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Anti RhD. Why, When, How Much?

Jane Walden Transfusion Practitioner
June 22nd 2012
Kings Mill Hospital

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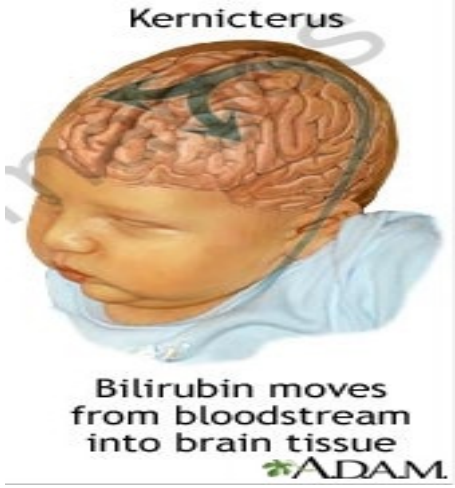
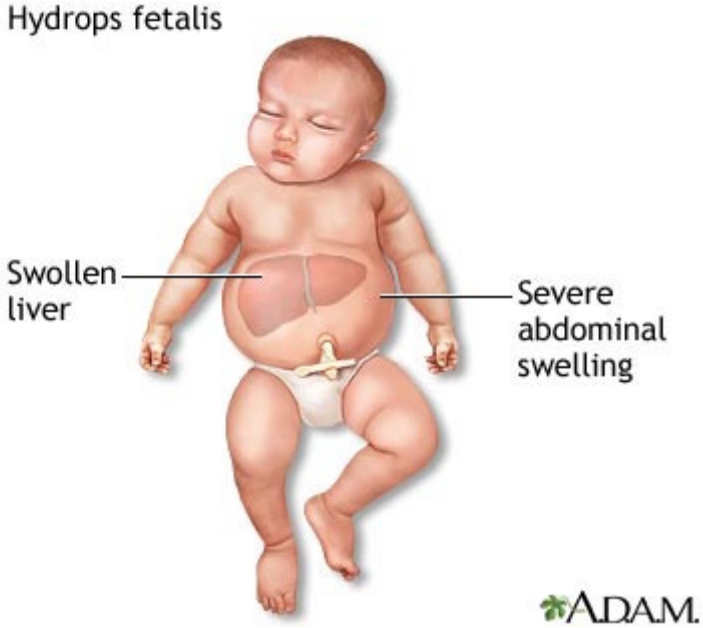
Why?

Prevention of Rh Haemolytic Disease of the Newborn





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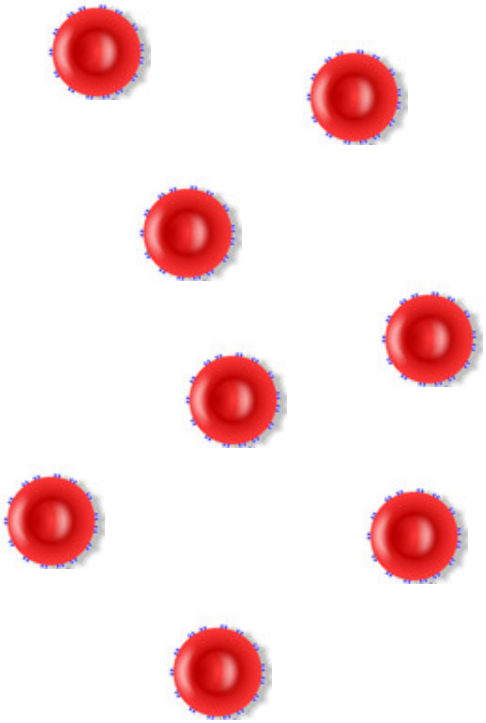
HDN

