend was observed in the rate of RNA positive donors among first-time donors (or those not previously hepatitis C tested) for the 2015-2024 period (IRR: 0.99; 95% CI: 0.94-1.04).

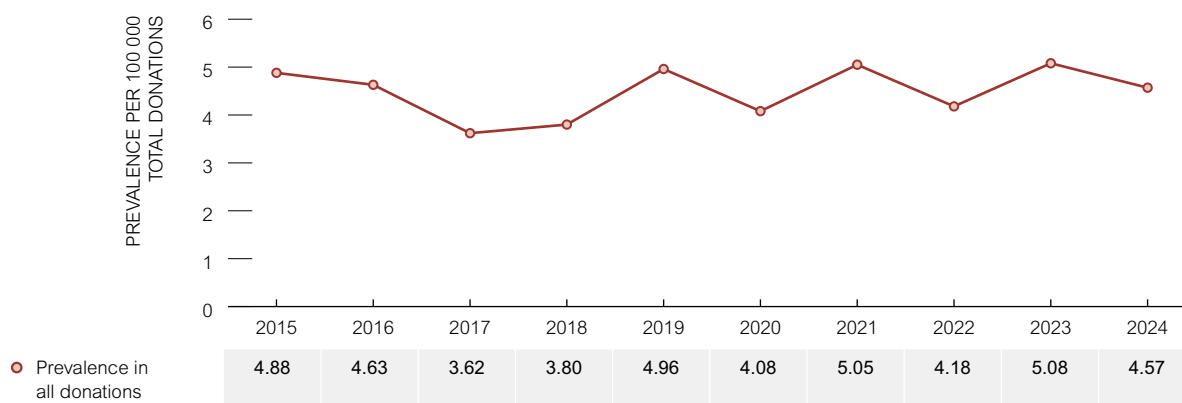
Importantly, first-time hepatitis C-positive donors do not correlate directly with an increase in the hepatitis C residual transmission risk. This is because the increase is among prevalent (long-standing) infections, readily detectable by Lifeblood's dual NAT / antibody testing strategy. The transmission risk for transfused blood components correlates with window period (WP) infections which, in repeat donors, Lifeblood estimates from 'incident' donors (i.e. a confirmed hepatitis C-positive donor with negative hepatitis C testing in the prior 12 months). That is why, for all infectious diseases the deferral strategy is not based on every donor having a risk, but an adequate deferral period from blood donation to cover a WP. The number of hepatitis C incident donors identified by Lifeblood fluctuated between 0-4 during the past nine years, 2016-2024. Lifeblood does not measure incidence directly among first-time donors. However, the best available incidence proxy is the number of hepatitis C NAT 'yield' donors (i.e. RNA positive / antibody negative), which Lifeblood routinely includes in the incident donor count, even if they are first-time donors as they are in the process of seroconverting and represent new infections. There was one such donor in 2024. However, the last first-time hepatitis C NAT 'yield' donor occurred in 2015, arguing against any substantial recent increase in first-time donor incidence.

Trends in prevalence

All donations

In the past 10 years, 2015-2024, 666 hepatitis C-positive donors have been detected (539 first-time donors & 127 repeat donors) (Table 1A). During this period, no significant trend (IRR: 1.00 95% CI: 0.98-1.03) was observed in hepatitis C prevalence among all donations. Overall, in the past 10 years hepatitis C prevalence in all donations has fluctuated between 3.6 and 5.1 per 100 000 donations (Figure 14). For detail on the number and prevalence rate of hepatitis C among all donations for 2024 see Supplementary Table 1.

Figure 14 Hepatitis C prevalence in all blood donations in Australia, by year of donation, 2015-2024



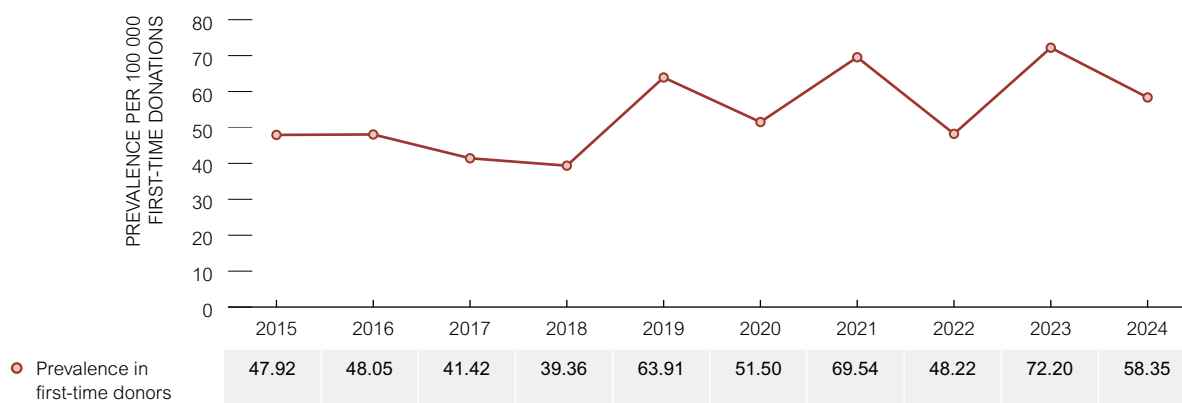
First-time donors

Overall, hepatitis C prevalence in first-time donors was 54.5 per 100 000 over the 10-year period 2015-2024. During this period, there was a small but significant increase in hepatitis C prevalence for first-time donors (IRR: 1.04; 95% CI: 1.01-1.07) from 47.9 in 2015 to 72.2 per 100 000 donations in 2023, which reduced to 58.4 per 100 000 donations in 2024 (Figure 15). The increase in hepatitis C prevalence in first-time donors, especially in the recent years 2019-2024, is likely to be the combined impact of two factors. Firstly, the number of prospective donors attending with a past history of hepatitis C has increased. Lifeblood attributes this to an increased propensity for individuals with resolved hepatitis C (antibody positive / RNA negative) to consider they are now eligible to donate and then answer 'no' to the question about ever having a positive test for hepatitis C. Secondly, eligibility policy regarding injecting drug use changed from indefinite deferral to a five-year deferral in September 2018.



In comparison, the national rate of diagnosis of hepatitis C declined from 43.2 per 100 000 in 2015 to 26.3 per 100 000 in 2024.¹ In addition, there has also been a decrease in the prevalence of RNA and/or antibody positivity among people seen at needle and syringe programs between 2015-2024, from 55% and 57% to 8% and 39% in 2024 for RNA positive and antibody positive respectively. During the same period, the rates of receptive needle and syringe sharing remained stable (range: 16 to 19%), highlighting the importance of sustaining and enhancing harm reduction services.⁷

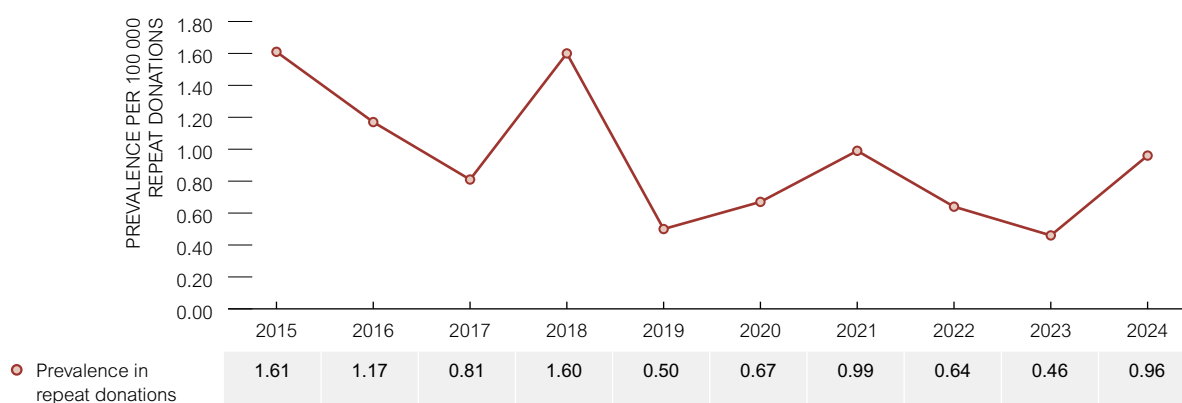
Figure 15 Hepatitis C prevalence in first-time blood donors in Australia, by year of donation, 2015-2024



Repeat donations

Overall, hepatitis C prevalence in repeat donations was 0.92 per 100 000 over the 10-year period 2015-2024 (Table 1A). Prevalence has fluctuated between 0.46 and 1.61 per 100 000 repeat donations (Figure 16), with a small but significant decrease in the 10-year period (IRR: 0.86; 95% CI: 0.75-0.99).

Figure 16 Hepatitis C prevalence in repeat blood donations in Australia, by year of donation, 2015-2024

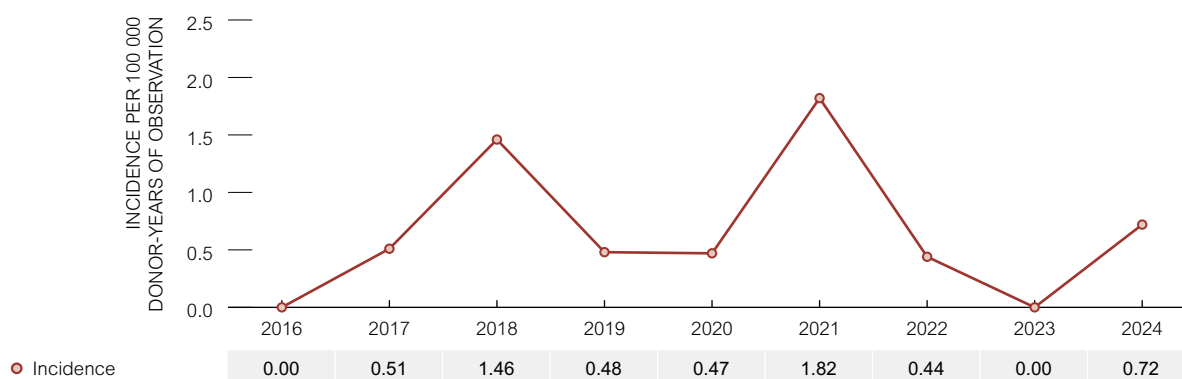


Trends in incidence

Over the nine-year period 2016-2024, a total of 13 incident hepatitis C donors were detected with no statistically significant trend observed for incidence rates (between 0.0 and 1.8 per 100 000 donor-years of observation; IRR: 1.00; 95% CI: 0.81-1.23) (Figure 17). Two hepatitis C incident donors were identified in 2024, both were hepatitis C NAT 'yield' donors (i.e. RNA positive / antibody negative) with one being a first-time donor. The modelled national hepatitis C incidence estimates show a 68% decline in the number of incident cases between 2017 and 2024 (from 4 310 to 1 380 incident cases). Among people attending Australian Collaboration for Coordinated Enhanced Sentinel Surveillance (ACCESS) care sites with high caseloads of people with a history of injecting drugs, hepatitis C incidence declined from 0.7 to 0.2 new infections per 100 person-years between 2015-2024.¹

No probable or confirmed transfusion-transmitted hepatitis C cases were reported in Australia during 2016-2024.

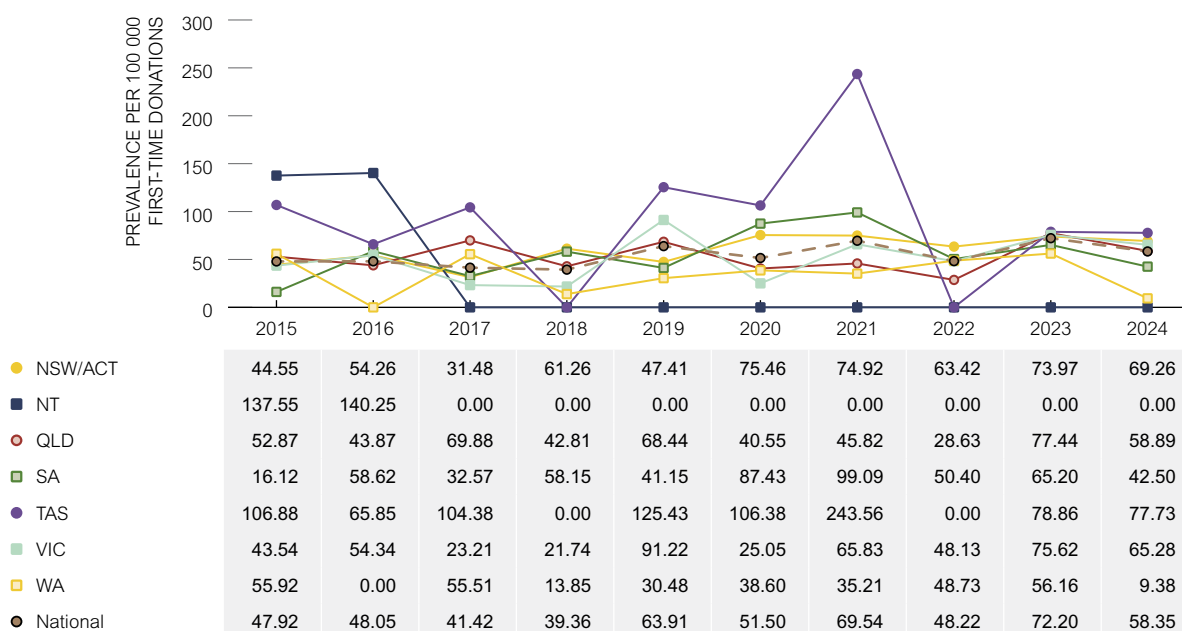


Figure 17 Hepatitis C incidence in repeat blood donors in Australia, by year of donation, 2016-2024

Note: One first-time donor who tested RNA positive / antibody negative (hepatitis C NAT 'yield') included as incident donor in 2024.

Trends in hepatitis C by state/territory

Similar to patterns in previous years' TTI surveillance reports, hepatitis C prevalence among first-time donors varied markedly by jurisdiction in 2024, ranging from 0.0 (Northern Territory) to 77.3 (Tasmania) per 100 000 donations (Figure 18). In each year since 2017, the Northern Territory has recorded the lowest rate of 0.0 per 100 000 donations. The fluctuating trend in hepatitis C prevalence in first-time donors in Tasmania over the past 10 years should be interpreted with caution due to small numbers of positive donors, ranging between zero and seven. National notifications data indicate the notification rate of hepatitis C in Australia in 2024 was highest in Queensland (36.2 per 100 000), followed by the Northern Territory (32.2 per 100 000), Western Australia (31.4 per 100 000) and New South Wales (29.7 per 100 000).¹

Figure 18 Hepatitis C prevalence among first-time donors, by state/territory and year of donation, 2015-2024

Generally, hepatitis C incidence in repeat donors has remained low across most Australian jurisdictions during the past nine years. Reflecting small numbers, in the Northern Territory and Tasmania, hepatitis C incidence has remained zero since 2016. There were two incident hepatitis C donors (South Australia [n=1], Victoria [n=1]) detected in 2024, both were NAT 'yield' (RNA positive / antibody negative) with one being a first-time donor.



Comparison of hepatitis C prevalence among blood donors and the general population

This section presents a comparison of hepatitis C virus RNA prevalence among first-time blood donors and the general population for a combined period of 2015-2024 and then 2024 separately. Only RNA positive donors are included in this comparison, as donors who are antibody positive only are not considered infectious (i.e., past resolved infection). This approach differs from previous TTI surveillance reports which included all donors with a positive antibody result, regardless of RNA status. Subsequently, a discussion is presented on the prevalence reduction in first-time donors compared to the general population.

Hepatitis C prevalence is much higher in the general population than in blood donors, which is consistent with previous Lifeblood studies.^{5,6} The prevalence of hepatitis C virus RNA in first-time donors was 336 and 187 times lower than the prevalence of people living with chronic hepatitis C in the general population for the period 2015-2024, and 2024, respectively (Table 5). It is noted that the population estimate is based on modelling including assumptions about incidence, treatment and clearance and therefore there are uncertainties.

Table 5 Comparison of hepatitis C virus RNA prevalence in blood donors with population prevalence, 2024* and 2015-2024

TTI	Estimated population prevalence (per 100 000 people)		Hepatitis C virus RNA prevalence in first-time blood donors (per 100 000 donations)		Comparison of hepatitis C prevalence in first-time blood donors with population prevalence	
	2015-2024	2024	2015-2024	2024	2015-2024	2024
Hepatitis C	474	236	1.41	1.26	336 times lower	187 times lower

* The 2024 hepatitis C prevalence in the general population was calculated by taking the estimated number of people living with chronic hepatitis C in 2024,¹ and dividing it by the estimated mid-year resident Australian population in 2024 reported by the Australian Bureau of Statistics. For the period 2015-2024, an average of the 10 years' prevalence rates was calculated. Due to updated modelling methods for calculating estimated number of people living with chronic hepatitis C, estimates may be different from those presented in previous years of reporting.

