

Haemovigilance Handbook:

***Requirements for Reporting Serious Adverse
Reactions and Events to the National
Haemovigilance Office***

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FOREWORD

This handbook has been compiled by the National Haemovigilance Office (NHO) to aid hospital based haemovigilance staff in the reporting of serious adverse reactions and events to the NHO. It should assist in compliance with the mandatory requirements for serious adverse reaction and event reporting described in EU Directive 2002/98/EC and 2005/61/EC transposed as SI 360 of 2006 and SI 547 of 2006. In the Hospital transfusion setting, this handbook should be used in conjunction with the ISO 15189 Standard and the Irish Medicines Board / Irish National Accreditations Board document entitled “Minimum Requirements for Blood Bank Compliance with Article 14 (Traceability) and Article 15 (Notification of Serious Adverse Reactions and Events) of EU Directive 2002/98/EC”. This handbook details the investigations which should be performed for reportable reactions / events, and outlines the reporting formats which should be followed.

Throughout the handbook, we have endeavoured to categorise reportable reactions and events, as (a) mandatory as described by the above legislation or (b) non mandatory i.e. those that the NHO have historically captured which are outside the scope of legislation. Mandatory reactions and events will be reported onto the IMB who subsequently report to the European Commission, while the data on non mandatory events will be collated and analysed by the NHO. This data is compiled and forms the basis of the NHO Annual Report. We feel that such information has been of great benefit to stakeholders involved in the transfusion of blood and blood components and hospital based haemovigilance staff for education purposes and for improving the safety of the blood transfusion chain.

Since 1999, the NHO has collated data relating to serious adverse reactions and events associated with blood and blood components and SD Plasma, as well as serious adverse events associated with some blood-derived medicinal products as specified in section 3.2. While this remit is broader than that mandated by EU and National legislation, the NHO will to continue to capture these adverse reactions and events.

We hope that this handbook will prove useful and as always we welcome your comments.

Dr Emer Lawlor
Medical Director
NHO

GLOSSARY OF TERMS

AA:	Acute Anaphylactoid or Anaphylactic Transfusion Reaction
AHOSTR:	Acute Haemolytic or Other Severe Transfusion Reactions
AHTR:	Acute Haemolytic Transfusion Reactions
BNP:	Brain Natriuretic Peptide
DAT:	Direct Antiglobulin Test
DCT:	Direct Coombs Test
DHTR:	Delayed Haemolytic Transfusion Reaction
FNHTR:	Febrile Non Haemolytic Transfusion Reaction
Hb	Haemoglobin
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HDU	High Dependency Unit
HIV	Human Immune Deficiency Virus
HLA	Human Leucocyte Antigen
IBCT	Incorrect Blood Component/Product Transfused
IBTS:	Irish Blood Transfusion Service
IMB:	Irish Medicines Board
ISBT:	International Society of Blood Transfusion
LDH:	Lactic Dehydrogenase
NHO:	National Haemovigilance Office
PUCT:	Previously unreported (undescribed) complications of transfusion.
SAE:	Serious Adverse Event
SAR:	Serious Adverse Reaction
SD Plasma	Solvent Detergent Plasma
SHOT	Serious Hazards of Transfusion
sTTI	Suspected Transfusion Transmitted Infection.
TACO	Transfusion Associated Circulatory Overload
TA-GVHD	Transfusion-associated graft-versus-host disease
TRALI	Transfusion Related Acute Lung Injury
TTP	Thrombotic Thrombocytopenic Purpura
Rh D:	Rhesus D

1. BACKGROUND

1.1 Legal Framework

The European Communities (Quality and Safety of Human Blood and Blood Components) Regulations 2005 Statutory Instrument (SI) No. 360 of 2005 became effective for the purposes of regulation on 8 November 2005.

These regulations transpose the requirements of the following EU legislation into national law:

Directive 2002/98/EC – setting standards of quality and safety for the collection, testing, processing, storage and distribution of human blood and blood components and amending Directive 2001/83/EC.

Directive 2004/33/EC – implementing Directive 2002/98/EC as regards certain technical requirements for blood and blood components.

Two further technical Directives were adopted by the European Commission on 30 September 2005.

Directive 2005/61/EC – implementing Directive 2002/98/EC as regards traceability requirements and notification of serious adverse reactions and events, transposed into national law by S.I. No.547 of 2006,

The European Communities (Human Blood and Blood Components Traceability Requirements and Notification of Serious Adverse Reactions and Events) Regulations

Directive 2005/62/EC - implementing Directive 2002/98/EC as regards Community standards and specifications relating to a quality system for blood establishments, transposed into national law by S.I. No. 562 of 2006,

The European Communities (Quality System for Blood Establishments) Regulations.

1.2 Scope of Legislation

The above regulations apply to **blood establishments** and to **hospital blood banks** as defined in Directive 2002/98/EC.

A '**blood establishment**' is any structure or body involved in any aspect of the collection, testing, processing, storage and distribution of blood and blood components.

A '**hospital blood bank**' is a hospital unit which stores and distributes and may perform compatibility tests on blood and blood components exclusively for use within hospital facilities.

1.3 Roles of the Parties Responsible for Haemovigilance

1.3.1 The Role of the IBTS

1.3.2 The Role of the National Haemovigilance Office Statutory role of NHO

Internal Remit of the NHO

1.3.3 The Role of the hospital-based Haemovigilance Officer in reporting SARs and SAEs

- The Haemovigilance Officer should review all suspected reaction / event reports.
- The Haemovigilance Officer should communicate with clinical and laboratory staff and review the patients clinical notes to assess all suspected reactions and events.
- The Haemovigilance Officer should ensure that appropriate investigation forms are completed (as per local hospital policies) and should present the results of the investigation along with a history for review by the Consultant Haematologist / Physician prior to the confirmation of the reaction / event.
- In the case of a Serious Adverse Reaction, it is important to exclude any underlying illness or concomitant medication, which may have contributed to the reaction.
- In the case of a Serious Adverse Event, the Haemovigilance Officer should contact and work with appropriate staff to review, investigate and where appropriate to undertake a root cause analysis of the error. Follow-up action, whether corrective or preventative should be agreed following review with the Consultant Haematologist.
- A summary report on all serious adverse reactions and events investigated along with accompanying blood transfusion documentation should be returned to the patient's chart. The Haemovigilance Officer should retain a copy of this report in the hospital based haemovigilance office.
- The Haemovigilance Officer should submit reports to the NHO, both mandatory (as required by the legislation) and non-mandatory which meet the reporting criteria as defined in this handbook.

1.4 The Irish Medicines Board

1.4.1 The Role of the IMB in relation to the Reporting of Serious Adverse Reactions (SARs) and Serious Adverse Events (SAEs)

1.4.2 The role of the IMB in relation to Blood Establishments

1.4.3 The role of the IMB in relation to Hospital Blood Banks

1.4.4 The role of the IMB in relation to Medicinal Products

2. DEFINITIONS OF THE TERMS SERIOUS ADVERSE REACTION AND SERIOUS ADVERSE EVENT

2.1 Serious Adverse Reaction (SAR):

An unintended response in a donor or in a patient associated with the collection or transfusion of blood or blood components that is:

- Fatal,
- Life-threatening,
- Disabling,
- Incapacitating,
- Or
- Results in, or prolongs, hospitalisation or morbidity.

2.2 Serious Adverse Event (SAE):

Any untoward occurrence associated with the collection, testing, processing, storage and distribution of blood and blood components that might:

- Lead to death,
- Be life-threatening,
- Causes disabling or incapacitating conditions for patients,
- Results in, or prolongs, hospitalisation or morbidity.

3. REPORTING PROTOCOLS

This section outlines the reporting protocols to be followed in relation to Blood and Blood Components, and Blood Derived Medicinal Products including SD Plasma.

3.1 Reporting SARs and SAEs associated with Blood and Blood Components

This section is designed to aid relevant hospital based staff when submitting SAR and SAE reports to the National Haemovigilance Office (NHO).

3.1.1 Initial Report Form (IF)

Events which fulfil the criteria for a SAR / SAE should be submitted to the NHO on an *Initial Report Form (IF)* which can be obtained from the NHO.

- It is essential that **all sections** of the *Initial Report Form* are completed fully. If *Not Applicable*, write *N/A* in the relevant section.
- Omissions in form filling causes delay and information may be misinterpreted.
- *Initial Report Forms (IF)* should be completed and returned to the NHO as soon as possible after the occurrence of a reaction or event.
- If there are any difficulties encountered while completing this form, please contact the NHO for assistance.

Following receipt of the *Initial Report Form (IF)* the NHO will review the information received and if appropriate supply the reporter with a *Detailed Form (DF)* which specifies additional information required by the NHO.

3.1.2 Detailed Form (DF)

The *Detailed Form (DF)* will relate to the particular reaction or event that has been reported. It should be completed and returned to the NHO.

- It is essential that all relevant sections are completed fully. Pay particular attention to '**Required Information for Inclusion in Reports to the NHO**' sections for each category as highlighted throughout this handbook.
- In the case of adverse events it is often useful to attach a summary of the event to aid interpretation of the form.
- All *Detailed Forms* should be returned as soon as possible but no later than **six weeks** following receipt from the NHO. Where a *Detailed Form* is not received within the time period specified the NHO will contact the reporting hospital. Failure to return forms relating to mandatory SARs and SAEs will be notified to the IMB.
- When forms are processed, they are reviewed at an internal case meeting. Following this, NHO staff will either request further information or send a letter informing the reporting hospital/Haemovigilance Officer (HVO) of its consideration and where applicable of any change of category for the Annual Notification Form.
- In cases, where there is a delay in closing the investigation e.g. suspected TRALI or TTI, a letter stating that the investigation is ongoing will be sent to the reporting hospital / HVO.

