

THE NAMIBIAN HAEMOVIGILANCE REPORT FOR THE 2024/25 FINANCIAL YEAR

THE 12TH HAEMOVIGILANCE REPORT

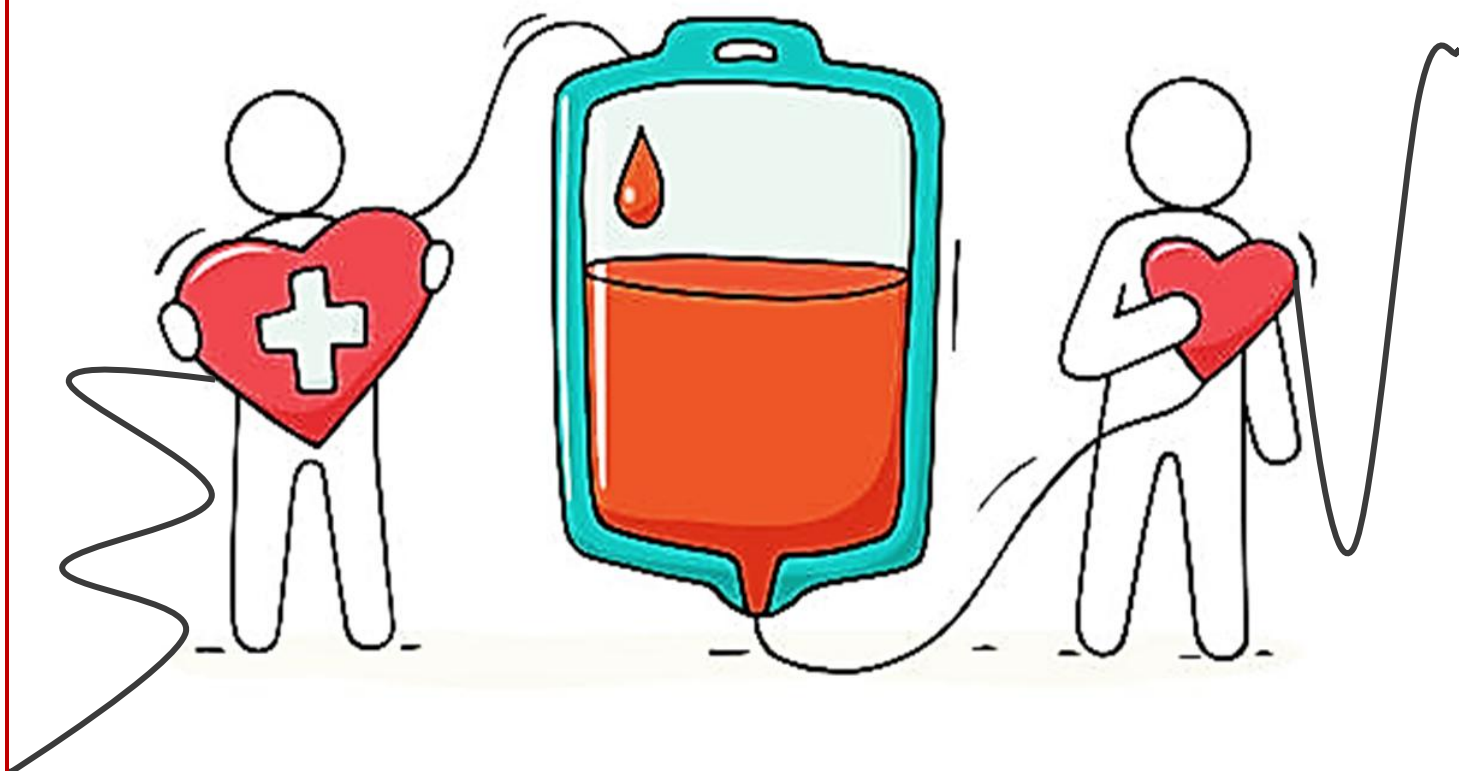


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Executive Summary

The 12th Namibian Haemovigilance Report is a comprehensive review of the national blood transfusion system during the 2025 financial year for the period of 1 April 2024 to 31 March 2025. During this period a total of 30,876 individuals donated blood, with half of these being regular donors and 58% of the donors being female. While donor numbers have increased, the donor rate as a percentage of the population has slightly declined due to national population growth. There were 1,957 temporary donor deferrals of which 64% were primarily due to low hemoglobin or low serum ferritin levels, then followed by high-risk behaviors and poor venous access. The prevalence of transfusion-transmissible infections (TTIs) has decreased to 0.87%, with hepatitis B remaining the most common infection at 0.42%, followed by HIV and then hepatitis C. First-time donors continue to show the highest TTI rates.

During the reporting period, 59,543 blood components were issued, with red cell concentrates (RCCs) accounting for 72% of all components used. Internal Medicine, Obstetrics & Gynecology, and Oncology were the highest users of RCC's. The usage of Freeze-dried plasma (FDP) remained high at 1,033 units. This raises concerns about cost and potential overuse or misuse of FDPs particularly in peripheral settings. Wastage of Whole blood rose to 5.0%, which was primarily due to expired units, while platelet wastage increased to 13.8%, thus exceeding the national target limit of 10%. Data on hospital-based wastage was unavailable, highlighting the urgent need for improved traceability and reporting systems in hospitals.

The donor adverse event rate remained low during the reported period (0.3%), with vasovagal reactions being the most common. Transfusion reactions declined to 0.2%, this is possibly due to the increased use of leucodepleted RCCs. No transfusion-related deaths were reported during the period. The Lookback Programme initiated one investigation which yielded inconclusive results due to inadequate patient follow-up, underscoring ongoing challenges in documentation and traceability. Financially, the national blood service spent N\$141.5 million on collection and processing activities, with significant allocations to reagents and consumables.

Key recommendations include strengthening hospital transfusion committees and reporting systems, revising and distributing GACUB guidelines, promoting rational use of components, especially FDPs, and enhancing follow-up mechanisms for Lookback investigations.



Introduction

The Namibian Haemovigilance Reports have been published annually or biannually since 2009. The **12th Namibian Haemovigilance Report** provides an overview of blood transfusion activities for the 2025 financial year, covering the period from 1 April 2024 to 31 March 2025.

Haemovigilance in any country involves the systematic monitoring of the entire transfusion chain—from blood donation and the production of safe blood components, to clinical use and the management of transfusion-related adverse events. In Namibia, this "vein-to-vein" transfusion chain is the result of coordinated teamwork among all stakeholders within the National Blood Programme. Each stakeholder plays a vital role in ensuring the safety, quality, and effectiveness of blood transfusion services delivered to the Namibian population.

The public healthcare sector remains the primary consumer of blood and blood components in Namibia. A significant portion of the national health budget is allocated annually by the Ministry of Health and Social Services (MoHSS) to ensure the availability of safe blood and to cover all necessary laboratory testing for public patients in need. For the 2025 financial year, approximately **N\$ 141,520,000.00** was spent by MoHSS on blood and blood products, including essential testing. The private healthcare sector accounts for a relatively small percentage of total blood use.

The primary aim of this Haemovigilance Report is to provide comprehensive feedback to all stakeholders in the transfusion chain and to guide the implementation of corrective and preventive actions that will enhance the overall quality and safety of blood transfusion in Namibia.

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The Blood Transfusion Service of Namibia (NAMBTS) extends its sincere appreciation to all key stakeholders of the National Blood Programme, including individuals and institutions within both the public and private healthcare sectors, as well as the various NAMBTS divisions, for their valuable contributions to this report. We strongly encourage continued and accurate haemovigilance reporting to identify risks associated with the transfusion of blood and blood components. This commitment to quality reporting is essential to ensuring that effective measures are implemented to enhance transfusion safety across Namibia.



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Abbreviations and Acronyms

Ab	Antibody	EDTA	Ethylene diamine tetra acetic acid
Ag	Antigen		
AHTR/DHTR	Acute/Delayed Haemolytic Transfusion Reaction	ENT	Ear, Nose and Throat
		F	female
		FDP	Freeze Dried Plasma
AIDS	Acquired Immunodeficiency Syndrome	FFP	Fresh Frozen Plasma
		FNHTR	Febrile Non-Haemolytic Transfusion Reaction
Anti-HIV	HIV antibody test		
Anti- Hep B	Hepatitis B antibody test	GACUB	Guidelines on the Appropriate Clinical Use of Blood and Blood Products
Anti-Hep C (c)	Hepatitis C core antibody test		
APH	Ante partum Haemorrhage	GIT	Gastrointestinal Tract
		g/dl	gram per deciliter
BB	Blood Bank	Hb	Haemoglobin
BeST	Better and Safer Transfusion	HBsAg	Hepatitis B Surface Antigen
Ca	Cancer	HBV	Hepatitis B virus
°C	Degree Celsius	HCV	Hepatitis C virus
COVID 19	Corona virus pandemic	HCWs	Health Care Worker/s
DAT	Direct Antiglobulin Test	HELLP	Haemolysis, Elevated Liver Enzymes, Low Platelets
D(HIV/HBV/HCV)	Discriminatory test		
DIC	Disseminated intravascular coagulation	HIV	Human Immunodeficiency Virus
DOB	Date of birth	HQ	Head quarters
DARs	Donor Adverse Reactions	HV(R)	Haemovigilance (report)

HTC/HTCs	Hospital Transfusion Committee/s	RCC	Red Cell Concentrate
ID – NAT	Individual Donation Nucleic Acid Testing	RHIG	Rabies Human Immunoglobulins
ml(s)	milliliter (s)	SA	South Africa
M	Male	SOPs	Standard Operating Procedures
M&E	Monitoring and Evaluation	SP	Source plasma (apheresis)
MoHSS	Ministry of Health and Social Services	TACO	Transfusion Associated Circulatory Overload
MVA	Motor vehicle accident	TAD	Transfusion associated dyspnoea
NAMBTs	Blood Transfusion Service of Namibia	TPHA	<i>Treponema pallidum</i> Hemagglutination Assay
NAT	Nucleic Acid Testing		
NBI	National Bioproducts Institute	TR/TRs	Transfusion Reaction(s)
NIP	Namibia Institute of Pathology	TRALI	Transfusion Related Acute Lung Injury
NUST	Namibia University of Science and Technology	TRR/TRRF	Transfusion Reaction Report (Form)
O&G	Obstetrics and Gynaecology	TTI (s)	Transfusion Transmissible Infection(s)
PBM	Patient Blood Management	VDRL	Venereal Disease Research Laboratory test
PLT	Platelet	WB	Whole Blood
PPH	Post-partum haemorrhage	WBTP	Wrong Blood to Patient
PTB/TB	Pulmonary Tuberculosis /Tuberculosis	WHO	World Health Organization

Section 1 – Collection & Preparation of Blood and Blood Components

1.1 Blood Donors

1.1.1 Blood Donor Categories

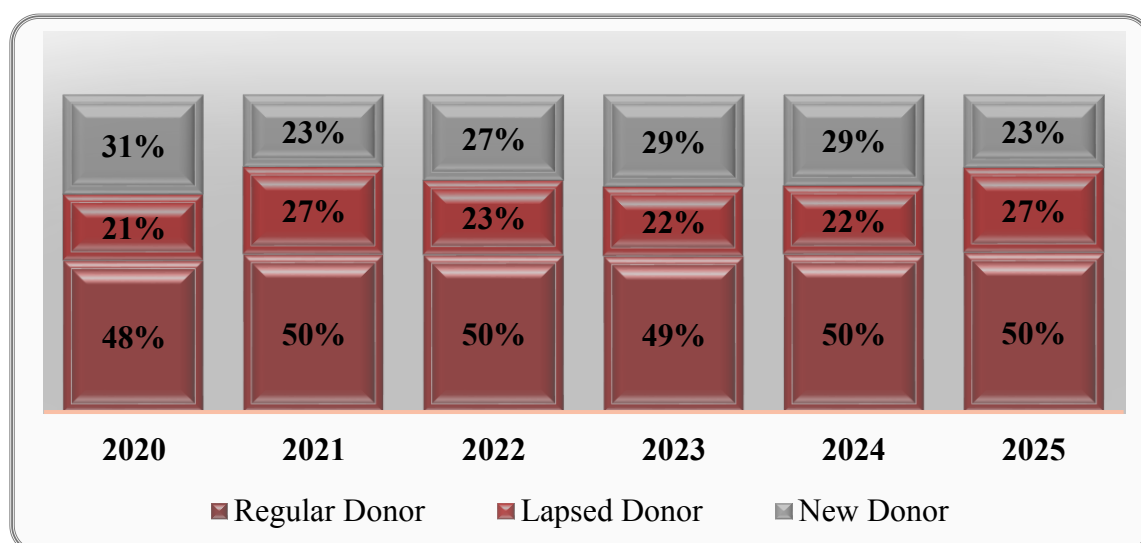
NAM BTS collects blood from voluntary non-remunerated blood donors as recommended by the WHO. A total of 30,876 blood donors donated during the 2025 financial year, of which 15,557 (50%) were regular donors, 7,072 (23%) lapsed donors and 8,247 (26%) new donors.

