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**Bureau of Infectious Disease and Laboratory Sciences**

**Hemovigilance Program Data Summary**

**January 1-December 31, 2023**

**Suggested citation:**

Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences.*Hemovigilance Program Data Summary January 1– December 31, 2023.*

<https://www.mass.gov/service-details/reporting-requirements-for-blood-banks-and-hemovigilance-in-massachusetts>. Published September 2024. Accessed [date].

**Bureau of Infectious Disease and Laboratory Sciences**
The Massachusetts State Public Health Laboratory
305 South Street
Jamaica Plain, MA 02130

**For questions about this report, contact:**

Ashley.a.iannone@mass.gov or Melissa.cumming@mass.gov

**Acknowledgments**

This report was prepared by the following MDPH staff:

Ashley Iannone, MPH, CIC

Christina Brandeburg, MPH, CIC

Melissa Cumming, MS, CIC

Amanda Slider, MPH, CIC

**Executive Summary**

**Introduction**

This report includes data submitted by Massachusetts blood banks to the Hemovigilance Module of the Centers for Disease Control and Prevention’s National Healthcare Safety Network (NHSN) from January 1 through December 31, 2023. The purpose of this report is to provide information on transfusion activity in the state, as well as transfusion-associated adverse events. Blood banks in Massachusetts can examine their own facility metrics and use this report for comparison and context.

The members of the Massachusetts Hemovigilance Technical Advisory Group (TAG) appreciate the committed participation of Massachusetts blood banks and transfusion services in reporting hemovigilance data to NHSN for the past 10 years and hope that the availability of the metrics contained in this report will be useful for comparison, context, and quality improvement.

**Key Findings**

* Total volume of transfused products increased by 3% in 2023, with plasma being the only component to show a decrease in transfusions from 2022 to 2023.
* 5.6% of products in 2023 were discarded, a decrease from 6% in 2022, with plasma being the most frequently discarded product over the last four years.
* The total number of reported adverse reactions decreased by 5% between 2022 and 2023, but there was an increase in transfusion-associated circulatory overload (TACO) reactions for the 4th year in a row.
* The overall rate of adverse reactions decreased from 18.5 per 10,000 products transfused in 2022, to 16.9 per 10,000 products transfused in 2023.
* Platelets continue to be the blood product associated with both the highest and most variable rate of adverse reactions over time.
* The volume of pathogen reduction technology (PRT) products transfused increased by over 10,000 units from 2022 to 2023. Over 60% of platelets transfused in Massachusetts are pathogen reduced.
* In 2023, there were 59 adverse reactions associated with PRT platelets for a rate of 19 per 10,000 PRT platelets transfused. None of these reactions were life-threatening. In comparison, there were 47 adverse reactions associated with conventional platelets for a rate of 26.4 per 10,000, 11 (23%) of these reactions were severe or life-threatening.

**Technical Notes**

The following are inclusion criteria for the adverse reactions included in this report:

* Case criteria – the reaction must either definitively or probably meet the NHSN case reporting criteria.
* Imputability – the reaction must definitely, probably, or possibly meet NHSN imputability criteria.
* Reaction type – the reaction must be one of twelve specified types in NHSN, excluding “Other” and “Unknown”.
* Allergic reactions – *non-severe* allergic reactions are excluded from analysis and reporting is not required.

Current reaction definitions and imputability criteria can be found at the following link: <https://www.cdc.gov/nhsn/PDFs/Biovigilance/BV-HV-protocol-current.pdf>.

**Data Summary**

This report includes data submitted by 65 licensed blood banks in Massachusetts. Submission of data through the NHSN Hemovigilance Module is a regulatory requirement under 105 CMR 135.120 for all blood banks and transfusion services licensed in Massachusetts. Complete denominator and adverse reaction data were submitted by 63 facilities for all months covered. Two facilities did not submit a complete years’ worth of denominator and adverse reaction data.

Updated responses to the NHSN annual facility survey, which describes facility characteristics, were provided by 59 blood banks. Facilities were stratified into three bed size groups for this report defined as those with less than 100 beds, those with 100-299 beds, and those with 300 or more beds. For the 6 facilities that did not submit a 2023 annual facility survey, the most recently submitted annual facility survey data were used. Bed size characteristics from the annual facility survey data can be found in Table 1. Eighty-seven percent of facilities were College of American Pathologists (CAP) accredited, 49% were accredited by AABB, and 42% indicated accreditation by the Joint Commission.