3.1.3 Points to Note in Relation to Reporting

- Incidents which are received on an *Initial Report Form (IF)* or *Detailed Form (DF)* which do not fit into the criteria for a serious adverse reaction / event, after investigation, will be classified as ‘*Did Not Progress*’ (DNP). A letter informing the reporting hospital / HVO of this is sent by the NHO.
- Queries relating to incidents which do not fulfil the criteria for a serious adverse reaction or event and are not accompanied by an NHO *Initial Report Form (IF)* will be filed as ‘Queries’ by the NHO. However, if a subsequent *Initial Report Form (IF)* is received, the case will be treated as an initial report and managed appropriately.
- Reports relating to *serious adverse reactions* and *serious adverse events* which are mandatory under legislation and which have occurred after the introduction of mandatory reporting in November 2005 will be accepted at any time by the NHO and included in the figures for the year of reporting. However, please note that where possible, *Initial Report Forms (IFs)* should be completed and sent to the NHO as soon as possible after the reaction or event has occurred.
- Reports relating to serious adverse events which are not mandatory under legislation and which are not associated with serious adverse reactions will still be collected by the NHO and should be submitted within one year of occurrence because they may be associated with audit findings and involve multiple similar reports which may affect yearly reporting trends. These events include for example findings of inappropriate transfusion due to clinical error, and it is anticipated that such incidents may also be identified and recorded through the quality management system. Please refer to the section on Serious Adverse Events in this Handbook for further guidance.
- Initial reports of SAR, SAE/ IBCT occurring during the previous reporting period (i.e. to end of year) will be accepted if received prior to 14th January, for inclusion in the annual report figures for the preceding year. Initial reports received after 14th January will be included in the annual report figures for the current year.

3.2 Reporting SARs and SAEs associated with Blood Derived Medicinal Products

The NHO collects SAEs associated with all blood derived medicinal products e.g. Solvent Detergent (SD) Plasma, Factor Concentrates and Anti D.

3.2.1 Reporting SARs and SAEs associated with SD Plasma

While reporting of SARs involving SD Plasma is covered by Pharmaceuticals Legislation and therefore does not fall within the Blood and Blood Components legislation, the NHO will continue to collect and report on any such cases, along with SAEs involving SD Plasma.

- *Serious adverse reactions* associated with SD plasma should be reported in the usual manner to the NHO on an *Initial Report Form (IF)*. The Quality Assurance Department of the IBTS forwards a report to the manufacturer. In addition, SARs associated with the use of SD Plasma should be reported to the IMB by a healthcare professional via the spontaneous reporting system (the yellow card system). (See <http://www.imb.ie> Pharmacovigilance Section)
- *Serious adverse events* associated with SD plasma should be reported to the NHO on an *Initial Report Form (IF)* and are captured as Incorrect Blood Component Transfused (IBCT). They are a reflection of the safety of the overall transfusion

process. These cases do not require reporting to the Pharmacovigilance Section of the IMB.

- Suspected quality defects e.g. pinhole perforations of the bag suspected to be caused by the manufacturing process should be reported to the Quality Department of the IBTS and to Quality Defect Reporting system at the IMB (See <http://www.imb.ie> Compliance Section/Quality Defect Reporting). The Quality Department in the IBTS will inform the manufacturer.

3.2.2 Reporting SARs and SAEs associated with Anti-D and Factor Concentrates

Reporting of Serious Adverse Reactions involving Blood Derived Medicinal Products is covered by Pharmaceuticals legislation and therefore does not fall within the Blood and Blood Components Legislation. However, the NHO will continue to collect and report SAEs associated with blood derived medicinal products- including Anti D and Factor Concentrates..

- *Suspected adverse reactions* associated with Blood Derived Medicinal Products should be reported directly to IMB via the spontaneous adverse reaction reporting system (the yellow card system, see <http://www.imb.ie> Haemovigilance Section).
- *Serious adverse events* associated with blood-derived medicinal products, should be reported to the NHO on an *Initial Report Form*.
- Suspected quality defects suspected to be caused by the manufacturing process should be reported to the Quality Department of the IBTS and to Quality Defect Reporting system at the IMB (See <http://www.imb.ie> Compliance Section/Quality Defect Reporting).

3.3 Reporting SARs and SAEs that occur in Paediatric Patients

This category encompasses both SARs and SAEs for patients less than 18 years of age. The criteria for reporting and the reporting protocols to be followed as defined throughout this handbook apply to all reactions and events occurring in paediatric patients.

4. SERIOUS ADVERSE REACTIONS

4.1 Introduction

This section clarifies the reporting requirements for Hospitals with regards to serious adverse reactions (SARs). With the introduction of European and National legislation on Blood and Blood Components, reporting of SARs, which are attributable to the quality and safety of the blood component, is now mandatory. Commission Directive 2005/61/EC and SI 547 of 2006 outline the reactions which are to be reported.

4.2 Definition

A serious adverse reaction is defined as an unintended response in a donor or in a patient associated with the collection or transfusion of blood or blood components that is:

- Fatal,
- Life-threatening,
- Disabling,
- Incapacitating,
- Or
- Results in, or prolongs, hospitalisation or morbidity.

4.3 SARs to be reported to the NHO

Table 4.1 outlines the SARs which should be reported as specified in Commission Directive 2005/61/EC. Throughout this section, the terminology currently used by the NHO will be clarified in relation to the terms used within Commission Directive 2005/61/EC under the sub sections titled 'EU Notification Category'.

Table 4.1 EU Notification categories

EU Notification Categories		Former National Haemovigilance Office Category
Immunological haemolysis	Due to ABO incompatibility	Acute Haemolytic and Other Severe Transfusion Reaction (ABO Incompatible)
	Due to other alloantibody	Acute Haemolytic and Other Severe Transfusion Reaction or Delayed Haemolytic Transfusion Reaction (Other Antigen Incompatible)
Non- Immunological haemolysis		Acute Haemolytic and Other Severe Transfusion Reaction
Transfusion transmitted bacterial infection		Suspected Transfusion Transmitted Infection - Bacterial Contamination
Anaphylaxis/hypersensitivity		Severe Acute Anaphylactoid or Anaphylactic Transfusion Reaction
Transfusion related acute lung injury		Transfusion Related Acute Lung Injury
Transfusion transmitted viral infection HBV, HCV, HIV-1/2, Other		Suspected Transfusion Transmitted Infection HBV, HCV, HIV-1/2 Other
Transfusion transmitted parasitical infection Malaria, Other		Suspected Transfusion Transmitted Infection Malaria, Other

EU Notification Categories	Former National Haemovigilance Office Category
Post-transfusion Purpura	Post Transfusion Purpura
Graft versus host disease	Graft Versus Host Disease
Other serious reactions Febrile Non-Haemolytic Transfusion Reaction, Previously Undescribed /Unreported Complications of Transfusion, Unclassified SAR. Transfusion Associated Circulatory Overload,	Other Serious Reaction Acute Haemolytic and Other Transfusion Reaction Transfusion Associated Circulatory Overload Other

4.4 Imputability of SARs

‘Imputability’ means the likelihood that a SAR in a recipient can be attributed to the blood or blood component transfused or that a SAR in a donor can be attributed to the donation process. (Commission Directive 2005/61/EC).

Table 4.2 outlines the levels of imputability. While imputability may be determined at hospital level at the time of investigation of the reaction, these will be reviewed by the Medical Director of the NHO. The reporting hospital will be notified of any change of assessment in imputability.

Table 4.2 Imputability level

NA	Not assessable	When there is insufficient data for imputability assessment
0	Excluded	When there is conclusive evidence beyond reasonable doubt for attributing the adverse reaction to alternative causes
	Unlikely	When the evidence is clearly in favour of attributing the adverse reaction to causes other than the blood or blood components
1	Possible	When the evidence is indeterminate for attributing adverse reaction either to the blood or blood component or to alternative causes.
2	Likely, probable	When the evidence is clearly in favour of attributing the adverse reaction to the blood or blood component.
3	Certain	When there is conclusive evidence beyond reasonable doubt for attributing the adverse reaction to the blood or blood component

4.5 Clinical Outcome

The National Haemovigilance Office and the Irish Medicines Board have developed a definition of clinical outcome, and an explanation for the classification for the categories laid out in the Directive.

Clinical Outcome refers to the effect of the precipitating SAR on the patient's clinical condition.

Table 4.3 Clinical Outcome

Classification	Explanation
Complete recovery	Patient develops signs and/or symptoms which resolve spontaneously without treatment.
Minor Sequelae	Patient develops signs and/or symptoms that resolve following symptomatic treatment, e.g. mild hypersensitivity effects responsive to antihistamines.
Serious Sequelae	Patient develops signs and/or symptoms which are life-threatening or are associated with significant persistent effects requiring ongoing treatment and intervention, are permanently disabling or prolong hospitalisation.
Death	Definitely related to transfusion Probably related to transfusion Possibly related to transfusion Unknown relationship to transfusion Not assessable

4.6 Acute Transfusion Reactions

Acute Transfusion Reactions can occur up to twenty four hours after transfusion and include:

- Acute Haemolytic Transfusion Reactions – symptoms occur within 24 hours,
- Febrile Non-haemolytic Transfusion Reactions– symptoms occur within 4 hours,
- Acute allergic and Anaphylactic Transfusion Reactions– symptoms occur within 4 hours.

Each of the above reactions will be further defined in the following sections 4.6.1, 4.6.2 and 4.6.3

4.6.1 Acute Haemolytic Transfusion Reactions (AHTR)

EU Notification Category:

The term AHTR now incorporates the following EU categories, which are now mandatory for reporting.

- Immunological haemolysis due to ABO incompatibility
- Immunological haemolysis due to other alloantibody - Acute
- Non –immunological haemolysis.

Reactions within this category were formerly reported to the NHO as Acute Haemolytic and Other Severe Acute Transfusion Reactions (AHOSTR).

