



Government of Newfoundland and Labrador

Department of Health and Community Services
Provincial Blood Coordinating Program

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| IRRADIATED BLOOD COMPONENTS | NLBPC-020 |
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Overview

Irradiation of cellular blood components is a well-established intervention for the prevention of transfusion-associated graft-versus-host disease (TA-GVHD). The National Advisory Committee on Blood and Blood Products in collaboration with the Canadian Blood Services Provincial Territorial Blood Liaison Committee compiled evidence-based recommendations for use of irradiated blood components in Canada.

Policy

1. Cellular components, such as red blood cells (RBC) and platelets, shall be irradiated for prevention of TA-GVHD in recipients at risk.
2. All human leukocyte antigen (HLA)-selected/matched platelets shall be irradiated, even if patient is immunocompetent.
3. All recipients of allogenic hematopoietic stem cell transplantation (HSCT) shall receive irradiated blood components from the time of initiation of conditioning chemoradiotherapy and should be continued while the patient continues to receive GVHD prophylaxis.
4. All components for intrauterine transfusion shall be irradiated.
5. All transfusions from first- or second-degree relatives shall be irradiated, even if the patient is immunocompetent.
6. Recipients of irradiated blood components shall continue to receive irradiated components as long as clinically indicated.
7. The RBC and platelet units shall be labelled to indicate that the product has been irradiated.

Guidelines

1. Red cell components may be irradiated up to 28 days after collection.
2. Irradiated red cells should be transfused as soon as possible, but no later than 14 days after irradiation, and in any case, no later than 28 days after collection.
3. Platelets can be irradiated at any stage during storage; therefore can be stored up to their normal shelf life.
4. Irradiated blood components may be released to recipients not requiring irradiated components.

5. Patients who should receive irradiated blood components:
 - 5.1. Neonates with complex cardiac abnormalities;
 - 5.2. Neonates with previous intrauterine transfusion;
 - 5.3. All neonatal exchange transfusions provided it does not unduly delay transfusion;
 - 5.4. Very low birth weight infants, until four months of age;
 - 5.5. Patients with severe aplastic anemia receiving immunosuppressive therapy with anti-thymocyte globulin (ATG) and/or alemtuzumab;
 - 5.6. Patients treated with purine analogue drugs (fludarabine, cladribine, and deoxycoformicin,);
 - 5.7. Patients treated with other purine antagonists and new or related agents, such as bendamustine and clofarabine;
 - 5.8. Patients treated with alemtuzumab (anti-CD52) therapy;
 - 5.9. All adults and children with Hodgkin lymphoma at any stage of the disease, for life;
 - 5.10. All patients with severe T lymphocyte immunodeficiency syndromes;
 - 5.11. Patients undergoing bone marrow or peripheral blood stem cell 'harvesting' for future autologous re-infusion, during and for seven days before the bone marrow/stem cell harvest.
6. Allogeneic blood transfused to bone marrow and peripheral blood stem cell donors seven days prior to or during the harvest should be irradiated.
7. Overstocking of pre-irradiated red cell units for emergency transfusion is not recommended. If storage of pre-irradiated inventory is necessary, then red cells that have been irradiated within 14 days of collection should be obtained, if possible.
8. If the event that irradiated red cells are required for emergency transfusion and are not available, red cells older than 14 days from collection date should be provided.

Key Words

Irradiation, irradiated, graft-versus-host disease

References

- Canadian Society for Transfusion Medicine. (2017). *Standards for Hospital Transfusion Services*. (Version 4.0). Markham, ON: Author.
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- National Advisory Committee on Blood and Blood Products. (2018) *Recommendations for Use of Irradiated Blood Components in Canada: A NAC and CCNMT Collaborative Initiative*. Available at <http://www.nacblood.ca/resources/guidelines/irradiated.html>.