In 2023, 58 facilities transfused over 32,000 pathogen reduced products (PRT), a 49% increase from PRT products transfused in 2022. Pathogen reduced platelets make up more than 60% of platelets transfused in Massachusetts. All but one of 65 blood banks attempted to issue only leukocyte-reduced or leuko-poor cellular components. Ten (15%) blood banks collected blood at their facility.

The number of red blood cell (RBC) type and screen procedures performed by Massachusetts’ blood banks ranged from 100 to 94,433 (mean: 10,911, median: 5,768) and RBC crossmatches ranged from 62 to 53,099 (mean: 5,291, median: 1,979). The number of products transfused statewide increased from an average of 28,123 products per month in 2022 to 29,042 in 2023. The only blood component with a decrease in overall transfusion volume from 2022 to 2023 was plasma. The percentage of blood products discarded decreased from 6% in 2022, to 5.6% in 2023, with plasma yielding the highest discard ratio of 21.3.

One transfusion transmitted infection, *Staphylococcus spp.*, was reported in 2023. This severe infection was associated with a red blood cell unit which was tested and implicated. This is only the second TTI reported since 2020.

In 2023, there were 348,523 blood products transfused and a total of 589 adverse reactions classified as possibly, probably, or definitely related to transfusion, yielding an overall reaction rate of 16.9 reactions per 10,000 products transfused. Fifty (8.5%) of the reported reactions were considered serious or life-threatening, and one of the reactions was fatal (allergic reaction). This is the fourth year in a row that the number and proportion of TACO reactions has increased, making up 7% of all adverse reactions in 2020, 9% in 2021, 11% in 2022, and 13% in 2023.

The Hemovigilance Technical Advisory Group (TAG) was established in June 2014 to provide guidance to the Massachusetts Department of Public Health (MDPH) in the analysis and use of statewide hemovigilance data.

Current members of the TAG are:

**Chester Andrzejewski, Jr., PhD, MD, FCAP**

Medical Director

System Transfusion Medicine/Blood Banking and

Apheresis Medicine Services

Baystate Health/ Baystate Medical Center

**Christina Brandeburg, MPH, CIC**

Epidemiologist

Bureau of Infectious Disease and Laboratory Sciences

Massachusetts Department of Public Health

**Melissa Cumming, MS, CIC**

Epidemiologist

Hemovigilance Coordinator

Bureau of Infectious Disease and Laboratory Sciences

Massachusetts Department of Public Health

**Ashley Iannone, MPH, CIC**

Epidemiologist

Bureau of Infectious Disease and Laboratory Sciences

Massachusetts Department of Public Health

**Amanda Slider, MPH, CIC**

Epidemiologist

Bureau of Infectious Disease and Laboratory Sciences

Massachusetts Department of Public Health

**Reggie Thomasson, MD**

Boston Medical Center

**Alfred DeMaria, Jr., MD**

Medical and Laboratory Consultant

Bureau of Infectious Disease and Laboratory Sciences

Massachusetts Department of Public Health

**Michele Herman, MT (ASCP)**

Compliance Officer - Transfusion Medicine

Beth Israel Deaconess Medical Center

**Kimberly Knox, RN, MHA, CIC**

Infection Prevention and Control Coordinator

Milford Regional Medical Center

**Eileen McHale, RN, BSN**

Healthcare Associated Infection Coordinator

Bureau of Health Care Safety and Quality

Massachusetts Department of Public Health

**Lynne O’Hearn, MT (ASCP)**

Transfusion Safety Officer

Baystate Medical Center

**Jorge Rios, MD**

Medical Director

American Red Cross Blood Services

Massachusetts Region

**Lynne Uhl, MD**

Vice Chair and Division Director for Laboratory and Transfusion Medicine

Beth Israel Deaconess Medical Center

**Pamela Waksmonski, MS, MT (ASCP),**

**PMP, CRA**

Clinical Laboratory Program Manager

Bureau of Health Care Safety and Quality

Massachusetts Department of Public Health

Table of Contents

[List of Abbreviations 7](#_Toc173330668)

[Table 1: Bed Size Characteristics from the 2023 Annual Facility Survey 8](#_Toc173330669)

[Figure 1: Volume of Blood Products Transfused in Massachusetts, 2021-2023 9](#_Toc173330670)