Definition

AHTR is defined as a reaction occurring within 24 hours of a transfusion where clinical and/or laboratory features of haemolysis are present (International Society of Blood Transfusion Working Party, Capetown, 2006). This is a working definition, which has yet to be formally adopted. Acute haemolysis may be caused by ABO incompatibility, other antigen incompatibility e.g. Rh D, Kell or to non-immunological factors such as hypertonic solutions or medicinal products mixed with the blood component.

Reporting AHTR

Reporting of cases of *haemolysis* which are considered *likely probably or certainly associated with transfusion* (imputability level 2/3) is now a mandatory requirement.

Clinical Signs & Symptoms and Laboratory Findings

A differential diagnosis of AHTR should be considered where a patient exhibits signs and symptoms such as fever, chills/rigors, nausea/vomiting, dyspnoea, hypotension, tachycardia, flank or back pain, red or dark urine, following transfusion.

Laboratory results consistent with haemolysis are:

- Drop or no increase in Hb level,
- Raised LDH after 24-48hrs - 1.5x baseline value or 1.5x upper limit of normal,
- Decreased haptoglobins,
- Hyperbilirubinemia -unconjugated bilirubin 1.5 x baseline value or 1.5x upper limit of normal,
- Haemoglobinemia and haemoglobinuria,
- Blood group serology usually shows abnormal results.

Investigations for AHTR

- Clerical check; recheck the identity of the patient and the implicated unit(s),
- Recheck the patients blood group,
- ABO type and re-crossmatch the units using pre and post transfusion samples,
- Look for evidence of haemolysis,
 - Direct Antiglobin /Coombs Test (DAT /DCT), Bilirubin, LDH, Urinary Urobilinogen, Haptoglobins,
 - Where a clinically significant red cell antibody is detected on the post transfusion sample which was not detected on the original pre-transfusion

sample, pre and post transfusion samples should be sent to the reference centre for investigation as it suggests that the original testing technique may have been insufficiently sensitive to detect the antibody,

- Where clinical symptoms suggest the possibility of bacterial contamination the following microbiological investigations should be carried out;
 - Blood cultures on patient,
 - When possible, culture the pack contents and the pack segment line. The administration set may be cultured, as this is helpful to evaluate the possibility of contamination. It is unnecessary to culture the outside of the blood bag.
 - If clinically indicated other cultures may be necessary to outrule other causes.

Required Information on AHTR for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to AHTR. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.4: AHTR

	Location	Question Number
Age	Initial Form	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	IF	13
Evidence of haemolysis	Detailed Form	6, 15, 16,
Antibodies detected	DF	17,18
Evidence of bacterial contamination	DF	20, 21
Treatment	DF	33, 34
Clinical outcome and timeframe of recovery	DF	35

4.6.2 Febrile Non Haemolytic Transfusion Reaction (FNHTR)

EU Notification Category:

FNHTR is incorporated in the following EU category: Other - Febrile Non Haemolytic Transfusion Reactions.

These reactions were formerly reported as Acute Haemolytic and Other Severe Acute Transfusion Reactions (AHOSTR) to the NHO.

Definition

FNHTR is defined as a rise in temperature of $>1.5^{\circ}\text{C}$, above the patient's (pre-transfusion) baseline value together with rigors or chills, occurring during or within four hours following transfusion without any other cause such as haemolytic transfusion reaction, bacterial contamination or the patient's primary diagnosis and where symptoms lead to increased morbidity as detailed below.

FNHTR may present as chills or rigors without fever (ISBT, 2006).

Reporting FNHTR (Refer to Appendix 1)

- Reactions where the temperature rise is less than 1.5°C and are associated with chills and rigors and other symptoms will be reviewed by the NHO. .
- Where symptoms of FNHTR are considered likely-probable or certainly associated with transfusion, and lead to increased morbidity or prolonged hospitalisation for patients, these reactions should be reported to the NHO (including incidents where day ward patients require admission overnight).
- Cases where the symptoms are considered due to the patient's primary diagnosis and not due to the transfusion should not be reported.
- An isolated fever which has been fully investigated but has not revealed evidence of haemolysis or bacterial contamination should not be reported to NHO.

Clinical Signs & Symptoms and Laboratory Findings

A differential diagnosis of FNHTR should be considered where the patient has one or more of the following symptoms; fever, chills and rigors. These reactions may be accompanied by other symptoms such as headache, nausea, hypertension (defined as a systolic BP rise of $>30\text{mmHg}$), hypotension (defined as a systolic BP fall of $>30\text{ mmHg}$) (International Society of Blood Transfusion Working Party, Capetown, 2006).

Laboratory Investigations for FNHTR

- Clerical check; recheck the identity of the patient and the implicated unit(s).
- Recheck the patient's blood group,
- Laboratory Testing is required to exclude haemolysis due to transfusion of incompatible red cells or other causes: The following should be carried out:
 - Direct Antiglobulin /Coombs Test (DAT /DCT), Bilirubin, LDH, Urinary Urobilinogen, Haptoglobins,
- ABO type and re-crossmatch the units using pre and post transfusion samples.

- Where clinical symptoms suggest the possibility of bacterial contamination the following microbiological investigations should be carried out:
 - Blood cultures on patient;
 - Culture pack contents, administration set, and pack segment line. It is unnecessary to culture the outside of the blood bag.

Required Information on FNHTR for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to FNHTR. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.5: FNHTR

	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	IF	13
Evidence of haemolysis	DF	6, 15, 16,
Antibodies detected	DF	17,18
Evidence of bacterial contamination	DF	20, 21
Treatment	DF	33, 34
Clinical outcome and timeframe of recovery	DF	35

4.6.3 Acute Allergic and Anaphylactic Transfusion Reaction (AA)

EU Notification Category:

AA is incorporated in the following EU category: Anaphylaxis / hypersensitivity.

Reactions within this category were formerly reported as Severe Acute Anaphylactoid or Anaphylactic Transfusion Reactions.

Definition

Anaphylaxis/ Hypersensitivity occurs when a patient who is pre-sensitised to an allergen, is re-exposed to the particular antigen. A few patients with severe IgA deficiency develop antibodies to IgA. Some of these patients may have severe anaphylaxis if exposed to IgA through transfusion (McClelland, 2001)

Reporting AA Reactions

Allergic type reactions (except for pruritus, mild rashes and urticaria) which are considered likely probably or certainly associated with transfusion should be submitted to the NHO.

Clinical Signs & Symptoms and Laboratory Findings

Allergic and anaphylactic transfusion reactions span a range of symptoms of varying severity.

- The symptoms encompass mild allergic-type reactions such as urticaria / pruritis associated with or without gastrointestinal discomfort, to major reactions with a stridor, wheeze, angioedema, bronchospasm and hypotension occurring during or within 4 hours of transfusion (ISBT, 2006).
- An anaphylactic reaction or anaphylaxis is characterized by severe hypotension and collapse which may be accompanied by laryngeal oedema and respiratory obstruction (Popovsky, 2001).

Investigations for AA

- Frequently, investigations carried out do not elucidate a cause. In some cases the reactions are related to drug/food allergy and unrelated to transfusion.
- IgA levels should be checked in patients with a severe allergic reaction or with a history of repeated allergic reactions to exclude IgA deficiency with anti IgA antibodies (McClelland, 2001)
- Tryptase levels if available prior to the transfusion and within 2-3 hours of the reaction taking place, may help to confirm diagnosis.

Required Information on AA for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to AA. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.6: AA

	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	IF	13
<i>Investigations; IgA</i>	DF	6
Treatment	DF	33, 34
Clinical outcome and timeframe of recovery	DF	35

4.7 Delayed Haemolytic Transfusion Reactions (DHTR)

EU Notification Category

DHTR is incorporated within the following EU category: Immunological haemolysis due to other alloantibody – Delayed.

Definition

Delayed haemolytic transfusion reactions are defined as evidence of clinical or laboratory features of haemolysis occurring more than 24 hours and up to 28 days following the transfusion of a blood component (ISBT Working Party, Capetown, 2006) and associated with serological evidence of antibodies.

Reporting DHTR

While detection of red cell antibodies within 28 days should be reported to the NHO, those detected over a month after transfusion without evidence of clinical or laboratory evidence of haemolysis are termed delayed serological reactions and are not reportable to the NHO.

For the purpose of analysis, the NHO grades such reactions by severity using the Serious Hazards of Transfusion criteria (SHOT, 1999). These are:

- Group 1:** Asymptomatic with ‘antibody only’ detected, with or without a positive direct antiglobulin test (DAT).
- Group 2:** Demonstrates evidence of haemolysis measured by falling haemoglobin levels and a positive DAT.
- Group 3:** Evidence of a falling Haemoglobin level associated with jaundice, with or without a positive DAT level.
- Group 4:** Graded as for Group 3, but with associated renal impairment

Reports of DHTR Groups 2, 3, and 4 are accepted by the NHO. DHTR, Group 1 (no evidence of haemolysis) is not accepted by National Haemovigilance Office. It is recommended that a record of all Group 1, DHTR is maintained at local level.

Clinical Symptoms and Laboratory Findings

Clinical signs of delayed haemolysis can be similar to those described for acute haemolytic transfusion reactions but are usually less severe and the diagnosis may be missed if not suspected. Clinical symptoms may be absent. Please see section on AHTR for similar Clinical and Laboratory Signs and Symptoms.

Investigations for DHTR

- Investigations for haemolysis to include:
 - Hb,
 - LDH,
 - Bilirubin,
 - Haptoglobin
- Serological investigations e.g. DAT, detection of red cell antibodies.

