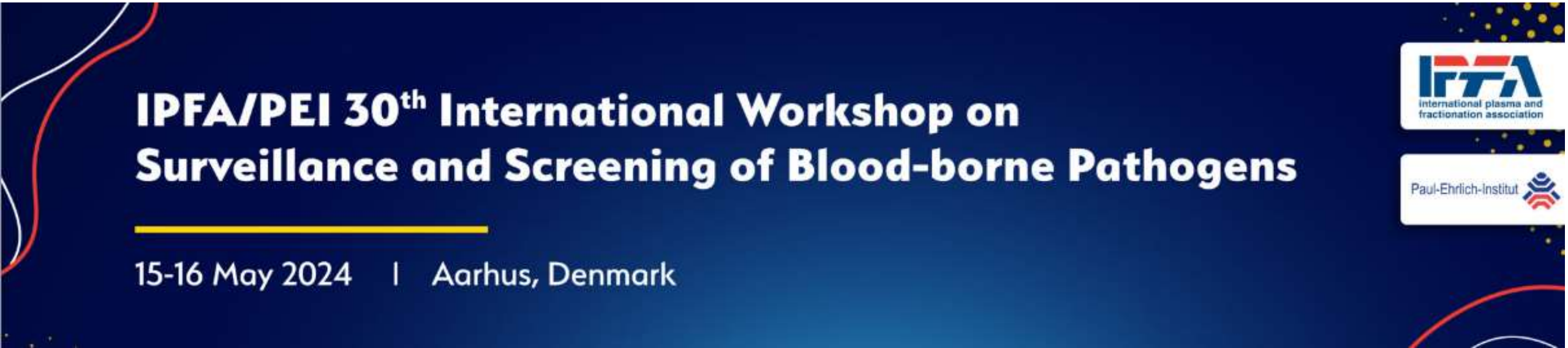
# Developments in donor selection & testing in Australia: “The Plasma Pathway”

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Invited speaker this talk

Invited speaker ISBT July 2024

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**Stock shareholder (you or spouse/partner):** Nil

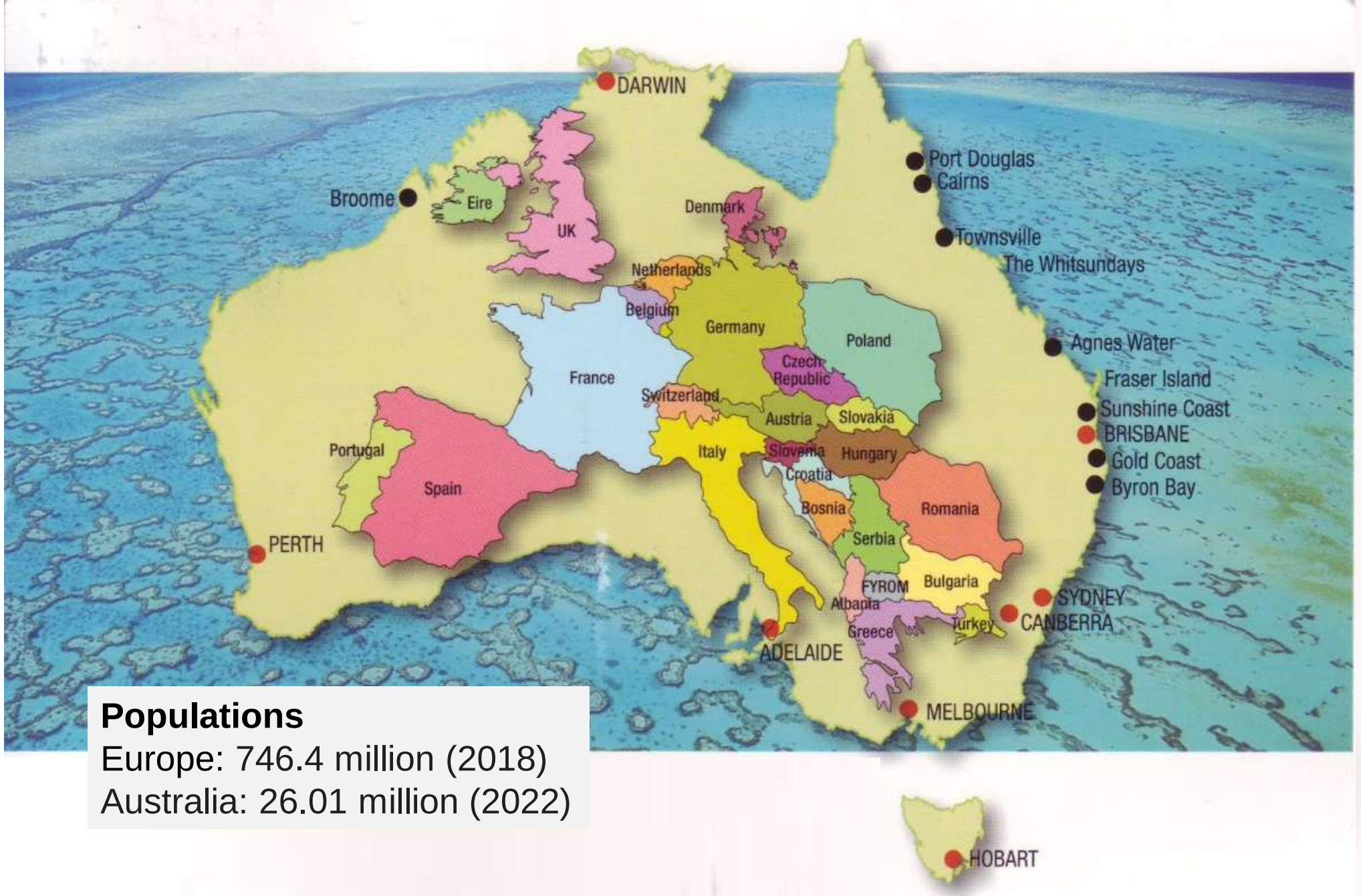
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# Content