Between 2020 and 2025, the NAM BTS blood donor population exhibited a clear upward trend in absolute donor numbers, increasing from 25,742 in 2020 to 31,315 in 2025, indicating a 21.2% overall growth. This rise was driven primarily by increases in repeat donors, who consistently made up around 50% of the donor base, indicating effective donor retention efforts. New donor numbers rebounded significantly from a pandemic-related decline in 2021, through the recommencement of mobile drives at schools

and tertiary institutions, peaking in 2024. Although lapsed donor numbers fluctuated slightly, a gradual upward trend was still observed. Despite the rising donor numbers, the proportion of the Namibian population donating blood declined from 1.1% in 2024 to 1.0% in 2025, highlighting the impact of national population growth outpacing recruitment gains.

On average, each regular donor donated twice, 1.9 donation per annum, during the year under review, a pattern consistent with the previous two financial years. Figure 1.1 below shows a comparison of the distribution of donors by category, namely repeat, lapsed, and new donors, for each financial year from 2020 to 2025, highlighting trends in donor retention, re-engagement, and recruitment over the six-year period.

Figure 1.1: Distribution of Donors by Category from 2020 to 2025 Financial Years:



1.1.2 Blood Donor Demographics

In the 2025 financial year, female donors accounted for 58% of the total donor population, compared to 42% male donors. This represents a 2% increase in female participation compared to the previous two years, where females made up 54% of donors. Remarkably, this gender distribution among donors does not directly reflect that of the general Namibian population, where females constitute approximately 51% and males 49%. The consistently higher proportion of female donors may indicate stronger engagement and responsiveness among women to blood donation campaigns and outreach initiatives.

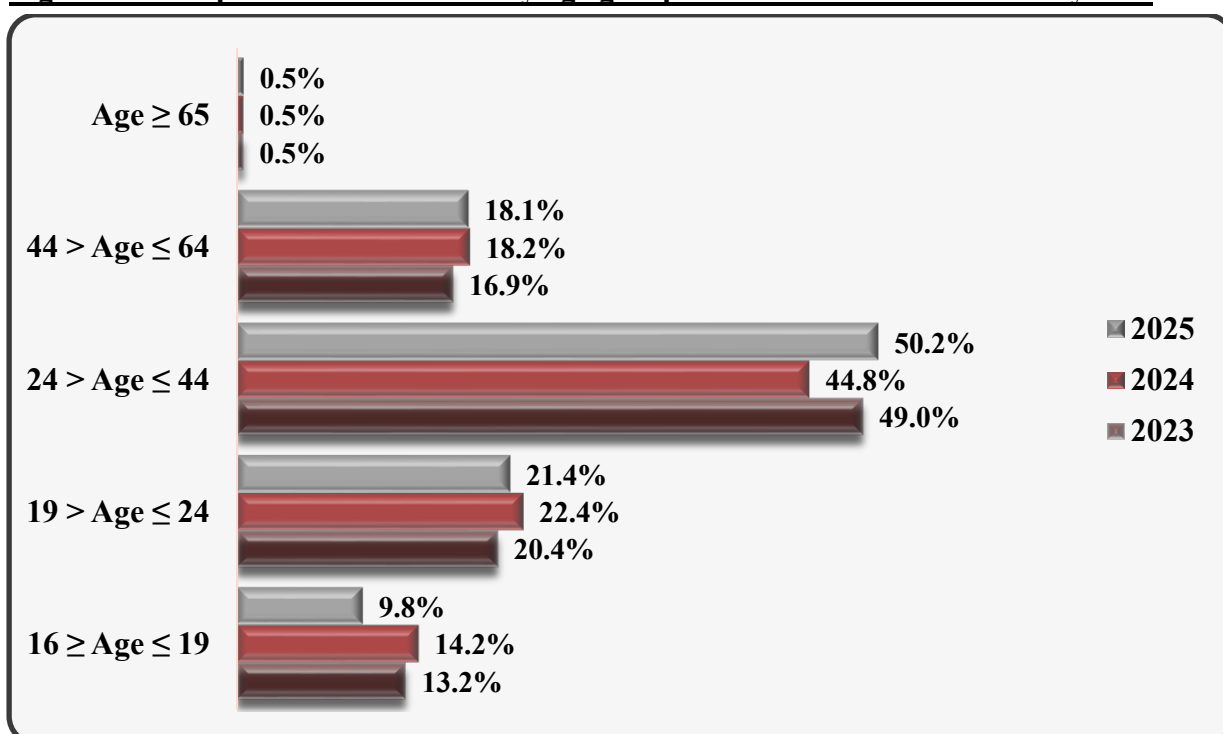
The age distribution of blood donors in Namibia for the financial years 2023 to 2025 reveals a continued reliance on the 25–44-year age group, which contributed the largest share of donations, rising from 44.8% in 2024 to 50.2% in 2025 as shown in Figure 1.2. This consistent dominance suggests a strong and

stable donor base among young working adults.

However, the proportion of donations from school-aged donors (16–19 years) declined from 14.2% in 2024 to 9.8% in 2025, indicating a possible disengagement among youth or challenges in mobilizing donations at school level. While donations from the 19–24-year age group remained relatively stable, the slight increase in contributions from the 44–64-year age group to 18.1% in 2025 is encouraging and may reflect effective workplace mobilization.

Contributions from donors aged 65 and above remained minimal at 0.5%, likely due to eligibility and health-related limitations. These trends highlight the importance of diversifying donor recruitment strategies and strengthening youth engagement to ensure a resilient and sustainable blood supply.

Figure 1.2: Proportion of donations by age group for the 2023 -2025 financial years:



1.1.3 Donor Deferrals

Donors who fail to meet the eligibility criteria for blood donation are deferred either temporarily or permanently to ensure the safety of both the recipient and the donor. Permanent deferrals are mostly related to the detection of transfusion transmissible infections (TTIs), as highlighted in Section 2 of this report. In contrast, a donor who is temporarily deferred may return to donate after a prescribed deferral period, once the condition leading to the deferral is resolved.

During the 2025 financial year, a total of 1,957 donors were temporarily deferred, representing approximately 6% of the total number of donors bled in that year. This continues the increasing trend in temporary deferrals observed over the past two years, with 1,116 (4%) in 2023 and 1,765 (5%) in 2024. A summary of deferral reasons is provided in Table 1.1.

As in previous years, the leading cause of temporary deferral was low haemoglobin or low serum ferritin, which accounted for 64% (1,250) of all deferrals in 2025. This marks a continued increase from 47% in 2023 and 63% in 2024, largely attributed to the introduction of serum ferritin testing, piloted at the end of 2023 and fully implemented in 2024. Ferritin testing allows for the early identification of iron deficiency, even before haemoglobin levels fall below threshold, and has led to more proactive deferral to protect donor health.

The second most frequent cause for deferral was being sick, on medication, or

undergoing a medical procedure or operation, contributing 14% (271) of all deferrals in 2025. While slightly reduced from the 16% recorded in 2024, it remains a significant and recurring reason.

Pregnancy and breastfeeding ranked third in 2025, accounting for 5% (95) of temporary deferrals. This was followed by hypotension or hypertension at 3% and acupuncture, body piercing, tattoo, or permanent make-up, which made up 4% of deferrals.

Notably, the number of donors deferred due to high serum ferritin, polycythaemia, or haemochromatosis increased significantly to 88 in 2025, from 28 in 2024 and 19 in 2023. This is also a direct result of the implementation of ferritin testing, reflecting NAMBTS's growing emphasis on managing both low and high iron levels in the donor population.

The top four deferral reasons, low Hb/ferritin, illness or medication, pregnancy or breastfeeding, and acupuncture/ piercing/ tattoo, accounted for more than 85% of all temporary deferrals in 2025, consistent with the patterns seen in prior years.

The persistent and growing burden of low haemoglobin and ferritin-related deferrals emphasizes the need for sustained donor iron management strategies, including education, iron supplementation where appropriate, and ferritin monitoring. These interventions are essential to protect donor health, reduce deferral rates, and maintain a stable and sustainable blood supply.

Table 1.1: Temporary Blood Donor Deferrals for 2023 – 2025 Financial Years:

Deferral reason	2023	2024	2025
Abnormal antibodies	10	2	6
Accidental Exposure to Blood	5	3	3
Acupuncture/body piercing/ tattoo/ permanent make-up	71	73	70
Age (over 65)	23	51	42
Animal/Human Bite	2	6	3
Biological false positive/ inconclusive results	7	11	19
Blood transfusion	0	1	2
Bradycardia/ tachycardia/ Irregular Pulse	18	24	44
Non-sexually transmitted Hepatitis/Hepatitis contact	3	0	1
High Risk Behaviour	35	25	43
Hypotension/Hypertension	33	51	63
Immunization / Vaccination	5	7	8
Low Hb/ Low serum Ferritin	520	1107	1250
Occupational Exposure/Hazzard	0	1	1
Sick/on medication/operation/medical procedure	230	295	271
Polycythaemia/Haemochromatosis/ High Serum Ferritin	19	28	88
Pregnant/ breast feeding	126	66	95
Underweight	9	14	10
TOTAL	1116	1765	1957

1.2 Blood Donations

NAM BTS collects four types of donations namely: Whole blood, plasmapheresis, plateletpheresis and erythrocytapheresis

donations. Each of these donations will be outlined separately in the sections below.

1.2.1 Whole Blood Donations

According to the World Health Organization, the median blood donation rate in lower-middle-income and low-income countries, most of which are in Africa, ranges between 5.0 and 6.6 units per 1,000 population. In contrast, Namibia recorded a whole blood donation rate of 14.8 units per 1,000 population during the 2025 financial year. Over the past three financial years (2023–2025), the Namibia Blood Transfusion Service (NAM BTS) collected an average of 14.7 units per 1,000 population, indicating that Namibia is performing well in maintaining a sufficient and stable blood supply.

Figure 1.3 illustrates the number of whole blood units collected during the 2020–2025

financial years. As observed, there was a decline in blood collection during the COVID-19 pandemic, followed by stabilization in the 2023–2024 financial year. A slight decrease of 1.1% was recorded during this period, attributed to efforts to align blood collection with demand, particularly when restrictive transfusion measures were implemented.

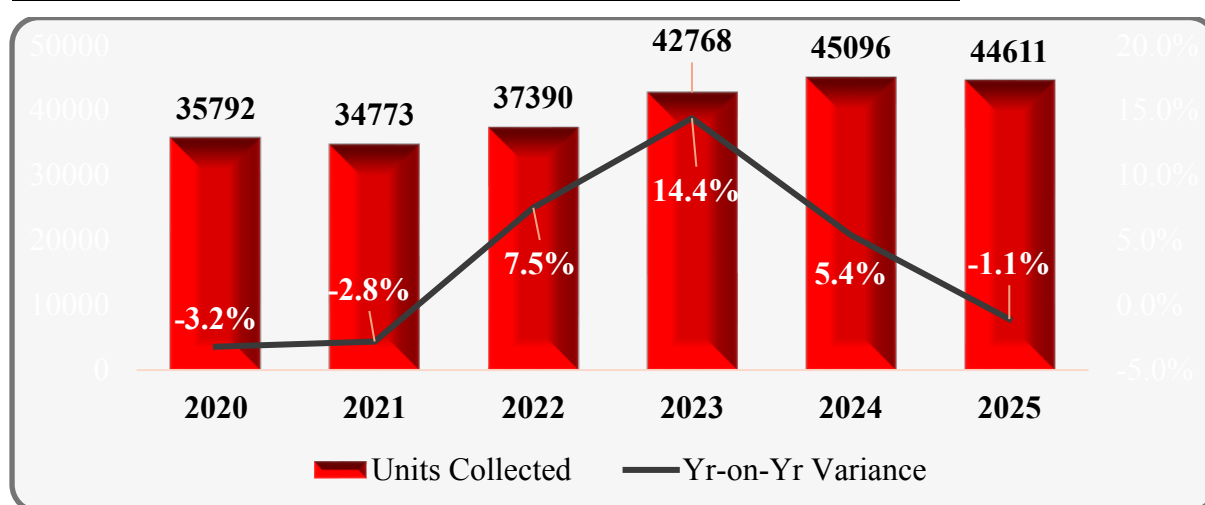
In the 2024 financial year, the majority of whole blood collections originated from fixed donation sites (37%), followed by worksites (16%) and long-distance mobile clinic, defined as clinics operating more than 150 km from headquarters, at 14%. A similar trend continued into the 2025 financial year, with fixed sites remaining the primary source,

although decreasing slightly to 33%. In contrast, worksite collections increased to 19%, and long-distance mobile clinics contributed 15%.

In the 2025 financial year, 55% of whole blood collections were from group O donors, reaffirming group O as the predominant blood group collected. The slight decline in group O collections compared to previous years, 2023

(58%) and 2024 (57%), of total collections may be attributed to a 4% reduction in donations from fixed sites, which have historically been the main source of group O blood. This trend highlights the influence of collection site performance, particularly at fixed donation centres, on the overall availability of critical blood groups such as group O.