Required Information on DHTR for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to DHTR. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.7: DHTR

			Location	Question Number
Age			IF	1
Gender			IF	1
Reporting establishment (hospital)			IF	1
Component / product			IF	2
Unit number			IF	2
Date reaction occurred			IF	3
Imputability			IF	SAR
Patients primary diagnosis			IF	5
Interval between commencing transfusion and onset of symptoms			IF	12
Symptoms			IF	13
Investigations	HB	Pre-transfusion	IF	9
		Post-transfusion	DF	6
	Bilirubin	Post – transfusion	DF	6
	LFT	Post transfusion	DF	6
	DAT	Post transfusion	DF	6
Antibodies pre transfusion			DF	11, 12,13
Antibodies post transfusion			DF	17, 18, 19
Renal impairment -Other			DF	22
Clinical outcome and timeframe of recovery			DF	35

4.8 Transfusion Associated Circulatory Overload (TACO)

EU Notification Category

TACO is incorporated in the following EU category: Other – TACO

This category has remained unchanged from previous NHO category.

Definition

Transfusion Associated Circulatory Overload (TACO) is characterised by the development of acute pulmonary oedema secondary to congestive cardiac failure as a result of transfusion (Popovsky 2001).

Reporting TACO

TACO considered likely, probably or certainly associated with a transfusion should be reported to the NHO.

Clinical Signs & Symptoms and Laboratory Findings

The signs and symptoms of TACO may include any or all of the following: dyspnoea, orthopnoea, cyanosis, tachycardia, hypertension and pulmonary and/or peripheral oedema. There may be evidence of positive fluid balance. Chest auscultation usually reveals crepitations. Chest x ray shows evidence of pulmonary oedema. The heart size may be normal or enlarged and there may be pleural effusions (Ware and Matthay, 2005).

Investigations for TACO

- Careful clinical assessment of cardiovascular status.
- Assessment of fluid balance and response to diuretics.
- Pre and post transfusion Brain Natriuretic Peptide(BNP) and/or NT- pro BNP, may be of help when differentiating TACO from other causes of respiratory distress i.e. TRALI. The post–transfusion sample should wherever possible be taken within 2 hours of the suspected reaction (Zhou et al, 2005).
- Troponin levels may be helpful in differentiating TACO from acute myocardial ischemia.
- Chest x-ray.

Required Information on TACO for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to TACO. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.8: TACO

Essential information		Location	Question Number
Age		IF	1
Gender		IF	1
Reporting establishment (hospital)		IF	1
Component / product		IF	2
Unit number		IF	2
Date reaction occurred		IF	3
Imputability		IF	SAR
Patients primary diagnosis		IF	5
Interval between commencing transfusion and onset of symptoms		IF	12
Symptoms		IF	13
<i>Investigations:</i> Chest X ray		DF	6
Auscultation of chest		DF	6
BNP		DF	6
Weight of patient		DF	27
Pre-existing cardiac condition		DF	28
Pre-existing respiratory condition		DF	28
Pre-existing Renal failure		DF	28
Fluid Balance		DF	29
Diuretic	Pre:	DF	30
Diuretic	During:	DF	30
Diuretic	Post:	DF	30
Clinical outcome and timeframe of recovery		DF	35

4.9 Transfusion Related Acute Lung Injury (TRALI)

EU Notification Category

TRALI is an EU Notification category.

This category has remained unchanged from previous NHO category.

Definition

Transfusion-related acute lung injury (TRALI) is an acute lung injury unrelated to circulatory overload occurring within six hours of a transfusion (Toy et al 2005). TRALI is one of the leading causes of transfusion related mortality.

The Canadian Consensus Conference (Kleinman et al, 2004) proposed a new definition of TRALI and divided cases into TRALI and possible TRALI. This definition has been adopted by the National Haemovigilance Office (as detailed below in the clinical signs and symptoms).

Reporting TRALI

Where TRALI is considered possible a report should be submitted to the NHO.

Clinical Signs & Symptoms and Laboratory Findings

TRALI is characterised by the following:

- Acute onset of symptoms,
- Hypoxemia $SpO_2 < 90\%$ on room air or other evidence of hypoxemia,
- Bilateral infiltrates on frontal chest X-ray,
- No evidence of circulatory overload,
- No pre-existing acute lung injury (ALI) before, during, or within six hours of transfusion.
- No alternative risk factors for Acute Lung Injury present Table 4.8.

Possible TRALI is characterised by the following:

- ALI as described above
- Presence of alternative risk factors for Acute Lung Injury Table 4.8.

Table 4.9: Risk Factors for Acute Lung Injury (ALI)

Direct Lung Injury	Indirect Lung Injury
Aspiration	Severe sepsis
Pneumonia	Shock
Toxic inhalation	Multiple trauma
Lung contusion	Burn injury
Near drowning	Acute pancreatitis
	Cardiopulmonary bypass
	Drug Overdose

(Kleinman et al, 2004)

- The incidence of ALI varies considerably among these conditions and may be as high as 40% for intensive care unit related cases of septic shock and aspiration or as low as 2% for cases of cardiopulmonary bypass and intensive care unit related drug overdose. Symptoms of fever or chills or hypotension which are present in some cases are not sufficiently specific to be included in the definition of TRALI or possible TRALI. Differentiation of TRALI from TACO may sometimes be difficult (Gajic et al 2006).

Investigations for TRALI (Hospital Based)

- Outrule circulatory overload,
- Assess response to diuretics,
- Frontal Chest x ray,
- Where available, pre and post transfusion samples for BNP and/or NT- pro BNP levels to outrule TACO. The post-transfusion sample should, wherever possible be taken within 2 hours of the suspected reaction (Zhou et al, 2005).
- Samples from the patient for HLA typing and antibody testing should be sent to the IBTS HLA laboratory

Required Information on TRALI for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to TRALI. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.10: TRALI

Essential Information	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	IF	13
<i>Investigations:</i> Chest X ray	DF	6
O2 Saturations	IF	13
B Naturetic Peptide (BNP)	DF	6
Auscultation of chest	DF	6
Fluid balance	DF	29
Other symptoms supporting diagnosis of TRALI	DF	31
Treatment	DF	33, 34
Clinical outcome and timeframe of recovery	DF	35

4.10 Suspected Transfusion Transmitted Infection (STTI)

This section will deal with **viral, parasitic and bacterial** infections.

EU Notification Category

These infections are incorporated in the following EU categories:

Table 4.11 EU notification categories for STTI

EU Notification Category	Previous NHO Category
Transfusion Transmitted Viral Infection (HBV, HCV, HIV-1/2, Other)	Post Transfusion Viral Infection (STTI)
Transfusion Transmitted Parasitical Infection (Malaria, Other)	Post Transfusion Parasitic Infection (STTI)
Transfusion Transmitted Bacterial Infection	Bacterial Contamination (STTI)

Definition

A post transfusion infection is confirmed as transfusion-transmitted once investigations are complete and the following criteria are fulfilled (SHOT, 1999).

- The recipient shows evidence of infection following the transfusion, with no evidence of infection prior to the transfusion

And

- A donor, who had evidence of the same transmissible infection, donated at least one component received by the infected recipient

Or

- At least one component received by the infected recipient was shown to have been contaminated with the same infectious agent.

4.10.1 Transfusion Transmitted Viral Infection

Reporting Transfusion Transmitted Viral Infections

The NHO collects and investigates reports on the following:

- All suspected transfusion-transmitted viral infections relating to blood components which have been transfused after the introduction of mandatory testing for that virus i.e. HIV 1 + 2 (October 1985), HCV (October 1991), HBV (June 1973), HTLV I&II (November 1996).
- Viral infections which not covered by mandatory testing, e.g. Hepatitis A virus, CMV and Parvovirus, but which are suspected to be associated with a blood transfusion.
- Isolated findings of hepatitis B core IgG antibody and/or e antibody and/or surface antibody in a transfusion recipient who has had no clinical or biochemical evidence of hepatitis within 6 months of transfusion, and where there is no prior patient sample, and where the donations have been core antibody tested (since January 2002), will not be further investigated by the National Haemovigilance Office.
- Where the donor has not been tested for core antibody (e.g. donation prior to January 2002), review of donor records will be undertaken and a decision to undertake any active donor investigation e.g. donor recall will depend on evaluation of the clinical circumstances.

Investigations for Suspected Transfusion Transmitted Viral Infection (Patient)

Reports of possible viral transfusion infection should be based on confirmed positive results (e.g. HCV EIA +RIBA or EIA +PCR), as screening tests may give false positive results.

Previous archived samples of patients should be identified if possible as they may be valuable in pinpointing the timing of infection and out-ruling transfusion as a source of the infection.

Investigations for Suspected Transfusion Transmitted Viral Infection (Donor)

Donor investigations are carried out by the IBTS. Investigation of markers of infection in an implicated donation, or in subsequent samples from the donors of implicated donations, can confirm transfusion as the probable cause of infection, or identify the need to investigate other possible sources. Such investigations may involve testing of considerable numbers of donors and may take months to complete.

Required Information on Suspected Transfusion Transmitted Viral Infections for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to Suspected Transfusion Transmitted Viral Infection. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.12 Suspected Transfusion Transmitted Viral Infection

Essential Information	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Symptoms	IF	13
Year of implicated transfusion	DF	2
Year of confirmation of infection	DF	3
<i>Viral Markers; HIV</i>	DF	4
<i>HBV</i>	DF	4
<i>HCV</i>	DF	4
<i>Other</i>	DF	4
Patient risk factors	DF	8
Clinical Outcome	DF	10
Donor investigations	DF	11 (Completed in IBTS)

4.10.2 Transfusion Transmitted Parasitic Infection

Reporting Transfusion Transmitted Parasitic Infection

The NHO collects and investigates reports on the following:

- All suspected transfusion transmitted parasitic infections, which have occurred since 1st October, 1999 e.g. malaria, toxoplasmosis.

Investigations for Suspected Transfusion Transmitted Parasitic Infection (Patient)

Investigations to be undertaken are dependent on the type of parasite and will be decided on following discussions between the IBTS and the hospital.

Investigations for Suspected Transfusion Transmitted Parasitic Infection (Donor)

Reports are passed on to the QA Department of IBTS for investigation and follow up as appropriate.