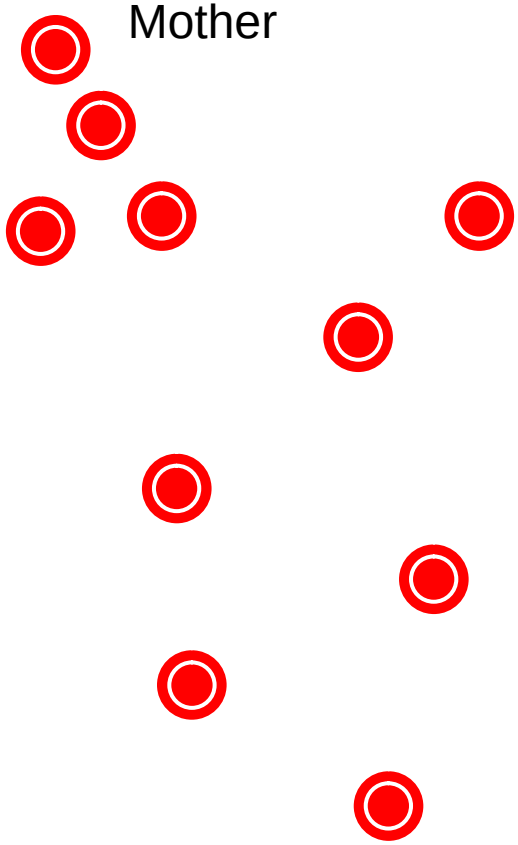
Baby



Rh factor on the surface of baby's red cells

Placenta

Mother



Mother's red cells lack Rh factor

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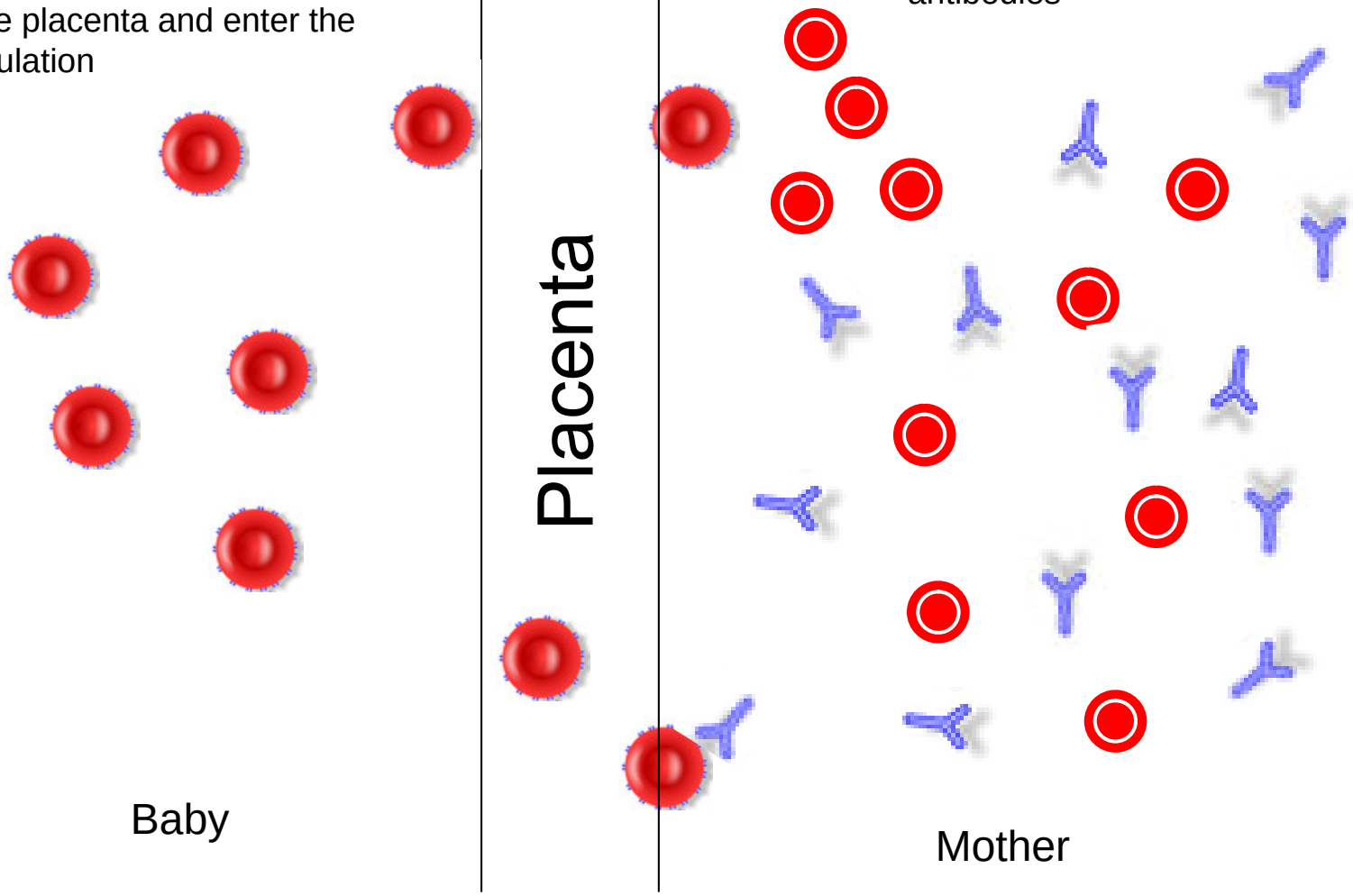
HDN