Figure 1.3. Whole Blood collections for the 2020-2025 financial years:



1.2.2 Plasmapheresis Donations

Plasmapheresis utilizes a device that collects whole blood from a donor, separates the blood into components allowing plasma to be diverted into a separate bag and return all the cellular components to the donor. A donor can donate between 650-850 ml of source plasma per procedure depending on his/her blood volume. Plasma not used for transfusion will be sent to the National Bioproducts Institute (NBI) for fractionation to manufacture plasma derived medicinal products (PDMPs).

During the 2025 financial year, a total of 4,027 plasmapheresis procedures were performed, resulting in an estimated production of 11,437 source plasma units. This estimation is based on the distribution of

donation volumes, where 71% of collections yielded 750 mL, 13% yielded 850 mL, another 13% yielded 650 mL, and the remaining 3% ranged between 500–600 mL. Source plasma was primarily used for transfusion purposes, with 65% of the plasma collected during the 2025 financial year utilized for this indication.

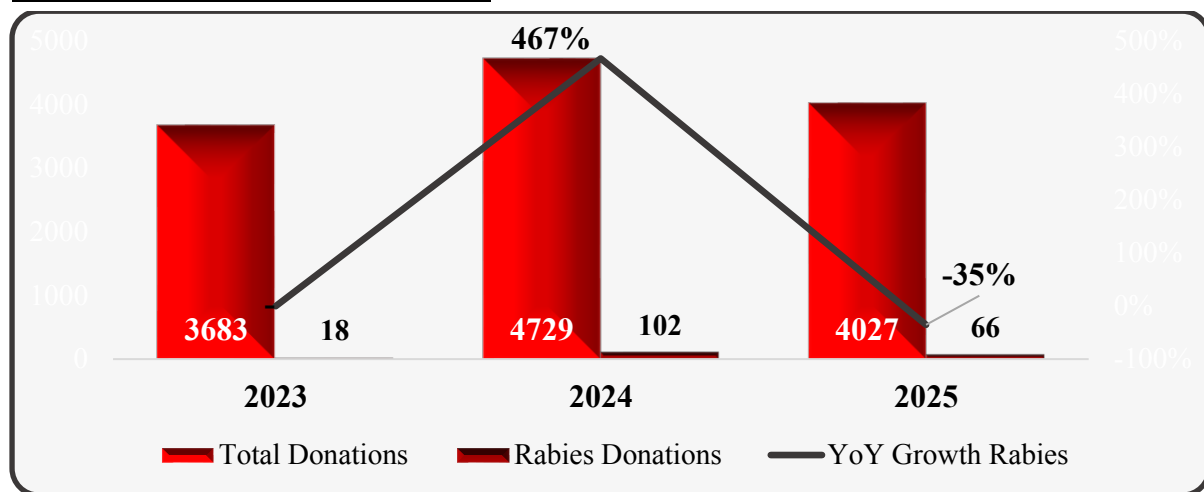
In the 2025 financial year, only 66 plasmapheresis donations (1.6% of total collections) were part of the Rabies Hyperimmune Plasma Programme, a significant shortfall against the annual target of 540 donations, with just 12% of the target achieved. The programme, designed to address national shortages by enabling local

production of Rabies Immunoglobulin, depends on plasma from individuals hyperimmunized with rabies vaccine, such as veterinarians.

As shown in Figure 1.4, rabies hyperimmune plasmapheresis donations declined by 35% compared to 2024, raising serious concerns

about the sustainability of the programme. This highlights the urgent need for improved donor mobilization, targeted recruitment, and continued engagement with eligible donor groups to strengthen the supply of hyperimmune plasma and ensure consistent HRIG availability.

Figure 1.4: Total Plasmapheresis Collections, Including Rabies Hyperimmune Plasma, for the 2023–2025 Financial Years:



1.2.3 Plateletpheresis Donations

Since 2007, NAMBTS has supplied platelets exclusively through apheresis collections. However, pooled platelets were introduced in 2016 following the implementation of individual donation nucleic acid testing (ID-NAT), which greatly enhanced blood safety.

During the 2025 financial year, a total of 715 plateletpheresis procedures were performed, yielding 1,266 apheresis platelet units. Most of these donations had a sufficient platelet concentration to allow splitting into two adult units, though the average split rate declined to

77%, a notable drop compared to 93% in 2023 and 91% in 2024.

In addition to apheresis platelets, 1,548 pooled platelet units were produced from whole blood donations, bringing the total platelet production for the year to 2,814 units. The decline in the apheresis split rate highlights potential challenges in donor quality, collection efficiency, or processing, which may require targeted investigation to maintain optimal component yields.

1.2.4 Erythrocytapheresis Donations

Erythrocytapheresis is an apheresis procedure that separates and collects red blood cells (RCC) while returning the remaining blood components to the donor. This process

enables the collection of two standard RCC units in a single session and forms the foundation of the Double Red Cell

Programme, introduced by NAMBTS in March 2023.

The programme has demonstrated rapid and sustained growth since its launch. In the 2023 financial year, only 37 procedures were performed. This number increased dramatically to 564 in 2024, a 1,424% increase, and rose further to 1,063 in 2025, marking an 88% year-on-year growth. As a result, the 2025 procedures yielded 2,126 adult RCC units, significantly enhancing overall red cell supply.

A key benefit of erythrocytapheresis is that the collected RCC units are leucodepleted,

making them particularly suitable for paediatric patients, especially neonates and preterm infants with underdeveloped immune systems. Reflecting this clinical advantage, NAMBTS has increasingly issued leucodepleted RCC for paediatric use. In 2023, only 5% of paediatric RCC transfusions were leucodepleted, rising to 38% in 2024 and reaching 75% in 2025.

The programme's success highlights its value in improving both supply efficiency and transfusion safety for vulnerable populations.

Section 2 – Transfusion Transmissible Infections (TTI's) of donated blood

All blood and blood components collected by NAMBTS are tested for human immune-deficiency virus (HIV 1 & 2), hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis as recommended by the WHO.

Every blood donation is screened routinely using serology and ID-NAT tests. The results of the screening tests are interpreted using

standard algorithms that determine the final outcome of results and identify donations with discordant results that require further confirmatory testing.

The final outcome of both routine and confirmatory tests, determine the usability of the donation or components made from it as well as the management of the blood donor.

2.1 TTI Results and Prevalence

The transfusion-transmitted infection (TTI) prevalence data for the 2025 financial year, as detailed in Table 2.1, indicate an overall positivity rate of 0.87%, with hepatitis B virus (HBV) exhibiting the highest prevalence at 0.42%, followed by HIV at 0.16%.

The highest TTI prevalence was observed among new donors (0.70%), compared to regular and lapsed donors, who demonstrated rates of 0.13% and 0.05%, respectively. When benchmarked against the HBV and HIV prevalence in the general population, these

findings underscore the success of NAMBTS in recruiting low-risk donors, thereby enhancing blood safety.

Over the period from 2023 to 2025, total TTI prevalence demonstrated a consistent decline from 1.05% to 0.87% (Figure 2.1). Notably, HBV and syphilis prevalence decreased significantly, likely reflecting effective recruitment measures, while hepatitis C virus (HCV) prevalence remained relatively stable. Conversely, the increase in HIV prevalence

from 0.10% to 0.16% warrants close monitoring and targeted intervention.

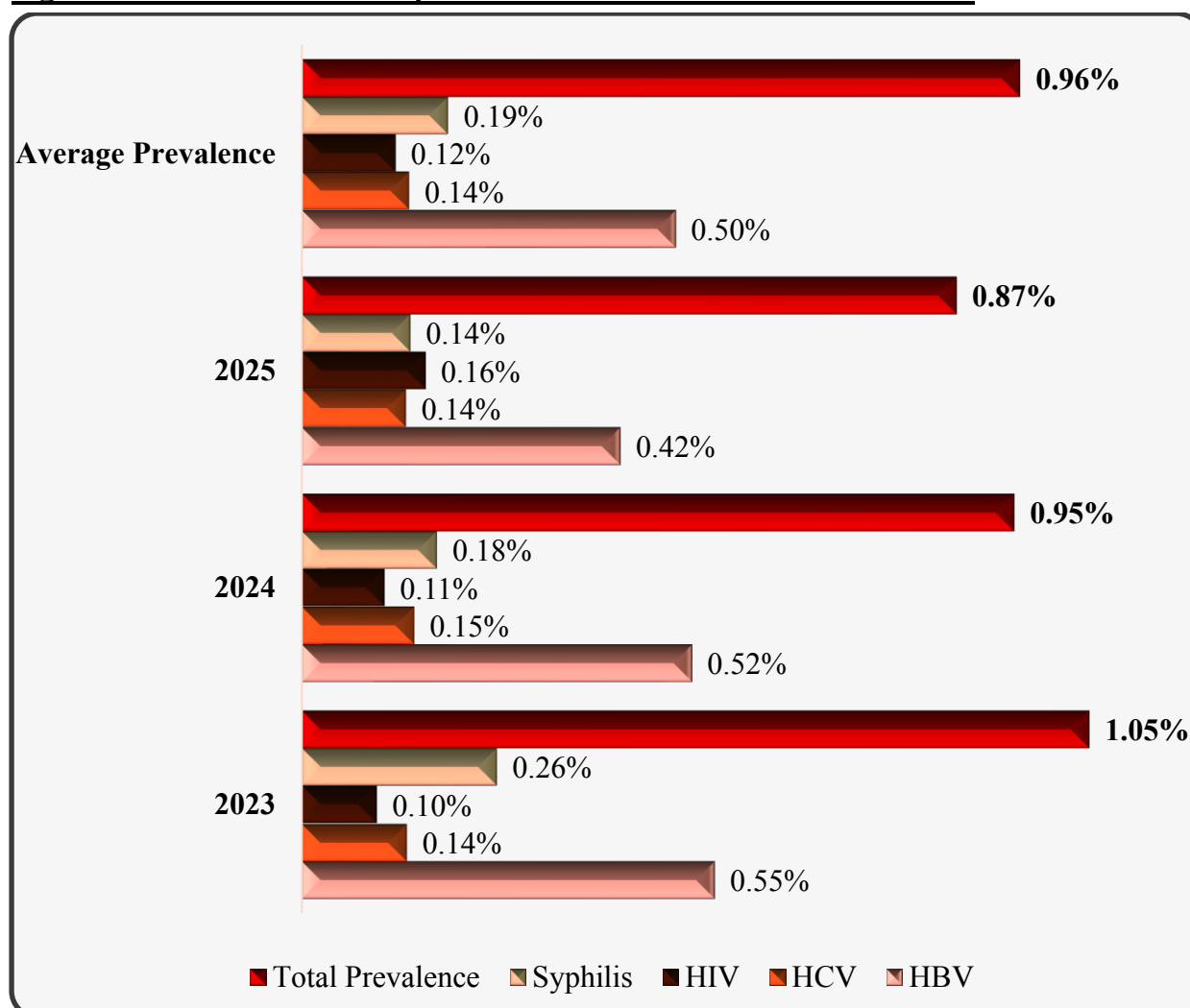
Collectively, these data highlight ongoing improvements in transfusion safety, while emphasizing the imperative for sustained vigilance, particularly with regard to HIV transmission risks.



Table 2.1: TTI positive donations and prevalence for 2025 Financial Year

	<u>HBV</u>	<u>HCV</u>	<u>HIV</u>	<u>Syphilis</u>	<u>Total TTI</u>
Lapsed donors	7	4	8	4	23
New donors	196	48	53	55	352
Regular donors	11	18	22	14	65
Total	214	70	83	73	440
Prevalence	0.42%	0.14%	0.16%	0.14%	0.87%

Figure 2.1: Total Annual TTI prevalence for 2023 - 2025 Financial Years



Section 3 – Blood wastage

3.1 Whole blood & RCC wastage at NAMBTS

Table 3.1 shows that the average total discard rate for whole blood units at NAMBTS from 2021 to 2025 was 3.87%.

However, discard rates exceeded the five-year average in both 2024 and 2025, reaching 4.68% and 5.00%, respectively. Notably, 2025 recorded the highest discard rate of the period, driven primarily by expired units, which accounted for 2.32% of all whole blood collected. Although expiries slightly declined from 2.37% in 2024, they remained significantly higher than earlier years. The

increase in expiry-related discards may be linked to overcollection of certain blood groups and imbalances between supply and clinical demand.

In response, NAMBTS has implemented targeted strategies, including improved demand forecasting, stricter collection planning, and redistribution efforts between centres. These measures aim to reduce expiry rates and improve overall efficiency, with the goal of lowering discard rates in future reporting periods.

Table 3.1 NAMBTS Whole blood & RCC discards, excluding short bleeds (2021-2025):

Year	2021	2022	2023	2024	2025
Total Whole blood units collected	34785	37533	42807	45358	44607
Number of units discarded	1012	1190	1543	2121	2232
Total discards rate	2.91%	3.17%	3.60%	4.68%	5.00%
TTI - positive (% of total collected)	1.34%	1.40%	1.36%	1.25%	1.31%
Expired (% of total collected)	0.37%	0.56%	1.34%	2.37%	2.32%
Below the required weight (% of total collected)	0.03%	0.03%	0.02%	0.02%	0.04%
Broken during processing (% of total collected)	0.45%	0.58%	0.19%	0.16%	0.18%
Clotted (% of total collected)	0.33%	0.23%	0.30%	0.35%	0.45%
Other reasons (% of total collected)	0.40%	0.38%	0.39%	0.52%	0.70%

NOTE: ‘**Other reasons**’ included: Donor related: abnormal antibodies in donor blood, donors on medication, over bleeds, temperature out of range, unsuitable for transfusion (coded donors, lipaemic blood). ‘**TTI – positive**’: Only include WB & RCC, not all components.

