Use of Irradiated Blood Components

Applicability This document applies to all Transfusion Services in Alberta Public Laboratories.

Purpose This policy provides direction for the processes and procedures to effectively aid in the selection of irradiated cellular blood components for appropriate patients in Alberta.

Background To reduce the risk of Transfusion Associated Graft Versus Host Disease (TA-GVHD) in immunocompromised recipients, some patients must be transfused with cellular blood components that have been irradiated.

The physician and health care providers on the patient care units have the primary responsibility of identifying these patients. Physician and patient care unit staff are also responsible for notifying the Transfusion Service when irradiated cellular blood components are no longer required. Cellular components that require irradiation include; red cells (except cryopreserved red cells following deglycerolization), platelets and granulocytes.

Policy Orders for irradiated blood components that fall outside of the indications listed in the table below will be assessed by a Pathologist/Transfusion Medicine physician on a case by case basis. The following table is based on international guidelines, and represents a minimum standard. Transfusion services and individual physicians may choose to provide irradiated products for additional patient groups based on local transfusion committee recommendations.

Patient Types	Irradiated Blood Component Required
Patient receiving transfusion from first-or second-degree relative	Yes
For a patient receiving Intra-Uterine Transfusions (IUT), or that has previously received an IUT (up until 6 months after expected delivery date).	Yes
Neonatal exchange transfusions if patient has had an IUT	Yes
Very low birthweight neonates up to 4 months of age, including small-volume transfusions	At discretion of local neonatology experts
Neonates / Pediatrics with complex cardiac malformations until congenital immune deficiency disorder is excluded as diagnosis	Yes*
Suspected or confirmed (T cell) congenital immune deficiency (i.e. Wiskott-Aldrich, Di Georges, SCID)	Yes

Patient Types	Irradiated Blood Component Required
Autologous bone marrow or stem cell transplant patient (from start of conditioning)	Yes**. Irradiated components should be transfused during and for 7 days before harvesting of bone marrow/stem cells
Allogeneic bone marrow or stem cell transplant patient (from start of conditioning)	Yes
Patients who receive alemtuzumab (anti-CD52) immunosuppressive therapy for solid organ transplant or receive alemtuzumab and have severe aplastic anemia	Yes
Patients with transplant associated graft-versus-host disease (GVHD)	Yes
Donors of bone marrow and peripheral blood stem cells receiving allogenic transfusions 7 days prior to or during the harvest.	Yes. All allogenic units transfused.
Patients treated with purine analogs (e.g. fludarabine, cladribine, deoxycoformycin, clofarabine), bendamustine, as well as alemtuzumab (anti -CD52) and anti-thymocyte globulin***	Yes. Fludarabine, cladribine and deoxycoformicin should receive irradiated components indefinitely. Transfusion requirements with other purine analogues should be reviewed annually.
Patients receiving HLA-selected platelets	Irradiated platelets (other components do not require irradiation unless patient falls into one of the other listed *Patient Types*)
Patients receiving granulocyte transfusion	Irradiated granulocytes (other components do not require irradiation unless patient falls into one of the other listed *Patient Types*)
Patients with Hodgkin's Disease	Yes
Patients with severe aplastic anemia and receiving anti-thymocyte globulin (ATG)	Yes

** Irradiated products will be provided until T Lymphocyte immunodeficiency syndrome has been excluded.*

*** In the absence of other indications as listed above, autologous bone marrow or stem cell transplant patients require irradiated components for 3 months post transplant (6 months if total body irradiation is used for conditioning).*

**** The decision to provide irradiated blood for patients on immunosuppressive agents should be made with consideration given to perceived risks and benefits of irradiated blood transfusion, the availability of the irradiated components and the immunosuppressive potency of the agent. Discussion between the patient's most responsible physician and a Transfusion Medicine expert is advised.*

Responsibility

Transfusion Medicine Network is responsible for:

- reviewing this policy at minimum every 2 years and revising as necessary.

Laboratory/TM Directors/Physicians, Managers, and Supervisors are responsible for:

- ensuring that the transfusion service meets the policy requirements outlined above, as a minimum, for the provision of irradiated blood components.
- ensuring staff are familiar with the policy and procedures surrounding the use of irradiated blood components
- monitoring the utilization of irradiated blood components for appropriateness.

Zone Clinical Department Heads are responsible for:

- familiarity with this policy.
- communicating and educating clinical colleagues on the appropriate use of irradiated blood components.

Laboratory Personnel are responsible for:

- familiarity with this policy
- following local procedures and processes when orders that fall outside of the policy are received.
- appropriately recording blood component requirements when notified by physician and patient care units.

Physician and health care providers on patient care units (clinical staff) are responsible for:

- notifying the Transfusion Service of the requirement for irradiated cellular blood components
- notifying the Transfusion Service when irradiated cellular blood components are no longer required.

Reference

Determining Patients' Blood Product Eligibility, CLS policy TM01-3.2.2

2 21 Irradiated Blood Components: Criteria and Processing, Edmonton zone RTMBPS00221UAR

Clinical Guide to Transfusion ©2017, Canadian Blood Services On-line Edition Standards for Hospital Transfusion Services, Canadian Society for Transfusion Medicine, Version 4, 2017

Recommendations for use of irradiated blood components in Canada, National Advisory Committee on Blood and Blood Products, A MAN and CCNMT Collaborative Initiative: 2018-05-14