- What is the Australian Red Cross Lifeblood?
- History of sexual activity deferrals
- Lifeblood rules
- Selected international approaches
- Australian scenario 2000’s
- Lifeblood website messaging
- Plasma pathway
  - Logic
  - Safety arguments
  - Progress
- Gender neutral assessment (fresh product pathway)
- Research into gender-neutral assessment
- Summary




**Populations**
Europe: 746.4 million (2018)
Australia: 26.01 million (2022)

https://www.quora.com/Does-Europe-fit-in-Australia

# Location of donor and processing centres



# Lifeblood at a glance

## Who we are



**102 blood donor centres**
mobile centres and pop-up centres across the nation



**4 major blood processing centres**
transforming donations into life-changing outcomes for recipients



**2 milk processing facilities**
collecting and supplying breast milk for vulnerable preterm babies



**1 microbiome facility**
supplying faecal microbiota for transplant for approved clinical trials



**3,749 people**
working at Lifeblood and 1,500 volunteers helping to support donors

## Donors



**536,966**
people from the Australian community made life-giving donations of blood, platelets or plasma




**116,951**
new donors stepped up to make a difference to patients across Australia



**1,607,820**
individual donations of blood, plasma and platelets



**35%**
of all donations made by Lifeblood Teams, our popular group donation program



**370**
breastfeeding mums gave milk to support Australia's most vulnerable babies

## What we delivered this year



**1,055,000**
fresh blood products delivered to hospitals and healthcare providers to help patients



**842.4 tonnes**
of plasma delivered to CSL Behring to turn into plasma products



**3,972 litres**
of breast milk delivered to partner hospitals and special care nurseries to feed babies



**9,500**
patient samples and 10,500 donor samples tested to support patients with complex transfusion issues



**More than 80%**
of Australian transplant programs, from stem cell to solid organ, supported by diagnostic tests and scientific analysis by our Transplantation and Immunogenetics laboratories

# Sexual activity deferrals

Early 80s most countries – permanent deferral for gay/bisexual men

Development of HIV antivirals

- Initially ineffective, but combinations => effective, turned HIV into a chronic disease
- Can use antivirals as prevention: PEP, PrEP

NAT reduced window period

Time to reduce deferrals worldwide

- In Australia
  - 9/5/1983 NSW Red Cross calls on homosexual men with multiple partners not to donate blood
  - June 1983 information sheet in some states
  - Late 1984 – deferral for bisexual and homosexual men
  - 1984 – HTLV-III discovered to be the cause of AIDS, later renamed HIV
  - 1985 – FDA licenced HTLV-III test March, introduced for blood donation in Australia May
  - 2000 – 12m deferral MSM
  - Application 6m deferral – rejected by regulator
  - January 2021 – 3m deferral approved