[Table 2: Transfusion Volume by Bed Size Group, Product Type, and Year, 2021-2023 10](#_Toc173330671)

[Table 3: Volume of Pathogen Reduced Products Transfused in Massachusetts, 2021-2023 11](#_Toc173330672)

[Figure 2: Volume of Blood Products Discarded in Massachusetts, 2021-2023 12](#_Toc173330673)

[Table 4: Number and Ratio of Discarded Products by Type and Bed Size Group Massachusetts, 2023 13](#_Toc173330674)

[Table 5: Number of Adverse Reactions in Massachusetts, 2021-2023 14](#_Toc173330675)

[Figure 3: Adverse Reaction Rates Associated with PRT vs. Non-PRT Platelets, 2021-2023 15](#_Toc173330676)

[Table 6: Number of Adverse Reactions by Bed Size Group, 2021-2023 16](#_Toc173330677)

[Table 7: Summary of Transfusion-transmitted infections in Massachusetts, 2023 17](#_Toc173330678)

[Figure 4: Rates of Adverse Reactions per 10,000 Transfused Products by Product Type in Massachusetts, 2021-2023 18](#_Toc173330679)

[Figure 5: Rates of Adverse Reactions per 10,000 Transfused Products by Bed Size Group in Massachusetts, 2020-2023 19](#_Toc173330680)

[Table 8: Rates of Adverse Reactions per 10,000 Total Units (Full and Aliquot) Transfused by Component Type, 2023 20](#_Toc173330681)

**List of Abbreviations**

* AABB – Association for the Advancement of Blood and Biotherapies
* AHTR – Acute hemolytic transfusion reaction
* ALLERG – Allergic reaction
* CAP – College of American Pathologists
* CCP- Covid Convalescent Plasma
* DHTR – Delayed hemolytic transfusion reaction
* DSTR – Delayed serologic transfusion reaction
* FNHTR – Febrile non-hemolytic transfusion reaction
* HTR – Hypotensive transfusion reaction
* PRT- Pathogen Reduction Technology
* PTP – Post-transfusion purpura
* TJC – The Joint Commission
* TACO – Transfusion-associated circulatory overload
* TAD – Transfusion-associated dyspnea
* TAGVHD – Transfusion-associated graft versus host disease
* TRALI – Transfusion-related acute lung injury
* TTI – Transfusion-transmitted infection

**Table 1: Bed Size Characteristics from the 2023 Annual Facility Survey[[1]](#footnote-2)**

|  |  |  |  |
| --- | --- | --- | --- |
|   | **BSG 1[[2]](#footnote-3) (1-99 Beds)** | **BSG 2[[3]](#footnote-4)(100-299 Beds)** | **BSG 3 (≥ 300 Beds)** |
| Number of Hospitals | 13 | 37 | 15 |
| Average Number of Beds Served by Transfusion Service (range) | 59(14-95) | 187(100-299) | 514(302-1,045) |
| Average Number of Inpatient Surgeries (range) | 641(7-3,239) | 1,612(0-3,558) | 6,936(1,736-20,582) |
| Average Number of Outpatient Surgeries (range) | 2,225(0-8,990) | 4,942(0-16,472) | 13,332(2,878-26,235) |
| Transfusion Service Serves Cancer Center (includes adult and pediatric) | 8 (62%) | 23 (62%) | 13 (87%) |
| Medical School Affiliation | Major Teaching Hospital | 3 (23%) | 10 (27%) | 14 (93%) |
| Graduate Teaching Hospital | 2 (15%) | 7 (19%) | 1 (7%) |
| Undergraduate Teaching Hospital | 1 (8%) | 10 (27%) | 0 |
| Trauma Level  | Level 1 | 0 | 0 | 9 (60%) |
| Level 2 | 0 | 1 (3%) | 2 (13%) |
| Level 3 | 1 (8%) | 9 (24%) | 2 (13%) |
| Level NA | 12 (92%) | 27 (73%) | 2 (13%) |
| Community Setting | Rural | 6 (46%) | 1 (3%) | 0 |
| Suburban | 6 (46%) | 24 (65%) | 5 (33%) |
| Urban | 1 (8%) | 12 (32%) | 10 (67%) |