Due to a sensitising event or at delivery some of the baby's red cells may cross the placenta and enter the maternal circulation

Rh factor on the baby's red cells stimulates the mothers immune system to make Rh antibodies

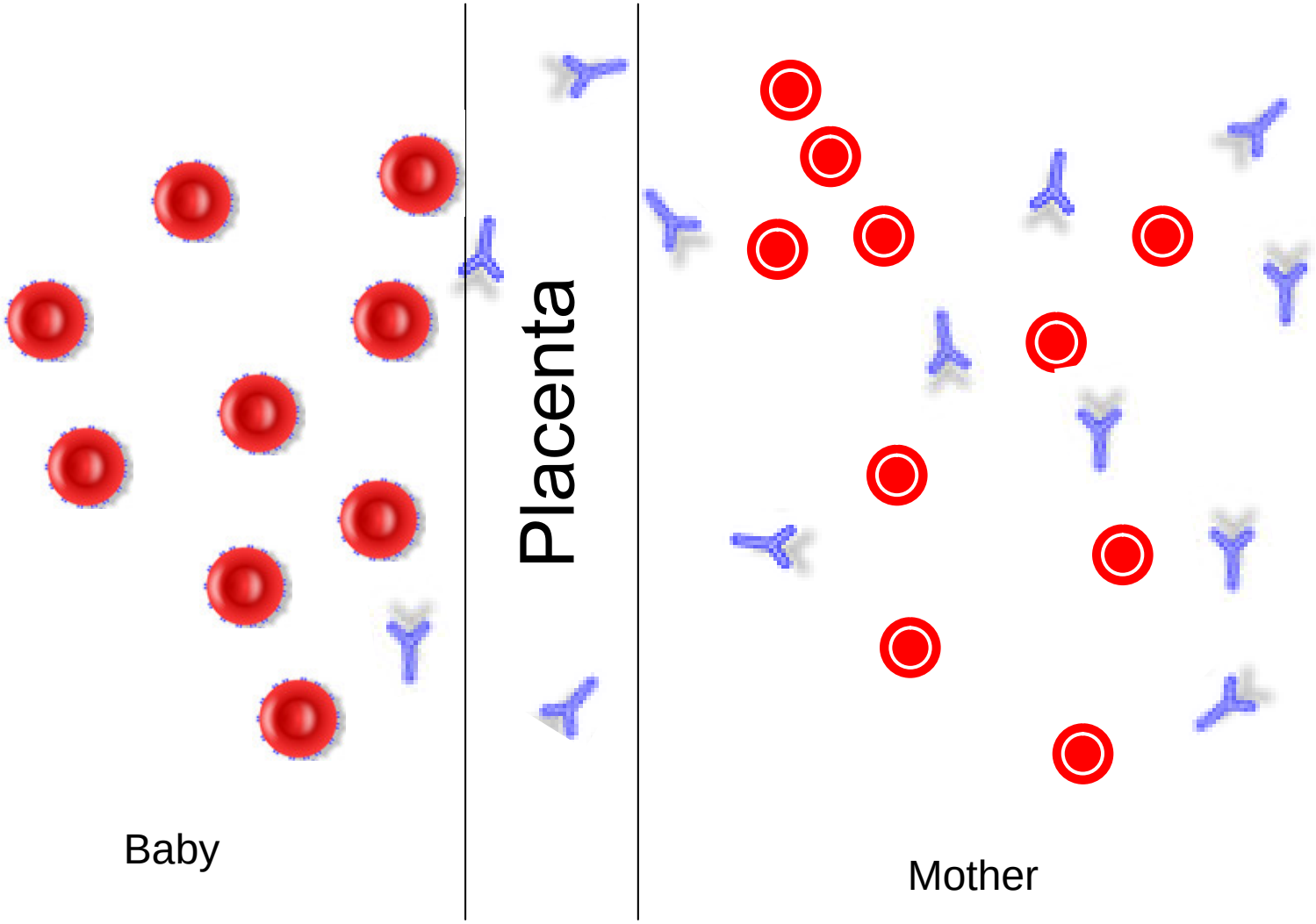


Sensitising Events

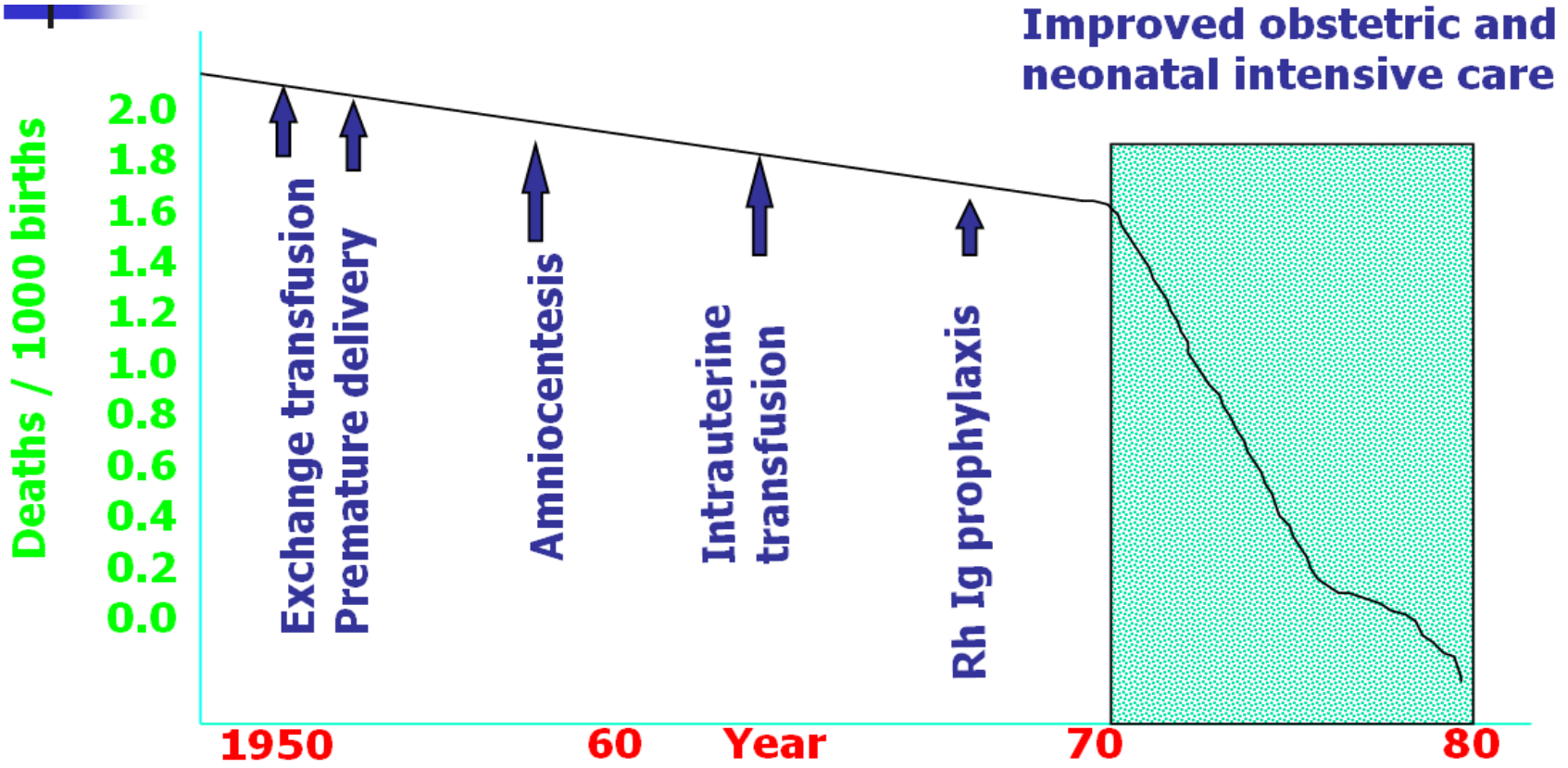
(i.e events that could cause antibody formation)