International changes => time to change in Australia

# Current Lifeblood higher risk sexual activity rules

Donors with higher risk sexual activity are currently deferred for 3 months:

- for male donors: male-to-male sex
- for female donors: sex with a man who has ever had sex with a man
- for transgender donors: sexual contact with a male or transgender person
- sex work
- sexual contact with a sex worker (male or female)
- overseas sexual contact with a resident of a HIV high prevalence country
- sexual contact with an injecting drug user (current or past)
- sexual contact with a partner known to be infected with a blood-borne virus (HIV, HBV, HCV or HTLV)

High risk prevalence country – deferral is 12 months from first contact

# International approaches

Sexual activity deferrals

- In the past were usually time-based
- Usually ‘men-who-have-sex-with-men” (MSM) as about behaviour not sexuality
- Some cover other sexual risks e.g. sex workers (Canada 12m, UK/US 3m)

Plasma pathways with quarantine

- Attempted in France, Israel, Canada
- Failed as most donors didn’t return to get 2nd lot of testing to release original donation

“Individual risk assessment”

- Various meanings to this, such as:
  - New or multiple partners (most often)
  - Anal sex
  - Chemsex (drugs + sex)
- Different periods to begin countdown
- Doesn’t account for risk of partner
- Terminology changing to “gender neutral assessment” currently

# In Australia 2020s

Much lobbying

Many complaints

Excellent tests (NAT, serology)