**Figure 1: Volume of Blood Products Transfused in Massachusetts, 2021-2023**



**Table 2: Transfusion Volume by Bed Size Group[[4]](#footnote-5), Product Type, and Year, 2021-2023**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bed Size Group** | **Product** | **2021 Volume Transfused** | **2022 Volume Transfused** | **2023 Volume Transfused** | **Δ (2022-2023)** | **% Δ 2022-2023** |
| **BSG 1: 1-99 Beds[[5]](#footnote-6)** | RBCs | 7,992 | 7,016 | 7,279 | 263 | 3.7 |
| Plasma | 473 | 508 | 476 | -32 | -6.3 |
| Platelets | 359 | 406 | 361 | -45 | -11.1 |
| Cryoprecipitate | 21 | 26 | 18 | -8 | -30.8 |
| Whole Blood | 0 | 0 | 0 | 0 | 0.0 |
| **BSG 2: 100-299 Beds[[6]](#footnote-7)** | RBCs | 65,812 | 61,266 | 57,231 | -4,035 | -6.6 |
| Plasma | 6,089 | 5,111 | 4,342 | -769 | -15 |
| Platelets | 5,297 | 3,810 | 2,375 | -1,435 | -37.7 |
| Cryoprecipitate | 1,087 | 1,316 | 1,455 | 139 | 10.6 |
| Whole Blood | 1 | 0 | 0 | 0 | 0.0 |
| **BSG 3: ≥300 Beds[[7]](#footnote-8)** | RBCs | 165,393 | 159,155 | 167,498 | 8,343 | 5.2 |
| Plasma | 34,753 | 30,749 | 30,567 | -182 | -0.6 |
| Platelets | 43,094 | 41,321 | 46,163 | 4,842 | 11.7 |
| Cryoprecipitate | 27,253 | 25,794 | 29,588 | 3,794 | 14.7 |
| Whole Blood | 926 | 1,003 | 1,170 | 167 | 16.7 |
| **All Facilities** | RBCs | 239,197 | 227,437 | 232,008 | 4,571 | 2 |
| Plasma | 41,315 | 36,368 | 35,385 | -983 | -2.7 |
| Platelets | 48,750 | 45,537 | 48,899 | 3,362 | 7.4 |
| Cryoprecipitate | 28,361 | 27,136 | 31,061 | 3,925 | 14.5 |
| Whole Blood | 927 | 1,003 | 1,170 | 167 | 16.7 |

**Table 3: Volume of Pathogen Reduced Products Transfused in Massachusetts, 2021-2023**

|  |  |  |  |
| --- | --- | --- | --- |
| **Component Type** | **2021** | **2022** | **2023** |
| **Total** | **11,319** | **21,666** | **32,207** |
| **Platelets** |   |   |   |
| Psoralen Treated  |   |   |   |
| Apheresis Derived  | 11,208 | 20,573 | 30,967 |
| Whole Blood Derived  | 66 | 677 | 71 |
| Riboflavin Treated  |   |   |   |
| Apheresis Derived  | 9 | 25 | 25 |
| **Plasma** |   |   |   |
| Psoralen Treated  |   |   |   |
| Apheresis Derived  | 36 | 376 | 1,126 |
| Riboflavin Treated  |   |   |   |
| Apheresis Derived  | 0 | 15 | 18 |

**Figure 2****: Volume of Blood Products Discarded in Massachusetts, 2021-2023**



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **2023 Bed Size Group** | **Product** | **Volume Transfused** | **Number of Products Discarded** | **Discard Ratio[[8]](#footnote-9)** |
| **BSG 1: 1-99 Beds(N=13)** | RBCs | 7,279 | 159 | 2.2 |
| Plasma | 476 | 163 | 34.2 |
| Platelets | 361 | 39 | 10.8 |
| Cryoprecipitate | 18 | 3 | 16.7 |
| Whole Blood | 0 | 0 | 0.0 |
| **BSG 2: 100-299 Beds(N=37)** | RBCs | 57,231 | 1,440 | 2.5 |
| Plasma | 4,342 | 1,831 | 42.2 |
| Platelets | 2,375 | 349 | 14.7 |
| Cryoprecipitate | 1,455 | 186 | 12.8 |
| Whole Blood | 0 | 0 | 0.0 |
| **BSG 3: ≥300 Beds(N=15)** | RBCs | 167,498 | 3,593 | 2.1 |
| Plasma | 30,567 | 5,547 | 18.1 |
| Platelets | 46,163 | 4,222 | 9.1 |
| Cryoprecipitate | 29,588 | 3,049 | 10.3 |
| Whole Blood | 1,170 | 32 | 2.7 |
| **All Facilities** | RBCs | 232,008 | 5,192 | 2.2 |
| Plasma | 35,385 | 7,541 | 21.3 |
| Platelets | 48,899 | 4,610 | 9.4 |
| Cryoprecipitate | 31,061 | 3,238 | 10.4 |
| Whole Blood | 1,170 | 32 | 2.7 |

