**OBJECTIVE**

Prevention of transfusion-associated graft-vs-host disease by irradiation of blood and its components

**BACKGROUND**

TA-GVHD is a rare but usually fatal complication of transfusion. The disease occurs when donor lymphocytes engraft in a susceptible recipient. These donor lymphocytes proliferate and damage target organs, especially bone marrow, skin, liver and gastrointestinal tract. Typically the condition presents 10-14 days after transfusion with rash (erythroderma), pancytopenia and abnormal liver function. The mortality rate of TA-GVHD approaches 100%.

Transfusion-associated graft-vs-host disease (GVHD) is a serious risk for some severely immunosuppressed or immunodeficient patients. Cellular components for at-risk patients should be irradiated with a minimum of 25 Gy prior to transfusion. Evidence suggests that irradiation is not necessary for fresh frozen plasma and cryoprecipitate. GVHD has been reported in immunocompetent recipients who have received blood from an individual with a similar HLA haplotype, such as a close relative. Scientific evidence indicates that donor lymphocytes of similar HLA type are not perceived as foreign and are therefore not destroyed by the recipient's immune system.

**Indications for Irradiated Cellular Products**

Refer to [**CD\_HA\_0513**](http://AHSHAREDAPP02/Fasttrack/Portal/CD_HA_0513.docx)**\_ Patient Comment (PTC)** for details on how to enter **Use Irradiated** as a transfusion requirement.

**Definite indications**

These are indications where there is strong evidence to support the requirement for use of irradiated blood components or where there is clear consensus on the requirement within published guidelines:

Allogeneic and Autologous bone marrow/peripheral blood stem cell recipients

Acute leukaemia

Congenital cellular immune deficiencies

Aplastic anaemia receiving immunosuppressive therapy

Patients receiving purine analogues (cladribine, fludarabine, pentostatin, bendamustine)

Hodgkin disease

Directed donations from first or second degree relatives

HLA matched single donor platelets

**References**

1. ANZSBT Guidelines for Prevention of Transfusion Associated GvHD, 1st Edition, January 2011.
2. British Committee for Standards in Haematology blood transfusion task force, Guidelines on the use of irradiated blood components, 2010. British Journal of Haematology, 152, 35-51.
3. AABB Technical Manual 18th Edition 2008 p.155-156 and P 688-689
4. Recommendations for Use of Irradiated Blood Components in Canada: a NAC nad CCNMT collaborative initiative https://www.nacblood.ca/resources/guidelines/downloads/Recommendations\_Irradiated\_Blood\_Components.pdf accessed July 31st 2020
5. Kopolovic I, Ostro J, Tsubota H et. Al . A systematic review of transfusion-associated graft-versus-host disease. Blood 2015;126☹3):406-414