3.2 Platelet wastage at NAMBTS

As shown in Table 3.2, platelet discard rates at NAMBTS increased from 6.2% in 2022 to 13.8% in 2025, consistently exceeding the target discard rate of 10% in the past three years. Expiry remained the leading cause of discards throughout this period, rising from 4% in 2022 to 9 –10% in 2023 – 2025, and accounted for the majority of wasted units.

To reduce wastage, NAMBTS introduced key interventions in 2022, including the use of a suspending solution to extend platelet shelf life to 7 days and the implementation of sterility testing. These efforts initially reduced total discards, keeping them below the target in 2022. However, despite these improvements, discard rates climbed in the

following years, driven largely by increased expiry-related losses.

Figure 3.3 shows discard and expiry trends from 2020 to 2025. A peak in 2021 (16.5%) likely resulted from overproduction during the COVID-19 pandemic. Although interventions in 2022 briefly improved outcomes, the continued rise in expiry-related discards points to persistent challenges in aligning production with actual demand. If sterility testing had not been in place, the total

discard rate in 2025 would have increased from 14% to 23%, and expiry-related discards would have more than doubled, from 9% to 19%.

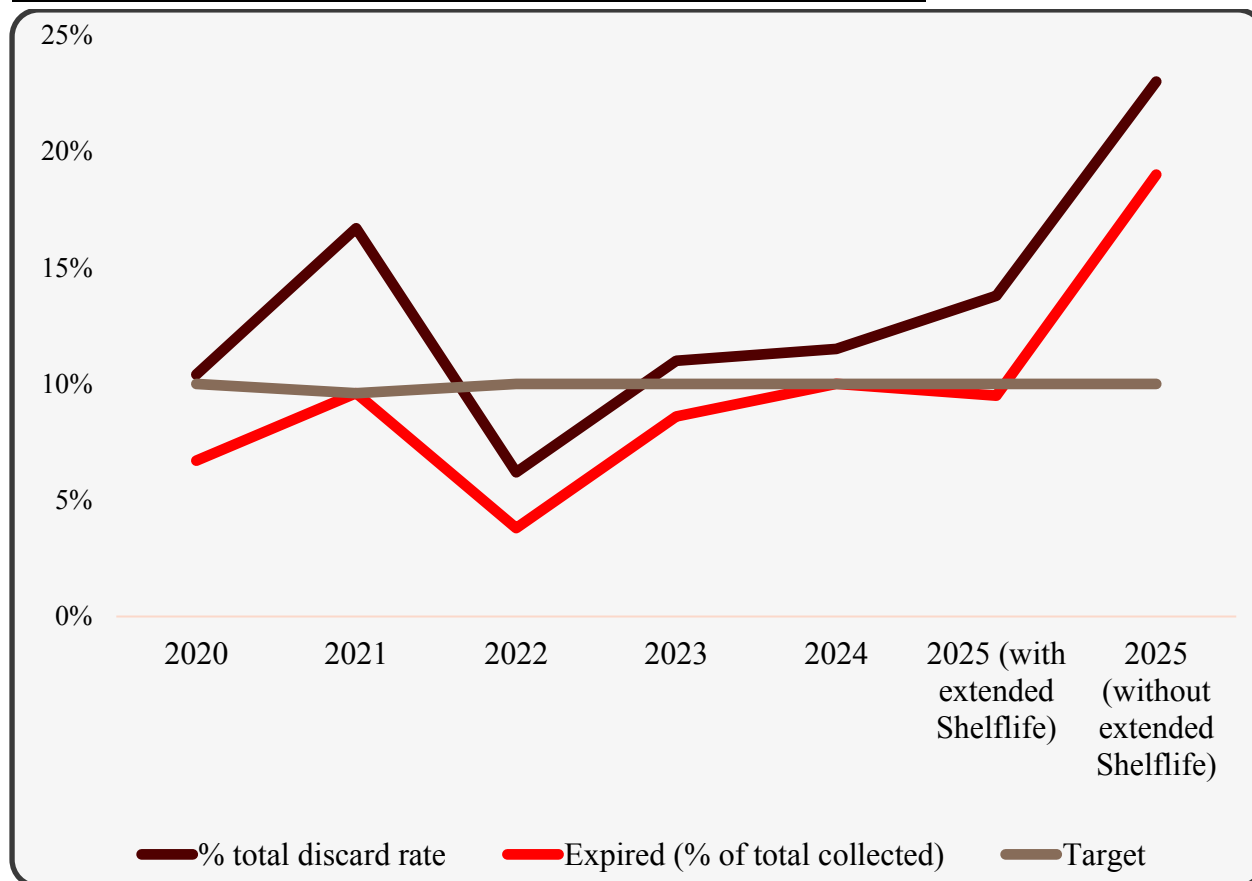
Reducing platelet wastage will require improved demand forecasting, tighter inventory control, and continued investment in quality assurance practices. Expiry must be addressed as the primary contributor to discard rates if NAMBTS is to consistently meet its 10% discard target.

Table 3.2: NAMBTS Platelet Discards from 2022 – 2025 Financial Year

Platelet Discards	2022	2023	2024	2025
Produced	2280	2919	2927	2814
Discarded	141	318	338	388
% total discard rate	6.2%	11.0%	11.5%	13.8%
Expired (% total collected)	4%	9%	10%	9%

NOTE: These figures includes adult dose platelets collected by apheresis and pooled platelets produced from buffy coats but excludes paediatric dose platelets.

Figure 3.3: NAMBTS Platelet Discards & Expiry Rate from 2020 – 2025:



3.3 Blood wastage in hospitals

Hospital blood wastage refers to blood and blood components which are discarded within hospitals rather than being administered to the patient. Namibia currently does not have a system in place to monitor blood wastage within hospitals. Blood wastage in hospitals

can be due to various reasons and should be monitored. Monitoring blood wastage within hospitals will allow NAMBTS to identify gaps and provide focused training on these identified gaps to minimize blood wastage and ensure a sustainable blood supply.

Section 4 – Blood and Blood Component Usage

During the 2025 financial year, NAMBTS issued a total of **59,543 blood components**, marking a continued upward trend in national transfusion demand. Of these, Adult Red Cell Concentrate (RCC) accounted for 43,319 units, representing over 72% of all components issued. This reflects a **6.5% increase** from 2024 and a 9.6% increase from 2023, reaffirming Adult RCC as the most commonly required blood product and the main driver of transfusion needs in Namibia.

The data in Table 4.1 highlights that RCC continues to dominate transfusion practices, with consistent year-on-year growth. In contrast, platelet concentrate usage declined slightly to 2,815 units, and FFP use, while increasing compared to 2024, remained variable across subcomponents. These patterns emphasize the critical importance of maintaining a stable RCC supply while monitoring shifting clinical demands for plasma and platelet component.

Table 4.1: Blood & Blood Components Issued during the 2023 - 2025 Financial Year:

<u>Blood and blood component</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Red Cell Concentrate (RCC)	42236	44572	47067
Adult	39530	42551	43319
Paediatric	2706	2021	3748
Fresh Frozen Plasma (FFP)	8794	7974	9617
Adult FFP	2657	1265	1085
Adult source plasma (SP)	4951	5341	7193
Adult apheresis FFP	465	671	538
Paediatric source plasma (SP)	536	474	450
Paediatric apheresis FFP	185	223	351
Platelet concentrate	2941	2909	2815
Adult apheresis Platelets	1257	1210	1128
Pooled platelets	1298	1332	1293
Paediatric apheresis Platelets	386	367	394
Whole Blood (WB)	128	141	44
TOTAL	54 099 units	55 596 units	59543 units

4.1 Usage of Red Cell Concentrate (RCC):

A total of 47,067 units RCC were issued to Hospitals and Healthcare facilities in Namibia during the 2025 financial year, of which the majority were adult RCC units (433,319 units). The RCC units were issued mainly to public healthcare facilities (83%) compared to private healthcare facilities (17%). As illustrated in figure 4.1 below, the majority were issued to Katutura Intermediate Hospital (13%), Oshakati Intermediate Hospital (12%) and Windhoek Central Hospital (10%)

RCC usage increased steadily over the past three years, rising by 5.5% from 2023 to 2024 and by 5.6% from 2024 to 2025, indicating growing transfusion demand and highlighting the need for strengthened blood conservation practices. Despite the overall rise in blood and blood components issued by NAMBTS to hospitals and healthcare facilities, Katutura Intermediate Hospital, Oshakati Intermediate Hospital, and Windhoek Central Hospital each recorded an average 1–2% decline in RCC usage in the current year under review compared to the previous two financial years.

During the 2025 financial year, blood group O remained the most issued adult RCC type across all hospitals, accounting for 56% of total RCC usage. Among major public

hospitals served by NAMBTS blood banks, Windhoek Central Hospital had the highest proportion of group O RCC issued at 57%, followed by Rundu Intermediate Hospital (56%) and Katutura Intermediate Hospital (55%). In contrast, Onandjokwe State Hospital, which had the highest group O usage in the previous financial year at 58%, saw an 11% decrease following the establishment of an on-site blood bank.

In smaller public hospitals supported by the National Institute of Pathology (NIP) for crossmatching services, blood group O usage was significantly higher, with 73% of RCC units issued being group O, representing a 2% increase from the previous year. This pattern suggests a continued reliance on group O due to limited crossmatching, likely as a workaround for compatibility concerns. However, overuse of group O RCC places strain on national blood supplies and increases the risk of antibody-antigen mismatches when uncrossmatched units are used. Addressing this requires targeted training and quality assurance interventions within NIP laboratories to promote appropriate blood group utilisation and reduce overdependence on group O RCC.

Figure 4.1: RCC usage to individual hospitals during the 2025 Financial year:

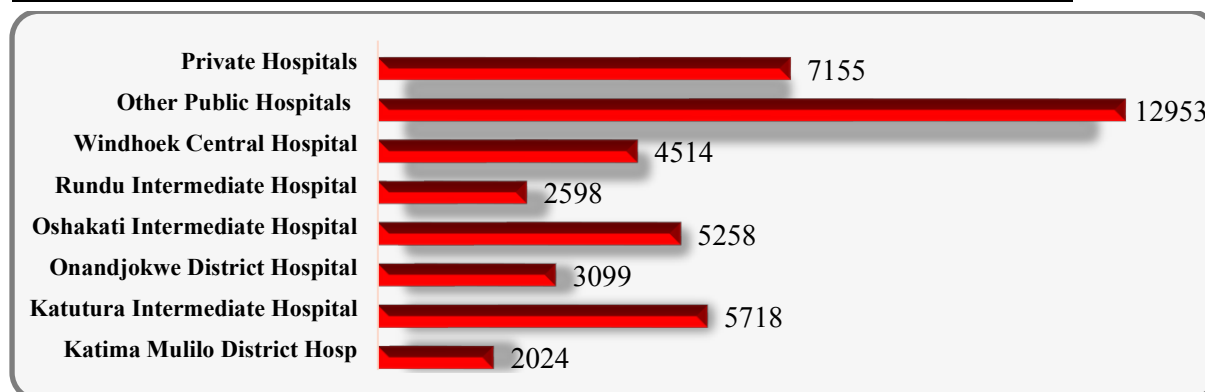
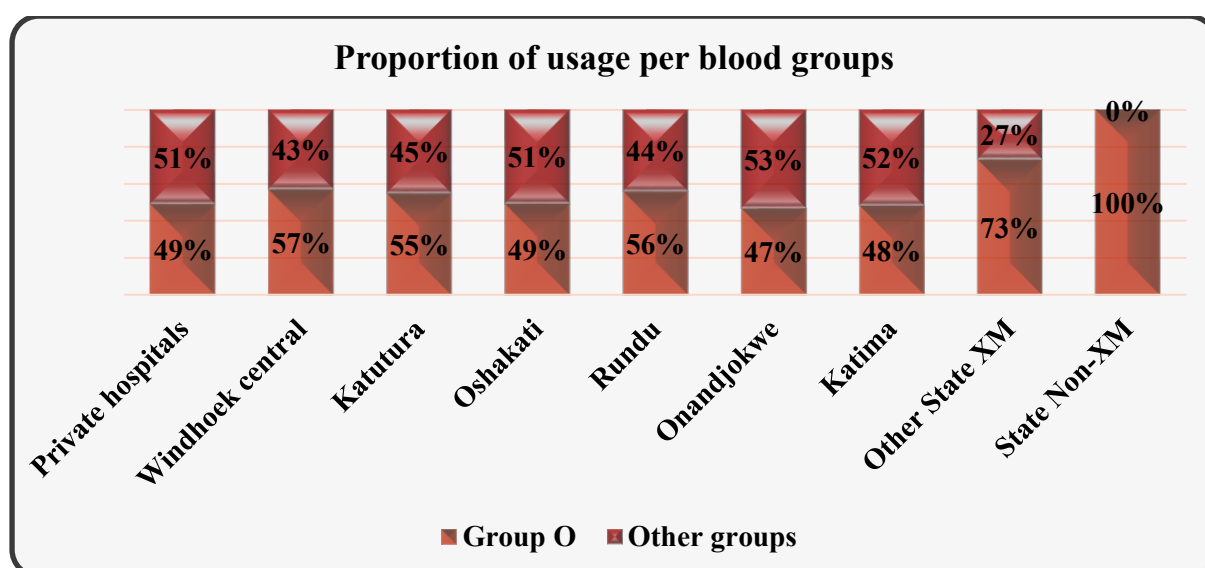