Characteristics of hepatitis C-positive blood donors

The demographic characteristics (sex, age group, and state/territory) for all hepatitis C-positive blood donors in 2024 and the five-year period 2020-2024 are listed in Supplementary Tables 3 and 4 respectively. In 2024, there was a roughly even split between males and female donors who tested positive for hepatitis C (55% male), and 63% were aged over 50 years old. Most were detected in New South Wales (n=28, 37%), or Victoria (n=22, 29%). The rate of hepatitis C infection was highest among donors in the Australian Capital Territory (22.4 per 100 000 donations), likely due to a smaller denominator.

During the five-year period 2020-2024, 59% of hepatitis C positive donors were male, and 55% were aged 50 years or above. The highest rate of hepatitis C positive donors was in Tasmania, at 19.2 per 100 000 donations, followed by New South Wales at 17.2 per 100 000 donations.



Risk factors associated with hepatitis C-positive donors

Of the 369 hepatitis C-positive donors during 2020-2024, 85% were first-time donors and 59% were male. Over the last five years, the mean age was 49 years with a wide range (18-73) (Table 6). Unlike hepatitis B where birth overseas predominated, the majority (63%) of hepatitis C-positive donors during 2020-2024 were born in Australia (Figure 19).

Overall, the main reported putative risk factor for hepatitis C positivity during 2020-2024 was injecting drug use at 30%, while for 26% of the hepatitis C-positive donors the risk factor remained undetermined or unknown.

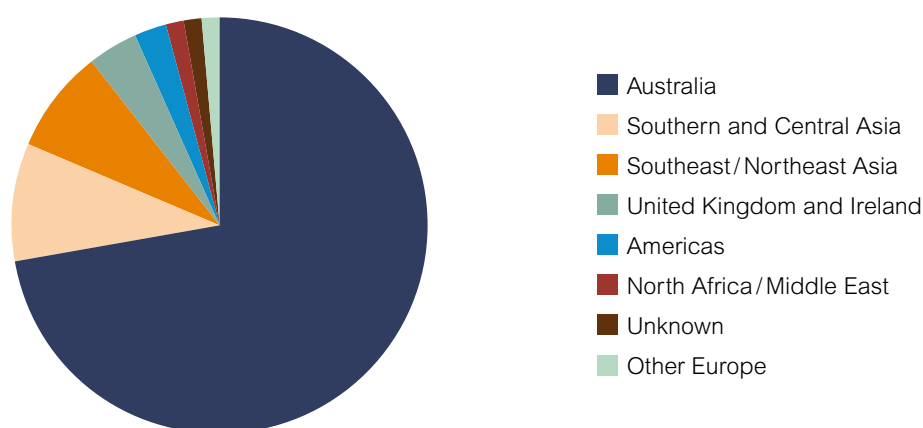
Table 6 Characteristics of hepatitis C-positive donors, by year of donation, 2020-2024

Characteristics	2020	2021	2022	2023	2024	2020-2024
Number of positive donors	65	81	64	83	76	369
Number of positive first-time donors (%)	55 (85%)	66 (81%)	55 (86%)	76 (92%)	61 (80%)	313 (85%)
Number of male donors (%)	42 (65%)	51 (63%)	35 (55%)	46 (55%)	42 (55%)	216 (59%)
Mean age (range) in years	45 (20-69)	49 (18-72)	50 (18-72)	50 (18-70)	52 (21-73)	49 (18-73)
Number of incident donors	1	4	1	0	2	8
Number of donors born in Aus-tralia (%)	36 (55%)	57 (70%)	37 (58%)	47 (57%)	55 (72%)	232 (63%)
Main reported risk factor	IDU ² & undetermined	IDU ²	IDU ²	Undetermined	IDU ²	IDU ²
	20%	32%	32%	31%	39%	30%
Second reported risk factor	TBP ¹	Undetermined	Undetermined	IDU ²	Undetermined	Undetermined
	15%	21%	30%	26%	26%	26%

1 TBP= Tattoo/Body piercing

2 IDU= Injecting drug use

Figure 19 Hepatitis C-positive donors, by country/region of birth, 2024 (n=76)



Over the five-year period 2020-2024, a small increase in the number of hepatitis C-positive first-time donors has continued, at least in part explained by the September 2018 change in the deferral period for people who inject drugs from indefinite to five years. During the same period, the number of hepatitis C-positive male and female repeat donors remained relatively stable. In comparison, there have been gradual declines in hepatitis C notification rates by sex in the 10-year period 2015-2024, from 57.8 to 26.3 per 100 000 male population and 28.9 to 14.9 per 100 000 female population.¹ As the trends in general population are presented in rates as compared to numbers in blood donors, caution must be applied when comparing the two.

For more information on the number and percentage of hepatitis C-positive donors by sex, age group, donor status and country of birth for the year 2024 and the period 2020-2024, see Supplementary Tables 3-7.

Major exposure categories among blood donors

Blood donors are asked about multiple potential sources of exposure and are generally asked about ever being exposed. When donors give blood, they must sign a declaration that informs them there are penalties including imprisonment for anyone providing false or misleading information. Donors may be less likely to declare relevant risk factors in post donation interview.

Major exposure categories among hepatitis C-positive blood donors are listed in Table 7 (see [appendix](#) for the classification of key exposure categories). The most frequent potential risk factor reported for hepatitis C positivity in blood donors in 2024 was IDU (39.5%) followed by country of birth (9.2%). Of note, for 26.3% of blood donors in 2024, the risk factor remained unknown/undetermined.

Table 7 Major potential risk categories among hepatitis C-positive donors, 2024

Major risk category	Hepatitis C-positive blood donors (%)
Injecting drug use	39.5
Undetermined/unknown/not reported	26.3
Country of birth/Ethnicity	9.2
Tattoo or body piercing	7.9
Sexual contact ⁱ	5.3
Blood or tissue recipient	5.3
Household contact/Family history	2.6
Exposure in health care setting	1.3
Other blood to blood contact	1.3
Imprisonment	1.3

ⁱ Includes four sub-groups: Male-to-male sexual activity, partner with known risk or known to be positive, partner with unspecified risks and engaged in sex work
 Note: Percentages may not add to exactly 100% due to rounding

For more information on the number and percentage of hepatitis C-positive donors by sex, donor status and exposure category for the year 2024 and the period 2020-2024, see Supplementary Tables 8-11.



Conclusion

- There was a small but significant increase in hepatitis C prevalence among first-time blood donors during 2015-2024. Higher rates since 2018 may be explained in some part at least by donors with 'cured' hepatitis C, or injecting drug use more than five years ago, donating. As such donors have long standing infection, they do not contribute to any increase in the risk of hepatitis C transfusion transmission.
- Hepatitis C prevalence among first-time blood donors in 2024 and for the period 2015-2024 was 187 and 336 times lower than the general population estimates in 2024 and for the period 2015-2024, respectively.
- Hepatitis C prevalence in repeat blood donations has shown a small but significant decrease in the period 2015-2024.
- Two incident donors were detected in 2024. Both had NAT 'yield' results (RNA positive / antibody negative), and one was first-time donor. Incidence, the best correlate for transfusion transmission risk, has not shown a significant trend in the nine-year study period 2016-2024. This supports the general effectiveness of the donor questionnaire and specifically that repeat donors understand what constitutes 'risk behaviour' for acquiring transfusion-transmissible infections.
- Injecting drug use was the most frequent risk factor identified among hepatitis C-positive donors in 2024.





Human Immunodeficiency Virus (HIV)

Epidemiology of HIV in Australia

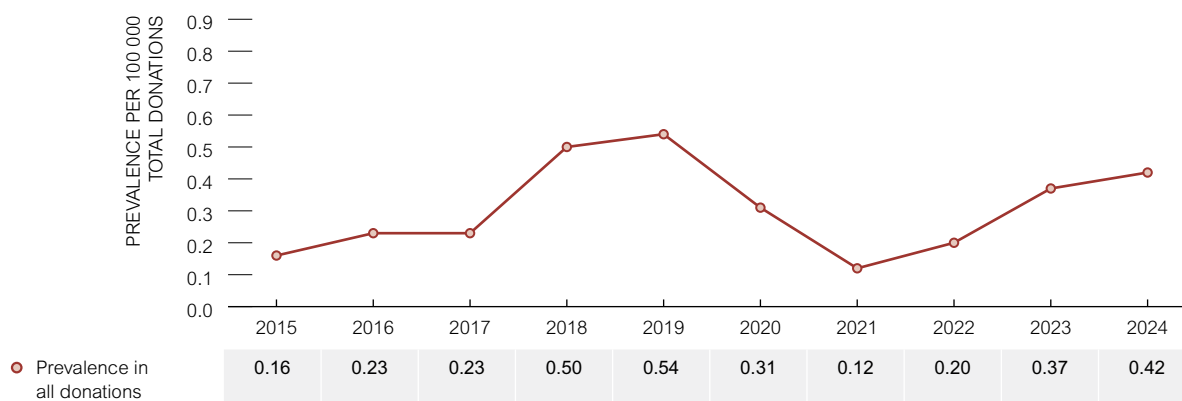
By the end of 2024, an estimated 30 890 people were living with HIV and an estimated majority (94%) or 28 940 were diagnosed.¹ Transmission of HIV in Australia continues to occur primarily through sexual contact between men, with 62% cases of HIV first ever diagnosed in Australia in 2024 involving men who reported sexual contact with men (including those reporting male-to-male sexual activity and injecting drug use).¹ The annual number of new HIV diagnoses (first ever in Australia) has decreased by 27% over the past 10 years, from 1 030 diagnoses in 2015 to 757 in 2024. Of those newly diagnosed with HIV in 2024, 86% were in men, 54% occurred among men who have sex with men, 8% due to male-to-male sexual activity and injecting drug use, 27% were attributed to heterosexual sex, and 2.5% to injecting drug use. At 0.14%, the prevalence or overall proportion of people in Australia who have HIV is lower than other comparable high-income countries, and countries in the region.¹

Trends in prevalence

All donations

In the past 10 years, 2015-2024, a total of 46 HIV-positive donors have been detected (27 first-time donors & 19 repeat donors) (Table 1A). During this period, no significant trend was observed in HIV prevalence among all donations (IRR: 1.03; 95% CI: 0.93-1.14). Overall, the prevalence has fluctuated within a tight range in the past 10 years between 0.1 and 0.5 per 100 000 donations (Figure 20). For detail on the number and prevalence rate of HIV among all donations for 2024, see Supplementary Table 1.

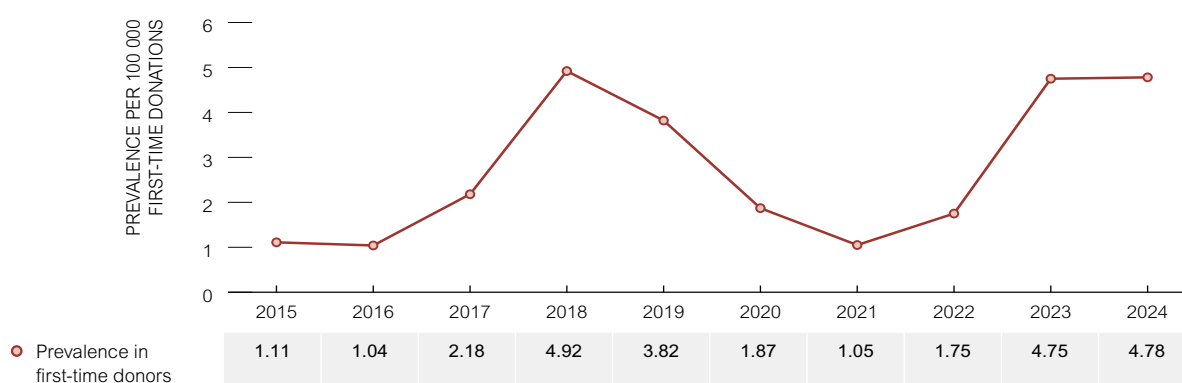
Figure 20 HIV prevalence in all blood donations in Australia, by year of donation, 2015-2024



First-time donors

Overall, HIV prevalence in first-time donors remained very low at 2.7 per 100 000 over the 10-year period 2015-2024 (Table 1A); it peaked at 4.9 per 100 000 donations in 2018 and fluctuated between 1.0 and 3.8 during 2019-2022 before increasing to 4.7 per 100 000 donations in 2023, and 4.8 in 2024 (Figure 21). Overall, no significant trends were observed in HIV prevalence among first-time donors in the past 10 years (IRR: 1.11; 95% CI:0.97-1.27). In comparison, the number of newly diagnosed HIV cases in the general Australian population decreased by 27%, from 1 030 diagnoses in 2015 to 757 cases of newly diagnosed HIV in Australia in 2024.¹ The annual number of new HIV cases has been declining in Australia since 2015, due to a combination of prevention measures, including sustained community-led responses, increased testing and treatment strategies and high uptake of the HIV prevention medication or pre-exposure prophylaxis (PrEP). While a downward trajectory of cases was occurring before 2020, the sharp decline of 38% seen in 2021 as compared to 2019 was most likely influenced by the COVID-19 pandemic, followed by an increase of 40% from 2021 (n=542) to 2024 (n=757).

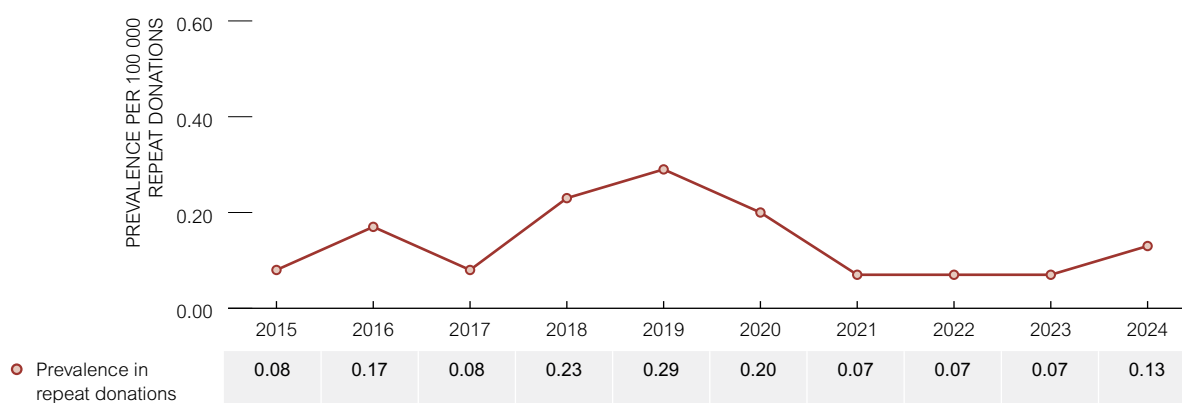
Figure 21 HIV prevalence in first-time blood donors in Australia, by year of donation, 2015-2024



Repeat donations

Overall, prevalence of HIV in repeat donations was very low in the ten-year period 2015-2024, at less than 0.29 per 100 000 repeat donations each year (Figure 22). No significant trend was observed in HIV prevalence among repeat donations in the past 10 years (IRR: 0.95; 95% CI: 0.81-1.11).

Figure 22 HIV prevalence in repeat blood donations in Australia, by year of donation, 2015-2024

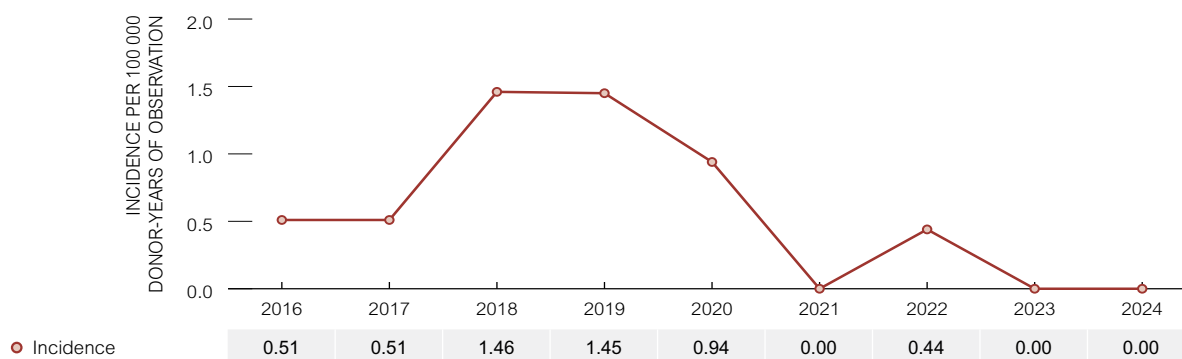


Trends in incidence

There was no incident HIV donor detected in 2024 (Figure 23). For the nine years 2016-2024, there were a total of 11 incident donors identified for HIV, and no significant trend was observed for HIV incidence during this time (IRR: 0.78; 95% CI: 0.61-1.00). While not directly comparable, the HIV incidence during 2020-2024 among gay and bisexual men attending sexual health services remained less than 0.1 per 100 persons years (fluctuating between 0.07 per 100 person years to 0.10 per 100 person years).¹

No probable or confirmed transfusion-transmitted HIV cases were reported in Australia during 2016-2024.

