

# Blood Component Support of Rh(D) Negative Individuals

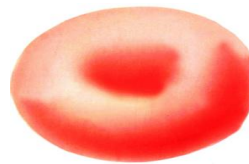
## Introduction

1. Rh(D) negative red cell components is considered as a rare resource as 99.6% of the population in Macao is Rh(D) positive and 0.4% is Rh(D) negative whereas 15% of Caucasians is Rh(D) negative.
2. Rh(D) antigen is presented on red cell membrane, it is not presented on platelets.  
(D- and D+ will be used instead of Rh(D) negative and Rh(D) positive in the following contents.)



D antigen

RhD Positive  
(red cells)



RhD negative  
(red cells)

## The policy of issuing D- red cells in Macao

The best practice is to supply Red Cells of the same ABO and Rh(D) blood group to that of patients for transfusion. Generally Macao Blood Transfusion Service adopts this practice.

However we have to adopt a policy to ensure the supply of D- red cells for those patients who are really in need.

Transfusion of D+ red cells to an D- recipient might be considered in emergency settings when:

- (1) A patient is requiring large numbers of red cells units (>4 units);
- (2) Requiring large numbers of red cells within 24 hours.

(To avoid the situation in which D- patients' lives may be affected while waiting for D- negative red cells transfusion, Mackay Memorial Hospital in Taipei has omitted routine pre-transfusion D typing for the Chinese population since 1988 without any adverse incidents until now.<sup>7</sup>)

## Circumstances in which D- red cells concentrates should be given

3 circumstances in which D- red cells concentrates should be given:

1. Patients who have pre-existing anti-D.
2. D- patients who had received D+ red cells transfusion and have developed anti-D.
3. D- females of child bearing age (but in life threatening situations transfusion of D+ red cells should be considered).

## Transfusion of Platelet Concentrates

- In practice it is impossible to supply D- platelet concentrates to D- patients.
- The Macao Blood Transfusion Service will provide ABO compatible, D+ platelet concentrates for D- patients.
- Anti-D immunoglobulin prophylaxis should be given if necessary.

**Blood Transfusion Service**

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## Transfusion of Fresh Frozen Plasma(FFP) & Cryoprecipitates

- FFP and cryoprecipitate of any Rh(D) type may be given regardless of the Rh(D) type of the recipient.
- No anti-D immunoglobulin need to be given if D- negative patients receive D+ FFP or Cryoprecipitate.

## D- individuals receiving D+ Blood Components

1. About 90% of D- individuals will develop anti-D after receiving large amount of D+ red cells and about 70% will develop anti-D after receiving small amount of D+ red cells.
  - The probability of the production of anti-D is high when D+ **red cells** are transfused to a D- individual.
  - Anti-D may develop in D- patients who have received D+ **platelets** units contaminated by red blood cells that carry D antigens.
  - Transfusion of D+ Fresh Frozen Plasma/Cryoprecipitate will not cause the production of anti-D.
2. Theoretically a D- individual who is receiving D+ **red cells** transfusion for the first time may continue to receive D+ **red cells** until the production of anti-D in that individual.

## Dosage and Administration of Anti-D Immunoglobulin

Where a requirement for administration of anti-D immunoglobulin has been identified then the following approach must be adopted:

- Anti-D immunoglobulin should be administered as soon as possible following transfusion and must be completed within 72 hours of commencement of the transfusion.
- A standard dose of anti-D immunoglobulin(250 micrograms) will be adequate to cover a single Platelets transfusion episode. In the event that repeat platelets transfusion occurs then further anti-D should be administered every 4 weeks.
- In any D- woman who is not yet immunized to RhD, the inadvertent treatment of D+ **red cells** should be treated by giving a suitable dose of anti-D.
- It is not necessary to administer anti-D immunoglobulin to D- females without childbearing potential or to D- males after D+ **red cells** transfusion.

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### Reference

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