



DANISH SOCIETY OF CLINICAL IMMUNOLOGY

Haemovigilance

Prevalence and Severity of Transfusions Reactions

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DANISH SOCIETY OF CLINICAL IMMUNOLOGY

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BACKGROUND

The Danish National Haemovigilance Committee administrates The Danish Registry of Transfusions Risks – DART. The National Hemovigilance Committee is a professional committee under the Danish Society for Clinical Immunology. Since 1999, the committee has received and analyzed data for serious adverse events, - reactions, and errors associated with the transfusion of blood components.

DART is a member of International Haemovigilance Network, IHN

The formula for reporting serious adverse events, - reactions, and errors associated with the transfusion of blood components, and the guide to DART reporting are to be found on the Danish Society of Clinical Immunology, [DSKI](#) homepage.

All reports received are systematically validated by the hemovigilance committee, and only those that meet the definitions for the ISBT categorization of transfusion complications are discussed below.

ABBREVIATIONS

AHTR	Acute hemolytic transfusion reaction
AR	Allergic reaction
DART	Danish Registry of Transfusion Risks
DHTR	Delayed hemolytic transfusion reaction
DSKI	Danish Society of Clinical Immunology
FNHTR	Febrile non hemolytic transfusion reaction
HC	Haemovigilance Committee
IBCTp	Incorrect blood component transfused (wrong patient)
IBCTc	Incorrect blood component transfused (wrong (blood)component)
IHN	International Haemovigilance Network
ISBT	International Society of Blood Transfusion
RBC	Red blood cells
TACO	Transfusion-associated circulatory overload
TAD	Transfusion-associated dyspnea

- TRALI Transfusion-related acute lung injury
- TTI Transfusion-transmitted infection
- UCT Unclassifiable Complication of Transfusion

DEFINITIONS

The terms for the blood components RBC, platelets and plasma are defined by the IHN.

Adverse events and reactions is the headline for the following:

An adverse event

An incident

An adverse reaction

The adverse events and reactions are defined and categorized according to ISBTs standards, that is: severity (grade 1 – 4) and imputability (grade 1 – 5).

Sources:

Number of transfused blood components per year, Danish Patient Safety Authority.

Inhabitants per 4. th quarter for the respective year, Statistics Denmark.

2022

In 2022, 19.0 adverse events and reactions per 100,000 transfused blood components were reported to the HC. The number was comparable to the recent years (2021: 15.3; 2020: 23.2; 2019: 15.9; 2018: 9.5/100,000 transfused blood components).

Transfused blood components/100,000 inhabitants in 2022: 42.6. The numbers for the recent years, (2021: 43.4; 2020: 45.0; 2019: 45.3; 2018: 47.4/100,000 inhabitants).

PREVALENCE/INCIDENCE – TRANSFUSIONS REACTIONS

Adverse events and reactions	Number	Number/100,000 transfused components
IBCT (wrong patient)	4	1.6
IBCT (wrong component)	4	1.6
AHTR	3	1.2
DHTR	9	3.5
AR	4	1.6
TRALI	1	0.4
TACO	11	4.3
TAD	2	0.8
TTI	1	0.4

FNTHR	9	3.5
UCT	1	0.4
Total	49	19.0

SEVERITY – TRANSFUSION REACTIONS

Adverse event and reactions	Grade 1 (Non-severe)	Grade 2 (Severe)	Grade 3 (Life-threatening)	Grade 4 (Death)	Total
IBCT (wrong patient)	4	0	0	0	4
IBCT (wrong component)	4	0	0	0	4
AHTR	0	3	0	0	3
DHTR	6	3	0	0	9
AR	0	0	4	0	4
TRALI	0	0	1	0	1
TACO	0	3	8	0	11
TAD	0	1	1	0	2
TTI	0	1	0	0	1
FNHTR	8	1	0	0	9
UCT	0	1	0	0	1
Total	22	13	14	0	49
Ratio/100,000 components	8.7	5.2	5.5	0	19.0

2023

In 2023, 15.0 adverse events and reactions per 100,000 transfused blood components were reported to the HC. This was comparable to the number for the recent years (2022: 19.0; 2021: 15.3; 2020: 23.2; 2019: 15.9/100,000 transfused blood components).