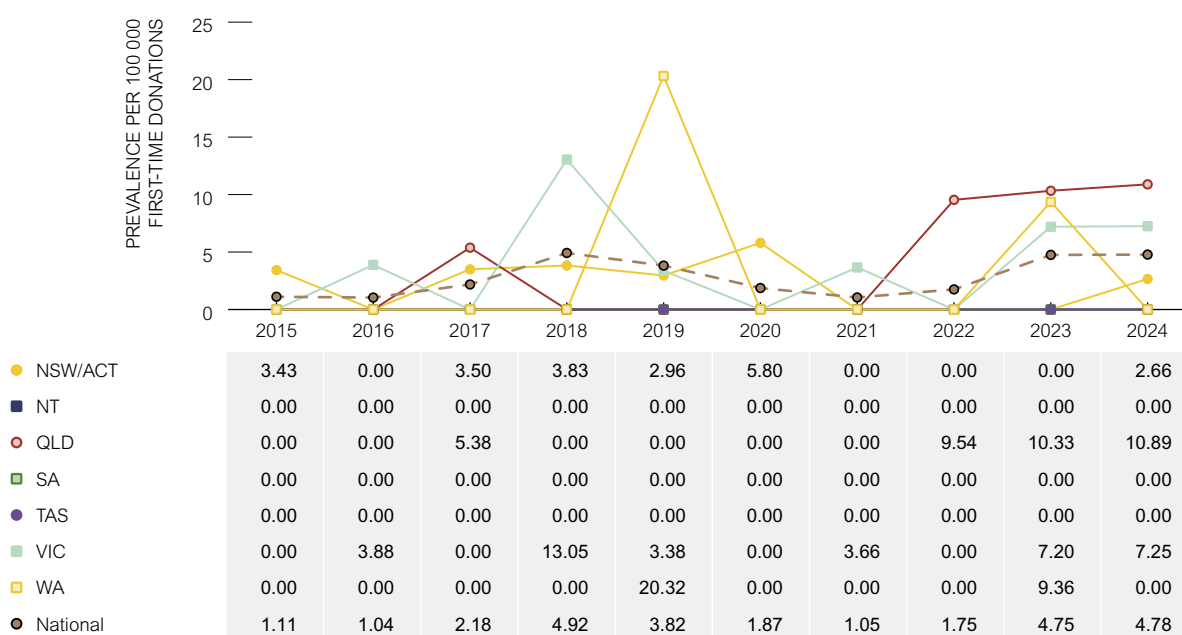
Figure 23 Incidence of HIV in repeat blood donors in Australia, by year of donation, 2016-2024



Trends in HIV by state/territory

In 2024, there were five HIV-positive first-time donors; two from Queensland, two from Victoria and one from New South Wales (Table 1A and Figure 24). The highest prevalence among first-time donors compared to other states was recorded in Queensland, at 10.89 per 100 000 donations, also the highest for the state in the past 10 years. Given small numbers, caution should be taken in interpretation. During 2015-2024, HIV prevalence in first-time donors was zero in the Northern Territory, South Australia and Tasmania.

Figure 24 HIV prevalence among first-time donors, by state/territory and year of donation, 2015-2024



Overall, HIV incidence in repeat donors has remained very low across all Australian jurisdictions during the past nine years 2016-2024 and no significant trend was observed for any state or territory. No incident HIV donors were recorded in Tasmania, Western Australia or the Northern Territory in the past nine years. There were no HIV incident donors identified in 2024.

Comparison of HIV prevalence among blood donors and the general population

This section presents a comparison of HIV prevalence among first-time blood donors and the general population for a combined period of 2015-2024 and then 2024 separately. Subsequently, a discussion is presented on the prevalence reduction in first-time donors as compared to the general population.

HIV prevalence is much higher in the general population than in blood donors, which is consistent with previous Lifeblood studies.^{5,6} Prevalence in first-time donors was 41 times lower for the period 2015-2024, and 24 times lower in 2024 alone as compared to the general population (Table 8). Given blood donors are drawn from the general population, the prevalence reduction observed in first-time donors is interpreted to reflect the combined effectiveness of donor education and donor selection policies.

Table 8 Comparison of HIV prevalence in blood donors with population prevalence*, 2024 and 2015-2024

TTI	Estimated population prevalence (per 100 000 people)		Prevalence in first-time blood donors (per 100 000 donations)		Comparison of HIV prevalence in first-time blood donors with population prevalence	
	2015-2024	2024	2015-2024	2024	2015-2024	2024
HIV	112	116	2.73	4.78	41 times lower	24 times lower

* The 2024 HIV prevalence in the general population was calculated by taking the estimated number of people living with HIV in 2024,¹ and dividing it by the estimated mid-year resident Australian population in 2024 reported by the Australian Bureau of Statistics. For the period 2015-2024, an average of the 10 years' prevalence rates was calculated. Due to updated modelling methods for calculating estimated number of people living with HIV, estimates may be different from those presented in previous years of reporting.

Characteristics of HIV-positive blood donors

Demographic characteristics (sex, age group, and state/territory) for all HIV-positive blood donors in 2024 and the five-year period 2020-2024 are listed in Supplementary Tables 3 and 4 respectively. In 2024, six of the seven donors who tested positive to HIV (86%) were male. Three were in New South Wales, two were in Queensland, and two were in Victoria. There was a roughly even split across age groups.

During the five-year period 2020-2024, 21 of the 23 donors who tested positive to HIV (91%) were male. Most were aged 20-29 (35%) or 30-39 (30%). Queensland had the highest rate of HIV among donations, at 1.7 per 100 000 donations.



Risk factors associated with HIV-positive donors

During 2020-2024, 65% of the 23 HIV-positive donors were first-time donors (Table 9). Most donors were male (91%) and had a mean age of 38 years, with a wide range of 21-68 years. Of 23 HIV-positive donors in the five-year period 2020-2024, three were incident HIV donors. For almost half (48%) of HIV-positive donors between 2020-2024, the main reported risk factor could not be determined. The second main reported risk factor was male-to-male sexual activity (22%). In comparison, male-to-male sexual activity (excluding those reporting male-to-male sexual activity and injecting drug use) and heterosexual contact accounted for 54% and 27% of the new HIV diagnoses in the general population in 2024, respectively.

Table 9 Characteristics of HIV-positive donors, by year of donation, 2020-2024

Characteristics	2020	2021	2022	2023	2024	2020-2024
Number of positive donors	5	2	3	6	7	23
Number of positive first-time donors (%)	2 (40%)	1 (50%)	2 (67%)	5 (83%)	5 (71%)	15 (65%)
Number of male donors (%)	5 (100%)	2 (100%)	3 (100%)	5 (83%)	6 (86%)	21 (91%)
Mean age (range) in years	38 (25-67)	44 (30-58)	43 (24-68)	31 (21-40)	39 (26-53)	38 (21-68)
Number of incident donors	2	0	1	0	0	3
Number of donors born in Australia (%)	2 (40%)	1 (50%)	2 (67%)	2 (33%)	5 (71%)	12 (52%)
Main reported risk factor	PUSR ³ 40%	PUSR ³ 100%	Undetermined ⁴ 100%	Undetermined ⁴ 50%	Undetermined ⁴ 57%	Undetermined ⁴ 48%
Second reported risk factor	MSM ¹ , PRP ² , undetermined ⁴ each 20%	...	...	MSM ¹ 33%	MSM ¹ , PRP ² , IDU each 14%	MSM ¹ 22%

1 MSM= Male-to-male sexual activity

2 PRP= Partner with known risk/known to be positive

3 PUSR= Partner with unspecified risk

4 A proportion of these are likely due to assumed heterosexual sexual transmission

Over the past five years, 2020-2024, no discernible overall trend was seen in first-time and repeat or male and female donors.

For information on the number and percentage of HIV-positive donors by sex, age group, donor status and country of birth for the year 2024 and the period 2020-2024, see Supplementary Tables 3-7.

Comparison of major exposure categories between blood donors and the general population

A comparison of major exposure categories between HIV-positive blood donors and the general population was conducted to determine if any unique source of exposure exists for HIV-positive Australian donors (Table 10). As discussed in the hepatitis C section, the risk factor reporting for blood donors should be interpreted with caution given donors are informed of penalties if they knowingly provide misleading information.

The most frequent potential risk factor reported for HIV positivity in blood donors in 2024 was sexual contact (all male-to-male or sexual partner with known risk) at 28.6%, followed by injecting drug use at 14.3%, while for 57.1% of blood donors, the risk factor remained unknown/undetermined. As in previous years, in 2024, the majority of newly diagnosed HIV in the general population was attributed to sexual contact (89.1%).¹



Table 10 Comparison between HIV-positive blood donors and general population in Australia, by major potential risk categories, 2024

HIV ⁱ		
Major risk category	Newly diagnosed HIV cases in general population (2024) (%)	HIV-positive blood donors (2024) (%)
Sexual contact ⁱⁱ	89.1	28.6
Undetermined/unknown	5.4	57.1
Injecting drug use ⁱⁱⁱ	5.3	14.3
Blood or tissue recipient	0.2	0.0
Exposure in health care setting	0.2	0.0

ⁱ Includes exposure categories for new HIV diagnoses only in general population

ⁱⁱ Includes four sub-groups: Male-to-male sexual activity, partner with known risk or known to be positive, partner with unspecified risk and engaged in sex work

ⁱⁱⁱ For general population, it includes injecting drug use and MSM that are IDUs

Note: Percentages may not add to exactly 100% due to rounding

For more information on the number and percentage of HIV-positive donors by sex, donor status and exposure category for the year 2024 and the period 2020-2024, see Supplementary Tables 8-11.

Conclusion

- HIV prevalence among first-time blood donors remained low in 2024 and showed no significant trend during 2015-2024. It was 24 times lower than in the general population in 2024, and 41 times lower for the period 2015-2024.
- HIV prevalence in repeat blood donations has also shown no significant trend in the period 2015-2024.
- The incidence of newly acquired HIV measured by the rate of incident donors has not shown a significant trend in the nine-year period 2016-2024. No incident donors were identified in 2024.
- The most frequent risk factor identified among HIV-positive donors in 2024 was sexual contact. However, for most cases, the risk factor was undetermined/unknown.





Human T-Lymphotropic Virus (HTLV)

Epidemiology of HTLV in Australia

Human T-lymphotropic virus (HTLV) is a human retrovirus of the family Retroviridae, genus Deltaretrovirus with four known types. HTLV-1 was the first human retrovirus to be discovered, and was the first virus known to cause cancer in humans.⁸ HTLV-1 is distributed globally, and is classified into seven major molecular and geographic subtypes: the Cosmopolitan subtype (a) distributed worldwide, the Australo/Melanesian subtype (c), and five African subtypes (b, d, e, f, g).⁹ Areas with known high prevalence of HTLV-1 include regions in Central and West Africa, the Caribbean basin, South America, Melanesia, southwestern Japan, Central Australia, and other discrete geographic areas.¹⁰ HTLV-1 causes adult T-cell leukemia-lymphoma (ATL),^{11,12} and both HTLV-1 and HTLV-2 cause HTLV-associated myelopathy (HAM).¹³ HTLV-1 is further associated with other inflammatory and infectious conditions, and a 50% increase in all-cause mortality.¹⁴ HTLV transmission occurs primarily via direct contact between infected and uninfected cells, enabled by cell-containing bodily fluids (blood, breastmilk, and semen). In Australia, HTLV-1 was first detected in the late 1980's. It is not a notifiable infection except in the Northern Territory. While blood donor studies and surveillance data on the national blood supply consistently indicate low overall prevalence, several community surveys from the Northern Territory, particularly in the Alice Springs region, have reported very high prevalences among select Aboriginal communities, in some cases exceeding 50% among older age groups.^{15–17} Consistent with global findings, there is a marked association with increased age, however the sex distribution within Central Australian Aboriginal communities is different from many other HTLV-1 affected populations with higher rates reported among males.

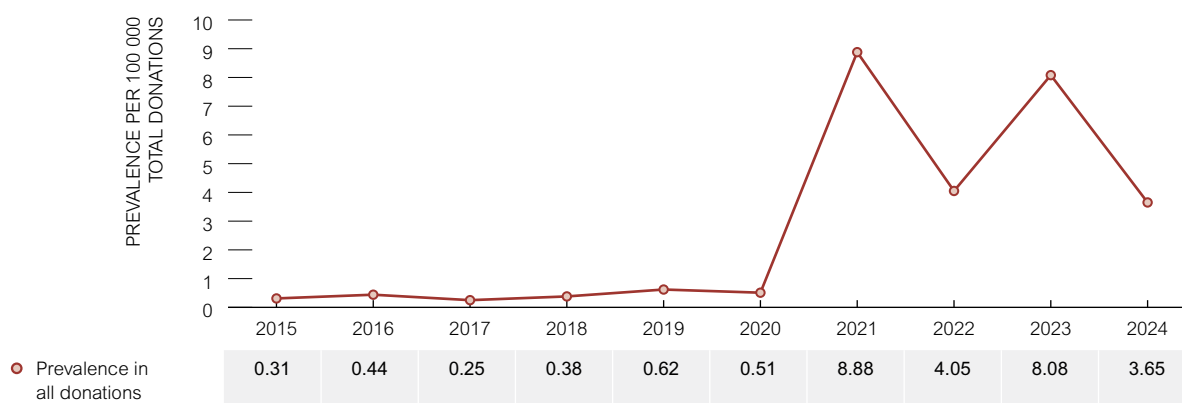
Trends in prevalence

All donations

From September 2016 to December 2020, repeat donors donating plasma for fractionation were no longer required to test for HTLV, and from 6 December 2020, repeat donors no longer required testing for HTLV, irrespective of the type of donation. This results in a different test denominator for the 2021 and onward TTI surveillance reports, a point that needs due consideration when assessing recent trends. Of note, some repeat/lapsed donors are still being tested for HTLV if: a) they are giving a donation that will be made into a granulocyte component; b) they are returning after being deferred for contact with an HTLV-positive sexual partner; or c) they were deemed ineligible and prevented from donating due to their previous testing results (equivocal/indeterminate/false positive). For the latter two scenarios, they then go through a sample-only process with additional testing. Their results are reviewed by medical staff, and they can proceed to donation if their results are considered acceptable.

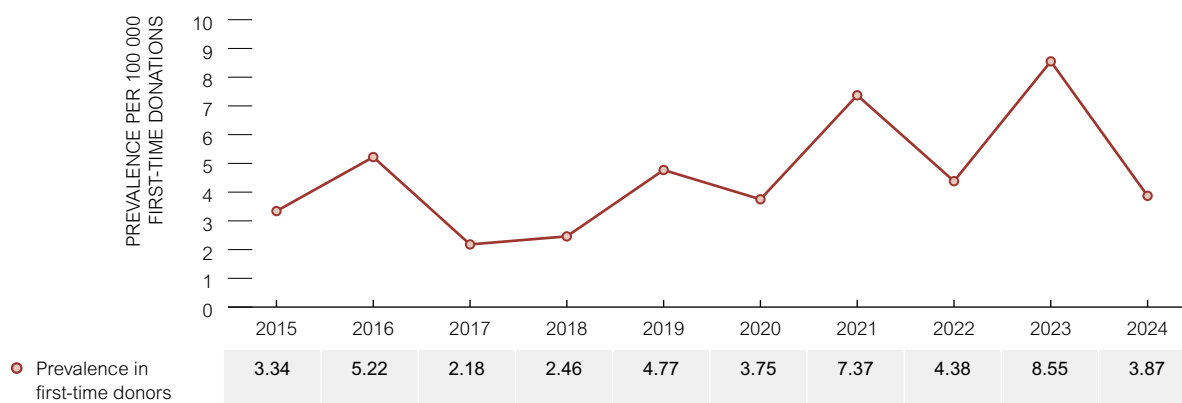
In the past 10 years, 2015–2024, a total of 50 HTLV-positive donors have been detected (46 first-time donors & four repeat donors) (Table 1B). During the same period, the overall HTLV prevalence among all donations was 0.83 per 100 000 donations (Table 1B) and has shown a statistically significant upward trend (IRR: 1.50; 95% CI: 1.35–1.67) (Figure 25). The rate fluctuated between 0.25 and 0.62 per 100 000 donations during 2015–2020, however a sharp increase was observed in 2021 where the rate went up to 8.88 and then fluctuated at 4.05 and 8.08 per 100 000 donations in 2022 and 2023, respectively, and decreased again to 3.65 per 100 000 donations in 2024. These increased rates in all donations post 2020 should be interpreted with caution as they were due to smaller denominators in these years, composed almost entirely of first-time donors (0.11 million average annual donations in 2021 to 2024 versus 0.93 million average annual donations tested for HTLV for the 2015–2020 period). Thus, it is not appropriate to compare the prevalence among all donations, as the mix of tested donors has changed substantially. Comparison therefore should be restricted to first-time donations (see below). For detail on the number and prevalence rate of HTLV-positive donors among all donations for 2024, see Supplementary Table 2A.



