Guidelines on the use of irradiated blood components Gap Analysis

Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
In an emergency the provision of red cells or platelets must not be delayed by sourcing irradiated components for patients with the appropriate indication; LD blood or platelets must be sourced rapidly from the blood bank; where non-irradiated components are used in this setting because of urgency this should be recorded and clinical observation made for any evidence of TA-GvHD over the next 6 weeks			
In emergency situations where irradiated components are unavailable, blood banks should consider preferentially issuing older red cells where possible (>14 days) (2/C). For neonates and infants, see BSH guidelines for transfusion of fetuses, neonates and older children40 for a suggested hierarchy of blood component characteristics to use in emergency.			
The minimum dose achieved in the irradiation volume should be 25 Gy, with no part receiving >50 Gy (1/B). The irradiation procedure must be validated and there must be regular monitoring of dosimetry.			
Red cells may be irradiated at any time up to 14 days after collection, and thereafter stored for a further 14 days from irradiation. Where the patient is at risk from hyperkalaemia, e.g. IUT or neonatal EBT, or other large-volume transfusion of neonates and infants, it is recommended that red cells are transfused within 24 h of irradiation (1/C).			
If washed red cells are irradiated, they should be transfused as soon as possible and according to UK Blood Transfusion Services Guidelines (1/B)			

Irradiated components not used for the intended recipient can be returned to stock to be used for recipients who do not require irradiated components (1/C).			
Platelets can be irradiated at any stage during storage and can thereafter be stored up to their normal shelf life after collection (1/A).			
All granulocytes should be irradiated before issue. They should be transfused with minimum delay (1/C).			
All irradiated units should be labelled as such, using an approved bar code label. Each unit should be monitored using a radiation-sensitive device, and the result should be permanently recorded, manually or by computer (1/C)			
For all at-risk patients, all red cell, platelet and granulocyte components should be irradiated, except cryopreserved red cells after deglycerolisation. It is not necessary to irradiate fresh frozen plasma, cryoprecipitate or fractionated plasma (1/B).			
All transfusions of cellular components and fresh plasma from first- or second-degree relatives should be irradiated, even if the patient is immunocompetent All HLA-selected components should be irradiated even if the patient is immunocompetent (1/B).			
Red cells for IUT should be irradiated (1/C)			
Red cells for neonatal EBT should be irradiated (1/C).			
As recommended above (Manufacturing), red cells for IUT and EBT should be transfused within 24 h of irradiation.			
Platelets for IUT should be irradiated (1/C).			
Routine irradiation of red cells for transfusion to preterm or term infants (other than for EBT) is not required unless there has been a previous IUT, in which case irradiated components should be administered until 6 months after the expected delivery date (40 weeks gestation) (2/C)			

Routine irradiation of platelet transfusions for preterm or term infants is not required unless there has been a previous IUT, in which case irradiated components should be administered until 6 months after the expected delivery date (40-weeks gestation) (2/C).			
All severe congenital T-lymphocyte immunodeficiency syndromes with significant qualitative or quantitative T-lymphocyte deficiency should be considered as indications for irradiation of cellular blood components (1/B).			
Once a diagnosis of severe T-lymphocyte immunodeficiency has been suspected, irradiated components should be given while further diagnostic tests are being undertaken. A clinical immunologist should be consulted for advice in cases where there is uncertainty (1/C).			
Neonates and infants with suspected immunodeficiency syndromes should undergo T-lymphocyte enumeration prior to cardiac surgery wherever possible. If the T-lymphocyte count is >400 cells/µl, of which 30% are naive T lymphocytes, there is no need to irradiate red cells or platelets. If it is not possible to undertake T-cell investigations prior to surgery, irradiated cellular blood components should be given until immunological investigations have been undertaken (1/C).			
Adults, and children aged > 2 years without a significant history of infection, referred for elective cardiac surgery for problems associated with DiGeorge syndrome, such as aortic arch anomalies and pulmonary artery stenosis, or in whom DiGeorge anomaly is suspected, do not need to receive irradiated cellular blood components, unless there is a significant history consistent with severe T-lymphocyte-associated immunodeficiency, as the risk of TA-GvHD is extremely low (2/C).			