Figure 4.2: Proportion of adult RCC usage per blood group in the 2025 Financial year:

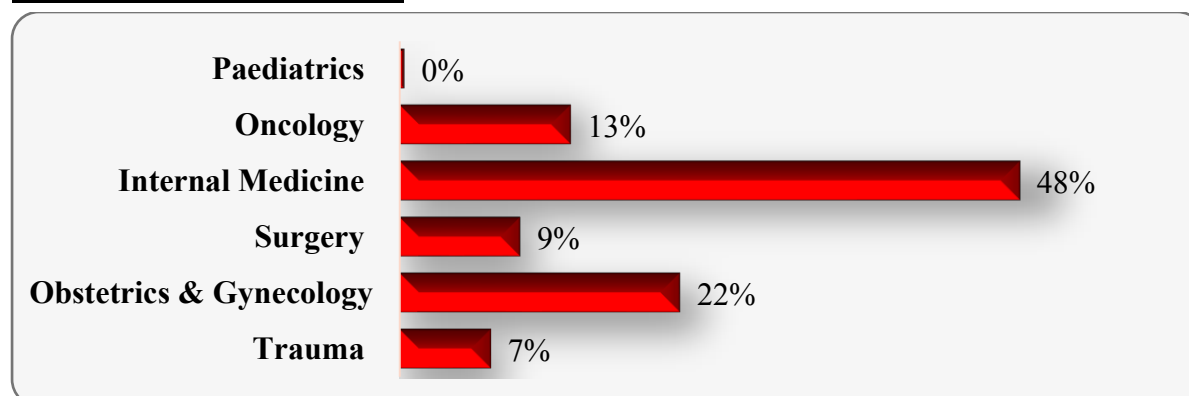


4.1.1 Adult RCC Usage

During the 2025 financial year, **55% of adult RCC units issued lacked a recorded clinical diagnosis**, up from 32% previously. Of these, 47% were marked as "null" due to insufficient clinical information or late form submission, and 8% had no diagnosis indicated. Despite efforts to improve compliance, incomplete diagnostic data remains high, limiting clinical auditing and understanding of transfusion practices. Improving accurate documentation at the point of request is a critical priority to enhance data quality and support evidence-based transfusion management.

Internal Medicine used 48% (9,300 units) of the remaining adult RCC units issued by NAMBTS, followed by obstetrics and gynaecology (22%, 4,211 units) and oncology (13%, 2,572 units) as illustrated in figure 4.3. The number of units used by internal medicine can be overestimated due to the fact that when no specific category was indicated on the requisition form and the clinical diagnosis matches this category it will be categorized under it, e.g., gastrointestinal bleeding which can also be due to a surgical cause.

Figure 4.3: Adult RCC usage per diagnostic category in 2023 & 2024 financial year, excluding No diagnosis/Null:



4.1.1.1 Internal Medicine Adult RCC Usage

During the review period, 9,300 RCC units were used in the internal medicine department. Haematological (52%), gastrointestinal bleeding-related (19%), and infectious/inflammatory conditions (16%) accounted for 8,103 of these units.

Unspecified anaemia (24%, 2,266 units) and anaemia of chronic disease (15%, 1,408 units) were the most common indications, suggesting reluctance by clinicians to provide specific diagnoses. Anaemia is a symptom of underlying conditions requiring further investigation, while anaemia of chronic disease is non-specific and often linked to chronic inflammation (e.g., HIV/AIDS, TB).

Only 9% (850 units) were attributed to specified anaemias, including iron deficiency (291), sickle cell anaemia (269), aplastic anaemia (268), autoimmune haemolytic

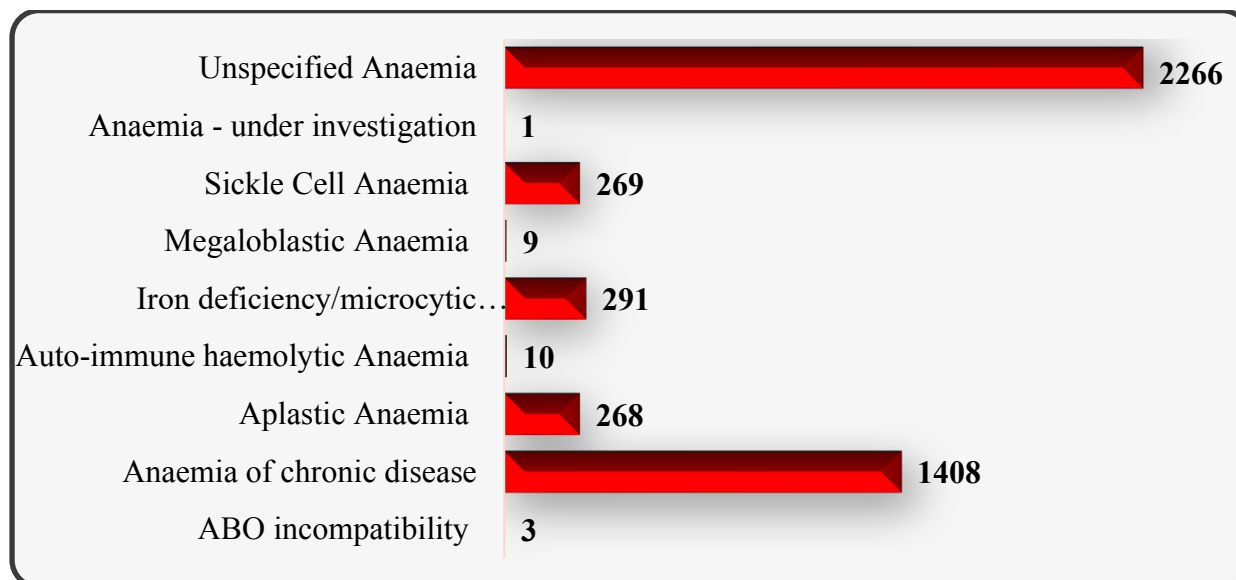
anaemia (10), megaloblastic anaemia (9), and ABO incompatibility (3).

Gastrointestinal bleeding accounted for 1,733 units, with upper GI bleeding being the most common (13% of RCC use), followed by lower GI (3%) and unspecified GI bleeding (2%).

Infectious and inflammatory conditions accounted for 1,518 units. Improved primary healthcare and timely infection management could significantly reduce this demand by enhancing iron absorption and reducing anaemia incidence.

In internal medicine, 24% of RCC units were used for unspecified anaemia, indicating reluctance to provide specific diagnoses...

Figure 4.4: RCC unit usage for anaemia during for Internal Medicine:



4.1.1.2 Obstetrics & Gynaecology Adult RCC Usage

Obstetrics and Gynaecology was the second highest user of adult red cell concentrate (RCC) during the 2025 financial year, with a total of 4,211 units utilized. Of these, 2,305

units (55%) were used for obstetric-related diagnoses, while 1,906 units (45%) were attributed to gynaecological conditions. This pattern of usage remains consistent with

previous years, with obstetric emergencies continuing to be the leading driver of blood transfusion within this specialty.

In obstetrics, the predominant indication for RCC transfusion was postpartum haemorrhage (PPH), which accounted for 966 units, representing 42% of all obstetric RCC usage. Antepartum haemorrhage (APH), including abruptio placentae, placenta praevia, and uterine rupture, followed with 440 units (19%). Hypertensive disorders of pregnancy, such as pre-eclampsia, eclampsia, disseminated intravascular coagulation (DIC), and HELLP syndrome, contributed to the transfusion of 227 units (10%). Anaemia during pregnancy and the postpartum period accounted for 250 units (11%), indicating potential areas for intervention through improved antenatal care and timely use of haematinics. RCC transfusions related to caesarean sections comprised 350 units (15%), suggesting a need to reinforce intraoperative blood conservation strategies. The remaining 3% (72 units) were used for other obstetric indications, including uterine sepsis, obstructed labour, intrauterine foetal demise (IUFD), and multiple gestation.

Within gynaecology, emergency presentations remained the main contributors to RCC usage, collectively accounting for 58% of all gynaecological

transfusions. The most common indication was miscarriage (incomplete, complete, or septic), which required 787 units (41%). Ectopic pregnancy, including ruptured cases, resulted in the transfusion of 414 units (22%), further highlighting the urgent nature of many gynaecological presentations. Abnormal uterine bleeding, encompassing conditions such as fibroids, menorrhagia, and menometrorrhagia, accounted for 618 units (32%), pointing to the ongoing burden of chronic gynaecological disorders on blood resources. Other gynaecological indications included surgical interventions such as hysterectomy and pre-operative anaemia (46 units, 2%), ovarian cysts (24 units, 1%), and pelvic inflammatory disease (PID) (17 units, 1%).

The continued high demand for RCC in both obstetrics and gynaecology underscores the importance of implementing Patient Blood Management (PBM) strategies, especially those targeting the prevention and early treatment of anaemia, reduction of surgical blood loss, and enhanced preparedness for obstetric emergencies. There is a clear opportunity to reduce transfusion requirements through improved antenatal and perioperative care, the use of haemostatic medications, and training in conservative surgical techniques.

4.1.1.3 Oncology Adult RCC Usage

Oncology was the third highest user of adult red cell concentrate (RCC) during the 2025 financial year, with a total of 2,572 units transfused.

Cervical cancer remained the leading oncology diagnosis requiring RCC transfusion, accounting for 510 units (20%) of

all cancer-related usage. This continues to highlight the burden of advanced cervical malignancy in Namibia. Promoting HPV vaccination in schools and increasing access to routine cervical screening for women of reproductive age remain essential strategies to

reduce the incidence and severity of cervical cancer and its transfusion burden.

Leukaemia was the second most frequent indication for RCC among oncology patients, using 419 units (16%). This was followed by unspecified or other tumours, which accounted for 213 units (8%), prostate cancer with 197 units (8%), and breast cancer with 152 units (6%). Together, these five diagnoses accounted for nearly 58% of all RCC usage in cancer patients.

RCC use among haematological malignancies totalled 664 units, representing 26% of overall oncology-related usage as illustrated in Figure 4.5. Leukaemia made up the bulk of this, followed by lymphoma (100 units), and multiple myeloma (50 units). These findings reinforce the high transfusion requirements of blood cancers.

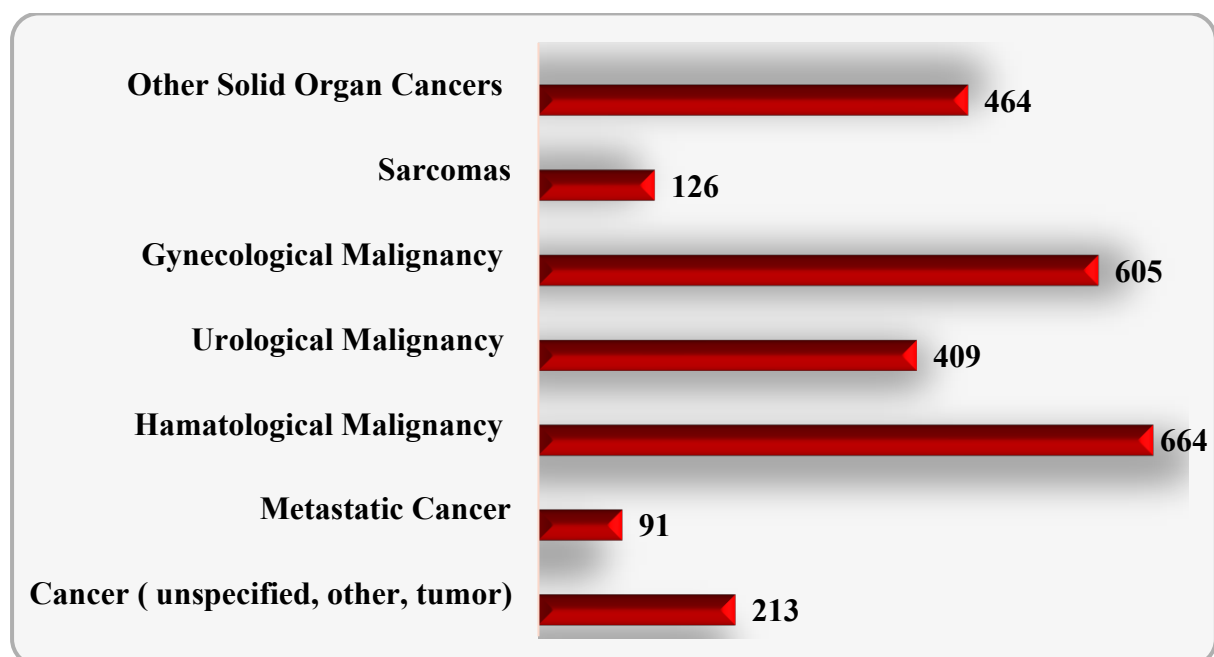
Among solid tumours, gynaecological malignancies (particularly cervical and ovarian cancers) accounted for 605 units

(24%), while urological malignancies (including prostate, kidney, and bladder cancers) used 409 units (16%). Other solid organ cancers, such as breast, colon, lung, and oesophageal cancers, collectively required 464 units (18%). Sarcomas, including osteosarcoma, Kaposi sarcoma, and rhabdomyosarcoma, accounted for a smaller share with 126 units (5%).