Figure 25 HTLV prevalence in all tested blood donations in Australia, by year of donation, 2015-2024

First-time donors

HTLV prevalence in first-time donors over the past 10 years, 2015-2024 had an overall rate of 4.7 per 100 000 donations (Table 1B). Whilst the prevalence fluctuated since 2015, it increased from a nadir of 2.2 in 2017 to 8.6 per 100 000 donations in 2023 and then reduced again to 3.9 in 2024 (Figure 26). Overall, 78% (39/50) of the HTLV-positive first-time donors had ethnicity or country of birth as their main risk factor. Caution must be applied when interpreting this trend given the low numbers of positive first-time donors (between 2-9 each year).

Figure 26 HTLV prevalence in first-time blood donors in Australia, by year of donation, 2015-2024

Trends in incidence

No incident donors have been identified since 2004. Given so few repeat donors are now tested for HTLV, it is no longer appropriate to derive an incidence rate from tested repeat donors. Lifeblood has derived a calculation method to indirectly derive the incidence from prevalence in first-time donors. A risk threshold for repeat donors was investigated based on previous modelling and a conservative ratio between prevalent and incident infections. It was estimated that 26 infections per 100 000 new-donor donations would be associated with an incidence in repeat donors approaching the tolerable risk threshold if sustained over several years.¹⁸ Lifeblood monitors HTLV prevalence and will trigger risk assessment should it exceed the threshold.

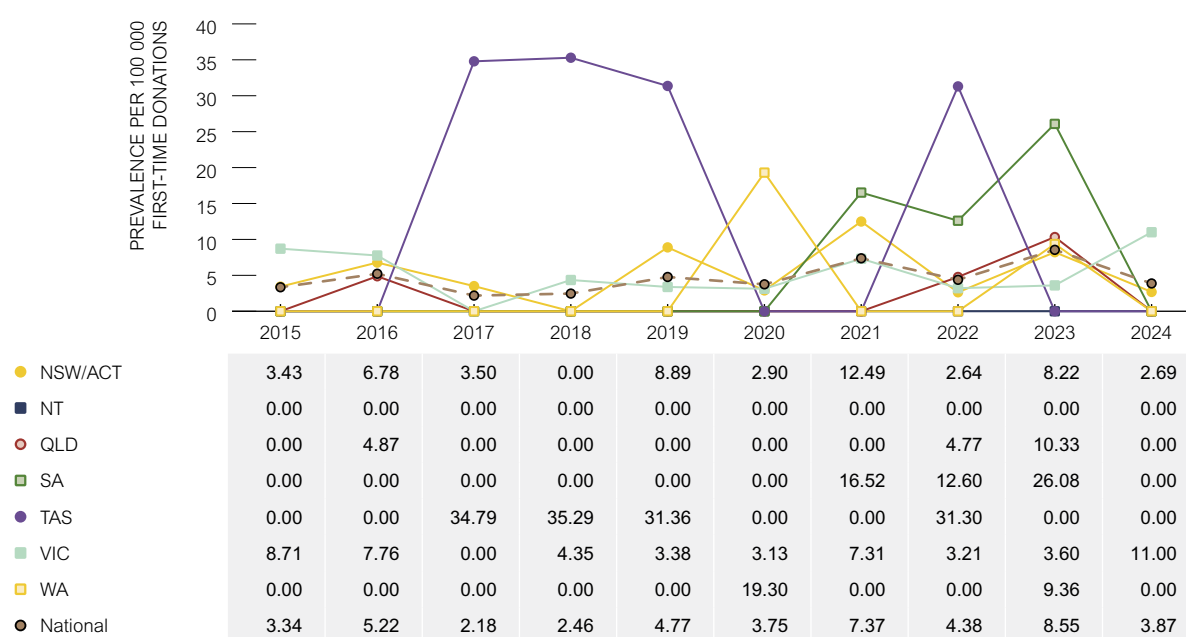
No probable or confirmed transfusion-transmitted HTLV cases were reported in Australia during 2016-2024.



Trends in HTLV by state/territory

In 2024, HTLV prevalence in first-time donors was the highest in Victoria, at 11.0 per 100 000 donations, followed by New South Wales/Australian Capital Territory at 2.69 per 100 000 donations (Figure 27). Caution should be taken in interpretation of HTLV prevalence in first-time donors in Victoria and New South Wales/Australian Capital Territory as these rates equate to only three and one positive donors per state respectively. HTLV prevalence in first-time donors has remained zero in the Northern Territory during the ten-year study period, 2015-2024 (Figure 27).

Figure 27 HTLV prevalence among first-time donors, by state/territory and year of donation, 2015-2024



Comparison of HTLV prevalence among blood donors and the general population

HTLV population prevalence is largely unknown with only the Northern Territory requiring formal notification; therefore, it is not possible to meaningfully compare prevalence among Australian blood donors and the general population.

Characteristics of HTLV-positive blood donors

Demographic characteristics (sex, age group, and state/territory) for all HTLV-positive blood donors in 2024 and the five-year period 2020-2024 are listed in Supplementary Tables 3 and 4 respectively. In 2024, three of the four HTLV-positive blood donors were female. Three were in Victoria and one was in New South Wales, with a roughly even split between age groups.

During the five-year period 2020-2024, 58% of HTLV-positive donors were male. Most were in New South Wales (39%), and Victoria (26%). There was a roughly even split across age groups.

Risk factors associated with HTLV-positive donors

Only 31 HTLV-positive donors were detected during the 2020-2024 period; 29 (94%) were first-time donors, while two were repeat positive donors – both in 2021, who did not meet the incident donor criterion; 58% were male, and the mean age was 42 years with a wide range (24-71 years) (Table 11). The majority of HTLV-positive donors (93%) were born overseas. Ethnicity or country of birth (87%) was the most common risk factor for HTLV positivity in blood donors in Australia during the study period, followed by partner with known risk or known to be positive for any TTI (6%). There were no incident HTLV donors during the five-year period 2020-2024.

Table 11 Characteristics of HTLV-positive donors, by year of donation, 2020-2024

Characteristics	2020	2021	2022	2023	2024	2020-2024
Number of positive donors	4	9	5	9	4	31
Number of positive first-time donors (%)	4 (100%)	7 (78%)	5 (100%)	9 (100%)	4 (100%)	29 (94%)
Number of male donors (%)	4 (100%)	5 (56%)	4 (80%)	4 (44%)	1 (25%)	18 (58%)
Mean age (range) in years	35 (27-41)	45 (24-67)	35 (26-49)	45 (26-63)	43 (29-71)	42 (24-71)
Number of incident donors	0	0	0	0	0	0
Number of donors born in Australia (%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)	1 (25%)	2 (7%)
Main reported risk factor	Ethnicity/COB ¹ 100%	Ethnicity/COB ¹ 67%	Ethnicity/COB ¹ 100%	Ethnicity/COB ¹ 100%	Ethnicity/COB ¹ 75%	Ethnicity/COB ¹ 87%
Second reported risk factor	...	PRP ² 22%	...	...	Undetermined 25%	PRP ² 6%

1 COB= Country of birth

2 PRP= Partner with known risk/known to be positive

During the five-year period 2020-2024, there was an upward trend in the number of HTLV-positive first-time female donors. No discernible overall trend has been observed for first-time male donors and repeat male or female donors.

For more information on the number and percentage of HTLV-positive donors by sex, age group, donor status and country of birth for the year 2024 and the period 2020-2024, see Supplementary Tables 3-7.

Major exposure categories among blood donors

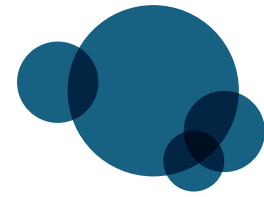
Ethnicity or country of birth was the likely exposure risk for 75% HTLV-positive donors in 2024 (Table 11). This aligns with evidence HTLV-1 is highly endemic in certain geographic regions including Central Australia, Japan, the Caribbean and central Africa and to a lesser extent in Iran, Iraq, southern India and China.¹⁹

For more information on the number and percentage of HTLV-positive donors by sex and exposure category for the year 2024 and the period 2020-2024, see Supplementary Tables 8-11.

Conclusion

- HTLV prevalence among first-time donors remained low; however, there are no data to meaningfully compare to prevalence rates in the general population.
- Most frequent risk factor identified among HTLV-positive donors in 2024 is ethnicity or country of birth.





Potentially infectious syphilis

Epidemiology of infectious syphilis in Australia

Potentially infectious syphilis is a blood safety definition designed to capture donors that have a theoretical risk of transmitting syphilis by transfusion. Importantly, the risk of syphilis transfusion transmission is quite distinct from the viral TTIs. Storage of blood products reduces the transmission risk; red cell storage at $<20^{\circ}\text{C}$ for >120 hours inactivates *T. pallidum* spirochaetes (the causative agent),²⁰ plasma stored at -20°C for 48 hours was shown to be non-infectious in an animal model,²¹ and oxygen flow levels in platelet storage bags are believed to be toxic to *T. pallidum*.²² Hence, the infectivity of transfused products is expected to be low even without syphilis testing. A published Lifeblood analysis concluded that the residual risk of syphilis transmission is currently negligible (1 in 49.5 million per unit transfused).²³ Since blood bags and cold storage were implemented in Australia during the 1970s, the risk of syphilis transmission can be considered theoretical, given the absence of cases of transfusion transmission.

Population level data are available on notifications of infectious syphilis. The definition of potentially infectious syphilis and infectious syphilis is described in detail in the Methodological Notes (see [appendix](#)). Although the potentially infectious syphilis and infectious syphilis definitions are slightly different, this section provides information on the epidemiology of infectious syphilis in Australia to provide a context for the report.

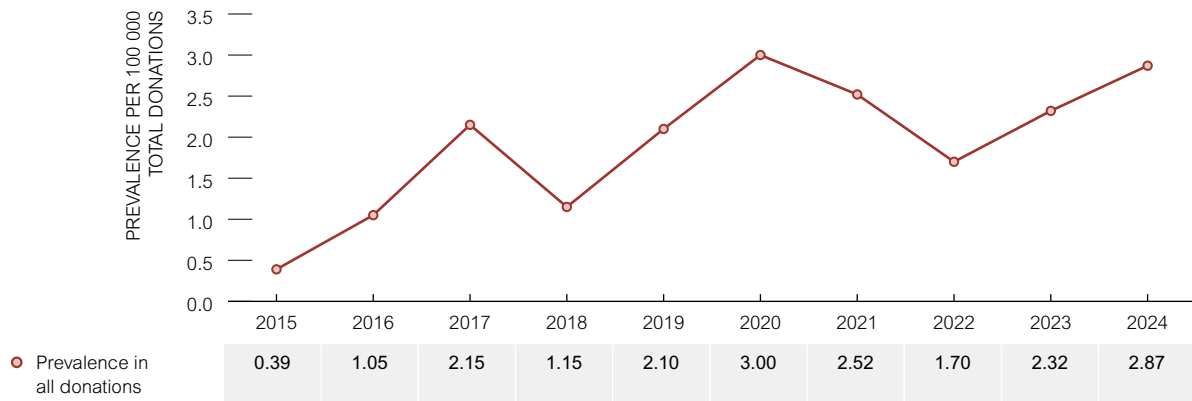
Historically, infectious syphilis in Australia was primarily an infection of men in urban settings, in the context of male-to-male sexual activity, and of heterosexual Aboriginal and/or Torres Strait Islander people in remote and outer regional areas. However, the epidemiology has changed in recent years to expand beyond these subgroups, with an increase observed in females and heterosexual males. The number of cases of infectious syphilis notified in 2024 was 5 866.¹ The notification rate of infectious syphilis almost doubled from 11.9 to 22.1 per 100 000 between 2015 and 2024. Notification rates among males remained higher than females for the entire 2015-2024 period.¹

Trends in prevalence

All donations

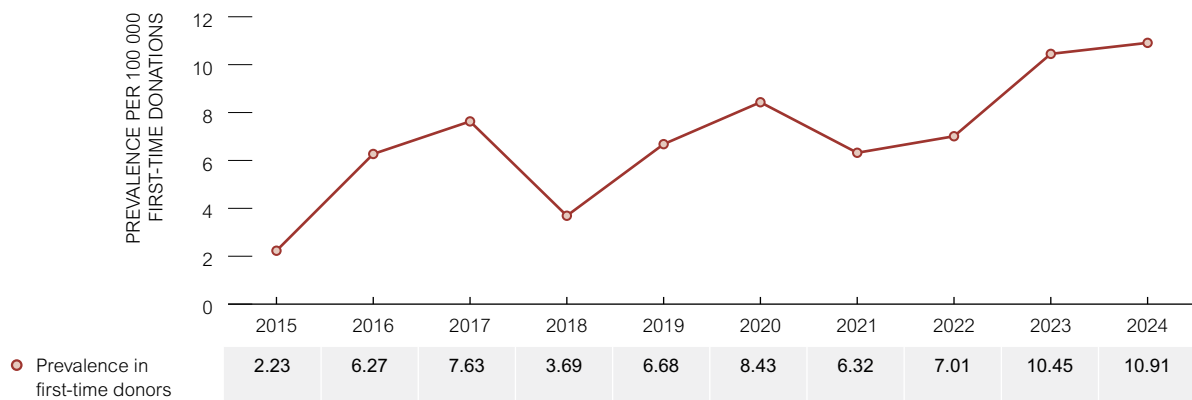
From September 2016 and from June 2024, repeat donors and first-time donors donating plasma for fractionation respectively no longer require testing for syphilis, resulting in fewer donations tested. The impact of this needs due consideration when assessing recent trends. Notwithstanding, in the past 10 years, 2015-2024, a total of 169 donors with potentially infectious syphilis/active syphilis have been detected (69 first-time donors & 100 repeat donors) (Table 1C). During the period 2015-2024, the prevalence of potentially infectious syphilis among all donations remained very low at 1.8 per 100 000 donations (Table 1C); however, the prevalence in all donations has increased substantially in recent years from 0.4 per 100 000 donations in 2015 to 3.0 per 100 000 donations in 2020 and 2.9 per 100 000 donations in 2024. As a result, a significant increase in the prevalence of potentially infectious syphilis among all donations was observed during 2015-2024 (IRR 1.13; 95% CI: 1.07-1.19) (Figure 28). Although this should be interpreted with caution because of the definition change in 2017 (see [appendix](#)) and impact of the change in the syphilis testing profile, there has been a definitive increase in syphilis cases in blood donors, which reflects the increasing trend in the general population. For detail on the number and prevalence rate of potentially infectious syphilis among all donations for the year 2024, see Supplementary Table 2B.



Figure 28 Prevalence of potentially infectious syphilis in all tested blood donations in Australia, by year of donation, 2015-2024

First-time donors

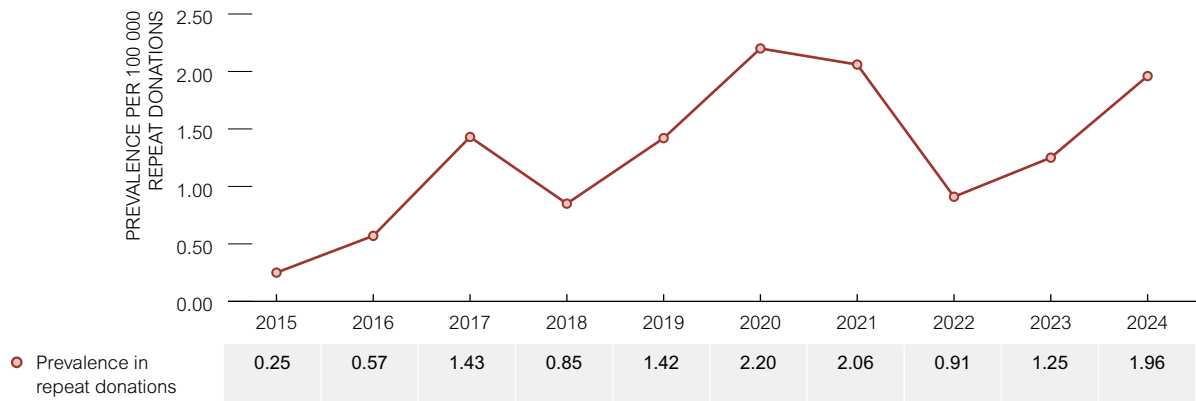
In the 10 years, 2015-2024, the prevalence of potentially infectious syphilis in first-time donors was 7.1 per 100 000 donations (Table 1C). Overall, the prevalence of potentially infectious syphilis in first-time donors has shown a significant upward trend during 2015-2024, increasing from 2.2 in 2015 to 10.9 per 100 000 donations in 2024 (IRR: 1.10; 95% CI: 1.01-1.20) (Figure 29). By comparison, the national rate of diagnoses of infectious syphilis was 11.9 per 100 000 population in 2015, which almost doubled to 22.1 per 100 000 in 2024.¹ Caution should be taken in interpretation, as the infectious syphilis case definition changed in July 2015, to include more cases of likely recent acquisition.²⁴

Figure 29 Prevalence of potentially infectious syphilis in first-time blood donors in Australia, by year of donation, 2015-2024

