



Date of publication: 10 th February 2009	Implementation: For information
------------------------------------------------------------	----------------------------------------

Change Notification UK National Blood Services No. 6 - 2009

X-irradiation as an alternative to γ -irradiation

Applies to the Guidelines for the Blood Transfusion Services in the United Kingdom – 7th Edition 2005

Gamma irradiation, although effective in preventing TA-GVHD, has some drawbacks. It involves the use of a radioactive source, which is subject to stringent health and safety, and security, regulations. The machines are also very expensive to buy and decommission when no longer required. In addition, due to decay of the source, regular recalibration is required and irradiation time is increased.

X-ray irradiation is a possible alternative to gamma irradiation. This has been delivered in some areas using linear accelerators, though dose mapping these machines for this purpose may be difficult. However, a shielded cabinet X-ray radiation source is now available - the Raycell, manufactured by Nordion. The Nordion Raycell is in use in several European and US sites, including Puget Sound in Seattle, Sweden, Italy, France and Germany. In France, EFS and AFSAPS approval has been granted based on published data.

The Nordion Raycell is dose-mapped prior to release from the factory and at installation, and the manufacturers recommend routine dosimetry at 6-monthly intervals. Nordion also manufacture a radiation sensitive label specifically for use with X-radiation.

The Standing Advisory Committee on Blood Components have reviewed data on the use of this machine for platelets, granulocytes, red cells produced for intra-uterine transfusion (IUT), red cells for exchange transfusion to neonates and red cells in additive for neonates following IUT (or for adults for certain clinical indications). It has been concluded that gamma- and X-irradiation can be regarded as equivalent. (JPAC 08-75)

Amend:

Section 8.28 Irradiated components:

For the whole of this section X-irradiation may be regarded as equivalent to gamma-irradiation. Times when irradiation should be undertaken and the permitted post-irradiation storage times are the same, as are the required labeling and dosing (recommended minimum dose achieved in the irradiation field is 25Gy, with no part receiving >50Gy).

\Continued



Please note that the X-ray equipment should be dose-mapped prior to release from the factory and at installation, and the manufacturers recommend routine dosimetry at 6-monthly intervals. They also manufacture a radiation sensitive label specifically for use with X-radiation.

Sheila MacLennan

Dr Sheila MacLennan

Professional Director - Joint UKBTS/NIBSC Professional Advisory Committee

☎ Direct Dial: (0113) 214 8638

✉ sheila.maclennan@nhsbt.nhs.uk