Metastatic cancers were noted in 91 units (4%), and unspecified or non-classified tumours represented 213 units (8%). This indicates a persistent need for improved cancer documentation and classification to allow for better resource tracking and clinical planning.

Overall, while the total RCC use in oncology has decreased since the last reporting period, the transfusion burden remains significant, especially in haematological and gynaecological cancers.

Figure 4.5: Oncology Adult RCC unit Usage during the 2025 financial year:



4.1.1.4 Surgery & Trauma Adult RCC Usage

The surgery departments used 1815 adult RCC units during the review period, however this is likely an underestimation since various clinical diagnoses can be treated by the surgical departments but get categorized under internal medicine.

General surgery used the bulk of adult RCC units (36%, 659 units) amongst the various surgical departments, followed by orthopaedic surgery (22%, 402 units) and urology (12%, 224 units). The most common uses for adult RCC in general surgery was for

an acute abdomen/laparotomy (147 units), large or small bowel obstruction (108 units) and abscess/abscess drainage (114 units). The pattern of RCC usage in surgery is similar to observations made in previous years.

About 1378 adult RCC units were used for trauma cases, however this should be significantly higher since emergency blood is often used for these cases and health care workers fail to complete blood requisition forms when an emergency unit is taken from the hospital emergency fridge.

4.1.2 Paediatric RCC Usage

During the 2025 financial year, a total of 3,748 paediatric RCC units were issued. However, it is important to note that this may be an underestimation, as paediatric patients can often be captured under adult diagnostic categories, particularly internal medicine.

To improve the accuracy of data collection, the Namibian Blood Transfusion Service (NAMBTS) recently introduced a paediatric category on the blood requisition form. This intervention is expected to enhance identification and tracking of paediatric blood usage. Despite this improvement, it remains possible that adult RCC units were transfused to children, especially when the required volume exceeded that of a standard paediatric RCC unit. Additionally, in cases where adult RCC units were unavailable or close to expiry, paediatric RCC may have been administered to adult patients.

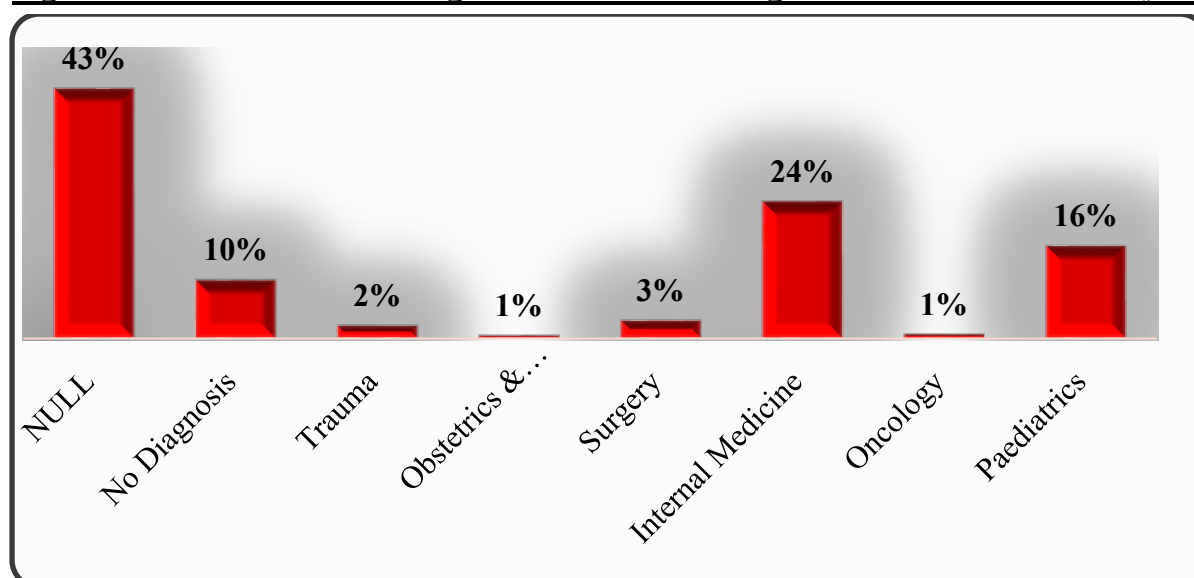
Of the total paediatric RCC units issued, 75% (2,812 units) were paediatric apheresis RCC, while 25% (936 units) were standard paediatric RCC. This reflects the increasing

reliance on apheresis-based components, which reduces recipient exposure to various donors.

The majority of paediatric RCC use was recorded under general paediatrics (601 units; 16%), with significant use also categorized under internal medicine (889 units; 24%). However, the largest portion was either labelled NULL or had no diagnosis recorded, indicating a persistent gap in diagnostic data entry for paediatric transfusion events. The various categories for which paediatric RCC units were used are illustrated in figure 4.6 below.

Analysis of available diagnostic categories reveals that haematological diagnoses accounted for 706 units (19%), followed by infectious causes (292 units; 8%), respiratory diagnoses (121 units; 3%), gastrointestinal conditions (116 units; 3%), and renal diagnoses (65 units; 2%). Other contributors included hepatobiliary (1%), neurological (1%), trauma (2%), and musculoskeletal conditions (2%).

Figure 4.6: Paediatric RCC Usage for the different categories in the 2025 financial year:



The highest usage was recorded at Windhoek Central Hospital, which accounted for 948 units (25%), reflecting its role as the main national referral centre. This was followed by Other Public Hospitals, which collectively used 862 units (23%), indicating a significant volume of paediatric transfusions at regional and district levels. Katutura Intermediate Hospital also contributed notably, with 560 units (15%), while Rundu and Oshakati Intermediate Hospitals used 424 units (11%) and 378 units (10%), respectively. Onandjokwe District Hospital issued 281

units (7%), and Katima Mulilo District Hospital had the lowest public sector use at 104 units (3%). Private hospitals accounted for just 5% (191 units) of total paediatric RCC usage, underscoring the dominant role of the public healthcare system in managing paediatric transfusions in Namibia. The distribution of RCC usage across these hospitals highlights the national demand for paediatric blood products and the importance of supporting blood supply logistics and paediatric transfusion practices throughout all levels of the healthcare system.

4.2 Usage of Whole Blood (WB)

During the 2025 financial year under review, a total of **44 units of whole blood** were utilized across Namibia. The highest usage was recorded at Katutura Intermediate Hospital, which accounted for 14 units (32%), followed closely by Onandjokwe Hospital with 13 units (30%), and Windhoek Central Hospital with 9 units (20%). Both Oshakati State Hospital and Rundu State Hospital used 4 units each (9%).

The majority of whole blood usage was linked to clinical cases classified under “Neonatal jaundice/Exchange transfusion,” comprising 27 units (61%), indicating appropriate and targeted usage. An additional of 5 units (11%) were issued where no diagnosis was provided, while 6 units (14%) were associated with null entries, indicating gaps in clinical documentation. The remaining units were issued for other indications, included neonatal sepsis, prematurity, anaemia of ABO

incompatibility, dehydration, jaundice and hypoalbuminemia, each representing 1 unit (2%) respectively.

4.3 Usage of Platelets Concentrate

A total of 2,815 platelet concentrate units were issued during the 2025 financial year, of which 2,421 units (86%) were for adult patients and 394 units (14%) for paediatric patients. The majority of these platelet units (69%) were distributed to major public healthcare facilities, while 21% were issued to private sector facilities, and the remaining 10% went to smaller public health facilities.

Among individual hospitals, Windhoek Central Hospital received the highest proportion of platelet units (26%), followed by Katutura Intermediate Hospital (15%) and Oshakati Intermediate Hospital (11%). This distribution pattern reflects the concentration of tertiary and high-acuity care services within these central and intermediate referral hospitals.

4.3.1 Adult Platelet Concentrate (Apheresis & Pooled) Usage

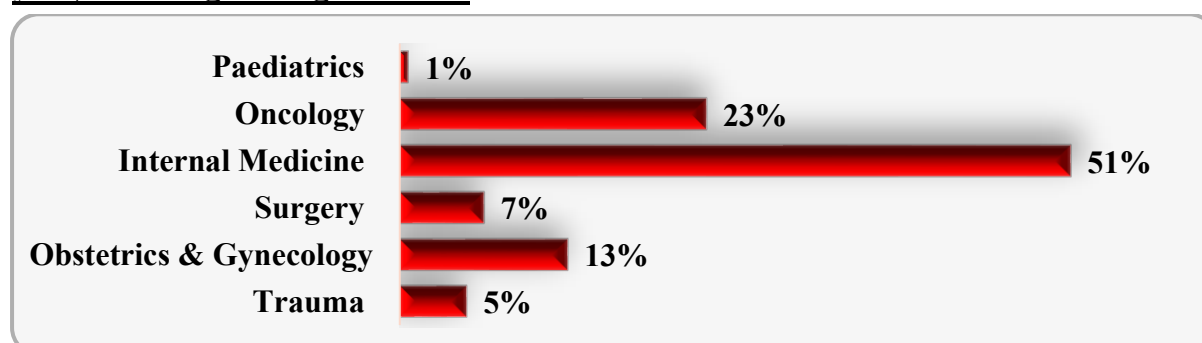
The total adult platelet usage over the past three financial years shows a gradual downward trend. In 2023, 2,555 units were issued, decreasing slightly to 2,542 units in 2024, and further to 2,421 units in 2025, reflecting an overall reduction of approximately 5% over the period. The most notable decrease occurred between 2024 and 2025 (4.8%). This trend may be attributed to improved clinical stewardship, stricter transfusion thresholds, and changes in patient profiles.

platelets, indicating a relatively balanced but slightly higher reliance on pooled components.

Thirty-eight percent of adult platelets had no diagnosis (220 units) on the blood requisition form or were categorized as null (696 units), a 13% increase from the previous two financial years. The remaining 1505 units were mainly used by internal medicine (51%), Oncology (23%) and Obstetrics & Gynaecology (13%) as illustrated below in figure 4.7, similar to the previous years under review.

In 2025, of the adult platelet units issued, 47% were apheresis platelets and 53% were pooled

Figure 4.7: Adult platelet concentrate usage per diagnostic category in the 2025 financial year, excluding no diagnosis/null:



4.3.1.1 Internal Medicine Adult Platelet Usage

In the 2025 financial year, Internal Medicine accounted for the highest usage of adult platelet units (41%). The majority of these were used to treat haematological conditions, which represented 62% of total internal medicine usage, followed by infectious or inflammatory conditions at 20% and gastrointestinal conditions at 10%. The remaining units were used for hepatobiliary (4%), cardiopulmonary (3%), renal (2%), and neurological conditions (<1%). These findings are consistent with the patterns observed in the previous two financial years, where haematological and infectious/inflammatory conditions also accounted for the majority of platelet use in internal medicine.

Haematological disorders made up the bulk of platelet usage in internal medicine. Of the 476 units used, aplastic anaemia accounted for the highest proportion (38%), followed by ITP/Thrombocytopenia (25%), pancytopenia (14%), and unspecified anaemia (12%). Smaller proportions were used for anaemia of

chronic disease (4%), DIC (2%), iron deficiency anaemia (1%), sickle cell anaemia (1%), and other bleeding or clotting disorders. “Thrombocytopenia” is a manifestation of disease rather than a diagnosis and should be recorded separately from ITP. It is recommended that the underlying cause be specified, if available, to improve data accuracy in the NAMBTS system.

Infectious and inflammatory diseases comprised 20% (156 units) of total platelet use in internal medicine. Of these, sepsis/septicaemia/septic shock accounted for the majority (46%), followed by malaria (31%), tuberculosis (7%), pancreatitis (6%), and smaller numbers for SLE, pneumonia, meningitis, HIV/AIDS, and peritonitis.

Gastrointestinal disorders accounted for 10% (79 units) of platelet usage. The overwhelming majority of these units were used for gastrointestinal bleeding (89%), with smaller numbers used for splenomegaly (10%).

