What are O RhD negative red blood cells?
Donors who have group O RhD negative red blood cells do not express any A, B or RhD antigen on their red cell surface and are therefore, compatible with every other ABO and RhD blood group. They are often referred to as “The Universal Donor” because their blood can be given safely to most patients. A consequence of this is a higher demand for units of this blood group from hospitals. O RhD negative units are sometimes referred to as “Emergency O Negs” or “Flying Squad Blood”.

How many people in the UK have group O RhD negative blood?
7% of the UK population are blood group O RhD negative. However, in 2011/12, NHSBT required over 11% of donations to be group O RhD negative to meet demand from hospitals. This means that each group O RhD negative member of the population has to donate around 20% more blood than average to meet demand.

When and why are O RhD negative red blood cells transfused?
O RhD negative red blood cells can be given to any patient with any blood group and are the safest blood group to give when the patients’ blood group is unknown or is not immediately available, for example in emergency situations when there is no time to wait for either group specific or crossmatched blood.

The use of emergency O RhD negative red blood cells avoids major ABO incompatibility, but there is still a risk of a transfusion reaction if the patient has atypical red cell antibodies.

Are there other times when O RhD negative red blood cells can be transfused?
Yes. There are mandatory, recommended and acceptable indications for the transfusion of O RhD negative red blood cells. There are also some unacceptable indications. These are recommended by the National Blood Transfusion Committee and are listed below.

MANDATORY INDICATIONS
O RhD negative red blood cells should always be transfused in the following circumstances:
- The patient is group O RhD negative and they have an anti-D antibody;
- The patient is group O RhD negative and they are a female aged less than 60 years;
- Emergency use for female patients aged less than 60 years where their blood group is unknown.

RECOMMENDED INDICATIONS
O RhD negative red blood cells should be transfused in the following circumstances:
- For transfusion dependent patients (e.g. Haemoglobinopathy, Aplastic Anaemia, and Myelodysplastic Syndrome) whose blood group is O RhD negative.
ACCEPTABLE INDICATIONS

O RhD negative red blood cells may be transfused in the following circumstances:

- Male patients whose blood group is O RhD negative, who do not have any anti-D and require less than or equal to 8 units in total;
- Female patients aged over 60 years, whose blood group is O RhD negative, who do not have any anti-D and require less than or equal to 8 units in total;
- Non group O, RhD negative infant patients, aged less than 1 year, where group specific units are unavailable;
- Emergency situations where the patients blood group is unknown at the point of transfusion, up to 2 units;
- Non group O, RhD negative patients requiring phenotyped units that are unavailable.

UNACCEPTABLE INDICATIONS

O RhD negative units should not be transfused in the following circumstances:

- If more than 8 units are required for a female patient aged over 60 years, whose blood group is O RhD negative but has no anti-D antibody.
- If more than 8 units are required for a male patient, whose blood group is O RhD negative and does not have any anti-D.
- Emergencies where the patients' blood group is unknown and the patient requires 2 or more units (because the patient should have had their blood group tested by this time).

What if I don’t know how many units of O RhD negative red blood cells a patient is going to require?

In these circumstances, particularly emergency scenarios when the transfusion requirements of the patient may be initially unknown, it is acceptable to start transfusing units with of O RhD negative red blood cells and switch to group specific blood as soon as this is known.

If it becomes clear that more than 8 units are required for an O RhD negative male patient with no anti-D, or an O RhD negative female patient aged over 60 years with no anti-D, then a switch to O RhD positive red blood cells should be made for the remainder of the transfusion episode. The hospital transfusion laboratory will often pre-empt this after 8 units of O RhD negative red blood cell units have been issued.

Why is a maximum of 2 units of O RhD negative units usually recommended for an emergency situation where the patients' blood group is unknown?