Required Information on Suspected Transfusion Transmitted Parasitic Infection for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to Suspected Transfusion Transmitted Parasitic Infection. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.13 Suspected Transfusion Transmitted Parasitic Infection

Essential Information	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Symptoms	IF	13
Symptoms	DF	4
Year of implicated transfusion	DF	2
Year of confirmation of infection	DF	3
<i>Investigations conducted</i>	DF	5
Patient risk factors	DF	7
Clinical Outcome	DF	9

4.10.3 Transfusion Transmitted Bacterial Infection

Reporting Suspected Transfusion Transmitted Bacterial Infection

The NHO collects and investigates reports on the following:

- Bacterial infection suspected to be transfusion related.
- In case of bacterial infection, results of culture of both patient and packs should be available.

Investigations for Suspected Transfusion Transmitted Bacterial Infection (Patient)

- Blood cultures of the patient
- Culture of the pack contents and segment line
- The administration set may be cultured as this is helpful to evaluate the possibility of contamination.
- Outrule other sources of sepsis in patient e.g. sputum, urine, wound swab or other if clinically indicated

Investigations for Suspected Transfusion Transmitted Bacterial Infection (Donor/Donors)

Upon receipt of the report the NHO will liaise with the Quality Assurance department in the IBTS, where investigations of the implicated pack or other components from the same donation and the donor will be initiated if indicated (see Rapid Alert - Section 6).

Required Information on Suspected Transfusion Transmitted Bacterial Infection for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to Suspected Transfusion Transmitted Bacterial Infection. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.14 Suspected Transfusion Transmitted Bacterial Infection

Essential Information	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Symptoms	IF	13
<i>Investigation</i> ; Culture of patient	DF	1
Culture of pack	DF	3
Treatment	DF	5 , 6
Clinical Outcome	DF	7

4.11 Transfusion Associated Graft-versus-Host Disease (TA-GvHD)

EU Notification Category

TA-GvHD is incorporated in the EU category: Graft versus host disease.

Definition

TA-GvHD occurs where viable donor lymphocytes transfused in a blood component attack recipient tissues in immunosuppressed or immunodeficient patients (Webb and Anderson, 2001). It rarely occurs in transfusion recipients who have no evidence of immunodeficiency and where HLA haplotypes are shared between donor and recipient.

TA-GvHD is rare, occurring in approximately 1:1,000,000 units of cellular blood components transfused and the incidence appears reduced since introduction of universal leucodepletion of blood components

Reporting TA-GvHD

Where TA-GvHD is considered possible, likely, probable or certain, a report should be sent to the NHO. This information is passed on to the Quality Department of IBTS for further investigations.

Clinical Signs & Symptoms and Laboratory Findings

TA-GvHD is characterised by:

- Fever, rash, liver dysfunction, diarrhoea, and pancytopenia occurring 1-6 weeks post transfusion with no other apparent cause.
- Supported by characteristic histological appearances on skin/bone marrow biopsy.

Confirmed by:

- Evidence of donor derived lymphocytes circulating in blood or tissues (chimerism).

Investigations for TA-GvHD

Skin /marrow biopsy and chimerism studies. Contact IBTS for further investigation.

Required Information on TA-GvHD for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to TA-GvHD. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.15 Transfusion Associated Graft Versus Host Disease

Essential Information	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Clinical features	DF	2
Investigations	DF	4
Concurrent drug/radiotherapy	DF	6
Irradiation of blood components?	DF	13-16
Clinical Outcome	DF	17

4.12 Post-Transfusion Purpura (PTP)

EU Notification Category

PTP is an EU Notification Category.

This category has remained unchanged from the previous NHO category.

Definition

Post Transfusion Purpura (PTP) is characterised by thrombocytopenia arising 5-12 days following transfusion of blood components (SHOT, 1999). It is supported by findings of antibodies in the patient directed against the Human Platelet Antigen (HPA) system usually anti HPA 1a but antibodies against other platelet antigens may be involved.

It is a rare condition occurring usually in female patients who have been immunised to platelets by a history of pregnancy or transfusion in the past. The incidence of this condition appears reduced since introduction of red cell leucodepletion which also removes platelets from red cell components, thereby reducing the risk of secondary alloimmunisation

Reporting PTP

Reports of PTP considered possible, likely, probable or certain should be reported to NHO.

Clinical Signs & Symptoms and Laboratory Findings

PTP is characterised by:

- Thrombocytopenia often associated with bleeding and poor response to platelet transfusion (NBUG, 2004)

Investigations for PTP

- Platelet antibodies and platelet genotyping (Samples to be sent to HLA laboratory at the IBTS).
- HLA type of the patient (samples to be sent to IBTS HLA Laboratory).

Required Information on PTP for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to PTP. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.16 Post Transfusion Purpura

Essential Information	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	DF	3
<i>Investigations: Anti platelet allo-antibody /platelet genotyping</i>	DF	8, 9
Clinical outcome	DF	11

4.13 Previously Unreported Complication of Transfusion (PUCT)

EU Notification Category:

These reactions are incorporated in the following EU category: Other serious reaction(s).

This category enables the NHO to capture reactions which cannot be categorised under the conventional categories. This category replaces the former NHO category 'Other'.

Definition

Reports of new previously unreported signs and symptoms temporally related to transfusion and with no other risk factor other than transfusion e.g like the red eye syndrome associated with some leucodepletion filters or in future if new reactions occur related to psoralen or prion filters

Reporting PUCT

All reactions which are new, previously unreported and can not otherwise be categorised and are considered likely probable or certainly related to the transfusion should be reported to the NHO. Any queries relating to reactions which may be suspected to be PUCT should be directed to the National Haemovigilance Office.

Investigations for PUCT

- Outrule other causes of reaction such as haemolysis, bacterial contamination or respiratory distress i.e. TACO or TRALI.
- Following clinical assessment other investigations should be considered

Required Information on PUCT for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to PUCT. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.17 PUCT

	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	IF	13
Evidence of haemolysis	DF	6, 15, 16,
Antibodies detected	DF	17,18
Evidence of bacterial contamination	DF	20, 21
<i>Investigations:</i> Chest X ray	DF	6
Auscultation of chest	DF	6
BNP	DF	6
Weight of patient	DF	27
Fluid Balance	DF	29
Diuretic	Pre:	DF 30
Diuretic	During:	DF 30
Diuretic	Post:	DF 30
Treatment	DF	33,34
Clinical outcome and timeframe of recovery	DF	35

4.14 Unclassified Serious Adverse Reaction

EU Notification Category:

These reactions are incorporated in the following EU category: Other serious reaction(s).

This category enables the NHO to capture reactions which are difficult to classify and cannot be categorised under the conventional categories. This category replaces the former NHO category ‘Other’.

Definition

Unclassified SAR is the occurrence of an adverse symptom / sign with no risk factor other than the transfusion and which on its own does not allow the reaction to be classified within the defined categories of SAR (i.e. such as those outlined in this handbook).

This category differs from PUCT and captures these adverse symptoms, which have been previously reported (in the literature) as associated with an SAR, but which do not fulfill the criteria of an already defined SAR.. An example may be the occurrence of an isolated hypertension or bradycardia, which is attributed to the transfusion.

Reporting Unclassified SAR

Where the signs and symptoms are recognised as associated with an SAR, but cannot be classified within an already defined category of SAR, such as those outlined in this handbook this is an “Unclassified SAR”. If this “Unclassified SAR” is considered likely- probable or certainly related to the transfusion this should be reported to the NHO.

Any queries relating to reactions which may be suspected to be Unclassified SAR should be directed to the National Haemovigilance Office.

Investigations for Unclassified SAR

- Outrule other causes of reaction such as haemolysis, bacterial contamination or respiratory distress i.e. TACO or TRALI.
- Following clinical assessment other investigations should be considered

Required Information on Unclassified SAR for Inclusion in Reports to NHO

This section outlines the fields on the *Initial Report Form (IF)* and *Detailed Form (DF)*, which should be completed in relation to Unclassified SAR. This information is necessary to gain a complete understanding of the reported reaction. If there are any difficulties encountered while completing these forms, please contact the NHO.

Table 4.18 Unclassified SAR

	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date reaction occurred	IF	3
Imputability	IF	SAR
Patients primary diagnosis	IF	5
Interval between commencing transfusion and onset of symptoms	IF	12
Symptoms	IF	13
Evidence of haemolysis	DF	6, 15, 16,
Antibodies detected	DF	17,18
Evidence of bacterial contamination	DF	20, 21
<i>Investigations: Chest X ray</i>	DF	6
Auscultation of chest	DF	6
BNP	DF	6
Weight of patient	DF	27
Fluid Balance	DF	29
Diuretic	Pre:	DF 30
Diuretic	During:	DF 30
Diuretic	Post:	DF 30
Treatment	DF	33,34
Clinical outcome and timeframe of recovery	DF	35

5. SERIOUS ADVERSE EVENTS

5.1 Introduction

This section describes the reporting requirements for hospitals with regard to serious adverse events (SAEs).

Hospital Blood Banks should report SAEs only in cases where the patient has actually been transfused. All other errors and events should be captured, recorded and investigated appropriately via the hospital blood bank quality system and may be followed up during inspections by INAB or the IMB.

Following the introduction of European and National legislation on Blood and Blood Components, reporting of specific SAEs, which may have an influence on their quality and safety, is now mandatory. The National Haemovigilance Office will collect these mandatory SAEs along with all other non-mandatory events within the category of Incorrect Blood Component Transfused (IBCT).

5.2 Definition

A Serious Adverse Event (SAE) is defined as any untoward occurrence associated with the collection, testing, processing, storage and distribution of blood and blood components that might:

- Lead to death,
- Be life-threatening,
- Causes disabling or incapacitating conditions for patients,
- Result in, or prolong, hospitalisation or morbidity.