Transfused blood components/100,000 inhabitants in 2023: 40.2. The numbers for the recent years, (2022: 42,6; 2021: 43.4; 2020: 45.0; 2019: 45.3/100,000 inhabitants).

PREVALENCE/INCIDENCE – TRANSFUSIONS REACTIONS

Adverse events and reactions	Number	Number/100,000 transfused components
IBCT (wrong patient)	1	0.4
IBCT (wrong component)	0	0.0
AHTR	3	1.3
DHTR	4	1.7
AR	4	1.7
TRALI	5	2.1
TACO	7	2.9
TAD	1	0.4
TTI	0	0.0
FNTHR	9	3.8
UCT	1	0.4
Total	36	15.0

SEVERITY – TRANSFUSION REACTIONS

Adverse event and reactions	Grade 1 (Non-severe)	Grade 2 (Severe)	Grade 3 (Life-threatening)	Grade 4 (Death)	Total
IBCT (wrong patient)	1	0	0	0	1
IBCT (wrong component)	0	0	0	0	0
AHTR	3	1	0	0	4
DHTR	4	0	0	0	4
AR	0	1	3	0	4
TRALI	0	0	5	0	5
TACO	0	3	4	0	7
TAD	0	1	0	0	1
TTI	0	0	0	0	0
FNHTR	7	2	0	0	9

UCT	0	1	0	0	1
Total	15	9	12	0	36
Ratio/100,000 components	6.3	3.8	5.0	0	15.0

2024

In 2024, 23.8 adverse events and reactions per 100,000 transfused blood components were reported to the HC. The numbers for the recent years were comparable, (2023: 15.0; 2022: 19.0; 2021: 15.3; 2020: 23.2/100,000 transfused blood components).

Transfused blood components/100,000 inhabitants in 2024: 38.5. The numbers for the recent years, (2023: 40.2; 2022: 42,6; 2021: 43.4; 2020: 45.0/100,000 inhabitants).

PREVALENCE/INCIDENCE – TRANSFUSIONS REACTIONS

Adverse events and reactions	Number	Number/100,000 transfused components
IBCT (wrong patient)	2	0.9
IBCT (wrong component)	2	0.9
AHTR	1	0.4
DHTR	4	1.7
AR	6	2.6
TRALI	7	3.0
TACO	11	4.8
TAD	2	0.9
TTI	4	1.7
FNHTR	12	5.2
UCT	4	1.7
Total	55	23.8

SEVERITY – TRANSFUSION REACTIONS

Adverse event and reactions	Grade 1 (Non-severe)	Grade 2 (Severe)	Grade 3 (Life-threatening)	Grade 4 (Death)	Total
IBCT (wrong patient)	2	0	0	0	2
IBCT (wrong component)	2	0	0	0	2
AHTR	1	0	0	0	1
DHTR	4	0	0	0	4
AR	0	2	4	0	6
TRALI	0	2	4	1	7
TACO	0	9	1	1	11
TAD	1	1	0	0	2
TTI	1	1	2	0	4
FNHTR	10	2	0	0	12
UCT	3	1	0	0	4
Total	24	18	11	2	55

Ratio/100,000 components	10.4	7.8	4.8	0.9	23.8
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The transfusion reactions with reported severity grade 4 - one TRALI and one TACO - both had imputability “possible” because of competing/addressable causes for the outcome.

COMMENTS

Over the last decade, the number of issued blood components/100,000 inhabitants has steadily decreased, and efforts to further reduce this figure continue. Though the number of reported transfusion reaction is relatively stable between 15-23/100,000 transfused components.