Excellent medicines for treatment and prevention

Many high-income countries changing

- No HIV transmissions from doing this so far

  ie **no safety signal**

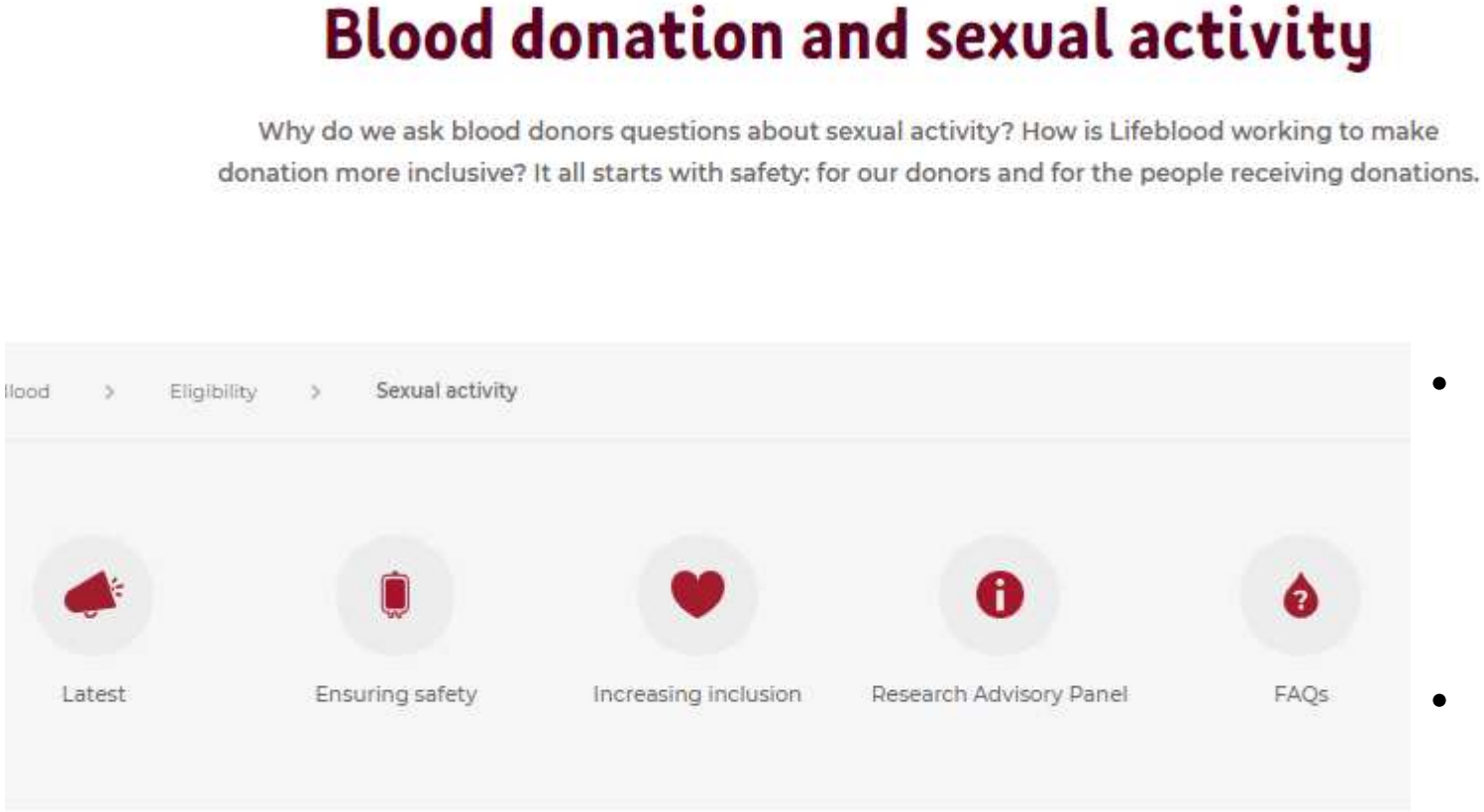
Reluctance to deal with Lifeblood

- Young donors
- Families of gay and bisexual men
- Corporate Australia (team donations)