**Table 4: Number and Ratio of Discarded Products
by Type and Bed Size Group Massachusetts, 2023**

**Table 5: Number of Adverse Reactions in Massachusetts, 2021-2023**

|  |  |  |  |
| --- | --- | --- | --- |
| **Adverse Reaction Description** | **2021** | **2022** | **2023** |
| AHTR | 5 | 0 | 2 |
| ALLERG | 4 | 19 | 19 |
| DHTR | 12 | 5 | 11 |
| DSTR | 41 | 37 | 43 |
| FNHTR | 441 | 462 | 402 |
| HTR | 4 | 2 | 6 |
| INF | 0 | 1 | 1 |
| TACO | 55 | 68 | 75 |
| TAD | 29 | 25 | 29 |
| TRALI | 1 | 1 | 1 |
| **Total** | **592** | **620** | **589** |

**Figure 3: Adverse Reaction Rates Associated with PRT vs. Non-PRT Platelets, 2021-2023**

 

**Table 6: Number of Adverse Reactions
by Bed Size Group, 2021-2023**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bed Size Group** | **Adverse Reaction** | **2021** | **2022** | **2023** |
| **BSG 1: 1-99 Beds[[9]](#footnote-10)** | AHTR | 0 | 0 | 0 |
| ALLERG | 0 | 1 | 2 |
| DHTR | 0 | 1 | 0 |
| DSTR | 0 | 0 | 0 |
| FNHTR | 13 | 10 | 11 |
| HTR | 0 | 0 | 0 |
| INF | 0 | 0 | 0 |
| TACO | 4 | 4 | 1 |
| TAD | 2 | 2 | 2 |
| TRALI | 0 | 0 | 0 |
| **BSG 2: 100-299 Beds[[10]](#footnote-11)** | AHTR | 0 | 0 | 0 |
| ALLERG | 0 | 0 | 1 |
| DHTR | 2 | 0 | 1 |
| DSTR | 4 | 0 | 3 |
| FNHTR | 81 | 62 | 63 |
| HTR | 0 | 0 | 0 |
| INF | 0 | 0 | 0 |
| TACO | 1 | 5 | 2 |
| TAD | 1 | 3 | 2 |
| TRALI | 0 | 0 | 0 |
| **BSG 3: ≥300 Beds[[11]](#footnote-12)** | AHTR | 5 | 0 | 2 |
| ALLERG | 4 | 18 | 16 |
| DHTR | 10 | 4 | 10 |
| DSTR | 37 | 37 | 40 |
| FNHTR | 347 | 390 | 328 |
| HTR | 4 | 2 | 6 |
| INF | 0 | 1 | 1 |
| TACO | 50 | 59 | 72 |
| TAD | 26 | 20 | 25 |
| TRALI | 1 | 1 | 1 |

**Table 7: Summary of Transfusion-transmitted infections in Massachusetts, 2023**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Adverse****Reaction Date** | **Number of Days from Transfusion and Reaction** | **Age atAdverseReaction** | **Gender** | **Infection** | **CaseDefinition** | **Severity** | **Imputability** | **Outcome** | **AssociatedUnit** | **UnitTested** | **UnitTestedPositive** | **DonorTested** |
| 01/2023 | 0 | 14 | Female | *Staphylococcus* spp. | Definitely  | Severe | Definitely | No sequelae | Red BloodCells | Yes | Yes | No |

**Figure 4: Rates of Adverse Reactions per 10,000 Transfused Products
by Product Type in Massachusetts, 2021-2023[[12]](#footnote-13)**

 

**Figure 5: Rates of Adverse Reactions per 10,000 Transfused Products
by Bed Size Group in Massachusetts, 2020-2023[[13]](#footnote-14)**