- • Amniocentesis (7-15%)
- • Cordocentesis
- • Other in-utero therapeutic interventions/surgery
- • (e.g. intrauterine transfusion, shunting)
- • Ante partum haemorrhage
- • Chorionic villus sampling (14%)
- • Ectopic pregnancy
- • External cephalic version (2-6%)
- • Fall/abdominal trauma
- • Intrauterine death
- • Miscarriage (2nd Trimester 4-5%)
- • Termination of pregnancy (4.5%)
- • Delivery

Future pregnancies



Reduction in perinatal deaths per 1000 births caused by HDN



The London and South East Technical Advisory Groups' Transfusion Training Committee.

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HDN 2002

- Approx 500 fetuses/year developed HDN
- 20-30 babies died from HDN
- ??babies lost prior to 28/40

Why?

- Silent bleeds in last trimester
- **N.B**. Anti Ig D DOES NOT protect against the development of other antibodies which can cause HDN

NICE GUIDANCE 2002

Routine antenatal prophylaxis to be offered to:-

- All non sensitised Rh Negative women in their last trimester
- To any potentially sensitising events need further prophylaxis

This is supported by guidance from :-

RCOG

BCSH

RAADP

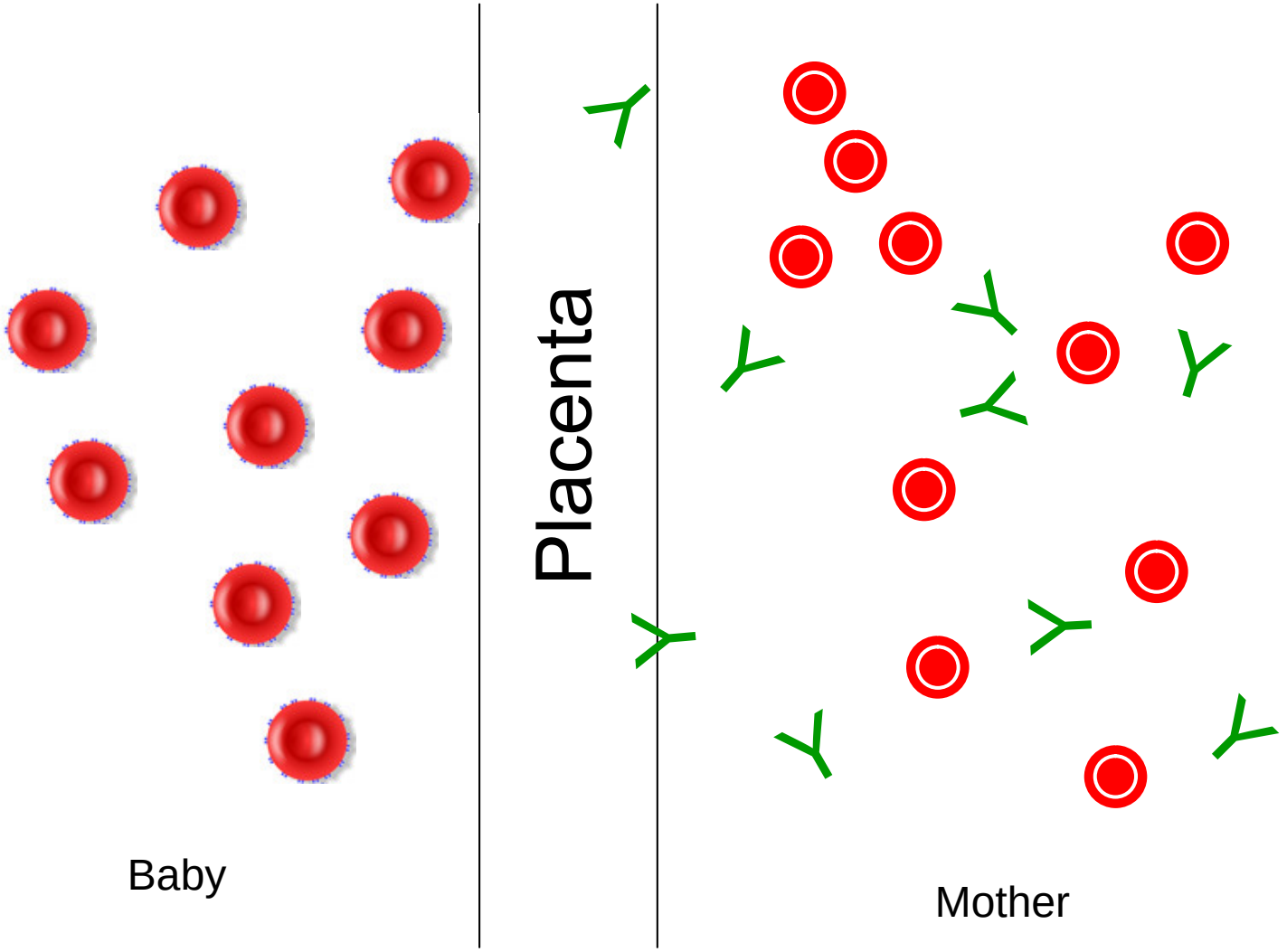
- 500iu to be given at 28 and 34 weeks

OR

- 1500iu to be given at 28 weeks