Repeat donations

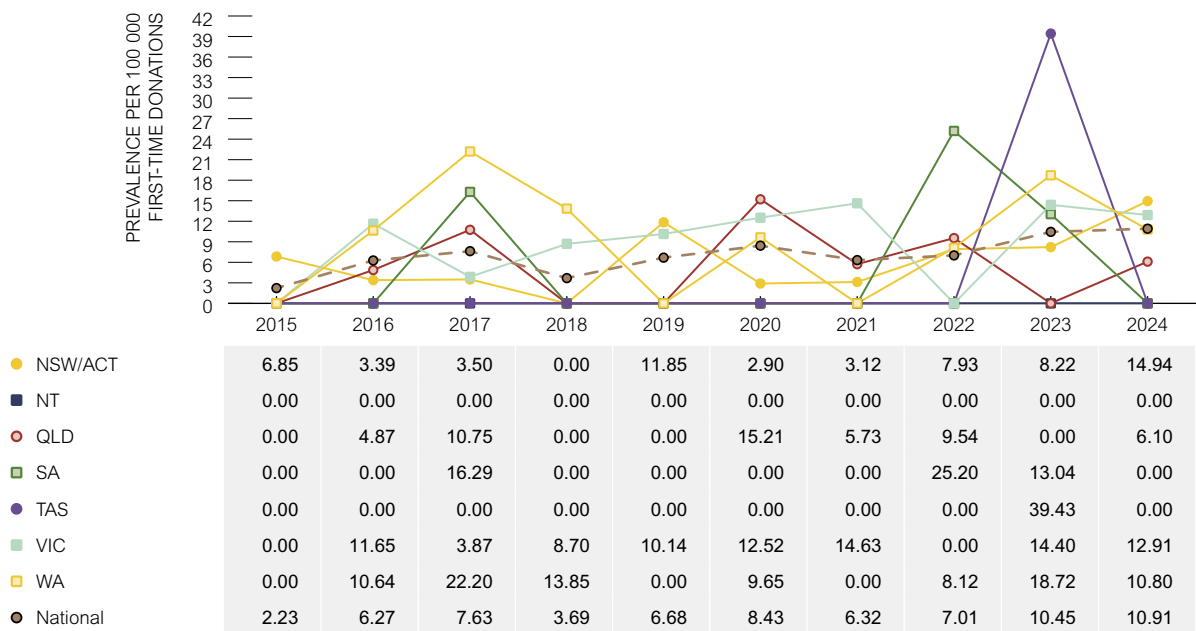
In the 10 years, 2015-2024, the prevalence of potentially infectious syphilis in repeat donations was 1.22 per 100 000 donations (Table 1C). Overall, the prevalence of potentially infectious syphilis in repeat donations has shown a significant increase during 2015-2024 (IRR: 0.95; 95% CI: 0.81-1.11), increasing from 0.25 in 2015 to 1.96 per 100 000 donations in 2024, with a peak of 2.2 per 100 000 donations in 2020 (Figure 30).



Figure 30 Prevalence of potentially infectious syphilis in repeat blood donations in Australia, by year of donation, 2015-2024

Trends in potentially infectious syphilis by state/territory

In 2024, potentially infectious syphilis prevalence in first-time donors was zero for the Northern Territory, South Australia and Tasmania. The prevalence rate in first-time donors was the highest in New South Wales/Australian Capital Territory at 14.94 per 100 000 donations, followed by Victoria and Western Australia where rates were 12.91 and 10.80 per 100 000 first-time donations, respectively (Figure 31). Prevalence in first-time donors in Northern Territory remained zero over the 2015-2024 period. In comparison, infectious syphilis rates were the highest in the Northern Territory in 2024, at 106.3 per 100 000, followed by Queensland and New South Wales at 27.4 and 21.8 per 100 000, respectively.¹ The trend in the general population during the period 2015-2024 showed an increase in rates of diagnosis of infectious syphilis in all jurisdictions.¹

Figure 31 Prevalence of potentially infectious syphilis among first-time donors, by state/territory and year of donation, 2015-2024

Comparison of prevalence of potentially infectious syphilis among blood donors and the general population

As noted above, prevalence of potentially infectious syphilis in first-time donors in 2024 and the 10-year study period 2015-2024 was 10.9 and 7.1 per 100 000 donations, respectively (Supplementary Table 2B and Table 1C). However, estimates on population prevalence for infectious syphilis are unknown and information is only available on infectious syphilis notifications.¹ It is therefore difficult to compare the prevalence of syphilis among Australian blood donors and the general population as notifications likely represent only a proportion of the total cases (those for which health care was sought, a test conducted and a diagnosis made, followed by a notification to health authorities).

Characteristics of potentially infectious syphilis in blood donors

Demographic characteristics (sex, age group, and state/territory) for all blood donors with potentially infectious syphilis in 2024 and the five-year period 2020-2024 are listed in Supplementary Tables 3 and 4 respectively. In 2024, most potentially infectious donors were male (65%), and 73% of potentially infectious donors lived in New South Wales or Victoria. The rate of potentially infectious syphilis was highest among donors in the Northern Territory (26.9 per 100 000 donations).

In the five-year period 2020-2024, most potentially infectious donors were male (67%). Most were aged 20-29 (36%) or 30-39 (34%), and most were in Victoria (30%) and New South Wales (28%). However, the rate of potentially infectious syphilis was highest in the Australian Capital Territory (11.6 per 100 000 donations).

Risk factors associated with potentially infectious syphilis positive donors

During 2020-2024, a total of 109 donors were classified as having potentially infectious syphilis, of which 40% were first-time donors, 67% were male, and 55% were born in Australia (Table 12). The mean age was 36 (range 19-66). Partner with unspecified risk (37%) was the most frequent likely risk factor for potentially infectious syphilis status. In comparison, in 2024, nationally, 79% of infectious syphilis diagnoses were in males, and 61% were in people aged 20-39 years.¹



Table 12 Characteristics of donors with potentially infectious syphilis, by year of donation, 2020-2024

Characteristics	2020	2021	2022	2023	2024	2020-2024
Number of positive donors	25	22	15	21	26	109
Number of positive first-time donors (%)	9 (36%)	6 (27%)	8 (53%)	11 (52.3)	10 (38%)	44 (40%)
Number of male donors (%)	19 (76%)	16 (73%)	8 (53%)	13 (62%)	17 (65%)	73 (67%)
Mean age (range) in years	36 (20-66)	32 (19-66)	37 (19-59)	35 (22-61)	39 (24-62)	36 (19-66)
Number of donors born in Australia (%)	10 (40%)	18 (82%)	8 (53%)	7 (33%)	17 (65%)	60 (55%)
Main reported risk factor	PUSR ¹	PUSR ¹ , undetermined each	Undetermined/ unknown	PUSR ¹	Undetermined/ unknown	PUSR ¹
	48%	36%	33%	43%	35%	37%
Second reported risk factor	Undetermined/ unknown	MSM ²	PUSR ¹	MSM ² , undetermined/ unknown each	PUSR ¹	Undetermined/ unknown
	36%	23%	27%	24%	27%	33%

1 PUSR= Partner with unspecified risk

2 MSM= Male-to-male sexual activity

Over the past five years, 2020-2024, there has been a slight upward trend in the number of potentially infectious syphilis cases in first-time female donors, while no discernible trend was observed in repeat female and first-time/repeat male donors.

For more information on the number and percentage of donors with potentially infectious syphilis status by sex, age group, donor status, country of birth and exposure category for the year 2024 and the period 2020-2024, see Supplementary Tables 3-11.

Conclusion

- Overall, during 2015-2024, the prevalence of potentially infectious syphilis among all donations, first-time donors and repeat donations has shown a significant upward trend. Likewise, since 2015, the national rate of diagnoses of infectious syphilis in general population has almost doubled by 2024.
- A meaningful comparison between the prevalence of potentially infectious syphilis in blood donors and the general population could not be done as accurate estimates on population prevalence for infectious syphilis are unknown and information is only available on infectious syphilis notifications.



Additional information

Screening compliance

Every donor is required to self-complete a comprehensive Donor Questionnaire (DQ) prior to each donation. Once the donor has completed the DQ, a Lifeblood staff member assesses the donor's eligibility to donate. All donors have to sign a legal binding declaration before donation and donors are informed that fines and penalties apply for deliberate misinformation. Lifeblood is highly reliant on donors truthfully answering all questions (termed 'compliance').

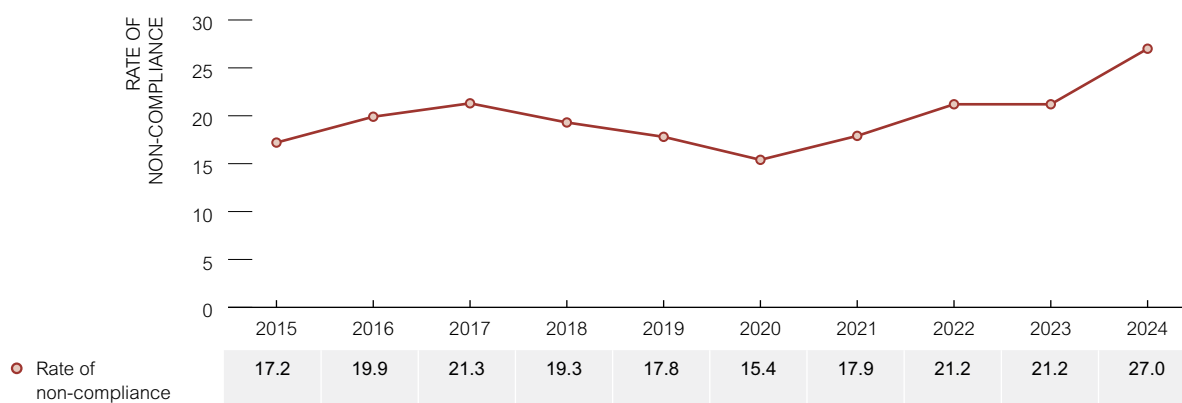
Not completing the DQ truthfully is termed 'non-compliance' with donor selection guidelines. Lifeblood remains highly committed to minimising non-compliance by optimising methods for ascertaining donor risk behaviour. A donor who does not appropriately report risk behaviour for a TTI poses a potential risk to the safety of the blood supply for two reasons. Firstly, if they are infected but within the testing window period, they are undetectable by available testing and their blood may be issued for transfusion. Secondly, even when successfully detected by testing there is an extremely remote risk of erroneously issuing this positive unit (i.e. a process failure). Lifeblood takes measures to minimise this latter risk, including the use of computerised quarantine/release systems. Non-detection and process failure are both avoidable risks if a positive donor appropriately discloses their risk (i.e. complies, leading to deferral) since no donation will be collected.

Approximately 21% (205/997) of TTI-positive donors in 2020-2024 disclosed risk factors or clinical history during their post-donation interview that would have deferred them from donating had they disclosed it at the pre-donation interview (Table 13). Of these, 78% (160 donors) were first-time donors. The rate of reported non-compliance in TTI positive donors has been relatively stable for the past 10 years (ranging between 15-21%), however in 2024 it peaked to 27% (Figure 32).

Table 13 Non-compliance category and rate among donors who were positive for any transfusion-transmissible infection, 2020-2024

Non-compliance by year and reason for deferral	2020	2021*	2022	2023*	2024	2020-2024
Number (%) of non-compliant donors by reasons for deferral						
Injecting drug use	1 (3.1%)	4 (11.4%)	0 (0)	1 (2.2%)	2 (3.6%)	8 (3.9%)
Known status/previous positive	23 (71.9%)	26 (88.6%)	34 (89.5%)	42 (93.3%)	45 (81.8%)	170 (82.9%)
Male-to-male sexual activity	2 (6.3%)	1 (2.8%)	1 (2.6%)	2 (4.4%)	3 (5.5%)	9 (4.4%)
Partner with known risk or known to be positive	3 (9.4%)	0 (0)	1 (2.6%)	1 (2.2%)	4 (7.3%)	9 (4.4%)
Jaundice or hepatitis not known to be associated with hepatitis B/hepatitis C	3 (9.4%)	4 (11.43%)	2 (5.3%)	1 (2.2%)	1 (1.8%)	11 (5.4%)
Others	0 (0)	1 (2.8%)	0 (0)	0 (0)	0 (0)	1 (0.5%)
Total number (%) of non-compliant donors by year	32 (15.4%)	35 (17.9%)	38 (21.2%)	45 (21.2%)	55 (27.0%)	205 (20.6%)

* In these years, some donors had more than one reason for non-compliance hence the total % is more than 100%
Note: A new category, "Jaundice or hepatitis not known to be associated with hepatitis B/hepatitis C", has been introduced this year. Donors with a history of jaundice or hepatitis of unspecified/other origin, who were previously included in the "Known status/previous positive" group, have been reclassified under this new category. As a result, figures in these two categories are not directly comparable with previous years' reports.

Figure 32 Rate of reported non-compliance in TTI-positive donors, 2015-2024

Each year between 2020-2024 the most common risk behaviour identified was known status of previously being positive for a TTI, ranging from 71.9% to 93.3%. This reflects an increasing number of returning/prospective donors with past hepatitis C who have successfully undergone treatment with direct acting anti-viral medications. While these donors have undetectable RNA and are considered 'cured', they have detectable hepatitis C antibodies and therefore are not eligible to donate blood. It is important to note that most non-compliance events are non-intentional. Donors may not fully understand the significance of declaring their past medical history, such as declaring a distant past history of jaundice. An increase in non-compliant hepatitis B positive donors might be associated with expanding migration from hepatitis B endemic countries. Overall, during the period of 2020-2024, 82.9% of non-compliance was attributed to known status of previously being positive for a TTI, followed by jaundice or hepatitis not known to be associated with hepatitis B/hepatitis C (5.4%), male-to-male sexual activity and having a sexual partner with known risk or known to be positive for any TTI (4.4%, each), and injecting drug use (3.9%) (Table 13).

Viral residual risk estimates

The rate of incident donors can be used to estimate the risk of collecting a unit of blood from a donor with very early infection (window period) which might test negative. Incident infections represent the majority of transmission risk because they may be missed by testing if donating in the window period, whereas long standing (prevalent) infections are readily detected by modern screening tests. The exception is hepatitis B where donors with OBI may contribute a substantial risk. Highlighting this, a model developed by Lifeblood estimated that in 2012/2013 the majority (55%) of the hepatitis B residual risk in Australia resulted from donors with OBI.²⁵ More recent estimates indicate an increasing proportion of OBI risk, approximately 80% for the 2023/2024 period (Lifeblood, unpublished), which is lower than prior years of approximately 99%.

Lifeblood uses the method of Weusten *et al* to estimate the window period risk for hepatitis B, HIV and hepatitis C.²⁶ Unlike earlier window period models which only estimated the risk of collecting a blood donation in the window period, this model includes the risk of infection in a recipient. Viral testing data, including the number of incident donors reported for the 2023 and 2024 calendar year periods, were used to estimate the residual risk per unit transfused (Table 14). The hepatitis B risk estimate includes a separate model specifically addressing the risk of OBI.²⁷ As there were no incident donors for HTLV, the residual risk estimate is based on an updated version of Lifeblood's published HTLV model.²⁸ The last published estimated risk for syphilis is 1 in 49 million per unit transfused.²³

The estimates for all are below the 'negligible' risk threshold of 1 in 1 million per unit transfused used by Lifeblood to contextualise the risks for transfusion recipients. Further information can be obtained from the following website: <https://www.lifeblood.com.au/health-professionals/clinical-practice/adverse-events/other-transfusion-transmitted-infections/transfusion-transmissible-infections>.



Table 14 Estimated risk of undetected but infectious hepatitis B, hepatitis C, HIV, HTLV and syphilis in Australian blood donations (2023-2024)[^]

	Hepatitis B	Hepatitis C	HIV	HTLV	Syphilis
Estimated number of undetected units collected (per annum)	<1	<1	<1	<1	<1
Residual risk to recipient - per unit transfused	Less than 1 in 1 million	Less than 1 in 1 million	Less than 1 in 1 million	Less than 1 in 1 million	Less than 1 in 1 million

[^] may include earlier calendar years if there were no incident donors in this period

The lower reported frequency of cases of transfusion transmission supports that the modelled estimates are conservative with no confirmed or probable cases of transfusion-transmitted hepatitis C reported in Australia since 1991, none for HTLV since 1993, none for HIV since 1998 and none for hepatitis B since 2011. Notably, no HIV or hepatitis C transfusion transmissions have been identified since the introduction of NAT testing in 2000.

Testing for malaria

In Australia, donation testing for malaria infection is limited to 'at risk' donors. This includes donors who report at the pre-donation interview that they have travelled to or resided in malaria endemic countries, as well as those with a previous history of infection.²⁹ The availability of malaria antibody testing results in significant recovery of valuable fresh blood components (red blood cells and platelets), as prior to the commencement of testing such donors were restricted to donating plasma for fractionation only, for 1-3 years. Recent risk assessment has demonstrated such long restrictions are not necessary for travellers. However, testing and fresh component recovery remains important for previous residents.³⁰ Since malaria antibodies can indicate both recent and past infection (and false positive results), all antibody repeat reactive donors in 2024 were referred to their doctor with a copy of their results.

