Customer receipt and storage of red cell unit guide

This guidance refers to Packed Red Blood Cells (PRBC) and Stored Whole Blood (SWB), hereby referred to as red cell units.

Expiry dates of red cell units

Packed Red Blood Cells may be stored for a maximum of 42 days from the date of collection.

Stored Whole Blood may be stored for a maximum of 21 days from the date of collection.

All expiry dates are shown on the unit label. On the date of expiry, the unit must be discarded as clinical waste.

If you are a blood sharing practice and have a unit of PRBC that is approaching its expiry date, please contact us. We may be able to arrange for another practice to use it and send you a replacement unit.

Receipt of red cell units

All practices should have an acceptance policy in place for the receipt of blood products. Acceptance of blood products into your facility should be performed by a trained member of staff and as soon as possible after receipt of the delivery. Where present in the transport box, the timestrip should be verified as part of the acceptance policy. Guidance on reading timestrips can be found on our website.

All our red cell units are subject to quality control checks prior to release, which includes confirmation of the integrity and normal appearance of the unit. Please inspect your red cell unit as part of your acceptance policy. If you have received a damaged or discoloured unit, we kindly ask that you inform us within 24 hours of receipt so we can investigate this.

Changes to the red cell unit that are reported after 24 hours of receipt may not be subject to replacement as the changes may have occurred because of sub-optimal on-site handling and storage. To maintain the optimum quality of your red cell units, please follow our storage guidance below.

Storage of red cell units

PRBC and SWB must be kept at a core temperature of 4°C (+/- 2°C). Variation from the core temperature of 4°C (+/- 2°C) must be kept to a minimum and restricted to only the short period necessary for examining or issuing the unit.

To ensure red cell units are being stored correctly, it is vital that the correct storage equipment is used. A dedicated red cell fridge that maintains a temperature of 4°C (+/- 2°C) with a continuous alarmed max/min temperature recording thermometer is ideal. Take care when positioning your fridge to avoid placing it in direct sunlight and close to heating or cooling vents. Where a max/min thermometer is being used to monitor the fridge temperature, the probe should be placed in a small container of 10% glycerol (100ml) to prevent the thermometer reading transient fluctuations of temperature caused by the fridge door being briefly opened. Temperatures should be read and recorded at least twice daily and fluctuations outside of the normal range immediately reported to

a designated member of staff. We have a blood fridge temperature log available for download on our website.

Red cell units should not be placed too close to the cold plate or any vents in the fridge as this can result in over cooling of the unit. Ensure good stock rotation occurs so that older units are accessed first.

The zip lock bag, red cell units are delivered in must be removed prior to storage. However, we advise that you keep the bag as it may be required if the unit is to be warmed in water before administration. Red cell units should be stored upright, ideally in a blood unit stand, with space between units. As red cells are metabolically active during storage and gaseous exchange is required both into and out of the unit to maintain red cell health, air must be able to circulate easily around each individual unit.

We recommend that a trained person inspects your red cell units each day to document and report any colour change or abnormality to a designated member of staff. Gentle inversion of each unit several times a week is also advised to ensure the additive solution is regularly mixed with the red cells.

If red cells are exposed to a core temperature between 1°C and 10°C, i.e. due to equipment failure, the unit may be released for transfusion provided:

- That the red cell unit has been exposed to such a temperature change on one occasion only
- That the duration of the temperature change was under five hours
- That a documented system is available to cover such eventualities
- That adequate records of the incident are compiled and retained

If red cell units are removed from storage to be transfused but are then no longer required, it is recommended that they are returned to the fridge within a maximum of 30 minutes. Further information can be found on in our step by step guide to blood unit separation.

All red cell units should be discarded after four hours from breach when held at room temperature.

Appearance of red cell units

Red cell units undergo many unavoidable changes during refrigerated storage, even when storage conditions are optimal. We can reduce the occurrence of these changes with our processing techniques, the anticoagulant, and red cell nutrient solutions we add. Proper storage will also help to minimise the impact of these changes, but they will increase over time, with older units demonstrating the most changes. Therefore, analysis of older red cell units before administration is recommended. Further information regarding these quality changes can be found in our guide to stored PRBC unit quality.

As the red cell unit ages, it will darken slightly in shade, but the whole unit should remain consistent in its darkening tone. It should never appear dark purple, brown, or black. A turbid appearance, presence of visible clots, particulate matter, or bubbles are all abnormal and the unit should not be transfused. Please see figures 1 and 2 for a guide to red cell unit colouration.

Please notify Pet Blood Bank as soon as possible of any abnormalities prior to discarding the unit. We may wish to investigate this further in line with our returns policy and this may require the unit to be returned. Ensure that the unit is clearly marked to indicate it cannot be administered to a patient.

Figure 1: normal colouration of a PRBC unit

Figure 2: abnormal colouration of a PRBC unit

References

National Blood Service. (2013). Guidelines for the Blood Transfusion Services in the United Kingdom, 8th edition. TSO