There is no indication for irradiation of cellular blood components for infants or children with temporary defects of T-lymphocyte function as the result of a viral infection. There is also no indication for irradiation of cellular blood components for adults or children who are HIV-antibody positive or who have acquired immune deficiency syndrome (AIDS) (1/B).			
All recipients (adult and paediatric) of allogeneic HSCT should receive irradiated blood components from the time of initiation of conditioning chemo/radiotherapy. The recommendation applies for all conditions where HSCT is indicated regardless of the underlying diagnosis (1/B).			
Irradiated components should be continued until all of the following criteria are met: 1. >6 months have elapsed since the transplant date 2. The lymphocyte count is >1·0 × 109/l 3. The patient is free of active chronic GvHD 4. The patient is off all immunosuppression			
If chronic GvHD is present or continued immunosuppressive treatment is required, irradiated blood components should be given indefinitely (2/C).			
Treatment with irradiated blood components should continue indefinitely if this is required based on transplant conditioning, underlying disease or previous treatment, e.g. previous diagnosis of HL or previous purine analogue treatment (1/C).			
Allogeneic cellular blood components transfused to bone marrow and peripheral blood stem cell donors of all ages within 7 days prior to or during the harvest should also be irradiated (2/C).			

Patients (adult and paediatric) undergoing bone marrow or peripheral blood stem cell collections for future autologous re-infusion should receive irradiated cellular blood components for 7 days prior to and during the bone marrow/stem cell harvest to prevent the collection of viable allogeneic T lymphocytes, which can potentially withstand cryopreservation (1/C).			
All patients undergoing ASCT irrespective of underlying diagnosis or indication for this treatment should receive irradiated cellular blood components from initiation of conditioning chemo/radiotherapy until 3 months post-transplant (6 months if total body irradiation was used in conditioning) unless conditioning, disease or previous treatment determine indefinite duration, for example previous diagnosis of HL or previous purine analogue treatment (1/C)			
All adults and children with HL at any stage of the disease should have irradiated red cells and platelets indefinitely (2/C).			
All patients treated with purine analogue drugs (fludarabine, cladribine, bendamustine and pentostatin) should receive irradiated blood components indefinitely (2/C).			
Patients with CLL or other haematological diagnosis treated with alemtuzumab should receive irradiated components (2/C).			
Patients with aplastic anaemia undergoing treatment with ATG or alemtuzumab should receive irradiated blood components (2/C).			
Patients receiving ATG or other T-lymphocyte-depleting serotherapy for rare types of immune dysfunction conditions should receive irradiated blood components (2/C).			

Patients (adult and paediatric) undergoing peripheral blood lymphocyte collections for future CAR-T cell re-infusion should receive irradiated cellular blood components for 7 days prior to and during the harvest, to prevent the collection of viable allogeneic T lymphocytes. Irradiated blood components should continue to be used until 3 months following CAR-T cell infusion unless conditioning, disease or previous treatment determine indefinite duration, e.g. previous diagnosis of HL or previous purine analogue treatment (1/C)			
For patients with aplastic anaemia, transfusion of irradiated cellular components is not routinely recommended, except for HLA-selected platelets, transfusion of granulocytes, donations from first- or second-degree relatives, or planned relevant treatment (e.g. ATG, alemtuzumab, HSCT) (1/B).			
Use of irradiated components for adult patients or children treated for acute leukaemia or NHL (including CLL unless treated with alemtuzumab) is not routinely recommended except for HLA-selected platelets, transfusion of granulocytes, donations from first- or second-degree relatives, or due to current or previous treatment (2/C).			
Use of irradiated cellular blood components is not indicated following treatment with alemtuzumab using the schedule currently recommended for MS or vasculitis (1/B).			
Use of irradiated cellular blood components is not indicated for patients undergoing solid organ transplantation who have received alemtuzumab or ATG as induction therapy or for treatment of graft rejection (1/B).			

Treatment of patients with rituximab is not an indication for use of irradiated cellular blood components unless this is indicated for a different reason (underlying diagnosis, type of component or previous treatment) (1/B).			
Where patients require irradiated cellular blood components, components must be requested and clearly prescribed as irradiated (1/C).			
Specific requirements, including need for irradiated blood components, must be part of the bedside check prior to administration of all blood components with documentation of checks (1/C).			
Clinical areas and transfusion laboratories should agree and implement communication processes to ensure specific requirements and provision of irradiated cellular blood components are met for patients under shared care (1/C).			
Patients requiring irradiated cellular blood components should receive appropriate information. Where possible patients should carry cards to facilitate provision of appropriate components (1/C)			