Malaria testing was heavily affected by the COVID-19 pandemic due to international border closures, which reduced overseas travel by donors. As well as fewer tests being performed, a higher proportion were repeatedly reactive for malaria antibodies due to the lower proportion of travellers compared to residents being tested. These figures have not yet returned to pre-pandemic levels because malaria testing is based on travel in the past three years and there have been minor policy adjustments to assessment.

In 2024, 95 576 donations were tested for malaria antibody, which is higher than the number of donations tested in both 2023 (78 638) and 2022 (50 560) but remains substantially lower than the 132 338 donations tested in 2020. Of the tested donations, 1 335 (1.4%) were repeatedly reactive for malaria antibodies, representing a decrease from the rates observed in 2023 (1.7%) and 2022 (3.0%).

No cases of transfusion-transmitted malaria were reported in Australia in 2024 with the last recorded Australian case in 1991.³¹

The residual risk for transfusion-transmitted malaria was recently modelled and estimated to be 1 in 67.9 million per unit transfused.³⁰



Minimising bacterial contamination of blood components

Despite advances in bacterial contamination screening (BCS) using automated microbial detection systems and the application of pathogen inactivation (PI) methods, the transfusion of platelet components remains one of the highest risks in transfusion practice, with transfusion-transmitted bacterial infections (TTBIs) reported regardless of the mitigation strategy employed.^{32–36} Platelets are stored at room temperature (20–24°C) which provides a more favourable environment for survival and replication of most pathogenic bacteria, than the storage conditions used for red cells (refrigeration at 2–6°C) or plasma (frozen storage at <–25°C). This increases the risk that even small initial numbers of contaminating bacteria in a platelet component may replicate during storage to levels sufficient to result in a transfusion reaction.³⁷

Bacterial contamination may occur from commensal skin bacteria introduced during collection or processing (e.g. when pooling buffy coats), or asymptomatic/transient donor bacteraemia at the time of blood donation, or less commonly post-processing (e.g., improper handling of blood components).

Lifeblood reduces this risk using a combination of strategies:

1. Pre-donation health screening

Specific questions in the Donor Questionnaire aim to detect donors at risk of bacteraemia, or with potentially compromised skin at the phlebotomy site which may make disinfection difficult (e.g., recent dental procedures, gastrointestinal symptoms and various dermatological lesions).

2. Donor site skin disinfection

Prior to phlebotomy, the donor skin at the venepuncture site is carefully disinfected using a standardised, validated technique with 2% chlorhexidine gluconate and 70% isopropyl alcohol. 70% alcohol alone can be used when the donor has an allergy to chlorhexidine. Skin disinfection reduces the bacterial load and risk of contamination at the time of collection.

3. Flow diversion

The first 30 mL (minimum) of blood collected is diverted away from the collection bag. Introduced in Australia in 2006,³⁸ this procedure had previously been shown to reduce the bacterial contamination of platelet concentrates by more than 70% due to the skin plug being discarded.³⁹

4. Process control

Optimal process control is achieved by adherence to the Code of Good Manufacturing Practice, which includes the employment of competent, trained staff who follow documented standard operating procedures for donor assessment, aseptic collection of donations into sterile, closed collection and processing systems, and appropriate subsequent handling and storage.

5. Bacterial contamination screening (BCS)

Since April 2008, all platelets produced by Lifeblood are screened for bacterial contamination, utilising the automated BACT/ALERT 3D system. As of February 2020, the BACT/ALERT 3D system at the four testing sites was replaced by the BACT/ALERT VIRTUO.^{32,38,40}

6. Patient Blood Management (PBM)

The risk of many adverse transfusion outcomes, including bacterial transmission, is dose dependent. PBM is a suite of strategies including optimising erythropoiesis, reduction of surgery-related blood loss and appreciation of the degree of physiological tolerance for anaemia in the individual patient, which together optimise the use of blood products.⁴¹

In combination, these strategies substantially reduce (but cannot wholly eliminate) the residual risk related to transfusion-transmissible bacterial infections.

7. Pre-transfusion platelet component inspection

Lifeblood recommends that platelets issued to pathology laboratories undergo a pre-transfusion visual inspection by the transfusing laboratory assessing for a number of characteristics including, but not limited to; platelet 'swirl', colour, presence of gas or fibrin strands. Non-conforming platelets should not be transfused, adding a further risk mitigation strategy.

8. Other strategies

PI potentially further mitigates the risk of bacterial transmission and has been adopted by other high-income blood establishments.^{42,43} Methods are available for platelets and plasma and are in late stage clinical trials for red cells; however there are currently no licensed technologies in Australia. Platelet components in Australia already carry a low residual risk which, together with the low cost-effectiveness and potential adverse impacts on product quality associated with PI, makes implementation of this technology unsuitable at this time.



Bacterial contamination screening for platelets

Platelet components are manufactured either directly by apheresis, or by pooling the buffy coats from four whole blood donations into a single platelet component. Apheresis collections may be split into one, two or three platelet components.

BCS was first introduced in Australia in 2008. In March 2021, platelet shelf-life was extended from five days to seven days, utilising the large-volume delayed sampling testing algorithm. Platelet components are sampled at a minimum of 36 hours after collection, with an 8-10mL inoculated into each aerobic (BPA) and anaerobic (BPN) culture bottles. The number of culture bottles from apheresis platelet collections is based on the final number of split components. Therefore, double apheresis platelets have four culture bottles (two BPA, two BPN) and triple apheresis platelets have six culture bottles (three BPA, three BPN). The culture bottles are incubated in the automated microbial detection system for seven days.

Due to the short shelf-life, platelet components are released as “negative to date” for immediate use after the culture bottles are loaded into the automated microbial detection system. Bacterial growth is suspected when inoculated culture bottle is flagged by the automated microbial detection system as “positive”. All unused platelet components and any associated components are immediately recalled or quarantined. If any components have already been transfused, the treating clinician is notified via the pathology laboratory and then updated regularly as further information becomes available.

Positive BCS bottles are investigated at external reference laboratories (ERL) in each state by Gram staining, subculture to agar media, bacterial identification and antimicrobial susceptibility testing (where appropriate). False positive BCS results trigger discard of all associated components, unless the ERL possesses a licence from the Therapeutic Goods Administration for platelet manufacture by conforming to the Code of Good Manufacturing Practice. In this latter case, non-platelet components may be released for clinical use if the ERL establishes that the initial BCS flag was a “machine false positive”, i.e. no organisms were seen on staining, and no growth was noted on agar subculture of the BCS medium.

There has been debate in the literature about the utility of including anaerobic culture media for BCS. Proposed benefits of including both aerobic and anaerobic culture media include:

- Larger total sample volume with consequent greater sensitivity for detection of facultative contaminants
- Detection of strictly anaerobic bacteria, particularly spore-forming organisms such as *Clostridium* species, which may survive within the aerobic platelet environment and cause sepsis in the recipient.⁴⁴

Red cell components are not universally screened for bacterial contamination due to the lower storage temperature (2-6°C) and overall lower observed risk of TTBI compared to platelets. Furthermore, a large proportion of red cells (approximately half) are screened by proxy when their associated buffy coats are used to produce pooled platelets.

Results for bacterial contamination screening of platelet components

In 2024 a total of 135 826 platelet collections were tested.

Of 109 439 pooled platelet components tested, 426 (0.39%) were flagged by the BACT/ALERT as initial machine positive. Of these, 149 (0.14%) were classified as “confirmed positive”, 132 (0.12%) were “indeterminate” and the remaining 145 (0.13%) were categorised as “machine false positive” (Table 15) after Gram stain and final culture reports.

Of 26 387 apheresis collections tested, 171 (0.65%) were flagged by the BACT/ALERT as initial machine positive. Of these, 28 (0.11%) were classified as “confirmed positive”, 39 (0.15%) were “indeterminate” and the remaining 104 (0.39%) were categorised as “machine false positive” (Table 15) after Gram stain and final culture reports.



Table 15 Bacterial contamination screening of platelets by BACT/ALERT VIRTUO, 2024

Platelet type	No. (% of total)	No. initial positive (% of total) ⁱ	No. confirmed positive (% total) ⁱⁱⁱ	No. indeterminate (% of total) ^{iv}	No. machine false positive (% of total) ^v
Pooled platelets	109 439 (80.57)	426 (0.39)	149 (0.14)	132 (0.12)	145 (0.13)
Apheresis platelets ⁱ	26 387 (19.43)	171 (0.65)	28 (0.11)	39 (0.15)	104 (0.39)
Total	135 826 (100)	597 (0.44)	177 (0.13)	171 (0.13)	249 (0.18)

i Represents apheresis platelet collections, of which single, double and triple components are produced. In 2024, 57 635 apheresis components were manufactured

ii At least one culture bottle reported ("flagged") as positive by the BACT/ALERT VIRTUO system

iii Includes the following:

- Platelet component is available for retesting, and the same organism is re-isolated from it (or from at least one split component, in the case of double- and triple-apheresis platelets)
- Where the platelet component is not available (e.g. transfused), the same organism is isolated from both the original platelet BCS sample and another associated blood component
- Following a septic transfusion reaction, the same organism is cultured from both the patient's blood and an implicated product

iv An organism is isolated from the original platelet BCS sample, however follow-up testing is inconclusive because:

- the original platelet component and/or the associated components are not available for resampling, or
- the original platelet component and/or the associated components were resampled but was culture-negative or a different organism was identified, or
- organism may be seen on Gram stain but could not be cultured e.g., Gram negative bacilli

v The BACT/ALERT VIRTUO system signals a positive bottle, but no organisms are found by the external reference laboratory (negative Gram/other stain and no growth on subcultures), and repeat BCS sampling of the platelet component is similarly negative

Of the 177 confirmed positives (Table 16), *Cutibacterium* species (n=139, 78.5%) and coagulase-negative staphylococci (CoNS; n=12, 6.8%) were most frequently isolated. *Cutibacterium* and CoNS are unlikely to represent donor bacteraemia in the absence of artificial intravascular materials such as prosthetic heart valves, cardiac pacemaker leads, central intravenous lines or vascular grafts. These most likely represent skin flora which contaminated the blood component at the time of collection.

Bacillus species were identified in three confirmed positive donations and most likely represents environmental contamination, unlikely to be clinically significant in the absence of history of recent injury or trauma in the donor. Specific risk factors in donors were excluded by Lifeblood Medical Officers to determine clinical significance and requirement of further follow up and investigations.

Of the remaining confirmed positives, 20 (11.3%) had potentially pathogenic species. All components from these donations were interdicted before supply to a customer and for this reason, no components from these donations were transfused. All donors were followed up and reported to be well with no specific risk factors.

Cutibacterium species (n=139, 81.3%) and coagulase-negative staphylococci (CoNS; n=16, 9.4%) were the most frequently isolated organisms of the 171 classified as indeterminate (Table 17). *Bacillus* species was identified in five indeterminate donations. Of the remaining classified as indeterminate, five (2.9%) had potentially pathogenic species and one pooled platelet with *Bacteroides* sp. was transfused. All other associated components were recalled and discarded. The recipient remained asymptomatic with no adverse transfusion reaction and donors remained well.

The clinical significance of non-spore forming strict anaerobes (e.g., *Bacteroides* species) is questionable, since these would be unlikely to survive and replicate to levels which would cause a septic transfusion reaction. This is in contrast with presence of spore forming anaerobes like *Clostridium* sp., previously described. Detection of contamination with anaerobes is nonetheless important for recipient safety (preventing transmission of viable bacteria), process control and donor safety (detection of asymptomatic bacteraemia).³²



Table 16 Summary of confirmed positive contaminants from platelets, 2024

Confirmed positives: organism isolated	Number
<i>Cutibacterium</i> species	139
Coagulase-negative staphylococci	12
<i>Staphylococcus aureus</i>	6
<i>Bacillus</i> species	3
<i>Streptococcus dysgalactiae</i>	2
<i>Campylobacter fetus</i>	1
<i>Cutibacterium acnes</i> and <i>Staphylococcus epidermidis</i>	1
<i>Enterococcus faecalis</i>	1
<i>Granulicatella (Abiotrophia) adiacens</i>	1
<i>Lactococcus</i> species	1
<i>Pseudomonas aeruginosa</i>	1
<i>Serratia sarumanii</i>	1
<i>Serratia ureilytica</i>	1
<i>Staphylococcus pasteurii</i> and <i>Acinetobacter calcoaceticus-baumannii</i> complex	1
<i>Staphylococcus intermedius</i> group	1
<i>Streptococcus agalactiae</i> (Group B)	1
<i>Streptococcus bovis</i>	1
<i>Streptococcus pneumoniae</i>	1
<i>Streptococcus pyogenes</i> (Group A)	1
<i>Streptococcus</i> species	1
Total	177

Table 17 Summary of indeterminate contaminants from platelets, 2024

Indeterminate: organism isolated	Number
<i>Cutibacterium</i> species	139
Coagulase-negative staphylococci	15
<i>Bacillus</i> species	4
<i>Kocuria</i> species	3
<i>Bacteroides</i> species	2
<i>Corynebacterium</i> species	2
<i>Micrococcus</i> species	2
<i>Staphylococcus aureus</i>	1
<i>Staphylococcus epidermidis</i> and <i>Staphylococcus succinus</i> (mixed CoNS)	1
<i>Staphylococcus aureus</i> and <i>Bacillus simplex</i>	1
<i>Streptococcus dysgalactiae</i>	1
Total	171



Transfusion-transmitted bacterial infections

In the 15 years following the introduction of universal BCS for platelet components, rate of TTBI reported to Lifeblood is 0.34 per 100 000 platelet components issued and 0.03 per 100 000 red cell components issued.³²

There were four confirmed cases of TTBI from platelet components in 2024. Prior to these, the last case was recorded in October 2019.

- **Case 1** developed sepsis following transfusion of an apheresis platelet component at day 6 of storage. The component was one part of a double apheresis platelet collection and follow-up of the second part of the donation, transfused at day 5 of storage, indicated **case 2** also developed sepsis following transfusion. Whole genome sequencing (WGS) of the isolates from the remnant platelet components and from the recipients' blood cultures identified *Bacillus mobilis*. The routine BCS for both platelet components was negative. Both recipients recovered.
- **Case 3** developed sepsis following transfusion of an apheresis platelet component at day 6 of storage. The component was one part of a triple apheresis platelet collection; the second part was transfused without event, and the third part was recalled. WGS of the isolate from the remnant platelet component and from the recipient's blood culture identified *Staphylococcus aureus*. The routine BCS for the three platelet components was negative. The third untransfused platelet component and the two associated plasma components were retested for BCS and were negative. The recipient recovered.
- **Case 4** developed sepsis following transfusion of a pooled platelet component at day 6 of storage. WGS of the isolate from the remnant platelet component and from the recipient's blood culture identified *S. aureus*. The routine BCS for the platelet component and the testing of all nine recalled associated components (four red cells, three fresh frozen plasma, one cryoprecipitate and one cryo-depleted plasma), was negative. One donor was genomically linked to the case. The recipient recovered.

There were two near-miss events where small aggregates were visually identified in platelet components, resulting in the components not being issued nor transfused.

- Two apheresis platelet components were returned from the same hospital pathology laboratory following the identification of small aggregates at day 6 of storage. The two components were part of a triple apheresis platelet collection, and the third component had not been issued. The routine BCS for the three platelet components was negative. All three platelet components were resampled for retesting with *B. cereus* complex and *S. epidermidis* identified. WGS of the *B. cereus* isolate identified *B. hominis*. Environmental testing detected four *Bacillus* species, including *B. hominis*, in platelet resting rooms, though a direct contamination link with the apheresis platelet collection was not established. Swabs from the donor's cubital fossae revealed multiple *Bacillus* species, including *B. cereus* group, suggesting possible donor arm contamination.
- Prior to issue, aggregates were identified in an apheresis platelet component at day 5 of storage. The component was one part of a double apheresis platelet collection, and the second component had been issued to a hospital pathology laboratory but had not been transfused. Inspection of the second component also identified similar aggregates. The routine BCS for both platelet components was negative. Both platelet components were resampled for retesting with *S. aureus* identified.

The number of TTBI and near-miss events during 2024 was highly unusual and was subject to an extensive investigation with regular reporting to the Therapeutic Goods Administration. There were no quality or procedural deviations. Several potentially causal factors were considered with no definitive cause identified. No further cases have been reported in 2025 up until the date of publication of this report.

Confirmed or highly probable TTBI cases since the implementation of BCS in April 2008 is shown in Table 18.



