

Indications for Irradiated Products:

Irradiated products are given to eliminate the reproductive capacity of the leukocytes within the donor product. While a normal host's immune system quickly eliminates these cells, in an immunosuppressed host, they are capable of implanting and causing severe Graft-Vs-Host-Disease. Although the risk of developing GVHD is low (about 1%), the mortality rate is 80-90%. If in doubt, irradiate.

To anybody who is immunosuppressed (at risk for GVHD):

- Intrauterine transfusions
- Premature, low birthweight (< 1200 grams) infants (routinely until 4 months of age)
- Newborns with erythroblastosis fetalis
- ECMO patients / LVAD patients
- Cardiopulmonary bypass patients
- Congenital immune deficiencies: Combined immunodeficiency disease, Wiskott-Aldrich syndrome, etc
- Lymphoma patients
- Leukemia patients
- Hodgkins disease
- Myelodysplastic syndromes
- Aplastic anemia on ATG (within one month)
- Some solid tumors: Neuroblastoma, sarcomas, glioblastoma multiform
- Bone marrow or stem cell transplant patients
- Fludarabine therapy recipients (other purine analogs: thioguanine, pentostatin, cladribine, mercaptopurine, 6-mercaptopurine, azathioprine)
- Anyone receiving granulocyte components
- Malignancy being treated with radiation / cytotoxic agents (Cytoxan) (or any severely neutropenic cancer patient)
- Donor-recipient pairs from genetically homogeneous populations (esp. Japanese to Japanese)
- I recommend irradiating products for all infants < 4 months old.

When Products are matched with the patient (unlikely to cause the immune response):

- HLA-matched platelets (given to platelet refractory patients)
- Directed-donations from family members
- Cross-matched platelets (for refractory patients)

NOT indicated for:

- HIV/AIDS patients (there has *never* been a reported case of GVHD)
- Healthy, term infants > 4 months old
- Most solid organ transplant recipients, after induction
- Non-immunosuppressed patients

Failing to irradiate a product (when indicated and ordered) is an FDA reportable incident.

Ref.

aaBB Technical Manual, 16th edition, 2008

Rossi's Principals of Transfusion Medicine, 4th Ed. 2009