Negative press

Political pressure

# What is Lifeblood doing?



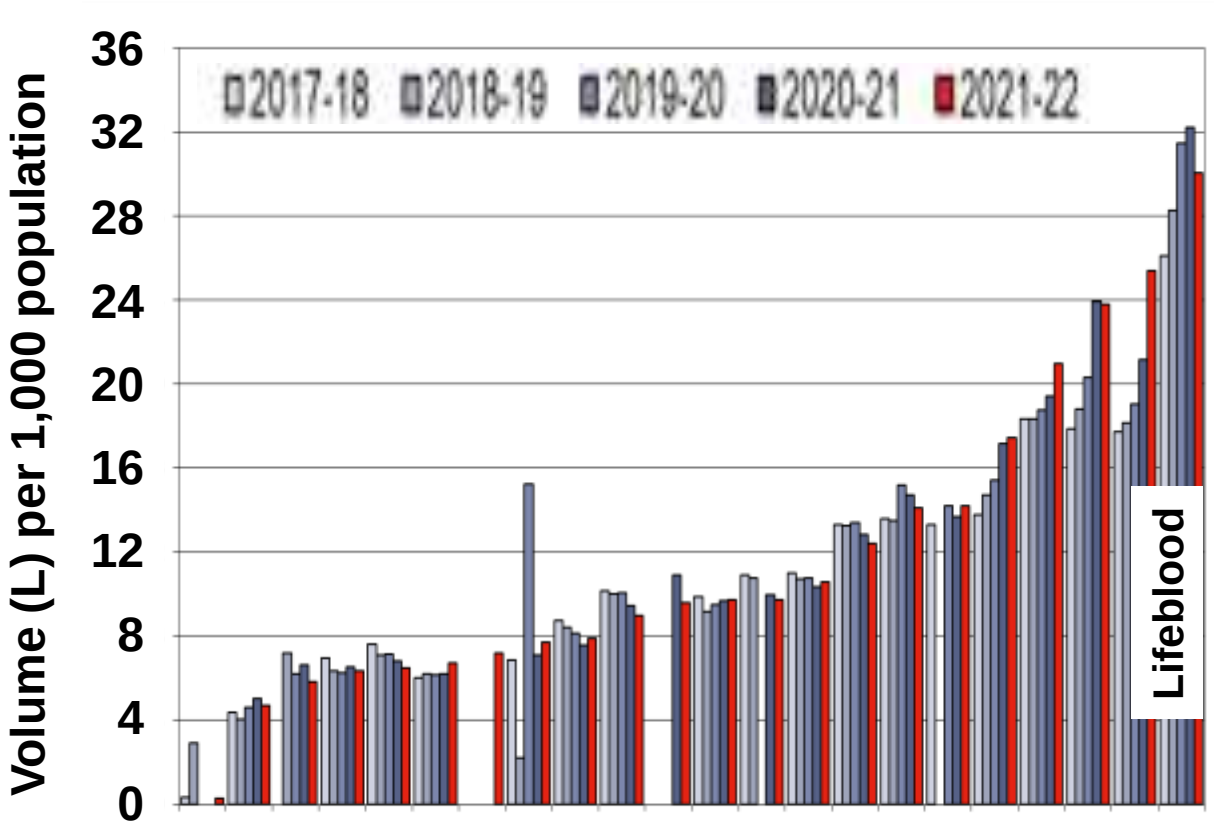

- *A 'plasma pathway' that will allow everyone, regardless of their sexual activity, including gay and bisexual men, and anyone taking PrEP, to donate plasma without any wait period at all.*
- *A gender-neutral approach or 'Individual risk assessment' for blood donation.*

https://www.lifeblood.com.au/blood/eligibility/sexual-activity
https://www.lifeblood.com.au/news-and-stories/media-centre/media-releases/changes-blood-and-plasma-donation-in-2024

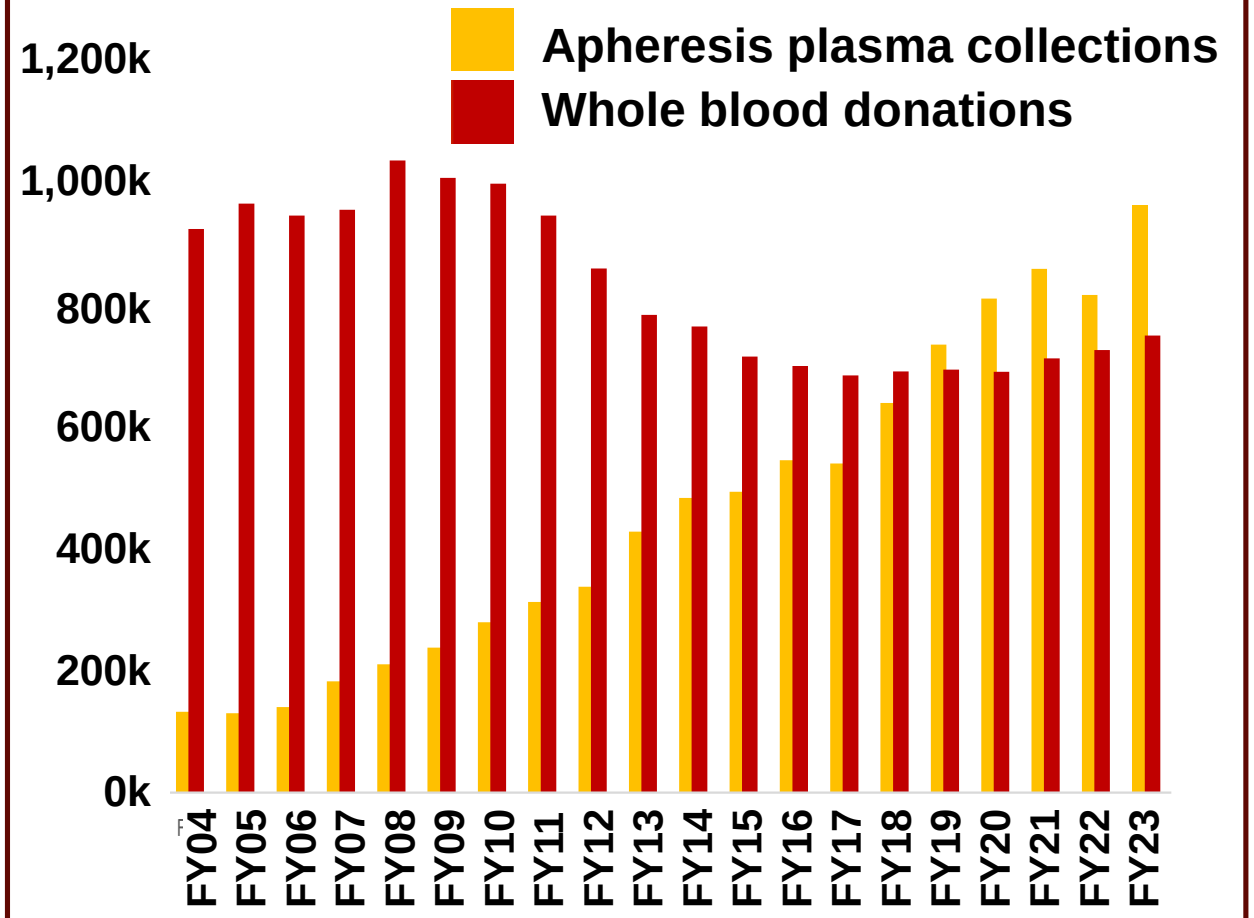
# Why a plasma pathway?