During this type of clinical scenario a venous blood sample should be taken from the patient as soon as possible and sent to the transfusion laboratory so that the patients' blood group can be ascertained. If the patients blood group is non group O (i.e. group A, B or AB) then the transfusion laboratory will issue “Group Specific” units so that they conserve the group O RhD negative units for patients with mandatory, recommended or acceptable indications. This practice will ensure that these units are not used when a suitable alternative is available.
# O RhD Negative Red Blood Cells – Quick Facts

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<tr>
<th>Fact 1</th>
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<td>- Only 7% of the UK population are group O RhD negative.</td>
<td>- Group specific red blood cells are as safe as O RhD Negative red blood cells, neither are as safe as crossmatched blood.</td>
<td>- O RhD negative red blood cells are often referred to as “Emergency Units” or “Flying Squad Blood”.</td>
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<td>- The 2010 National Comparative Audit of Blood Transfusion Re-Audit of the Use of Group O RhD negative red cells has shown that hospitals are stocking too many O RhD negative red blood cells and then using them inappropriately to avoid letting them time expire.</td>
<td>- The 2010 National Comparative Audit of Blood Transfusion Re-Audit of the Use of Group O RhD negative red cells identified 114 (2.2%) unacceptable transfusions of O RhD negative red blood cells.</td>
<td>- Patients with red cells antibodies can still have an adverse reaction when transfused with O RhD negative red blood cells – they are not 100% safe for every patient.</td>
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<tr>
<td>- Issue of O RhD negative red cells is increasing in England but the donor population is not.</td>
<td>- O RhD negative red blood cells are the only safe blood group that can be given when the patients blood group is unknown or not immediately available (e.g. in emergencies).</td>
<td>- O RhD negative red blood cells are known as “The Universal Donor” because they can be given to anyone with any blood group.</td>
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Flying squad blood / Emergency O negs should only be used in a genuine emergency and only until the patients blood group can be confirmed.

If these units are used then the hospital transfusion laboratory MUST be informed immediately for the following reasons:

- If it is a genuine emergency then the blood transfusion support required for the patient is likely to be more than the number of flying squad units available.
- The transfusion laboratory staff need to know the identity of the patient (if known), what the situation is and what other blood components are most likely to be needed to support the care of the patient.
- Arrangements must be made for the emergency units used to be replaced immediately in case of another emergency.

Unnecessary overstocking of O RhD negative red blood cells in the hospital transfusion laboratory can lead to inappropriate use and wastage of these units.
INDICATIONS FOR THE USE OF O RhD NEGATIVE RED BLOOD CELLS

<table>
<thead>
<tr>
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<tr>
<td>• O RhD negative patients with anti-D</td>
<td>• O RhD negative transfusion dependent patients (e.g. Haemoglobinopathy, Aplastic Anaemia, Myelodysplastic Syndrome)</td>
<td>• O RhD negative males with no anti-D requiring ≤8 units</td>
<td>• O RhD negative males with no anti-D where &gt;8 units are required</td>
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<tr>
<td>• O RhD negative females &lt;60yrs</td>
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<td>• O RhD negative females &gt;60yrs with no anti-D where ≤8 units are required</td>
<td>• O RhD negative females with &gt;60yrs with no anti-D where &gt;8 units are required</td>
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<td>• Emergency use for females &lt;60yrs where blood group is unknown</td>
<td>• Non group O RhD negative infants (&lt;1yr) where group specific units are unavailable</td>
<td>• Emergencies where the patients blood group is unknown and the patient requires &gt; 2 units</td>
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Additional Sources of Information
If you are interested in finding out more about blood transfusion and have access to the internet, you may find the following websites useful:

UK Transfusion Services
http://www.transfusionguidelines.org.uk.index.aspx
O RhD negative guidelines from the National Blood Transfusion Committee
http://www.transfusionguidelines.org.uk/docs/pdfs/nbtc_bbt_o_neg_red_cells_recs_09_04.pdf

Healthcare professionals can obtain further supplies of this leaflet by accessing ww3.access-24.co.uk and entering their Regional Transfusion Committee code. If you do not have a code please call 01865 381042.

For further information please consult your Hospitals Blood Transfusion Policy or contact a member of your Hospital Transfusion Team.

NHS Blood & Transplant (NHSBT) is a Special Health Authority within the NHS, and provides the blood that patients receive.

The information in this factsheet has been sourced from NHSBT transfusion experts.

NHSBT Customer Services Better Blood Transfusion Team does not accept any legal liability for errors or omissions.