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Royal Cornwall Hospitals NHS
NHS Trust

Blood matters in pregnancy…

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Transfusion Medicine, 2007, **17**, 252–262 doi: 10.1111/j.1365-3148.2007.00767.x

GUIDELINES

Guideline for blood grouping and antibody testing in pregnancy

British Committee for Standards in Haematology Blood Transfusion Task Force
A. Gooch,* J. Parker,† J. Wray‡ & H. Qureshi§ *National Blood Service, Manchester, †Department of Haematology, Derby City Hospital, Derby, ‡University of Salford, Salford, Greater Manchester, and §Department of Haematology, University Hospitals of Leicester, Leicester, UK*

- Sample acceptance criteria same as pre-transfusion testing

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Adherence to a strict specimen-labeling policy decreases the incidence of erroneous blood grouping of blood bank specimens

J.A. Lumadue, J.S. Boyd, and P.M. Ness

TRANSFUSION

- Rejected samples tested for 1 yr
- Results compared to historical data
- Poorly labelled samples 40x more likely to be from wrong patient

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Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories*

British Committee for Standards in Haematology
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Serological studies should be performed using blood collected no more than 3 days in advance of the actual transfusion when the patient has been transfused or pregnant within the preceding 3 months.

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What we provide

- Blood group & antibody screen
  - Routine testing
  - Testing following Ab production
- Anti-D
- FMH estimation
- Postnatal testing
- Support in obstetric haemorrhage