4.3.1.2 Oncology Adult Platelet Usage

During the 2025 financial year, a total of 353 platelet concentrate units (15% of all issued units) were used for the management of patients with oncological conditions. The majority of these units (70%, 246 units) supported patients with haematological malignancies, while 24% (83 units) were issued for solid organ cancers. The remaining 6% were used in cases classified as metastatic cancer (3%, 11 units) or unspecified oncological diagnoses (4%, 13 units). Among haematological cancers, leukaemia accounted for the largest proportion of platelet use

(83%), followed by lymphoma (9%), myelodysplastic syndrome (5%), multiple myeloma (2%), and myelofibrosis (1 unit). In the solid organ cancer group, renal cancer was the most common indication (24%), followed by breast and bladder cancers (10% each), colon cancer (8%), pancreatic cancer (7%), and prostate cancer (6%). Other less frequent indications included neuroblastoma, rhabdomyosarcoma, liver, lung, oesophageal, rectal, ovarian, cervical, and kaposi's sarcoma, each accounting for 1–5% of solid organ cancer-related use. These findings are

consistent with patterns observed in the 2023 and 2024 financial years, confirming that haematological malignancies, especially

leukaemia, continue to drive the highest demand for platelet support among oncology patients.

4.3.1.3 Obstetrics & Gynaecology Adult Platelet Usage

Eighty-one percent of the 194 platelet units used for obstetrics and gynaecology were used in obstetrics similar to observations made in previous years. In obstetrics, these units were mainly used for various obstetric emergencies i.e., Eclampsia, DIC or HELLP

Syndrome (91 units), PPH (24 units) and APH (21 units). The 37 units used in gynaecology were mainly for abnormal uterine bleeding, including miscarriages (20 units), uncomplicated or complicated ectopic pregnancies (6 units).

4.3.2 Paediatric Platelet Concentrate Usage

A total of 394 paediatric platelet units were issued during the 2025 financial year. Of these, 47% (183 units) had either no clinical diagnosis documented on the blood requisition forms or were categorized as “null.” This high proportion of undocumented clinical indications limits the ability to evaluate the appropriateness of platelet use in nearly half of all paediatric cases and underscores the need for improved documentation practices.

The majority of units were utilized in the departments of Internal Medicine (28%, 110 units), Paediatrics (15%, 59 units), and Oncology (7%, 26 units). In terms of clinical indications, the majority of transfusions were for haematological conditions (37%) and

infectious/inflammatory conditions (34%). This pattern is consistent with known paediatric transfusion triggers, particularly in settings with high burdens of anaemia, sepsis, or immune-mediated disorders. However, without proper diagnostic documentation, it is difficult to assess whether transfusion thresholds were met or guidelines were followed.

Regarding facility distribution, the majority of paediatric platelet units were issued to Windhoek Central Hospital (30%), Katutura Intermediate Hospital (20%), Rundu Intermediate Hospital (17%), and Oshakati Intermediate Hospital (12%). This reflects both population concentration and referral patterns within Namibia.

4.4 Fresh Frozen, Source & Apheresis Plasma Usage

A total of 9,617 units of plasma were used for transfusion purposes during the 2025 financial year, of which 8,816 were adult units. Most plasma used for transfusion was collected by means of an apheresis procedure, namely apheresis FFP and source plasma, and the remainder of the units are derived from whole blood in adults. Source plasma (7,643

units) was mainly used for transfusion in both adult and paediatric patients, followed by FFP (1,085 units) and apheresis FFP (889 units).

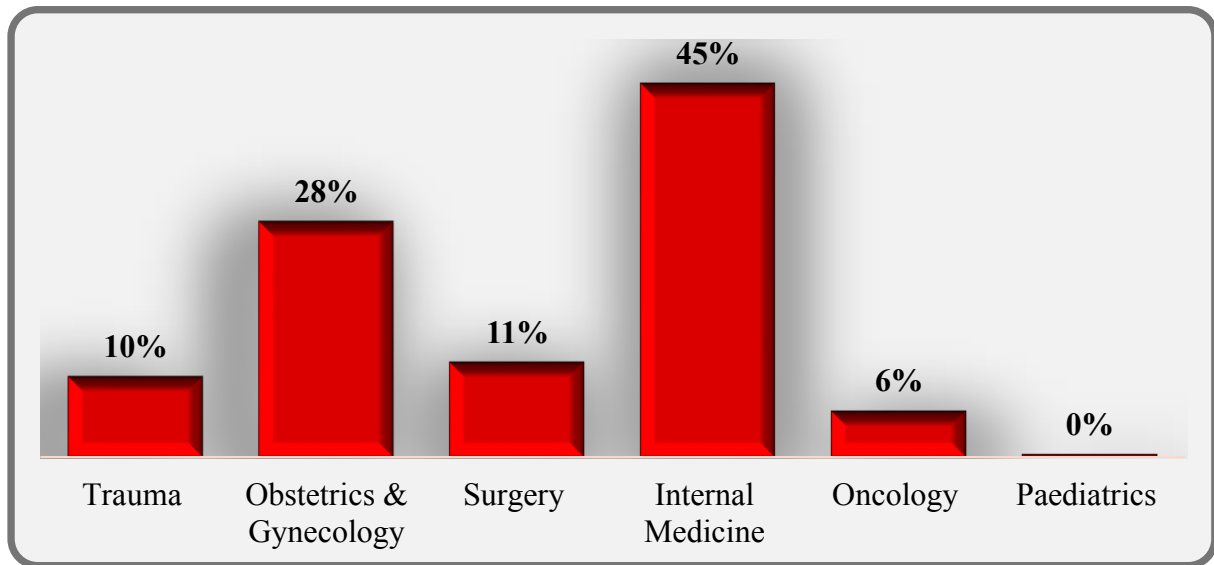
Additional plasma not used for transfusion is exported to the National Bioproduct Institute (NBI) for fractionation to make plasma derivatives i.e., Freeze Dried Plasma (FDP).

4.4.1 Adult Plasma Usage

Eighty-two percent (7,193 units) of adult Source Plasma (SP) was used for transfusion during the review period, followed by FFP (12%, 1,085 units) and apheresis FFP (6%, 538 units). No diagnosis was indicated on the blood requisition form for 2,465 units and

1,021 units were categorized under the null category, which constitutes 40% of all adult plasma products used. The remaining 5,330 units were mainly used by internal medicine, obstetrics & gynaecology and surgery as illustrated in figure 4.8 below.

Figure 4.8: Adult plasma usage per diagnostic category in 2025 financial year:



4.4.1.1 Internal Medicine Adult Plasma Usage

Internal medicine accounts for a large bulk of adult plasma used during the review period, 2,382 units. These units were mainly used for haematological conditions (24%, 679 units), gastrointestinal bleeding (23%, 648 units), infectious or inflammatory conditions (21%, 581 units) and hepatic conditions (8%, 232 units).

The main haematological conditions for which plasma units were used for were unspecified anaemia (173 units), anaemia of chronic disease (123 units), and thrombocytopenia or ITP (206 units).

Gastrointestinal bleeding used 648 plasma units, mainly for upper gastrointestinal bleeding (76%, 492 units), lower gastrointestinal bleeding (16%, 101 units) and unspecified gastrointestinal bleeding (8%, 55 units).

Septicaemia or sepsis and septic shock (370 units) is the primary contributing factor to plasma transfusions in infectious or inflammatory conditions. Hepatic conditions only used 232 units of plasma, mainly for liver failure (150 units) and chronic liver disease (57 units), i.e., Liver Cirrhosis.

4.4.1.2 Obstetrics & Gynaecology Adult Plasma Usage

During the 2025 financial year, 1,503 plasma units were issued for use in Obstetrics and Gynaecology, with 65% (974 units) administered for obstetric indications.

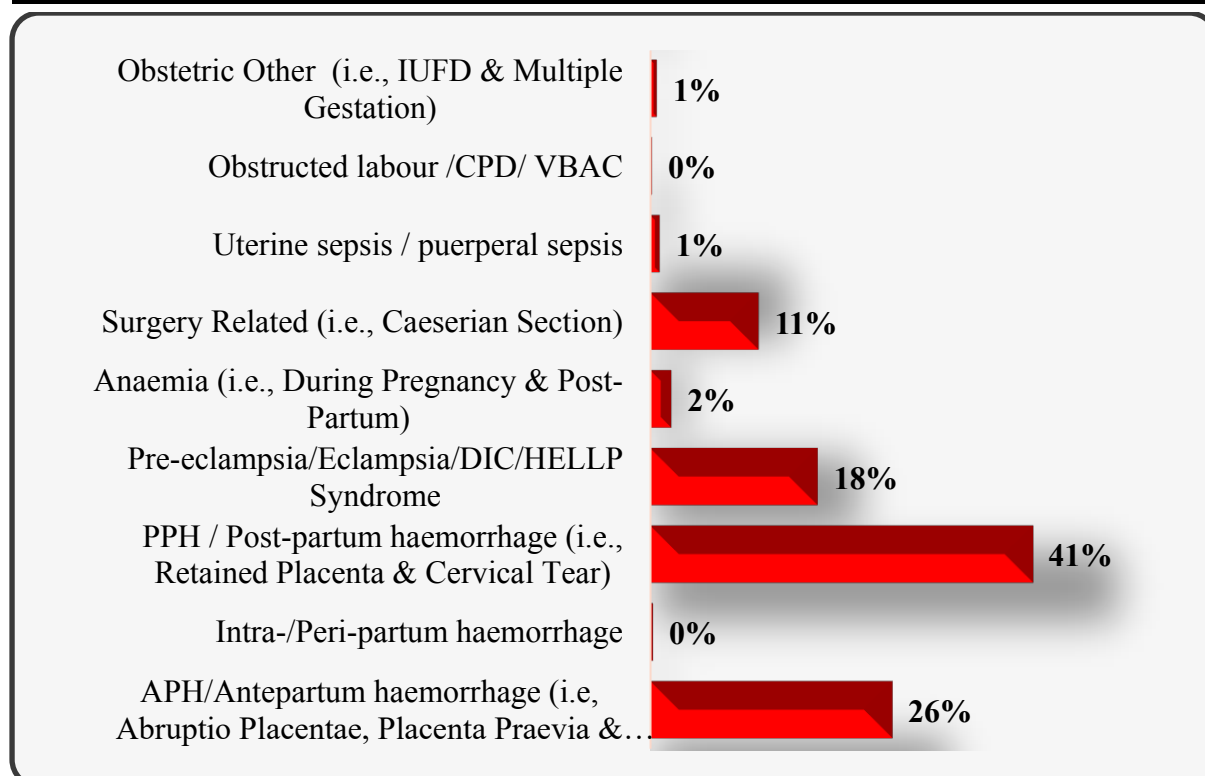
As illustrated by figure 4.9, the leading cause for plasma transfusion in obstetrics was post-partum haemorrhage (PPH), accounting for 41% (395 units), followed by antepartum haemorrhage (APH) at 26% (250 units), and pre-eclampsia, eclampsia, DIC, and HELLP syndrome, comprising 18% (173 units). Additional indications included surgery-related bleeding, primarily due to caesarean sections (11%, 112 units), anaemia during

pregnancy or post-partum (2%), and uterine sepsis (1%).

The remaining 529 plasma units (35%) were used in gynaecological settings. The majority of these were administered for miscarriages (44%, 233 units) and uncomplicated or complicated ectopic pregnancies (35%, 183 units).

Overall, the data reinforce that haemorrhagic complications are the predominant clinical drivers of plasma transfusion in both Obstetrics and Gynaecology, underscoring the ongoing need for effective management protocols to reduce transfusion demand and improve maternal care outcomes.

Figure 4.9: Indications for plasma unit usage in obstetrics during the 2025 financial year:



* VBAC: Vaginal Birth after a C-Section

4.4.1.3 Surgery Adult Plasma Usage

During the 2025 financial year, the surgical departments utilised a total of 609 adult plasma units. However, this figure is likely an underestimation, as several clinical conditions commonly managed by surgical teams, such as upper gastrointestinal bleeding, may be classified under different diagnostic categories.

Among the surgical disciplines, General Surgery accounted for the largest proportion of plasma usage (46%, 283 units), followed by Orthopaedic Surgery (13%, 77 units) and ENT (11%, 70 units).

4.4.2 Paediatric Plasma Usage

During the review period, a total of 807 paediatric plasma units were utilised, of which 17% (140 units) were transfused specifically for paediatric diagnoses. Additionally, 21 adult plasma units were used for paediatric indications, which equates to approximately two paediatric plasma units when split accordingly.

The majority of paediatric FFP was issued to Windhoek Central Hospital, accounting for 59% (474 units), followed by Katutura Intermediate Hospital (13%), Oshakati

Within General Surgery, the most common indications for plasma transfusion included abscess management or drainage (75 units), acute abdomen/laparotomy (68 units), and large or small bowel obstruction (46 units).

This pattern of plasma use is consistent with trends observed in previous financial years, highlighting the sustained transfusion demand in surgical care, particularly for intra-abdominal and infectious surgical pathologies.

Intermediate Hospital (8%), and Rundu Intermediate Hospital (7%). Private hospitals collectively accounted for 8% of paediatric plasma usage.

Notably, 391 paediatric plasma units (48%) were administered without a documented clinical diagnosis or were recorded as "null" in the database. The primary indications for the remaining 401 units, were infectious conditions (24%), haematological disorders (21%), and respiratory conditions (17%).

4.4.3 Freeze Dried Plasma (FDP) Usage

Freeze-Dried Plasma (FDP) is FFP that has undergone lyophilization to produce a freeze-dried powder form. This allows for rapid reconstitution and administration in settings where FFP is not immediately available, particularly in peripheral hospitals managing major haemorrhage. FDP is equivalent to FFP in terms of coagulation properties; however,

it offers logistical advantages, including easier storage and a longer shelf life.