**Table 8: Rates of Adverse Reactions per 10,000 Total Units (Full and Aliquot)
Transfused by Component Type, 2023**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | **Transfused** | **All Reactions** | **AHTR** | **ALLERG** | **DHTR** | **DSTR** | **FNHTR** | **HTR** | **TTI** | **TACO** | **TAD** | **TRALI** |
| Component Type | N | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate | N | Rate |
| **All Components** |   |   |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| All | 348,523 | 589\* | 16.9 | 2 | 0.06 | 19 | 0.55 | 11 | 0.32 | 43 | 1.23 | 402 | 11.53 | 6 | 0.17 | 1 | 0.03 | 75 | 2.15 | 29 | 0.83 | 1 | 0.03 |
| Severe Adverse Reactions |   | 42 | 1.21 | 1 | 0.03 | 9 | 0.26 | 3 | 0.09 | 0 | 0 | 10 | 0.29 | 1 | 0.03 | 1 | 0.03 | 13 | 0.37 | 4 | 0.11 | 0 | 0 |
| Life Threatening Adverse Reactions |   | 8 | 0.23 | 0 | 0 | 4 | 0.11 | 0 | 0 | 0 | 0 | 1 | 0.03 | 1 | 0.03 | 0 | 0 | 1 | 0.03 | 0 | 0 | 1 | 0.03 |
| Fata Adverse Reactions |   | 1 | 0.03 | 0 | 0 | 1 | 0.03 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **RBCS** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| All | 232,008 | 459+ | 19.78 | 1 | 0.04 | 7 | 0.3 | 11 | 0.47 | 43 | 1.85 | 306 | 13.19 | 4 | 0.17 | 1 | 0.04 | 62 | 2.67 | 23 | 0.99 | 1 | 0.04 |
| Collection Method |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Apheresis | 39,412 | 78 | 19.79 | 0 | 0 | 1 | 0.25 | 2 | 0.51 | 2 | 0.51 | 54 | 13.7 | 0 | 0 | 0 | 0 | 14 | 3.55 | 5 | 1.27 | 0 | 0 |
| Whole blood-derived | 192,596 | 373 | 19.37 | 1 | 0.05 | 6 | 0.31 | 9 | 0.47 | 34 | 1.77 | 252 | 13.08 | 4 | 0.21 | 1 | 0.05 | 47 | 2.44 | 18 | 0.93 | 1 | 0.05 |
| Irradiation |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Irradiated | 117,683 | 208 | 17.67 | 1 | 0.08 | 4 | 0.34 | 5 | 0.42 | 5 | 0.42 | 168 | 14.28 | 1 | 0.08 | 1 | 0.08 | 15 | 1.27 | 7 | 0.59 | 1 | 0.08 |
| Not Irradiated | 114,325 | 243 | 21.26 | 0 | 0 | 3 | 0.26 | 6 | 0.52 | 31 | 2.71 | 138 | 12.07 | 3 | 0.26 | 0 | 0 | 46 | 4.02 | 16 | 1.4 | 0 | 0 |
| Leukoreduction |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Leukoreduced | 219,581 | 433 | 19.72 | 1 | 0.05 | 7 | 0.32 | 11 | 0.5 | 35 | 1.59 | 293 | 13.34 | 4 | 0.18 | 1 | 0.05 | 57 | 2.6 | 23 | 1.05 | 1 | 0.05 |
| Not Leukoreduced | 12,427 | 18 | 14.48 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.8 | 13 | 10.46 | 0 | 0 | 0 | 0 | 4 | 3.22 | 0 | 0 | 0 | 0 |
| **Platelets** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| All | 48,899 | 106 | 21.68 | 1 | 0.2 | 6 | 1.23 | 0 | 0 | 0 | 0 | 88 | 18 | 1 | 0.2 | 0 | 0 | 6 | 1.23 | 4 | 0.82 | 0 | 0 |
| Collection Method |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Apheresis Derived | 48,811 | 105 | 21.51 | 1 | 0.2 | 6 | 1.23 | 0 | 0 | 0 | 0 | 87 | 17.82 | 1 | 0.2 | 0 | 0 | 6 | 1.23 | 4 | 0.82 | 0 | 0 |
| Whole blood-derived | 88 | 1 | 113.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 113.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Irradiation |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Irradiated | 25,763 | 41 | 15.91 | 1 | 0.39 | 4 | 1.55 | 0 | 0 | 0 | 0 | 34 | 13.2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.78 | 0 | 0 |
| Not Irradiated | 23,136 | 65 | 28.09 | 0 | 0 | 2 | 0.86 | 0 | 0 | 0 | 0 | 54 | 23.34 | 1 | 0.43 | 0 | 0 | 6 | 2.59 | 2 | 0.86 | 0 | 0 |
| Leukoreduction |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Leukoreduced | 48,878 | 106 | 21.69 | 1 | 0.2 | 6 | 1.23 | 0 | 0 | 0 | 0 | 88 | 18 | 1 | 0.2 | 0 | 0 | 6 | 1.23 | 4 | 0.82 | 0 | 0 |
| Not Leukoreduced | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Psoralen Treated |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Apheresis Derived | 30,967 | 59 | 19.05 | 0 | 0 | 2 | 0.65 | 0 | 0 | 0 | 0 | 50 | 16.15 | 0 | 0 | 0 | 0 | 5 | 1.61 | 2 | 0.65 | 0 | 0 |
| Whole blood-derived | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Riboflavin Treated |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Apheresis Derived | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Plasma** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| All | 35,385 | 9^ | 2.54 | 0 | 0 | 4 | 1.13 | 0 | 0 | 0 | 0 | 2 | 0.57 | 1 | 0.28 | 0 | 0 | 2 | 0.57 | 0 | 0 | 0 | 0 |
| Collection Method |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Apheresis | 11,829 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Whole blood-derived | 23,556 | 7 | 2.97 | 0 | 0 | 4 | 1.7 | 0 | 0 | 0 | 0 | 1 | 0.42 | 0 | 0 | 0 | 0 | 2 | 0.85 | 0 | 0 | 0 | 0 |
| Psoralen Treated |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Apheresis Derived | 1,126 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Cryoprecipitate** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| All | 31,061 | 2 | 0.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Whole blood** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
| All | 1,170 | 1 | 8.55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8.55 | 0 | 0 |