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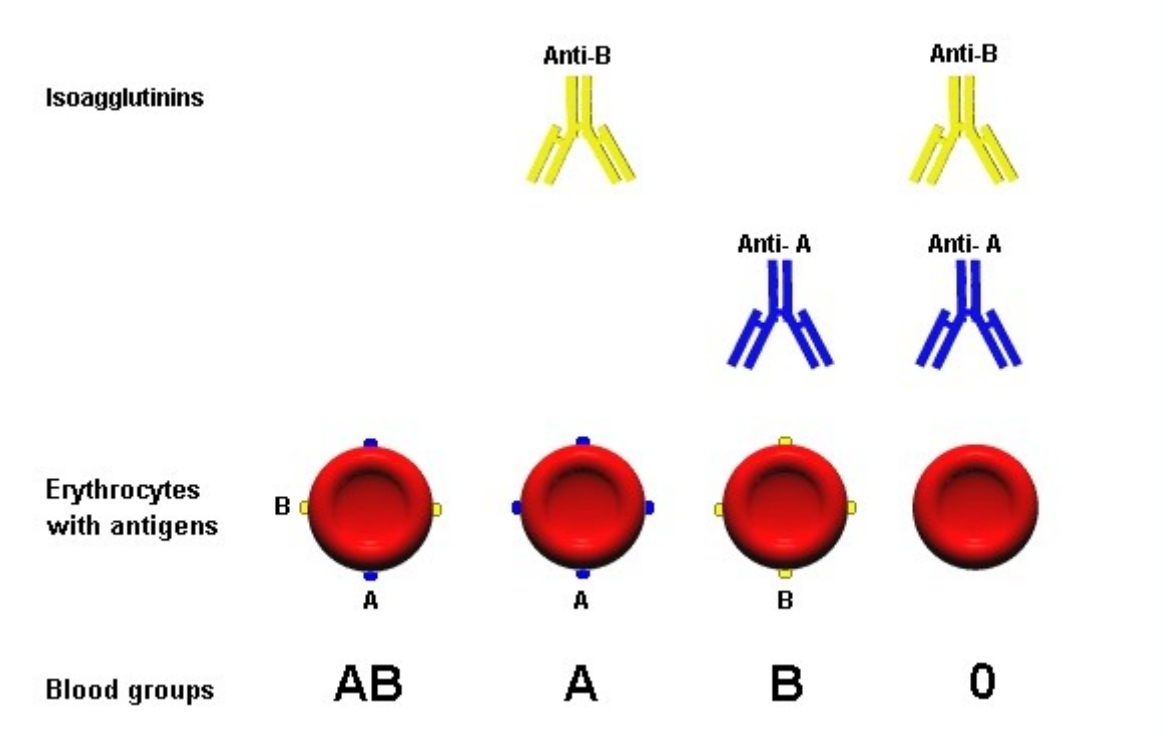
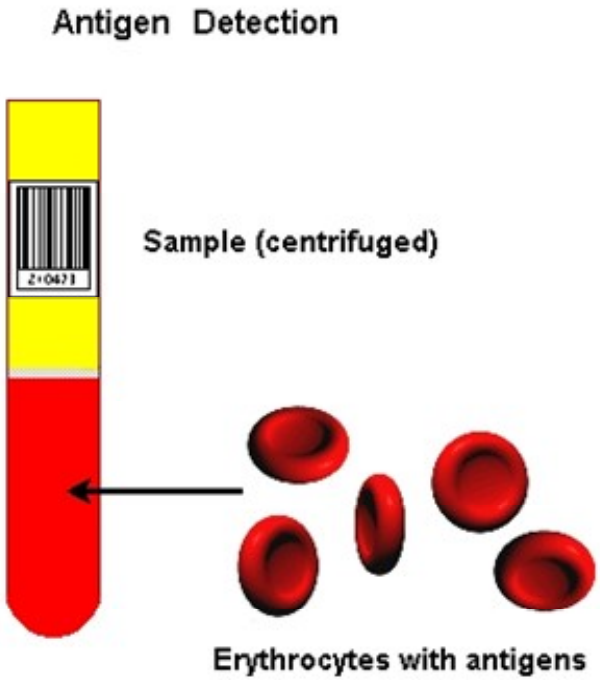
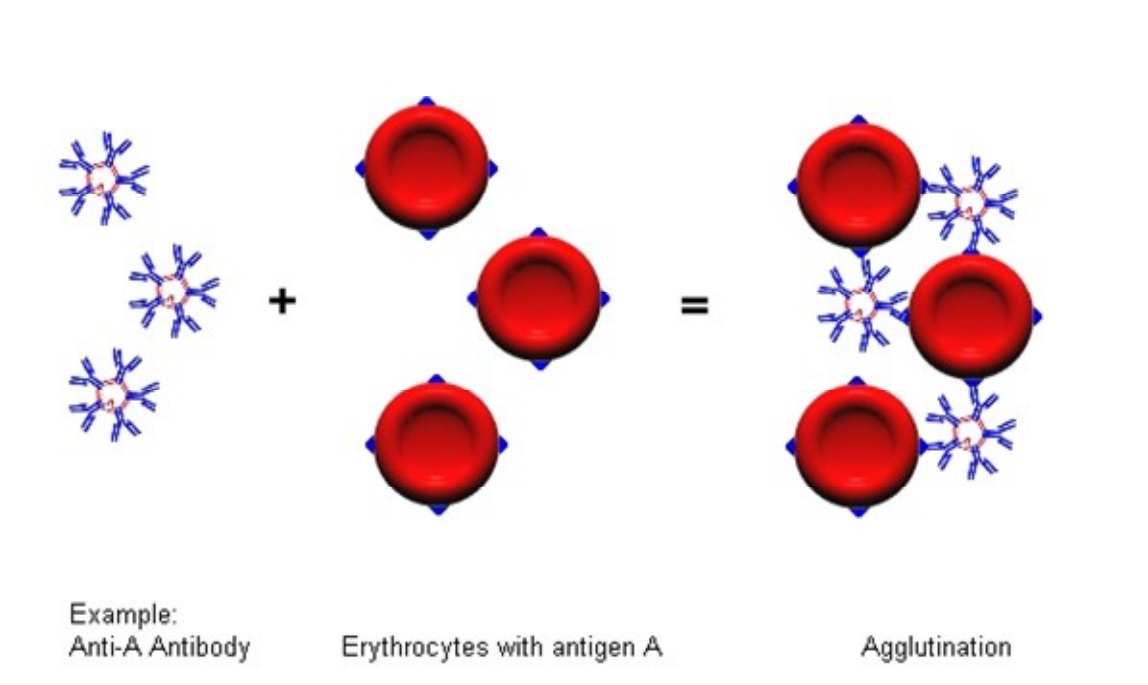
Grouping