Despite these benefits, the use of FDP should be carefully managed to ensure its availability for patients with critical bleeding in remote areas. FDP is intended as an emergency resource, not a routine substitute for FFP in settings where cold chain infrastructure and storage facilities are functional.

However, usage trends indicate a substantial increase in FDP consumption, particularly within public healthcare facilities. During the 2023 financial year, public hospitals used 405 units of FDP. This number rose abruptly to 1,093 units in 2024 and remained high with 1,033 units used during the 2025 financial year.

The financial impact of this increase is significant. In the 2024 financial year alone,

FDP usage accounted for N\$ 2,583,157.95 of the MoHSS total expenditure on blood and blood products and remained high in the 2025 financial year, with FDP expenditure totalling N\$ 2,122,918.30.

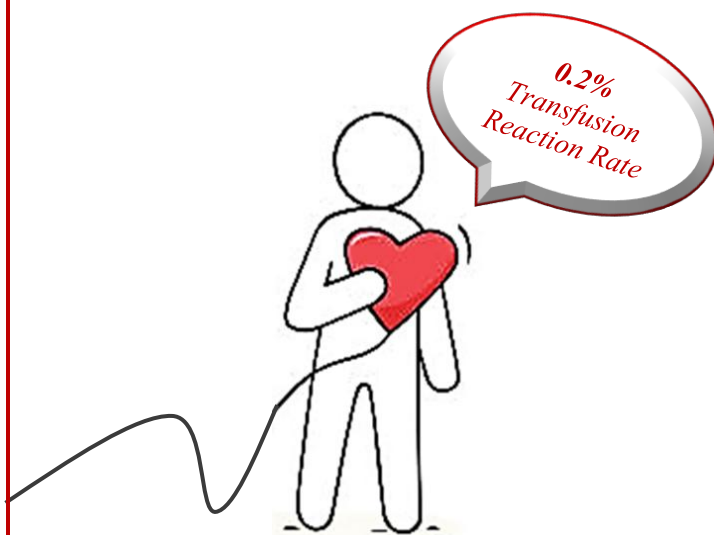
Ensuring rational use of FDP is essential for sustaining this essential resource, especially for life-threatening bleeding in peripheral and resource-limited settings.

Section 5 – Donor & Recipient Adverse Events related to the collection & transfusion of Blood and Blood Products

5.1 Recipient Adverse Events:

5.1.1 Transfusion Reactions:

A transfusion-related adverse event is any unintended and undesirable occurrence before, during, or after a transfusion, potentially linked to the administration of blood or its components.



In 2025, only 98 transfusion reactions were reported to NAMBTS out of 54,235 units issued, yielding a rate of 0.2%. This is a marked decline from the 0.7% observed in the two previous financial years.

This reduction likely reflects an increase usage of leucodepleted blood products, supported by a 51% drop in FNHTR's from 63 cases (42.3%) in 2023 to 31 (29.2%) in 2025. Leucodepletion significantly reduce the risk of Febrile Non-Haemolytic Transfusion Reactions (FNHTR's) by removing donor white blood cells that can trigger immune responses in recipients.

Although this observed trend is encouraging, underreporting remains a concern when compared to the global rate of 1–3%. This reinforces the need for ongoing training by NAMBTS and the MoHSS to ensure timely recognition and accurate reporting of transfusion reactions.

Eight were excluded as transfusion reactions, as they were better explained by the patient's underlying condition.

Mild to moderate allergic reactions were the most common (46%), followed by febrile

non-haemolytic transfusion reactions (29%) and anaphylactoid transfusion reactions (6%) as indicated in table 5.1. Most transfusion reactions categorized as 'Other' were hypotensive reactions (3).

FFP and RCC were equally responsible for mild to severe allergic reactions at 47%, followed by platelets (5%) during the review.

FNHTR were mainly associated with RCC transfusions (91%), with FFP (3%) and platelet concentrate (6%) contributing to the remainder of the FNHTR's.

Overall transfusion reactions were most commonly associated with RCC transfusions (66%), followed by FFP/FDP (29%) and platelets (5%).

Table 5.1: Transfusion Reactions to Blood and Blood Components (2023–2025)

Year	Allergic Reaction	Anaphylactoid Reaction	FNHTR	AHTR	DHTR	TRALI	TACO	TAD	Other	Total
2023	68 (46%)	12 (8%)	63 (42%)	5 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.7%)	149
2024	38 (41%)	8 (9%)	41 (44%)	2 (2%)	0 (0%)	1 (1%)	1 (1%)	2 (2%)	0 (0%)	93
2025	49 (46%)	6 (6%)	31 (29%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	5 (5%)	5 (5%)	98

Transfusion reactions were mainly reported from five major hospitals, namely Katutura Intermediate Hospital (19%), Onandjokwe Hospital (9%), Oshakati Intermediate Hospital (20%), Rundu Intermediate Hospital

(8%), and Windhoek Central Hospital (14%). These facilities are among the highest users of blood and blood products in the country, which likely accounts for the higher proportion of reported reactions.

5.1.2 Wrong Blood to Patient (WBTP) Incidents:

Wrong blood to patient (WBTP) incidents occurs when crossmatched blood intended for one patient is transfused to another, potentially resulting in fatal outcomes. These are entirely preventable with strict adherence to standard operating procedures and protocols.

During the review period, three WBTP incidents were reported, two (67%) involved transfusion of ABO/Rh-incompatible blood. Fortunately, none resulted in a transfusion reaction. Two of the cases were attributed to laboratory errors due to non-compliance with standard operating procedures.

5.1.3 Wrong Blood in Tube Incidents:

During the period under review, three Wrong Blood in Tube (WBIT) incidents were reported to NAMBTS, all originating from Oshakati Intermediate Hospital. These incidents occurred due to the omission of proper patient identification. Fortunately, all

were detected by attentive laboratory personnel in the hospital blood bank before any transfusions were carried out. WBIT events pose significant risks to patient safety and are preventable through strict adherence to established protocols.

Crossmatch tube labels and blood requisition forms should be completed immediately after proper identification at the patient's bedside, as per Standard Hospital Procedures. All

admitted patients must wear identification wristbands at all times to ensure accurate and safe transfusion practices.

5.2 Donor Adverse Events (DAEs)

Donor health and safety is a top priority for NAMBTS and is essential to maintaining a safe and adequate blood supply through voluntary, non-remunerated donations. Since the 2019 policy change, all Donor Adverse Reactions (DARs), regardless of severity, are recorded. Severe reactions are reported immediately to the Medical Officer, while mild to moderate reactions are reported to the clinic supervisor within two working days.

A total of 144 DARs were reported during the year under review, with the majority (91%) occurring during whole blood donations and only 9% during apheresis. Most DARs were observed among female and first-time donors, accounting for 73% of cases. During this period, 44,564 units of blood and blood components were donated, resulting in an average donor reaction rate of 0.3%.

The majority of DARs in 2025 were mild vasovagal reactions (58%), followed by moderate VVRs (29%) and haematoma (8%), as shown in Table 5.2. VVRs were most

frequently observed in female and first-time donors, consistent with global trends.

The highest number of DARs was recorded in 2023 (254), followed by a significant 49% decrease in 2024, and a subsequent 10.8% increase in 2025. Mild VVRs dropped sharply by 55% from 2023 to 2024 but showed a modest increase of 17% in 2025. Moderate VVRs remained relatively stable across the three years, while severe VVRs showed a steady decline. Haematoma cases decreased markedly from 28 in 2023 to 11 in 2024, then remained stable in 2025 (12), suggesting possible improvements in phlebotomy technique or staff training.

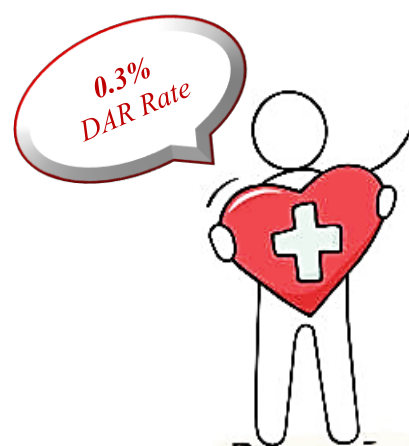


Table 5.2: Donor Adverse Reactions during the 2023 - 2025 Financial Years:

Year	Mild VVR	Moderate VVR	Severe VVR	Haematoma	Nerve Injury	Citrate	Others	Total
2023	161 (63%)	52 (20%)	8 (3%)	28 (11%)	1 (0%)	3 (1%)	1 (0%)	254
2024	72 (55%)	39 (30%)	6 (5%)	11 (8%)	1 (1%)	1 (1%)	0 (0%)	130
2025	84 (58%)	41 (29%)	5 (3%)	12 (8%)	1 (1%)	1 (1%)	0 (0%)	144

5.3 Near Misses:

During the period under review, five near-miss incidents were reported. One occurred in the components laboratory due to inattentiveness during product labelling, three in hospital blood banks due to deviations from standard crossmatching procedures, and one involved a poor-quality product (Fresh Frozen Plasma) from the National Bioproduct

Institute (NBI). Most incidents were identified before transfusion. However, one case involved the issuance and transfusion of a paediatric red cell unit without a direct crossmatch, despite the mother having a positive antibody screen. Fortunately, no adverse reaction occurred, as compatibility was later confirmed.

5.4 Mortalities associated with Blood Transfusion:

During the current reporting period, no transfusion-associated mortalities were reported, in contrast to the previous review period. This is an encouraging finding and may reflect improved transfusion practices, enhanced haemovigilance awareness, and adherence to standard procedures. However, continued vigilance is essential, as underreporting and the absence of post-

mortem investigations can obscure the true incidence of transfusion-related fatalities. Strengthening clinical documentation, timely reporting, and capacity for follow-up investigations — including autopsies when warranted — remain critical to ensuring accurate attribution of mortality and enhancing patient safety.

Section 6 – Lookback Programme

Lookback investigations are an essential component of haemovigilance and must be conducted by the Blood Service in all cases of suspected transfusion-transmitted infections (TTI's). These investigations can be initiated either by the donor (donor-triggered) or the recipient (recipient-triggered).

During the period under review, only one donor-triggered lookback investigation was initiated, concerning a possible transfusion-transmitted malaria case. Unfortunately, the investigation was inconclusive as the suspected recipient had passed away, and their hospital records were untraceable for

review. Consequently, it was not possible to confirm the transmission of malaria in the patient. Additionally, the diagnosis of malaria in the donor was established solely through a Malaria Immunochromatographic Test (ICT), therefore the presence of parasitemia could not be verified.

This case underscores the challenges associated with traceability and confirmation of transfusion-transmitted infections, and emphasizes the need for strengthened documentation and diagnostic follow-up within the lookback process.

Section 7 – Recommendations

All stakeholders in the Namibian Blood Programme are urged to take coordinated action to improve the safety, efficiency, and traceability of blood transfusion services across the country.

Recommendations	
NAMBTS	- Enhance electronic data collection systems to allow post-invoice editing of patient and transfusion information once requisition forms from NIP laboratories are received at the Windhoek Headquarters. - Computerise blood banks to enable real-time electronic capture and verification of transfusion histories. - Continue clinician education on the Lookback Programme to support transfusion traceability, including the completion of recipient contact details (e.g., mobile number) on requisition forms. - Conduct regular hospital audits to identify knowledge gaps in transfusion practices and implement targeted training based on findings. - Establish systems to monitor in-hospital blood wastage and implement corrective measures to minimise the loss of this scarce resource.
MoHSS	- Revise the GACUB guidelines in collaboration with NAMBTS, incorporating Patient Blood Management (PBM) principles to optimise blood use. Ensure that the updated guidelines are readily accessible both online and in printed format, particularly at peripheral hospitals. - In collaboration with NAMBTS, provide comprehensive training to clinicians on the revised guidelines, proper completion of blood requisition forms, and documentation of transfusion reactions. - Make all revised transfusion-related documentation available across all healthcare facilities. - Establish a National Blood Authority, comprising major stakeholders of the National Blood Programme, to serve in an advisory capacity to MoHSS and enhance the quality of blood transfusion services nationwide.
Hospitals	- Implement PBM programmes to optimise blood usage and reduce wastage. - Strengthen Hospital Transfusion Committees (HTCs) by: - o Mandating their establishment in high-volume hospitals. - o Including transfusion as a standing agenda item within Therapeutic Committees in smaller facilities. - Ensure HTCs oversee the implementation of MoHSS and NAMBTS transfusion guidelines and procedures by healthcare personnel, especially the Guidelines on the Appropriate use of Blood and Blood Products.
NIP	- Ensure the timely return of blood requisition forms to NAMBTS Headquarters to reduce the number of "unspecified" (null) entries and improve traceability of blood recipients. - Retrain NIP personnel on crossmatching procedures to increase the use of group-specific blood. This will help prevent Group O shortages and enhance patient safety. - Encourage laboratory staff to prioritize the issuance of FFP over FDP as FFP offers the same therapeutic benefit at a lower cost, making it a more sustainable option for public healthcare facilities.

