22. TRANSFUSION RISKS TABLES AND CALMAN CHART FOR EXPLAINING TRANSFUSION RELATED RISKS TO PATIENTS

Classification of transfusion-related adverse reactions and estimated incidence

Immunological Incidence\* Non-immunologica Incidence\*

Acute (<24 hours) Haemolytic transfusion

ABO/Rh mismatch 1:40,000c Massive transfusion complications Variablec,d

reactions

Acute 1:76,000c Non-immune mediated haemolysis (physical or chemical destruction of blood)

Rarec

Fatal 1:1.8 millionc Transfusion associated

sepsis (for clinically

Platelets At least 1:75,000a

Febrile non-haemolytic transfusion reactions 0.1%–1% of

transfusions with

universal leucocyte

depletionc

apparent reactions)

Red cells At least 1:500,000b

Allergic reactions Mild (urticarial) 1%–3% of transfusionsc Transfusion-associated circulatory overload (TACO) Less than 1% of patientsc

Severe (anaphylaxis) 1:20,000–1:50,000b,c

Transfusion-related Acute Lung Injury (TRALI) 1:1,200–1:190,000c

Delayed (>24hours) Delayed haemolytic transfusion reaction 1:2,500–1:11,000c,d Iron overload Iron overload requiring chelation therapy

Post-transfusion purpura Rarec Iron overload with organ dysfunction

May occur after 10–

20 RBC unitse

May occur after 50-100

RBC unitsc

Transfusion-associated graft versus host disease (TA-GVHD)

Rarec Transfusion-transmissible infections for incidence rates refer to risk estimates for transfusion- transmissible infection

Alloimmunisation RBC antigens 1:100c

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HLA antigens 1:10c

Transfusion-related immune modulation (TRIM) Not knownc

Note: \*Includes overseas data. Risks per unit transfused unless specified. References

a. Eder et al. Bacterial screening of apheresis platelets and the residual risk of septic transfusion reactions: the American Red Cross experience (2004-2006). Transfusion 2007;47:1134–1142. b. Kuenert MJ et al. Transfusion-transmissible bacterial infection in the United States, 1998 through 2000. Transfusion 2001;41:1493–1499.

c. Roback JD (ed). Non-infectious complications of blood transfusion. Chapter 27, AABB Technical Manual. 17th edition. AABB, Bethesda, 2011. d. Popovsky M (ed). Transfusion reactions, 3rd edition. AABB Press, Bethesda, 2007.

e. Brittenham GM. Iron-chelating therapy for transfusional iron overload. New England Journal of Medicine 2011 Jan 13;364(2):146–156. [Source: www.transfusion.com.au](http://www.transfusion.com.au/)

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| Risks of transfusion-transmissible infection calculated on Blood Service data | | |
| Agent and testing standard | Window period | Estimate of residual risk ‘per unit’ (a) |
| HIV (antibody + NAT) | 5.9 days | Less than 1 in 1 million(1) |
| HCV (antibody + NAT) | 2.6 days | Less than 1 in 1 million(1) |
| HBV (HBsAg + NAT) | 15.1 days | Approximately 1 in 468,000(1,4) |
| HTLV 1 & 2 (antibody) | 51 days | Less than 1 in 1 million(1) |
| vCJD [No testing] |  | Possible, not yet reported in Australia |
| Malaria (antibody) | 7–14 days | Less than 1 in 1 million(2) |

Notes: vCJD=variant Creutzfeldt-Jakob Disease; (a) The risk estimates for HIV, HCV and HBV are based on Blood Service data from 1 January 2011 to 31 December 2013. The HTLV estimates are based on data for the period 1 January 2010 to 31 December 2013. OBI risk function (ref 4) estimated on data from 1 January 2013 to 23 March 2014.

[Source: www.transfusion.com.au](http://www.transfusion.com.au/)

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| --- | --- | --- |
| The Calman chart for explaining risk (UK risk per 1 year) | | |
| Classification | Risk range | Example |
| Negligible | <1,000,000 | Death from a lightning strike |
| Minimal | 1:100,000–1:1,000,000 | Death from a train accident |
| very low | 1:10,000–1:100,000 | Death from an accident at work |
| Low | 1:1,000–1:10,000 | Death from a road accident |
| Moderate | 1:100–1:1,000 | Death from smoking 10 cigarettes per day |
| High | >1:100 | Transmission of chickenpox to susceptible household contacts |

The chance of dying in a road accident, for example, is about 1 in 10,000 per year which is considered a ‘low’ risk. Comparatively, all the viral risk estimates are well below this level, being considered as either ‘minimal’ (HBV) or ‘negligible’ (HIV and HCV)

Source: Calman K. Cancer: science and society and the communication of risk. BMJ 1996;313:801.