1. Safe - leverages sensitive testing and pathogen inactivation
2. We collect lots of plasma
    - Plasma is the most needed type of blood donation in Australia
    - >50% total donations are plasma
3. Most inclusive option - PrEP
4. We won't need to ask about sexual practices (apart from partner with HIV, HCV or HBV) – better donation experience, treats all donors equally
5. Increase in donor panel size and collections – modelling (gbMSM only) suggests this will result in between 3,500 to 9,500 new plasma donors, and 17,000 to 48,000 additional plasma donations every year.

# Plasma donations in Australia




**Plasma for fractionation donations by operator (L/1,000 population)**




**Donations/Financial year**

# Risk to recipients of plasma-derived medicinal products

The probability of Lifeblood issuing to CSLB a donation containing HIV, HCV or HBV virions:

- NAT can be negative due to:
  - NAT Window Period (most of risk)
  - PrEP usage
  - Viral variant - Grifols TMA assays, which include multiple viral targets
- Quarantine release error – negligible and ignored

Risk of transmitting HIV depends on:

- The maximum viral load in any such donation
  - Viral load for any such donation would be very low
  - Viral load would be massively diluted in the pool
- Capacity of the fractionator pathogen inactivation process to render the product safe
  - Very high for all products

# Risk assessment – Number of WP donations

**Predicted HIV risk impact of newly eligible donors (no sex act/PrEP deferral)**

| | Plasma donations | Residual risk | Proportion of total donations | Risk contribution | Predicted HIV-WP donations per annum |
|---|---|---|---|---|---|
| Baseline | 783,388 | $1.85 \times 10^{-7}$ | 0.9823 | $1.82 \times 10^{-7}$ | 0.145 |
| Newly eligible – on PrEP | 6474 | $1.66 \times 10^{-4}$ | 0.0081 | $1.58 \times 10^{-6}$ | 1.073 |
| Newly eligible - no PrEP | 7620 | $2.07 \times 10^{-4}$ | 0.0096 | $1.98 \times 10^{-6}$ | 1.579 |

Used a classical Incidence (I) – Window Period (WP) model

- Incidence rate (I) - the rate at which repeat donors acquire new infection.
- The incidence rate is then multiplied by the annualised risk of an infected donor attending during the WP (i.e. the WP in days divided by 365).
- Australian HIV epidemiology - number of sexually active MSM in Australia, number on PrEP, HIV seroconversion rates. Risk of other groups was trivial compared with MSM.
- **The number of HIV-WP donations issued per annum is predicted to be around 2.8 if no deferrals for sexual activity or PrEP usage were applied.**

# Risk assessment – Pathogen inactivation capacity

**Predicted maximum undetected viral load in ID-NAT and MP-16 for the Ultrio Elite assay**

| Pool size | Viral load (IU/mL) | | | |
|---|---|---|---|---|
| | HIV-1 | HIV-2 | HCV | HBV |
| ID-NAT* | 18.0 (15.0–23.5) | 10.4 (8.9–12.6) | 3.0 (2.5–3.9) | 4.3 (3.8–5.0) |
| MP-16 | 288.0 (240.0–376.0) | 166.4 (142.4–201.6) | 48.0 (40.0–62.4) | 68.8 (60.8–80.0) |

* 95% LOD from manufacturer's Australian package insert

- Maximum viral load in a test negative donation – 90,240 virions in 800mL plasma
- Applied the lowest stated HIV Log Reduction Factor (LRF) of CSLB for PDMP (9.6), which reduced the number of HIV virions to 0.000023 (i.e. no competent virus).
- **Used the Kleinman estimate of 415 virions as the minimum infectious dose, the estimated 0.000023 virions remaining in an HIV-WP donation after pathogen inactivation is more than 18 million times lower than the minimum infectious dose.**
- CSLB independently performed an HIV risk assessment and had no safety concerns