5.3 Mandatory SAE Reports (hospital blood banks) to be submitted to the NHO

The Legislation covers the quality and safety of blood components extending from the blood establishment to the hospital blood bank. It does not extend to clinical aspects of the transfusion chain.

Hospital blood banks should report SAE relating to Materials, Testing, Storage, Distribution and Other. These are defined as follows:

5.3.1 Materials - A hospital blood bank should report SAEs relating to a deviation in materials in association with testing, storage and distribution.

5.3.2 Testing of donations - Compatibility testing is considered to fall within the term "testing". This includes adverse events caused by testing failures, failure of equipment, human error.

5.3.3 Storage - This is considered to involve all stages of the cold chain including storage in the laboratory/satellite fridges.

5.3.4 Distribution - The act of delivery of blood and blood components to other blood establishments, hospital blood banks and manufacturers of blood and plasma derived products. It does not include the issuing of blood or blood components from the hospital blood bank for transfusion.

5.3.5 Other – Other SAEs which affect the quality and safety of the blood or blood component not covered by the above categories, but occurring within the Hospital Blood Bank. Examples include the selection of blood for special requirements, e.g. CMV negative, irradiated or specific patient requirements such as blood suitable for exchange transfusions or

paedipacks; transposition of labels or transfusion documentation in the hospital blood bank leading to patient receiving the incorrect blood.

5.4 Non-mandatory IBCTs which should be submitted to the NHO

The National Haemovigilance Office continues to collect reports relating to all steps of the transfusion chain i.e. initial clerking, sampling, prescription/request, and retrieval of blood from fridge by clinical staff and administration. While provision of these reports is not mandatory under the Blood and Blood Components legislation, the collection and analysis of these reports contributes to continuous improvement of transfusion practice. These are defined as follows:

5.4.1 Incorrect Blood Component Transfused:

The transfusion of a blood component which did not meet appropriate requirements and/or was intended for another patient e.g. failure to give CMV negative blood if the error is failure by a clinician to prescribe or request; other fluids or medicinal products transfused with blood component through same line etc. See Table 5.5 for further guidance

5.4.2 Incidents involving Anti-D Immunoglobulin or Factor Concentrates:

Incidents involving delays, omissions or other administration errors relating to Anti-D and serious adverse events associated with SD plasma (where transfusion has occurred) or Factor Concentrates are captured as IBCT.

5.5 Examples of reportable incidents in the Serious Adverse Event / IBCT Category

This list is **not** exhaustive. Other events not on the list may also be reportable.

If in doubt, please contact the NHO for further guidance.

Table 5.1 Events to be reported in the SAE/IBCT Category

Category of Error	Example of error	Mandatory SAE – Report to NHO as per Legal Requirement	Non-Mandatory IBCT Report to NHO
Incompatible/Wrong transfusion	ABO incompatible transfusion with no reaction due to hospital blood bank testing, selection etc	Yes	-
	Wrong blood for patient with no reaction due to hospital blood bank testing, selection etc.	Yes	-
	Transfusions of blood and blood components intended for another patient, even in cases where the transfusions were found to be ABO and Rhesus (RH) D compatible, due to hospital blood bank testing etc.	Yes	-
	RH D positive components administered to a RH D negative patient in error, with	Yes	-

Category of Error	Example of error	Mandatory SAE – Report to NHO as per Legal Requirement	Non-Mandatory IBCT Report to NHO
	no reaction due to hospital blood bank testing etc.		
	Aliquots transfused to a baby from a paedipack which had been crossmatched and allocated to another baby and issued in error by the hospital blood bank	Yes	-
	Transposition of compatibility labels between patients (level 1) or within cross match for the same patient (level 2)	Yes	-
Special Requirements not met	CMV negative/irradiated product not given to patient due to error in hospital blood bank.	Yes	-
	The failure to give CMV negative or irradiated cellular blood components, if error is failure by clinicians to prescribe or request	No	Yes
Storage Errors	Errors surrounding storage of blood; where storage incidents involve the breakdown / malfunction of a controlled fridge and where a number of units are implicated, this is reportable as one SAE.	Yes	-
	Transfusion of red cells returned to storage that were out of controlled storage for greater than 30 minutes and subsequently reused for transfusion.	Yes - where the transfusion time exceeds 4 hours after the red cells were initially removed from controlled storage, and the RCC were re-issued by staff from the Blood Transfusion Laboratory. Yes- if RCC	No, where the decision to return and subsequently remove the RCC was a clinical decision, and if units were transfused within 4 hours of initial removal from fridge to the patient for whom they were crossmatched. If the transfusion > six hours, this is

Category of Error	Example of error	Mandatory SAE – Report to NHO as per Legal Requirement	Non-Mandatory IBCT Report to NHO
		were subsequently taken back into stock, and reissued for another patient.	then reported as an IBCT.
	Incorrect storage i.e. red cells in non blood fridge or platelets in fridge	Yes	
	Incorrect storage of. SD plasma in a monitored / unmonitored fridge post thawing.	No	Yes
	Expired components i.e. red cells, platelets transfused, where transfusion is commenced after expiry time.	Yes	-
Other errors in the transfusion process	Bedside sample/identification errors resulting in wrong transfusion, where there was no reaction	No	Yes
	Errors surrounding handling of blood by clinical staff e.g. retrieval from the fridge.	No	Yes
	Components administered too quickly in patients at risk of developing a reaction e.g. patients with cardiac failure	No	Yes
	Components transfused through a non filtered giving set	No	Yes
	Other fluids or medicinal products transfused with blood component through same line (if no reaction)	No	Yes
	Inappropriate use of pumps not designed for use with blood or platelets transfused via a pump (if no reaction)	No	Yes
	Red cell transfusion exceeding 6 hours, where the unit was transfused following initial removal from the fridge.	No	Yes

Category of Error	Example of error	Mandatory SAE – Report to NHO as per Legal Requirement	Non-Mandatory IBCT Report to NHO
Inappropriate transfusion	Unnecessary transfusion due to errors in clinical judgement, resulting in unnecessary donor exposure	No	Yes
	Unnecessary transfusion due to incorrect haematology laboratory results, resulting in unnecessary donor exposure	No. The Haematology laboratory is not the hospital blood bank	Yes
Medicinal Products	Error/omission or delay in administration of Anti D/Factor Concentrates	No. Blood-derived medicinal products not covered Blood and Blood Component legislation	Yes

5.6 Required Information on SAE/ IBCT for inclusion in reports to NHO

This section outlines fields on the initial and detailed report forms which should be completed to facilitate full exploration of the reported SAE / IBCT.

Table 5.2 SAE/IBCT

	Location	Question Number
Age	IF	1
Gender	IF	1
Reporting establishment (hospital)	IF	1
Component / product	IF	2
Unit number	IF	2
Date error occurred	IF	3
Time error occurred	IF	3
Time error discovered	IF	3
Was vitamin K administered (plasma events)?	IF	9
Emergency transfusion	IF	11
<u>Classification of SAE</u> <ul style="list-style-type: none"> • Blood to wrong patient (if no reaction) • Incorrect ABO and Rh D group transfused (if no reaction) • Incorrect ABO group transfused (if no reaction) • Incorrect Rh D group transfused (if no reaction) • Transfusion of other antigen incompatible RCC (if no reaction) • Incorrect component/product transfused • Inappropriate transfusion • Failure to irradiate • Failure to give CMV negative component • Failure to administer product • Delay in giving product • Transfusion of expired component/product • Transfusion of incorrectly stored component • Transfusion of incorrectly distributed component • Other (specify) 	IF	SAE
Who discovered error?	DF	1
Where error discovered (clinical area)?	DF	2
Describe error type?	DF	3
Step in the work process error discovered?	DF	4
Stage in work process where error occurred	DF	6
Area where error occurred	DF	7
Personnel involved	DF	8
Root Cause	DF	9
Does the Medical Scientist normally work in transfusion?	DF	16
Unit and patient identification	DF	28, 29
Indications for transfusion within guidelines	DF	34
Follow-up action (changes to practice) to incident	DF	36

5.7 NHO classification of SAEs / IBCT

The NHO classifies errors on the potential of the incident to cause harm to the patient. Classification of SAEs /IBCT was based on levels 1-3, with level 1 being the greatest risk and level 3 being lowest risk. This classification has been changed. The numerical values have been removed, and events will now be categorised as high risk, medium risk and low risk, where level 1 is high risk and level 3 being low risk.

- | | |
|--------------|-------------------------------------------------------------------------------------------------------------|
| High Risk: | Events with the real potential for permanent injury or which are deemed life threatening. |
| Medium Risk: | Events which are very unlikely to cause permanent harm or have the potential for minimal or transient harm. |
| Low Risk: | Events with no realistic potential for harm. |

Low risk events should be collected and followed up at hospital level as they indicate defects in the quality of the service delivered. Trends identified are useful for both report writing and teaching. The National Haemovigilance Office does not normally capture these incidents unless multiple errors are reported. This may be indicative of systems failures.

Examples of Low Risk events not generally reportable to the NHO include:

- Expired pre transfusion samples >72hours since collection,
- Spelling /transcription errors which do not pose any realistic risk to the patient where unit was transfused,
- Supply problems/ lack of stock,
- Inappropriate use of emergency blood

These events should be captured by the Hospital Blood Bank Quality System.

5.8 Traceability

Failures of traceability should be captured as a non-conformances within the hospital blood bank quality system. Such failures should not be reported to the NHO, but will be assessed at inspection.

6. RAPID ALERT NOTIFICATION SYSTEM

This section relates to the Rapid Alert Notification System and is included to help the Haemovigilance Officer or other relevant personnel on the rare occasion where such a process may need to be initiated. As the Rapid Alert Process may result in the recall of any other blood components from that donor/donation, the decision to initiate it must follow careful clinical assessment of the patients' symptoms in relation to the transfusion.