How we test

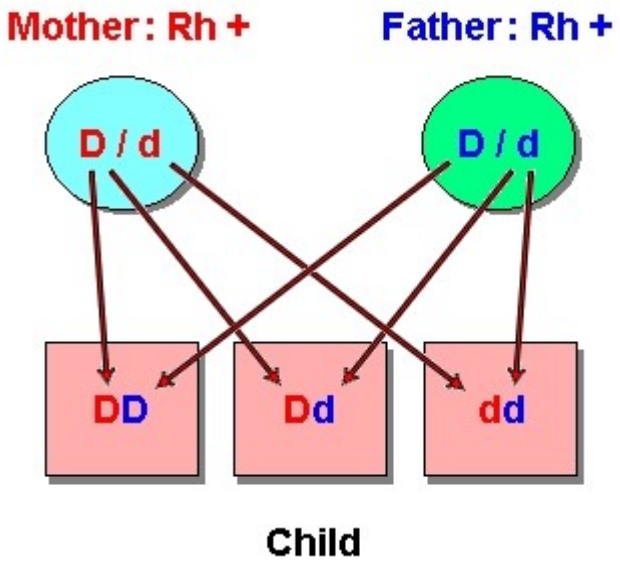

Antigen Detection
Sample (centrifuged)
Erythrocytes with antigens

How we test

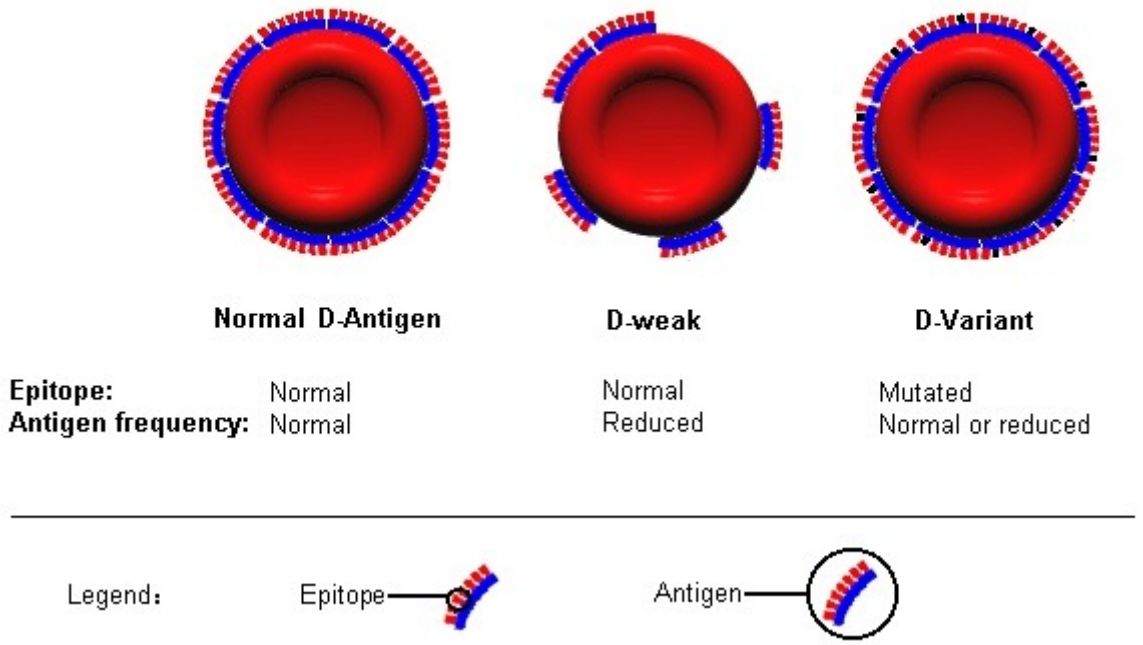

+
=
Example:
Anti-A Antibody
Erythrocytes with antigen A
Agglutination

Grouping

Rh-DD = Rh-positive
Rh-Dd = Rh-positive
Rh-dd = Rh-negative



Weak D


Normal D-Antigen
D-weak
D-Variant
Epitope: Normal Normal Mutated
Antigen frequency: Normal Reduced Normal or reduced
Legend:
Epitope
Antigen

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Why do we group?

- To identify Rh(D) Negative women

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Blood grouping and red-cell alloantibodies

- Women should be screened for atypical red-cell alloantibodies in early pregnancy and again at 28 weeks, regardless of their rhesus D status.
- If a pregnant woman is rhesus D-negative, consideration should be given to offering partner testing to determine whether the administration of anti-D prophylaxis is necessary

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- All pregnant women should be ABO & Rh(D) typed early in pregnancy (10-16/40)
- This should be repeated at 28/40
- No further ***routine*** grouping/screening required

Why we don’t …

Group O

- Powerful leaders
- Goal-oriented
- Enthusiastic
- Optimistic
- Ambitious
- Very cautious
- Good under pressure

Group A

- Perfectionist
- Orderly
- Detail-oriented
- Industrious
- Idealistic
- Soft-spoken
- Safe drivers

Group B

- Flexible thinkers
- Passionate
- Inconsiderate
- Unconventional
- Have excellent concentration

Group AB

- Complicated personality
- Great organizers
- Sensitive, easily hurt
- Rational
- Imaginative

Why we don’t …

Group O

- ‘First blood type’
- Hunter/Gatherers
- High protein
- Meat-based diet

Group A

- Agrarian
- Vegetarian-type diet

Group B

- Evolved after O & A
- Nomadic forebears
- Varied diet

Group AB

- ‘Last’ blood group
- Diet should be a ‘mixture of group A & B type diet’!