# Plasma pathway is more inclusive

Various modelling methodologies

Latest paper Mowat Y, *et al*. The impact of blood donation deferral strategies on the eligibility of men who have sex with men and other sexual risk behaviour in Australia. (*Transfusion*. 2024. https://doi.org/10.1111/trf.17732)

If monogamous MSM not on PrEP were allowed to donate increase in eligible population ≈ 50,000 compared to ≈ 625,000 if no sexual activity deferrals

Raw population estimates for other sexual activity deferrals:

| Current deferral | Percentage of population |
|---|---|
| Sex with an injecting drug user | 1.2% |
| MSM | 1.6% |
| Females has sex with MSM | 0.4% |
| Sex worker | 0.1% |
| Sex with a transgender partner | 0.1% |
| Sexual activity with a sex worker | 0.9% |
| Sex with someone from a high prevalence country* | 0.3% |

**During COVID border restrictions so artificially low*

# Plasma pathway is more inclusive

Australian Red Cross Lifeblood

SPOTS
Sex and Prevention of Transmission Study

**Blood donation and views about blood donor policy among gay, bisexual, takatāpui and other men who have sex with men in Aotearoa New Zealand: Community report**

Peter Saxton, Koson Tony Sriamporn, Sarah Morley, Patricia Priest, Sue McAllister, Stephen Ritchie, Janine Paynter, Kevin Haunui, Cameron Leakey, Joe Rich, Mark Fisher

February 2024




https://static1.squarespace.com/static/61c3974599b9f661a10fb3a7/t/65c2cc79ea60216b8dd4a73b/1707265161282/SPOTS+Community+Report+A4+W+EB+Singles+202402070945.pdf

# Plasma pathway – Getting it to fruition

Concept accepted by Lifeblood and stakeholders and progressed

Submission approved by regulator (Therapeutic Goods Administrator [TGA]) May 2023

- No quarantine, if testing negative => fractionator
- Cease syphilis testing for this pathway
- Preferred end state: sexual activity questions no longer relevant
- Stakeholders strongly endorse this pathway
- Logistic issues in getting to fruition

**Planned go live in the next 12 months**

- Details coming – extensive communications including media/website messaging

# Part 2 of approach: Gender neutral assessment

Pathway for fresh products

- Whole blood, plateletpheresis, clinical plasma from plasmapheresis, etc.

Terminology and communications being developed

Current nomenclature:

- Gender neutral assessment

Pathway being developed

- If approved by TGA, aim would be to implement in 2025

# Gender neutral assessment

Concept:

- New sex or multiple partner question; if “yes”, get asked about anal intercourse, if “yes” to supplementary questions, get deferred
- Time from which countdown starts and duration of deferral being sorted

Advantages

- Higher risk transgender donors covered without asking supplementary questions
- Many sexual behaviours covered

Issues

- Will see increased HIV and syphilis reactive donors => extra counselling
- Paradoxically heterosexuals with same behaviours that are not at higher risk of HIV will get deferred

  Road tested this: Perception of fairness considered to override this concern

# Research Plan for gender-neutral assessment

R&D/DPU/Kirby/UQld engaged in research various avenues

Lifeblood/Kirby Partnership Grant #2 – funding $1.5m over 5y

Sexual activity research questions:

1. What residual risk for HIV would the community be prepared to accept?
2. Does the community understand the difference between a plasma donation and a blood donation and how best should the differences be communicated?
3. What can we learn from the plasma pathway which will help inform the risk assessment for blood donations?
4. What would the impact of a modified individual risk assessment approach be on the blood donation donor panel size?
5. What structuring of questions for blood donation may be acceptable?

# Summary

Plasma pathway

- Safe – leverages sensitive testing and pathogen inactivation
- Inclusive – will lead to an increase in the donor panel and collections
- Better donation experience – no need to ask about recent sexual behaviour, treats all donors equally.

Blood donation pathway

- Gender neutral
- Still a requirement to ask about recent sexual behaviour
- More inclusive – although results in deferral of lower-risk heterosexual people who engage in anal sex with a new or multiple partners

Finally

- Still finalising logistics, communications and go-live dates
- Dual approach is the most inclusive

# The End