6.1 Definition

The Rapid Alert Notification System is the immediate urgent notification to the supplying Blood Establishment or Blood Bank to initiate a recall of blood components, or to prevent the issue of blood components from a donor which may remain in stock. The aim of the Rapid Alert System is to protect the blood supply and any potential recipients. This system should be activated in the following circumstances:

- Suspected bacterial infection
- Viral, parasitic or other post transfusion infection,
- TRALI
- Failure in blood processing/ equipment in blood establishments e.g. failure of irradiation.

6.2 Responsibilities of Various Parties

6.2.1 Hospital Level

- Where there is a suspected TTI or a suspected TRALI careful clinical assessment of the patient should take place.
- A decision to initiate a rapid alert should be taken following review with a consultant haematologist or the patient's primary physician. This decision should be taken at hospital level. If a hospital consultant is unavailable or if further assistance is needed, an IBTS consultant may be contacted (via switch board -Tel No. 01 4322800 / 021 4807400).
- If the symptoms are deemed to be related to the transfusion the issuing blood establishment should be contacted directly. Rapid Alert Notification may be initiated by telephone contact:
 - To the NHO at 01 4322890 /1
 - To the QA department of the IBTS at 01 4322800 / 021 4807400
 - Through a Consultant Haematologist or Medical Officer in the IBTS,
 - Through the Medical Scientist on duty at the IBTS or supplying Blood Establishment / Hospital Blood Bank.
- An Initial Report Form should also be completed and submitted in the usual manner to the NHO.

6.2.2 IBTS

- The IBTS will take action to recall products or defer donors where appropriate.

6.2.3 NHO

- The NHO will process the report in the usual manner
- Where there is a delay in closing the investigation the reporting establishment will be informed

7. ANNUAL NOTIFICATION OF SERIOUS ADVERSE REACTIONS/EVENTS

7.1 Introduction

As defined in Legislation, hospitals must report SARs and SAEs on an annual basis to the competent authority. As discussed in Section 1, the Competent Authority in Ireland is the Irish Medicines Board (IMB) who has designated the National Haemovigilance Office to collect and collate these reports prior to submission to the IMB. The objective of this section of the handbook is to assist in the correct completion of this form.

The format of the Annual Notification Form is set out in the Directive 2005/61/EC and SI 547 of 2006. The NHO, in consultation with the IMB, has devised an Annual Notification Form based on this format. Reports of SAR and SAE are separately compiled on this Annual Notification Form. Pages 1-6 should be used for reports of SAR, and page 7 should be used for reports of SAE. The form will be issued at the beginning of each calendar year, but relates to transfusion activity for the preceding year. Refer to Appendix 1 for a copy of the Annual Notification Form and a glossary of terms.

7.2 How to complete the Annual Notification Form

This section gives advice on how to complete the form. If any section of the form is difficult to interpret, please do not hesitate to contact the NHO for advice.

7.2.1 Terms Explained

- *Reporting Establishment*- Blood establishment, blood bank or facility where transfusion takes place,
- *Reporting Period* - preceding year (January- December).

7.2.2 Reporting Serious Adverse Reactions

Mandatory SARs relating to blood components should be reported on these forms and all cases which have been reported to the hospital HVO during the reporting year should be included on the annual notification forms. A separate page is available to capture reports of SARs related to SD Plasma, which is only intended for use by the NHO.

- **There is a separate page for each component** (Pages 1-6) i.e. *Whole Blood, Red Cells, Platelets, Fresh Frozen Plasma (FFP), SD Plasma* and *Other*. Examples of *Other Components* include cryoprecipitate and granulocytes. Only include information on the selected component on each table.
- The section “**Number of units issued.....**” refers to the number of individual components issued from the laboratory, which were transfused and wastage only occurring on clinical areas. This information is available from the Laboratory Information System.
- The section “**Number of recipients transfused.....**” refers to the number of patients’ transfused in each reporting establishment (every effort should be made to obtain this information which may be available from the Laboratory Information System).
- The section “**Number of units transfused**” refers only to the number of units transfused. This differs from the number issued because it specifically excludes clinical wastage (every effort should be made to obtain this information which may be available from the Laboratory Information System).
- The section “**Total number reported**” refers to all mandatory reported SARs related to the specified component.

- The section “*Numbers of deaths*” refers to the number of deaths (if any) resulting from SARs relating to the specified component.
- The form includes a grid which plots the category of reactions and the imputability of each reaction.
- The categories of reactions have been described in chapter 4.
- Imputability refers to the likelihood that a SAR can be attributed to the specified blood component.
 - Imputability of individual reports is determined at hospital level at the time of the investigation of a transfusion reaction. The reports are reviewed by the NHO on submission. Should a change of imputability be proposed, the NHO will inform the hospital / HVO by letter.
 - The Annual Notification Form should include reports of all imputability levels.
- Each category of reaction has two sections.
 - The section “*Total*” refers to the number of reactions within the specified category.
 - The section “*Death*” refers to the number of deaths within the specified category.
 - Each SAR reported within the category is attributed an imputability.
- SARs involving multiple components should be reported on each relevant component sheet. It is important to indicate where multiple components have been implicated in an SAR.
- The section “*Other Serious Reactions (Please specify)*” captures SARs such as Transfusion Associated Circulatory Overload (TACO), Febrile Non-Haemolytic Transfusion Reactions (FNHTR), Previously Unreported Complications of Transfusion (PUCT) and Unclassified SAR.
- To facilitate reconciliation of the Annual Notification Form, the NHO will issue a summary of reported cases for the reporting year on request.

7.2.3 Reporting Serious Adverse Events

SAEs relating to blood components, as outlined in section 5.3 should be reported on page 7 of the Annual Notification Form. This section of the form should be completed by hospital blood banks. The relevant sections have been highlighted to assist completion of this section of the form.

The National Haemovigilance Office collects reports on errors at all stages of the transfusion process (including clinical and laboratory practice) for inclusion in the NHO Annual Report. For further information, refer to Section 5.4.

Non-mandatory reports of IBCTs should not be included on the Annual Notification form.

REFERENCES

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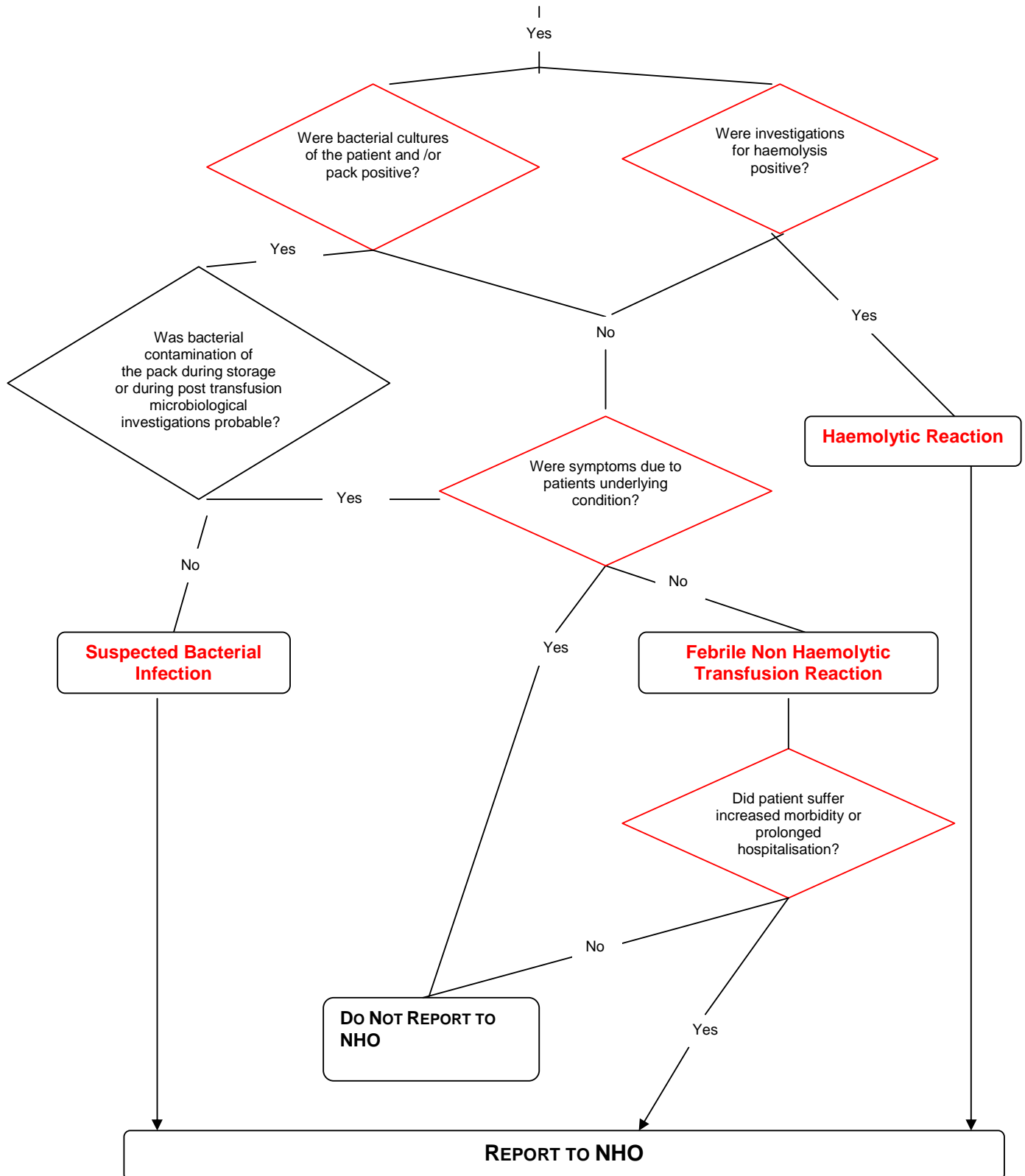
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Appendix 1: Reporting a Febrile Non Haemolytic Transfusion Reactions (FNHTR) to the NHO?