Table 18 Confirmed or highly probable TTBI cases since April 2008

Calendar year ⁱ	Implicated organism ⁱⁱ	Component
2009	<i>Pseudomonas putida</i>	Red cell
2010	Coagulase-negative <i>Staphylococcus</i> sp.	Pooled platelet
2012	<i>Staphylococcus epidermidis</i>	Red cell
2014	<i>Staphylococcus aureus</i> <i>Bacillus cereus</i>	Pooled platelet Pooled platelet
2016	<i>Staphylococcus aureus</i> (2 recipients)	Apheresis double platelet
2018	<i>Yersinia enterocolitica</i>	Red cell
2019	<i>Staphylococcus aureus</i> Group G Streptococcus	Apheresis triple platelet Pooled platelet
2024	<i>Bacillus mobilis</i> (2 recipients) <i>Staphylococcus aureus</i> <i>Staphylococcus aureus</i>	Apheresis double platelet Apheresis triple platelet Pooled platelet

i No cases recorded in the years not listed

ii One recipient unless stated

Surveillance and risk assessment for emerging infections

Lifeblood maintains surveillance for emerging infections through liaison with Australian Government communicable disease control departments, CSL Behring, membership of international medical/infectious disease groups and active horizon scanning. Potential threats are regularly reviewed by the Lifeblood's Donor and Product Safety Committee (DAPS Committee) and risk assessment performed if an emerging infection is identified as a clear and present threat to the safety of the blood supply. Where appropriate this will be performed in collaboration with CSL Behring (in their capacity as national plasma fractionator) and the Therapeutic Goods Administration (TGA).



2024-2025 Summary

Pathogen	Transfusion transmission reported	Infectious risk period	Surveillance/risk assessment	Additional risk management for blood safety
Chikungunya virus (CHIKV)	Transfusion transmission of CHIKV has not been reported.	The incubation period for symptomatic CHIKV infection is typically 3 to 7 days (range 1-12 days).⁴⁵⁻⁴⁷ Viraemia usually occurs one day before or concurrently with febrile symptoms and lasts for up to 14 days.^{48,49}	CHIKV activity significantly increased during 2025,⁵⁰ which WHO describes as “localised resurgence or emergence in specific geographical areas”. In addition to transmission throughout the Americas, large outbreaks are active as of October 2025 in the regions of Africa (Mauritius and Kenya), the Eastern Mediterranean (Pakistan and Somalia), South-East Asia (India) and the Western Pacific (China and Indonesia). Earlier in the year, the islands of Reunion and Mayotte (French overseas departments in the Indian Ocean region) both experienced major outbreaks that have now waned. In areas not covered by geographical donor restrictions, France and Italy reported autochthonous transmission, which for France was its largest recorded outbreak with the earliest start. As of 22 October 2025, France and Italy reported 755 and 369 locally acquired cases in 2025, respectively. No restrictions were applied to donors returning from these areas, as the risk with such small case numbers is negligible.⁵¹	With the exception of France and Italy (see risk assessment), all countries that have reported CHIKV outbreaks to date are subject to malaria- and/or flavivirus-related restrictions. Donations from donors who have recently returned from these countries are restricted to plasma for fractionation for a period of time after returning.
Dengue virus (DENV)	Yes, albeit rarely.	The incubation period for symptomatic infection following DENV infection is between 3 and 14 days (usually 4–7 days).^{52,53} Following infection with DENV, viraemia is detectable 2–3 days prior to febrile symptoms and can persist from 4–14 days.^{54,55}	Four separate outbreaks of locally acquired DENV infections occurred in the Torres Strait Island Region in 2024, with 56 confirmed cases.⁵⁶ The affected areas included isolated islands with small populations of <500 residents. Given these factors, the risk to blood safety was assessed as low with no additional geographical restrictions applied to blood donations. Between January and March 2025, an outbreak of 16 locally acquired cases occurred in Townsville. This was the first such outbreak in several years owing to the effectiveness of the <i>Wolbachia</i> program, but significant flooding had increased mosquito breeding during the 2025 summer. A plasma for fractionation restriction was applied to Townsville Donor Centre. A single case of ‘breakthrough’ DENV infection occurred in Cairns in May 2025. Cairns is also a <i>Wolbachia</i> area, and weather conditions were less hospitable to mosquitoes at this time. No blood safety risk mitigations were required. Additionally, cases of autochthonous dengue infection were higher than usual during the 2024 European transmission season,⁵⁷ with cases in France (83), Italy (213) and Spain (8). Only limited cases have been reported in 2025 as of 24 October. No restrictions were applied to blood donations in either year as the risk from donors travelling to areas with much larger outbreaks has been previously assessed and found to be negligible.⁵¹	During local outbreaks in Queensland, donations in outbreak areas are restricted to the manufacture of plasma products during outbreak period.



Pathogen	Transfusion transmission reported	Infectious risk period	Surveillance/risk assessment	Additional risk management for blood safety
Hepatitis E virus (HEV)	Yes, transmission of HEV by various blood components, including solvent detergent treated plasma, has been documented.	Most human HEV infections are asymptomatic. For symptomatic infections, the incubation period is 10-60 days (average 40). ⁵⁸ HEV RNA becomes detectable in blood 2-10 weeks after infection and lasts from 1 to 6 weeks. ⁵⁹	A blood donor in Australia was diagnosed with hepatitis E in 2024. Investigation confirmed that two components from this donor had transmitted hepatitis E to two recipients. In both cases, infection resolved without ongoing complications.	Australian blood donors have the lowest reported HEV prevalence in blood donors worldwide. Lifeblood's previous risk assessment ⁶⁰ concluded that the risk of an adverse outcome from TT-HEV is negligible and that HEV donor screening was not warranted. Currently, the data and risk remain consistent with the original assessment and within the risk tolerability threshold.
Murray Valley encephalitis virus (MVEV)	Transfusion transmission of MVEV has not been reported.	Most human MVEV infections are asymptomatic. For symptomatic infections, the incubation period can vary from 1 to 4 weeks with an average of about 2 weeks. The blood phase of MVEV has not been well characterised but it is considered to be relatively brief, similar to related flaviviruses such as West Nile virus (WNV) and Japanese encephalitis virus (JEV). ⁶¹	Between 1991 and 2024, the annual reported number of human MVEV cases varied between 0 and 4 cases except in 2011 and 2023, where 16 and 26 cases were reported respectively. ⁶² In 2025, 5 cases have been reported (up to 24 October). Given the typically small number of reported human MVEV cases, the epidemiology of MVEV and the absence of reported transfusion transmission cases, MVEV represents a negligible risk to blood safety in Australia. Lifeblood continues to perform ongoing surveillance of MVEV.	Lifeblood defers donors who report encephalitis for 6 months from the date of recovery. Donors with a current flavivirus infection are deferred for 4 months from date of recovery; donors who have visited areas known to have significant outbreaks are deferred for 4 weeks after leaving the risk exposure area.
Monkeypox virus (MPXV)	Transfusion transmission of MPXV has not been reported.	Most human MPXV infections are symptomatic, with symptoms typically lasting 2-5 weeks. The incubation period following infection can vary from 4 to 21 days but is usually between 5-13 days. ^{63,64} Although data are limited, detection of MPXV DNA in peripheral blood (DNAemia) has been reported ⁶⁵ but this has not been confirmed to be live virus.	A significant upsurge in mpox cases in Africa was declared a public health emergency of international concern (PHEIC) between August 2024 and September 2025. It involved geographic expansion to several previously unaffected areas, observation of sexual transmission of clade 1 MPXV for the first time and the emergence of a novel clade 1 sub-lineage (1b) associated with sustained human-to-human transmission. Community transmission of clade 1b MPXV was confined to African countries until recently, when countries in other regions identified cases among individuals without travel links. On 30 October 2025, WHO classified this as community transmission of clade 1b for the six affected countries. Evidence of circulation of clade 1b among MSM has also been identified for the first time; WHO assesses the public health risk as moderate for this group. As of 19 October 2025, 17 African countries had reported active transmission of MPXV (any clade) in the previous six weeks. A low level of transmission is continuing in other areas globally. ⁶⁵ Australia experienced a resurgence in 2024 and for a period was reporting the highest number of confirmed cases outside of Africa; however, the 2022 outbreaks in other countries exceeded these numbers significantly. In 2024, there were 1 409 mpox notifications in Australia, mostly in NSW (731) and VIC (493). Cases decreased significantly in 2025, with only 205 notifications as of 24 October. ⁶² MPXV is a negligible risk to blood safety. ^{66,67}	The numbers in the outbreak are relatively small and primarily associated with men who have sex with men with casual partners who are ineligible to donate blood. In addition, Lifeblood performs ongoing surveillance of mpox outbreaks.



Pathogen	Transfusion transmission reported	Infectious risk period	Surveillance/risk assessment	Additional risk management for blood safety
Oropouche virus (OROV)	Transfusion transmission of OROV has not been reported.	OROV infection causes a dengue-like illness with an incubation period between 3 and 8 days. The viraemic period is not well characterised, but viraemia is known to occur 2-4 days after the onset of symptoms at high enough levels to be infectious to biting midges. ⁶¹	Detected cases of OROV infection increased significantly in 2024 and expanded to geographical areas in the Americas not known to be endemic, with continued transmission in 2025. There were 16 239 confirmed cases in 2024 and 12 786 in 2025 as of the end of July; autochthonous transmission occurred in nine and seven countries, respectively. ^{68,69} Also occurring in 2024 were the first-ever reports of deaths associated with OROV infection, vertical transmissions including microcephaly, possible association with Guillain-Barré syndrome, and detection of replication-competent virus from semen. ⁷⁰⁻⁷² Given that OROV is isolated to areas that are also endemic for malaria and/or flaviviruses and the absence of reported transfusion transmission cases, OROV represents a negligible risk to blood safety in Australia. Lifeblood continues to perform ongoing surveillance.	All countries that have reported OROV outbreaks to date are subject to malaria- and/or flavivirus-related restrictions. Donations from donors who have recently returned from these countries are restricted to plasma for fractionation for a period of time after returning.
West Nile virus (WNV)	Yes, transmission of WNV by blood, tissue and organ transplantation has been documented. ⁶⁹	In symptomatic WNV infection (16–26% of cases), the estimated time from infection to the appearance of symptoms is typically reported as 3–14 days. ⁷⁰ WNV RNA becomes detectable 1–2 days post-infection followed by anti-WNV IgM and IgG approximately 8–11 days post-infection. ⁷¹	Lifeblood monitors WNV outbreaks in the European Union (EU) and neighbouring countries, most of which do not have specific donor deferrals, based on regular updates provided by the European Centre for Disease Prevention and Control. ⁷³ Lifeblood performed weekly risk modelling during the larger than usual 2018 WNV transmission season to estimate the risk of a donor returning from these countries and donating while infectious (i.e. viraemic). This modelling indicated that the additional level of risk to the Australian blood supply associated with donors returning from these countries did not exceed the threshold (established for local dengue outbreaks) that requires cessation of fresh blood component manufacture. Due to the very low risk to blood safety in Australia associated with WNV outbreaks in EU and neighbouring countries, Lifeblood has implemented a surveillance system whereby risk modelling will only be implemented when the total number of weekly reported WNV cases in all EU and neighbouring countries reaches a specified number or trigger point. ⁶⁷ This trigger point was not reached in 2024 or 2025.	Donors with a current flavivirus infection are deferred for 4 months from date of recovery. If a donor has travelled to areas known to have significant outbreaks or endemic for specific flaviviruses, a 'plasma only for fractionation' restriction may apply for 4 weeks from date of leaving the risk area.



Conclusion

- The reported non-compliance rate during the 10-year study period has fluctuated between 15-27%. The rate highlights the importance of promoting donor education to ensure that the potential donors understand the importance of 'self-deferral' to reduce the risk of collecting blood from a potentially infected donor whose infection may not be detected by testing.
- While non-compliance among positive donors has been routinely monitored since 2000, the rate among TTI test-negative donors is more difficult to track. Results from a large national survey conducted in 2012-2013 showed a comparatively low rate of non-compliance (in the range 0.05 to 0.29%) among TTI test-negative donors for several sexual activity-based donor deferrals.
- The estimated residual risk of transmission for HIV, hepatitis C, hepatitis B, HTLV and syphilis are all less than 1 in 1 million per unit transfused, which is considered a 'negligible' risk.
- In 2024, 135 826 platelet donations were screened for bacterial contamination. 177 (0.13%) and 171 (0.13%) were found to be confirmed positive and indeterminate respectively. The majority of organisms identified were slow-growing anaerobic skin flora not usually associated with post-transfusion septic reactions. However, a minority of platelets grew potential pathogens which may have been due to contamination, or transient or occult bacteraemia in the donor. Only one of the components from these donations was transfused. The recipient did not develop an adverse transfusion reaction and was well at the time of follow-up. All donors were followed up and reported to be healthy with no specific risk factors.
- In addition to established transfusion-transmissible infections, emerging infectious diseases continue to demand vigilant surveillance and risk assessment. During 2024-2025, Murray Valley encephalitis, mpox and local dengue outbreaks were monitored. The seasonal West Nile virus outbreak in Europe and the increased cases of Oropouche virus and Chikungunya virus infections seen overseas, were also monitored. The risk to blood safety in Australia remains negligible.
- In 2024 there was a total of six infectious disease transmissions which included four transfusion-transmitted bacterial infections and two hepatitis E transfusion-transmissions (from a single donor). This number is highly unusual compared to the usual 0-1 per year and influenced by random variation of rare events.



Supplementary Tables

Supplementary Table 1 The number and prevalence rate of TTI-positive donors (hepatitis B, hepatitis C and HIV) in Australia, by state/territory, 2024

State/Territory of donation	All tested donations			Hepatitis B			Hepatitis C			HIV			Total positive donations		
	First time	Repeat	All	First time	Repeat	All	First time	Repeat	All	First time	Repeat	All	First time	Repeat	All
NSW/ACT	37 541	501 167	538 708	24	7	31	26	6	32	1	2	3	51	15	66
Number (Number per 100 000 donations)				63.93	1.40	5.75	69.26	1.20	5.94	2.66	0.40	0.56	135.85	2.99	12.25
NT	767	10 487	11 254	1	0	1	0	0	0	0	0	0	1	0	1
Number (Number per 100 000 donations)				130.38	0.00	8.89	0.00	0.00	0.00	0.00	0.00	0.00	130.38	0.00	8.89
QLD	18 366	287 676	306 042	7	6	13	11	2	13	2	0	2	20	8	28
Number (Number per 100 000 donations)				38.11	2.09	4.25	59.89	0.70	4.25	10.89	0.00	0.65	108.90	2.78	9.15
SA	7 058	120 177	127 235	6	1	7	3	2	5	0	0	0	9	3	12
Number (Number per 100 000 donations)				85.01	0.83	5.50	42.50	1.66	3.93	0.00	0.00	0.00	127.51	2.50	9.43
TAS	2 573	53 999	56 572	2	0	2	2	0	2	0	0	0	4	0	4
Number (Number per 100 000 donations)				77.73	0.00	3.54	77.73	0.00	3.54	0.00	0.00	0.00	155.46	0.00	7.07
VIC	27 575	432 915	460 490	26	4	30	18	4	22	2	0	2	46	8	54
Number (Number per 100 000 donations)				94.29	0.92	6.51	65.28	0.92	4.78	7.25	0.00	0.43	166.82	1.85	11.73
WA	10 662	153 441	164 103	7	1	8	1	1	2	0	0	0	8	2	10
Number (Number per 100 000 donations)				65.65	0.65	4.87	9.38	0.65	1.22	0.00	0.00	0.00	75.03	1.30	6.09
National	104 542	1 559 862	1 664 404	73	19	92	61	15	76	5	2	7	139	36	175
Number (Number per 100 000 donations)				69.83	1.22	5.53	58.35	0.96	4.57	4.78	0.13	0.42	132.96	2.31	10.51



Supplementary Table 2 The number and prevalence rate of TTI-positive (HTLV and potentially infectious syphilis) donors in Australia, by state/territory, 2024**Supplementary Table 2A HTLV, by state/territory, 2024**

State/Territory of donation	All tested donations			HTLV		
	First time	Repeat	All	First time	Repeat	All
NSW/ACT	37 142	2 073	39 215	1	0	1
Number (Number per 100 000 donations)				2.69	0.00	2.55
NT	758	25	783	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
QLD	18 155	1 160	19 315	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
SA	6 988	623	7 611	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
TAS	2 549	71	2 620	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
VIC	27 265	1 763	29 028	3	0	3
Number (Number per 100 000 donations)				11.00	0.00	10.33
WA	10 541	509	11 050	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
National	103 398	6 224	109 622	4	0	4
Number (Number per 100 000 donations)				3.87	0.00	3.65

Supplementary Table 2B Potentially infectious syphilis, by state/territory, 2024

State/Territory of donation	All tested donations			Potentially infectious syphilis		
	First time	Repeat	All	First time	Repeat	All
NSW/ACT	33 472	283 982	317 454	5	8	13
Number (Number per 100 000 donations)				14.94	2.82	4.10
NT	672	3 607	4 279	0	1	1
Number (Number per 100 000 donations)				0.00	27.72	23.37
QLD	16 406	148 615	165 021	1	1	2
Number (Number per 100 000 donations)				6.10	0.67	1.21
SA	6 426	58 800	65 226	0	1	1
Number (Number per 100 000 donations)				0.00	1.70	1.53
TAS	2 195	19 493	21 688	0	0	0
Number (Number per 100 000 donations)				0.00	0.00	0.00
VIC	23 238	224 106	247 344	3	4	7
Number (Number per 100 000 donations)				12.91	1.78	2.83
WA	9 259	76 057	85 316	1	1	2
Number (Number per 100 000 donations)				10.80	1.31	2.34
National	91 668	814 660	906 328	10	16	26
Number (Number per 100 000 donations)				10.91	1.96	2.87