\*12 adverse reactions were associated with an “unknown” transfused blood product. These reactions were included in the overall adverse reaction rate calculations, but were excluded from component-specific rate calculations. Two ALLERGs, 4 FNHTRs, 5 TACOs, and 1 TAD reported an “unknown” blood product implicated.

+ 8 adverse reactions associated with red blood cells have an “unknown” product maniupulation- 7 DSTRs, 1 TACO.

^ 2 adverse reactions associated with plasma had an “unknown” product maniupulation- 1 HTR, 1 FNHTR

1. For those facilities that did not submit a 2023 annual facility survey (n=6), the most recent prior year submission was used. [↑](#footnote-ref-2)
2. 1 facility moved from BSG 1 to BSG 2 in 2023 [↑](#footnote-ref-3)
3. 1 facility moved from BSG 2 to BSG 3, and 1 facility moved from BSG 3 to BSG 2 in 2023 [↑](#footnote-ref-4)
4. Bed Size Group categorization was assigned based on the corresponding year’s annual facility survey. [↑](#footnote-ref-5)
5. In 2021 and 2022, 14 facilities were in Bed Size Group 1, in 2023 there were 13 [↑](#footnote-ref-6)
6. In 2021 and 2022, 36 facilities were in Bed Size Group 2, in 2023, there were 37 [↑](#footnote-ref-7)
7. In 2021, 2022, and 2023 there were 15 facilities in Bed Size Group 3 [↑](#footnote-ref-8)
8. Discard ratio = the number of products discarded for every 100 products transfused. [↑](#footnote-ref-9)
9. In 2021, 14 facilities were in Bed Size Group 1, 36 in Bed Size Group 2, and 15 in Bed Size Group 3. [↑](#footnote-ref-10)
10. In 2022, 14 facilities were in Bed Size Group 1, 36 in Bed Size Group 2, and 15 in Bed Size Group 3. [↑](#footnote-ref-11)
11. In 2023, 13 facilities were in Bed Size Group 1, 37 in Bed Size Group 2, and 15 in Bed Size Group 3. [↑](#footnote-ref-12)
12. Unstable platelet rates are a result of decreasing platelet transfusion volume during this time with little change in the number of reactions associated with this product. [↑](#footnote-ref-13)
13. Rates in BSG 1 tend to be unstable over time as a result of lower transfusion volume and fewer ARs reported overall. [↑](#footnote-ref-14)