Temperature rise and / or chills or rigors and other symptoms, occurring within 4 hours following transfusion?



Appendix 2: Annual notification form

Annual notification for serious adverse reactions

Reporting establishment _____

Reporting period _____

This table refers to: RED BLOOD CELLS (use separate tables for each component)	Number of units issued (total number of units issued with a given number of blood components) *					
	Number of recipients transfused (total number of recipients transfused with a given number of blood components) (if available)					
	Number of units transfused (the total number of blood components (units) transfused over the reporting period)(if available)					
	Total number reported	Number of serious adverse reactions with imputability level 0 to 3 after confirmation (see Annex IIA)				
Number of deaths		not assessable	Level 0	Level 1	Level 2	Level 3
Immunological Haemolysis	Due to ABO incompatibility	Total				
		Deaths				
	Due to other allo-antibody	Total				
		Deaths				
Non-immunological haemolysis	Total					
	Deaths					
Transfusion-transmitted bacterial infection	Total					
	Deaths					
Anaphylaxis/Hypersensitivity	Total					
	Deaths					
Transfusion related acute lung injury	Total					
	Deaths					
Transfusion-transmitted viral Infection	HBV	Total				
		Deaths				
	HCV	Total				
		Deaths				
	HIV-1/2	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Transfusion-transmitted parasitological infection	Malaria	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Post-transfusion purpura	Total					
	Deaths					
Graft versus host disease	Total					
	Deaths					
Other serious reaction (please specify)	Total					
	Deaths					

* Refers to total number of units of Red cells issued

Reported by: _____
(Please print name)

Signed: _____

Date: _____

Annual notification for serious adverse reactions

Reporting establishment _____

Reporting period _____

This table refers to: PLATELETS (use separate tables for each component)	Number of units issued (total number of units issued with a given number of blood components) *					
	Number of recipients transfused (total number of recipients transfused with a given number of blood components) (if available)					
	Number of units transfused (the total number of blood components (units) transfused over the reporting period)(if available)					
	Total number reported	Number of serious adverse reactions with imputability level 0 to 3 after confirmation (see Annex IIA)				
Number of deaths						
		not assessable	Level 0	Level 1	Level 2	Level 3
Immunological Haemolysis	Due to ABO incompatibility	Total				
		Deaths				
	Due to other allo-antibody	Total				
		Deaths				
Non-immunological haemolysis	Total					
	Deaths					
Transfusion-transmitted bacterial infection	Total					
	Deaths					
Anaphylaxis/Hypersensitivity	Total					
	Deaths					
Transfusion related acute lung injury	Total					
	Deaths					
Transfusion-transmitted viral Infection	HBV	Total				
		Deaths				
	HCV	Total				
		Deaths				
	HIV-1/2	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Transfusion-transmitted parasitological infection	Malaria	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Post-transfusion purpura	Total					
	Deaths					
Graft versus host disease	Total					
	Deaths					
Other serious reaction (please specify)	Total					
	Deaths					

* Refers to total number of units of Platelets issued

Reported by: _____
 (Please print name)

Signed: _____

Date: _____

Annual notification for serious adverse reactions

Reporting establishment _____

Reporting period _____

This table refers to: SD PLASMA (use separate tables for each component)	Number of units issued (total number of units issued with a given number of blood components) *					
	Number of recipients transfused (total number of recipients transfused with a given number of blood components) (if available)					
	Number of units transfused (the total number of blood components (units) transfused over the reporting period)(if available)					
	Total number reported	Number of serious adverse reactions with imputability level 0 to 3 after confirmation (see Annex IIA)				
Number of deaths						
		not assessable	Level 0	Level 1	Level 2	Level 3
Immunological Haemolysis	Due to ABO incompatibility	Total				
		Deaths				
	Due to other allo-antibody	Total				
		Deaths				
Non-immunological haemolysis	Total					
	Deaths					
Transfusion-transmitted bacterial infection	Total					
	Deaths					
Anaphylaxis/ Hypersensitivity	Total					
	Deaths					
Transfusion related acute lung injury	Total					
	Deaths					
Transfusion-transmitted viral Infection	HBV	Total				
		Deaths				
	HCV	Total				
		Deaths				
	HIV-1/2	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Transfusion-transmitted parasitological infection	Malaria	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Post-transfusion purpura	Total					
	Deaths					
Graft versus host disease	Total					
	Deaths					
Other serious reaction (please specify)	Total					
	Deaths					

* Refers to total number of units of SD Plasma issued

Reported by: _____
(please print name)

Signed: _____

Date: _____

Annual notification for serious adverse reactions

Reporting establishment _____

Reporting period _____

This table refers to: Fresh Frozen PLASMA (use separate tables for each component)	Number of units issued (total number of units issued with a given number of blood components) *					
	Number of recipients transfused (total number of recipients transfused with a given number of blood components)(if available)					
	Number of units transfused (the total number of blood components (units) transfused over the reporting period)(if available)					
	Total number reported	Number of serious adverse reactions with imputability level 0 to 3 after confirmation (see Annex IIA)				
Number of deaths						
		not assessable	Level 0	Level 1	Level 2	Level 3
Immunological Haemolysis	Due to ABO incompatibility	Total				
		Deaths				
	Due to other allo-antibody	Total				
		Deaths				
Non-immunological haemolysis	Total					
	Deaths					
Transfusion-transmitted bacterial infection	Total					
	Deaths					
Anaphylaxis/ Hypersensitivity	Total					
	Deaths					
Transfusion related acute lung injury	Total					
	Deaths					
Transfusion-transmitted viral Infection	HBV	Total				
		Deaths				
	HCV	Total				
		Deaths				
	HIV-1/2	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Transfusion-transmitted parasitological infection	Malaria	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Post-transfusion purpura	Total					
	Deaths					
Graft versus host disease	Total					
	Deaths					
Other serious reaction (please specify)	Total					
	Deaths					

* Refers to total number of units of Fresh Frozen Plasma issued

Reported by: _____
(please print name)

Signed: _____

Date: _____

Annual notification for serious adverse reactions

Reporting establishment _____

Reporting period _____

This table refers to: WHOLE BLOOD (use separate tables for each component)	Number of units issued (total number of units issued with a given number of blood components) *					
	Number of recipients transfused (total number of recipients transfused with a given number of blood components)(if available)					
	Number of units transfused (the total number of blood components (units) transfused over the reporting period)(if available)					
	Total number reported	Number of serious adverse reactions with imputability level 0 to 3 after confirmation (see Annex IIA)				
Number of deaths						
		not assessable	Level 0	Level 1	Level 2	Level 3
Immunological Haemolysis	Due to ABO incompatibility	Total				
		Deaths				
	Due to other allo-antibody	Total				
		Deaths				
Non-immunological haemolysis	Total					
	Deaths					
Transfusion-transmitted bacterial infection	Total					
	Deaths					
Anaphylaxis/Hypersensitivity	Total					
	Deaths					
Transfusion related acute lung injury	Total					
	Deaths					
Transfusion-transmitted viral Infection	HBV	Total				
		Deaths				
	HCV	Total				
		Deaths				
	HIV-1/2	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Transfusion-transmitted parasitological infection	Malaria	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Post-transfusion purpura	Total					
	Deaths					
Graft versus host disease	Total					
	Deaths					
Other serious reaction (please specify)	Total					
	Deaths					

* Refers to total number of units of whole blood issued.

Reported by: _____
(Please print name)

Signed: _____

Date: _____

Annual notification for serious adverse reactions

Reporting establishment _____

Reporting period _____

This table refers to: OTHER e.g cryoprecipitate, granulocytes. (use separate tables for each component)	Number of units issued (total number of units issued with a given number of blood components) *					
	Number of recipients transfused (total number of recipients transfused with a given number of blood components)(if available)					
	Number of units transfused (the total number of blood components (units) transfused over the reporting period)(if available)					
	Total number reported		Number of serious adverse reactions with imputability level 0 to 3 after confirmation (see Annex IIA)			
	Number of deaths					
		not assessable	Level 0	Level 1	Level 2	Level 3
Immunological Haemolysis	Due to ABO incompatibility	Total				
		Deaths				
	Due to other allo-antibody	Total				
		Deaths				
Non-immunological haemolysis	Total					
	Deaths					
Transfusion-transmitted bacterial infection	Total					
	Deaths					
Anaphylaxis/hypersensitivity	Total					
	Deaths					
Transfusion related acute lung injury	Total					
	Deaths					
Transfusion-transmitted viral Infection	HBV	Total				
		Deaths				
	HCV	Total				
		Deaths				
	HIV-1/2	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Transfusion-transmitted parasitological infection	Malaria	Total				
		Deaths				
	Other (specify)	Total				
		Deaths				
Post-transfusion purpura	Total					
	Deaths					
Graft versus host disease	Total					
	Deaths					
Other serious reaction (please specify)	Total					
	Deaths					

* Refers to total number of other blood components issued.

Reported by: _____

(please print name)

Signed: _____

Date: _____

Annual notification for serious adverse events

Reporting establishment

Reporting period

1 January-31 December (*year*)

	Blood establishments	Hospital blood bank
Total number of blood and blood components processed¹		Not applicable
Total number of units of blood and blood components issued²		

¹Refers to units processed in a blood establishment

²Refers to units issued in a hospital blood bank

Serious adverse event, affecting quality and safety of blood component due to a deviation in:	Total Number	Specification			
		Product defect	Equipment failure	Human error	Other (<i>specify</i>)
Whole blood collection					
Apheresis collection					
Testing of donations					
Processing					
Storage					
Distribution					
Materials					
Others (<i>specify</i>)					

To be completed by hospital blood banks

For Hospital Blood Banks ; Testing of donations = Compatibility testing

Reported by: _____
(*please print name*)

Signed: _____

Date: _____