Supplementary Table 3 Demographic characteristics of TTI-positive blood donors in Australia, 2024

	Number of donors	Hepatitis B	Hepatitis C	HIV	HTLV	Potentially infectious syphilis
		Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)
Sex						
Male	280 799	66 (23.5)	42 (14.96)	6 (2.14)	1 (0.36)	17 (6.05)
Female	274 919	26 (9.46)	34 (12.37)	1 (0.36)	3 (1.09)	9 (3.27)
Age group (years)						
Less than 20	12 015	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
20-29	97 329	15 (15.41)	4 (4.11)	2 (2.05)	1 (1.03)	7 (7.19)
30-39	115 273	28 (24.29)	11 (9.54)	2 (1.74)	2 (1.74)	8 (6.94)
40-49	107 694	18 (16.71)	13 (12.07)	2 (1.86)	0 (0)	6 (5.57)
50 and above	223 407	31 (13.88)	48 (21.49)	1 (0.45)	1 (0.45)	5 (2.24)
State/Territory*						
ACT	17 839	2 (11.21)	4 (22.42)	0 (0)	0 (0)	1 (5.61)
NSW	170 686	29 (16.99)	28 (16.4)	3 (1.76)	1 (0.59)	12 (7.03)
NT	3 715	1 (26.92)	0 (0)	0 (0)	0 (0)	1 (26.92)
QLD	98 404	13 (13.21)	13 (13.21)	2 (2.03)	0 (0)	2 (2.03)
SA	41 863	7 (16.73)	5 (11.95)	0 (0)	0 (0)	1 (2.39)
TAS	15 853	2 (12.62)	2 (12.62)	0 (0)	0 (0)	0 (0)
VIC	154 844	30 (19.37)	22 (14.21)	2 (1.29)	3 (1.94)	7 (4.52)
WA	52 484	8 (15.24)	2 (3.81)	0 (0)	0 (0)	2 (3.81)
Total	555 718	92 (16.56)	76 (13.68)	7 (1.26)	4 (0.72)	26 (4.68)

* 30 donors with unknown state/territory of residence are not included



Supplementary Table 4 Demographic characteristics of TTI-positive blood donors in Australia, 2020-2024

	Number of donors	Hepatitis B	Hepatitis C	HIV	HTLV	Potentially infectious syphilis
		Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)	Number of positive donors (Number per 100 000 donors)
Sex						
Male	1 300 146	333 (25.61)	216 (16.61)	21 (1.62)	18 (1.38)	73 (5.61)
Female	1 340 874	136 (10.14)	153 (11.41)	2 (0.15)	13 (0.97)	36 (2.68)
Age group (years)						
Less than 20	67 244	4 (5.95)	3 (4.46)	0 (0)	0 (0)	2 (2.97)
20-29	567 238	100 (17.63)	31 (5.47)	8 (1.41)	6 (1.06)	39 (6.88)
30-39	572 630	151 (26.37)	73 (12.75)	7 (1.22)	9 (1.57)	37 (6.46)
40-49	490 771	91 (18.54)	58 (11.82)	4 (0.82)	8 (1.63)	17 (3.46)
50 and above	943 136	123 (13.04)	204 (21.63)	4 (0.42)	8 (0.85)	14 (1.48)
State/Territory*						
ACT	86 604	12 (13.86)	11 (12.7)	1 (1.15)	0 (0)	10 (11.55)
NSW	790 037	147 (18.61)	136 (17.21)	5 (0.63)	12 (1.52)	31 (3.92)
NT	17 441	8 (45.87)	0 (0)	0 (0)	0 (0)	1 (5.73)
QLD	482 844	62 (12.84)	58 (12.01)	8 (1.66)	3 (0.62)	16 (3.31)
SA	202 493	31 (15.31)	30 (14.82)	1 (0.49)	4 (1.98)	6 (2.96)
TAS	78 314	16 (20.43)	15 (19.15)	0 (0)	1 (1.28)	3 (3.83)
VIC	737 253	152 (20.62)	96 (13.02)	6 (0.81)	8 (1.09)	33 (4.48)
WA	245 346	41 (16.71)	23 (9.37)	2 (0.82)	3 (1.22)	9 (3.67)
Total**	2 641 020	469 (17.76)	369 (13.97)	23 (0.87)	31 (1.17)	109 (4.13)

* 688 donors with unknown state/territory of residence are not included

** The total of over 2.6 million donors over a five-year period, 2020-2024, are not unique donors, although they are unique for any given year. The reason being that many donors are double counted from year to year (repeat donors)



Supplementary Table 5 **Number and percentage of TTI-positive donors, by sex and age group, 2024**

Donor status	Hepatitis B				Hepatitis C				HIV				HTLV				Potentially infectious syphilis			
	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%
First time donors																				
<20 years	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
20-29 years	13	2	15	16.3	3	0	3	3.9	2	0	2	28.6	1	0	1	25.0	3	1	4	15.4
30-39 years	16	5	21	22.8	6	2	8	10.5	2	0	2	28.6	0	2	2	50.0	1	1	2	7.7
40-49 years	11	5	16	17.4	7	1	8	10.5	0	1	1	14.3	0	0	0	0.0	1	1	2	7.7
50-59 years	10	2	12	13.0	7	8	15	19.7	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
60 years and above	5	4	9	9.8	13	14	27	35.5	0	0	0	0.0	0	1	1	25.0	1	1	2	7.7
Repeat donors																				
<20 years	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
20-29 years	0	0	0	0.0	0	1	1	1.3	0	0	0	0.0	0	0	0	0.0	1	2	3	11.5
30-39 years	3	4	7	7.6	1	2	3	3.9	0	0	0	0.0	0	0	0	0.0	5	1	6	23.1
40-49 years	2	0	2	2.2	3	2	5	6.6	1	0	1	14.3	0	0	0	0.0	2	2	4	15.4
50-59 years	2	3	5	5.4	2	3	5	6.6	1	0	1	14.3	0	0	0	0.0	2	0	2	7.7
60 years and above	4	1	5	5.4	0	1	1	1.3	0	0	0	0.0	0	0	0	0.0	1	0	1	3.8
Total	66	26	92	100	42	34	76	100	6	1	7	100	1	3	4	100	17	9	26	100

Note: Percentages may not add to exactly 100% due to rounding



Supplementary Table 6 **Number and percentage of TTI-positive donors, by sex and age group, 2020-2024**

Donor status	Hepatitis B				Hepatitis C				HIV				HTLV				Potentially infectious syphilis			
	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%
First time donors																				
<20 years	2	1	3	0.6	0	3	3	0.8	0	0	0	0.0	0	0	0	0.0	1	1	2	1.8
20-29 years	61	39	100	21.3	23	4	27	7.3	6	0	6	26.1	5	1	6	19.4	11	7	18	16.5
30-39 years	110	27	137	29.2	40	16	56	15.2	5	1	6	26.1	6	3	9	29.0	10	4	14	12.8
40-49 years	53	20	73	15.6	32	19	51	13.8	1	1	2	8.7	5	3	8	25.8	3	4	7	6.4
50-59 years	33	14	47	10.0	38	38	76	20.6	0	0	0	0.0	1	2	3	9.7	1	0	1	0.9
60 years and above	31	9	40	8.5	60	40	100	27.1	1	0	1	4.3	0	3	3	9.7	1	1	2	1.8
Repeat donors																				
<20 years	0	1	1	0.2	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
20-29 years	0	0	0	0.0	1	3	4	1.1	2	0	2	8.7	0	0	0	0.0	13	8	21	19.3
30-39 years	6	8	14	3.0	8	9	17	4.6	1	0	1	4.3	0	0	0	0.0	17	6	23	21.1
40-49 years	12	6	18	3.8	4	3	7	1.9	2	0	2	8.7	0	0	0	0.0	5	5	10	9.2
50-59 years	9	6	15	3.2	6	12	18	4.9	2	0	2	8.7	1	0	1	3.2	6	0	6	5.5
60 years and above	16	5	21	4.5	4	6	10	2.7	1	0	1	4.3	0	1	1	3.2	5	0	5	4.6
Total	333	136	469	100	216	153	369	100	21	2	23	100	18	13	31	100	73	36	109	100

Note: Percentages may not add to exactly 100% due to rounding



Supplementary Table 7 **Number and percentage of TTI-positive donors, by country/region of birth[^], 2020-2024**

Region of birth [^]	Hepatitis B		Hepatitis C		HIV		HTLV		Potentially infectious syphilis	
	Number	%	Number	%	Number	%	Number	%	Number	%
Australia	33	7.0	232	62.9	12	52.2	2	6.5	60	55.0
Overseas born										
<i>Other Oceania</i>	31	6.6	9	2.4	1	4.3	1	3.2	4	3.7
<i>United Kingdom and Ireland</i>	3	0.6	19	5.1	1	4.3	0	0.0	7	6.4
<i>Other Europe</i>	20	4.3	17	4.6	0	0.0	1	3.2	1	0.9
<i>Middle East/North Africa</i>	16	3.4	7	1.9	0	0.0	2	6.5	2	1.8
<i>Sub-Saharan Africa</i>	18	3.8	2	0.5	1	4.3	1	3.2	1	0.9
<i>South & North East Asia</i>	249	53.1	36	9.8	2	8.7	5	16.1	22	20.2
<i>Southern and Central Asia</i>	88	18.8	37	10.0	3	13.0	18	58.1	9	8.3
<i>Americas</i>	4	0.9	6	1.6	2	8.7	1	3.2	3	2.8
<i>South/Central America and the Caribbean</i>	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<i>Central and West Africa</i>	2	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Total with a reported country of birth	464	98.9	365	98.9	22	95.7	31	100.0	109	100.0
Not reported	5	1.1	4	1.1	1	4.3	0	0.0	0	0.0
Total	469	100	369	100	23	100	31	100	109	100

[^] Region of birth from the Australian Bureau of Statistics
Note: Percentages may not add to exactly 100% due to rounding



Supplementary Table 8 **Number and percentage of TTI-positive first-time donors, by potential reported exposure category and sex, 2024**

Exposure categories	Hepatitis B				Hepatitis C				HIV				HTLV				Potentially infectious syphilis			
	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%
Ethnicity/Country of birth	42	13	55	75.3	5	2	7	11.5	0	0	0	0.0	1	2	3	75.0	0	0	0	0.0
Injecting drug use	0	1	1	1.4	14	12	26	42.6	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Tattoo/Piercing	0	0	0	0.0	1	4	5	8.2	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Partners with known risks or known to be positive	1	0	1	1.4	1	1	2	3.3	1	0	1	20.0	0	0	0	0.0	1	0	1	10.0
Partner with unspecified risks	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0	1	10.0
Male-to-male sexual contact	1	0	1	1.4	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	3	0	3	30.0
Exposure in health care setting	0	0	0	0.0	1	0	1	1.6	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Engaged in sex work	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Blood or tissue recipient	0	0	0	0.0	3	1	4	6.6	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Household contact/Family history	10	4	14	19.2	1	1	2	3.3	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other blood to blood contact	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other*	0	0	0	0.0	1	0	1	1.6	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
No risk factors identified/Unknown^^	1	0	1	1.4	9	4	13	21.3	3	1	4	80.0	0	1	1	25.0	1	4	5	50.0
Total	55	18	73	100.0	36	25	61	100.0	4	1	5	100.0	1	3	4	100.0	6	4	10	100.0

* For hepatitis C, one out of one male first-time donor in the 'Other' category had imprisonment as a risk factor

Note: Percentages may not add to exactly 100% due to rounding

^^ A proportion of these are likely due to assumed heterosexual sexual transmission



Supplementary Table 9 Number and percentage of TTI-positive first-time donors, by potential reported exposure category and sex, 2020-2024

Exposure categories	Hepatitis B				Hepatitis C				HIV				HTLV				Potentially infectious syphilis			
	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%
Ethnicity/Country of birth	236	69	305	76.3	36	10	46	14.7	0	0	0	0.0	16	10	26	89.7	0	0	0	0.0
Injecting drug use	0	1	1	0.3	66	34	100	32.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Tattoo/Piercing	0	0	0	0.0	9	13	22	7.0	1	0	1	6.7	0	0	0	0.0	0	0	0	0.0
Partners with known risks or known to be positive	1	0	1	0.3	7	9	16	5.1	1	0	1	6.7	1	1	2	6.9	3	2	5	11.4
Partners with unspecified risks	3	2	5	1.3	1	0	1	0.3	2	0	2	13.3	0	0	0	0.0	5	7	12	27.3
Male-to-male sexual contact	3	0	3	0.8	2	0	2	0.6	3	0	3	20.0	0	0	0	0.0	11	0	11	25.0
Exposure in health care setting	0	1	1	0.3	8	2	10	3.2	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Engaged in sex work	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Blood or tissue recipient	0	0	0	0.0	10	4	14	4.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Household contact/Family history	38	33	71	17.8	1	8	9	2.9	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other blood to blood contact	1	0	1	0.3	3	3	6	1.9	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other*	0	0	0	0.0	13	2	15	4.8	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
No risk factors identified/Unknown^^	8	4	12	3.0	37	35	72	23.0	6	2	8	53.3	0	1	1	3.5	8	8	16	36.4
Total	290	110	400	100.0	193	120	313	100.0	13	2	15	100.0	17	12	29	100.0	27	17	44	100.0

* For hepatitis C, 77% (10/13) first-time male donors and 50% (1/2) first-time female donors in 'Other' had imprisonment as a risk factor

Note: Percentages may not add to exactly 100% due to rounding

^^ A proportion of these are likely due to assumed heterosexual sexual transmission



Supplementary Table 10 Number and percentage of TTI-positive repeat donors, by potential reported exposure category and sex, 2024

Exposure categories	Hepatitis B				Hepatitis C				HIV				HTLV				Potentially infectious syphilis			
	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%
Ethnicity/Country of birth	8	4	12	63.2	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Injecting drug use	0	0	0	0.0	2	2	4	26.7	1	0	1	50.0	0	0	0	0.0	0	0	0	0.0
Tattoo/Piercing	0	0	0	0.0	0	1	1	6.7	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Partners with known risks or known to be positive	2	2	4	21.1	1	0	1	6.7	0	0	0	0.0	0	0	0	0.0	2	2	4	25.0
Partner with unspecified risks	0	0	0	0.0	0	1	1	6.7	0	0	0	0.0	0	0	0	0.0	4	2	6	37.5
Male-to-male sexual contact	0	0	0	0.0	0	0	0	0.0	1	0	1	50.0	0	0	0	0.0	1	0	1	6.3
Exposure in health care setting	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Engaged in sex work	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Blood or tissue recipient	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Household contact/Family history	0	1	1	5.3	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other blood to blood contact	0	0	0	0.0	0	1	1	6.7	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other	0	1	1	5.3	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0	1	6.3
No risk factors identified/Unknown^^	1	0	1	5.3	3	4	7	46.7	0	0	0	0.0	0	0	0	0.0	3	1	4	25.0
Total	11	8	19	100.0	6	9	15	100.0	2	0	2	100.0	0	0	0	0.0	11	5	16	100.0

Note: Percentages may not add to exactly 100% due to rounding

^^ A proportion of these are likely due to assumed heterosexual sexual transmission



Supplementary Table 11 Number and percentage of TTI-positive repeat donors, by potential reported exposure category and sex, 2020-2024

Exposure categories	Hepatitis B				Hepatitis C				HIV				HTLV				Potentially infectious syphilis			
	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%	M	F	Total	%
Ethnicity/Country of birth	34	15	49	71.0	2	0	2	3.6	0	0	0	0.0	0	1	1	50.0	0	0	0	0.0
Injecting drug use	0	0	0	0.0	7	5	12	21.4	1	0	1	12.5	0	0	0	0.0	0	0	0	0.0
Tattoo/Piercing	0	0	0	0.0	4	3	7	12.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Partners with known risks or known to be positive	3	2	5	7.3	2	1	3	5.4	1	0	1	12.5	0	0	0	0.0	4	4	8	12.3
Partners with unspecified risks	1	0	1	1.5	0	1	1	1.8	1	0	1	12.5	1	0	1	50.0	19	9	28	43.1
Male-to-male sexual contact	0	0	0	0.0	0	0	0	0.0	2	0	2	25.0	0	0	0	0.0	8	0	8	12.3
Exposure in health care setting	0	0	0	0.0	2	2	4	7.1	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Engaged in sex work	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Blood or tissue recipient	0	0	0	0.0	0	1	1	1.8	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Household contact/Family history	3	6	9	13.0	0	1	1	1.8	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other blood to blood contact	0	0	0	0.0	0	2	2	3.6	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Other	0	1	1	1.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0	1	1.5
No risk factors identified/Unknown^^	2	2	4	5.8	6	17	23	41.1	3	0	3	37.5	0	0	0	0.0	14	6	20	30.8
Total	43	26	69	100	23	33	56	100	8	0	8	100	1	1	2	100	46	19	65	100

Note: Percentages may not add to exactly 100% due to rounding

^^ A proportion of these are likely due to assumed heterosexual sexual transmission





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