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Why we don’t …

- O ‘Visceral & intense. Carnal & primitive’
- A ‘Green & aromatic, reassuring & clean’
- B ‘woody & spicy, nomadic & eclectic’
- AB ‘Synthetic & individualist, uninhibited & visionary’

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Antibodies

- Stimulated by
  - Blood transfusion
  - Pregnancy
  - Environmental factors

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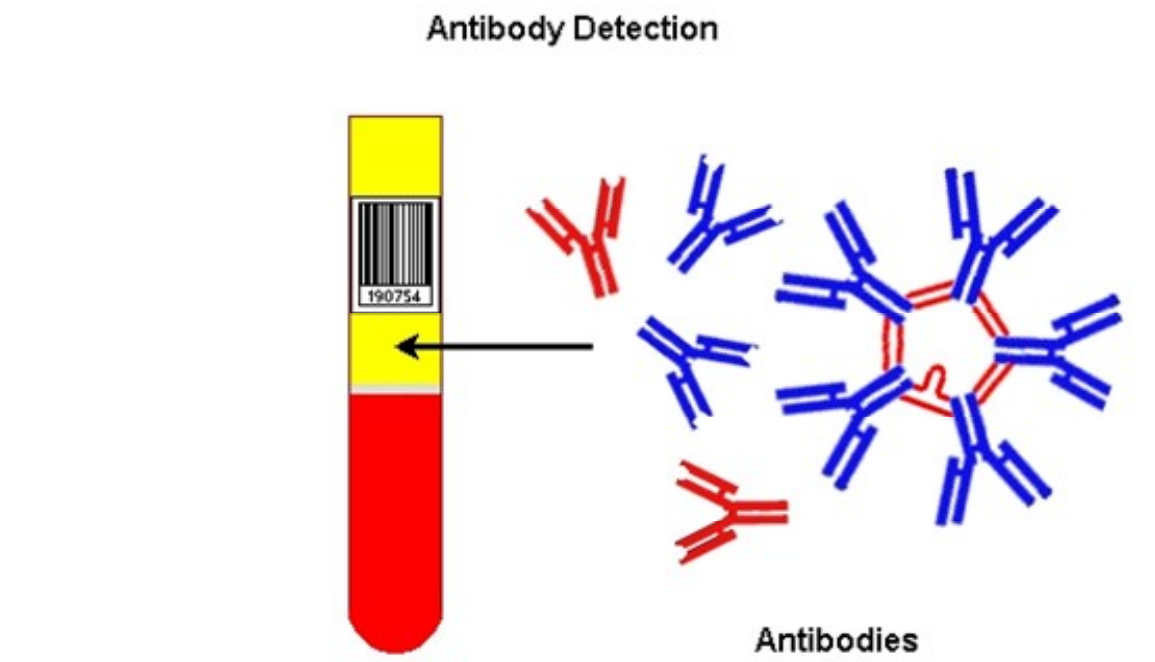
What we test



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Why do we Ab screen?

- To identify foetuses at risk of HDFN
- To predict the severity of HDFN and plan treatment
- To identify potential transfusion problems

Ab's in pregnancy

- Anti-D, anti-c and anti-K are most often implicated in severe HDFN
- Anti-D and anti-c should be monitored by antibody quantitation in iu/mL
- All other antibodies titrated

Ab's in pregnancy

- 'other' specificities
  - Next most likely to cause HDFN:

    C, E, Fy^a, Jk^a
  - In general, a titre of 32 or greater is likely to cause HDN, but there is no definitive link between titre and HDFN

Ab’s in pregnancy

- Where antibody detected is anti-D, c or K
  - Re-test monthly to 28/40, then every 2 weeks to delivery
  - At delivery test placental blood for DAT
    - If positive test Hb & bilirubin

Ab's in pregnancy

- All other antibodies (other than D, c or K)
- Re-test once at 28/40
  - Sample should be screened for additional antibodies
- At delivery test placental blood for DAT
  - If positive test Hb & bilirubin

Ab’s in pregnancy

- Important to tell lab on admission
- Potential for delay in blood for mother
- Plan ahead – blood for baby

Sensitising events Rh(D) Neg's

- <12/40 – No Kleihauer, No anti-D
- <20/40 – No Kleihauer, give anti-D
- >20/40 – Kleihauer, give anti-D
- Post delivery (Rh(D) Pos or UK)

Cord blood testing

- Cord bloods on all infants delivered to Rh(D) Neg women & those with clinically significant antibodies
- DAT only performed in the presence of maternal antibody or significant jaundice

Cord blood testing

- DAT positive alone is not diagnostic
- Problems post RAADP
- If DAT positive, lab should elute antibody

Elution

$$Ag + Ab \leftrightarrows AgAb$$

Support in major haemorrhage

- Be aware of your local MHP
- Transfusion lab key in successful outcomes
- Communicate effectively
- Product and test guidance

Summary

- ABO Rh(D) type to identify women eligible for anti-D prophylaxis
- Screen all women for red cell antibodies
  - Monitor those of clinical significance
- Cord group on children of Rh(D) neg women (and those with clinically significant antibodies)

Summary

- FMH estimation for events >20/40
- Talk to the lab
  - (we’re really not that bad...)