- Any potentially sensitising event needs further prophylaxis

Prophylaxis using D immunoglobulin



Maternal Testing

- Booking Bloods @ 10-16wks
  - ABO, D Type and antibody screen
- Repeat test at 28 wks
- If an antibody is detected
  - Identify and monitor
- Sensitising event
  - < 20 weeks check ABO, D Type and antibody screen
  - >20 weeks as above plus Kleihauer
- Birth
  - Rh negative and alloantibodies other than Rh D
  - (Cord bloods)

Anti-D Injections

Various doses available.

- 250, 500, 1250, 1500, 2500

Standard dose

- 125 iu per ml of foetal cells bleed (IM)
- 100 iu per ml of foetal cells bleed (IV)

If given IM should be given in the deltoid region to ensure it is in the muscle and not adipose. Being given in the gluteal region increases the risk

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When and how much Anti D is given? PSE

<12 weeks	Usually NOT necessary HOWEVER, 250iu of Anti-D given if: Surgical Intervention-TOP (Medical/Surgical) Unusually heavy bleed, Repeated blood loss Unusually severe pain, Unsure of gestation
12^{+0} to 19^{+6}	At least 250iu given
20^{+0}	At least 500iu given
Birth	At least 500iu given to Women who have a Rh D Positive infant **OR** When the infants D-Type cannot be determined

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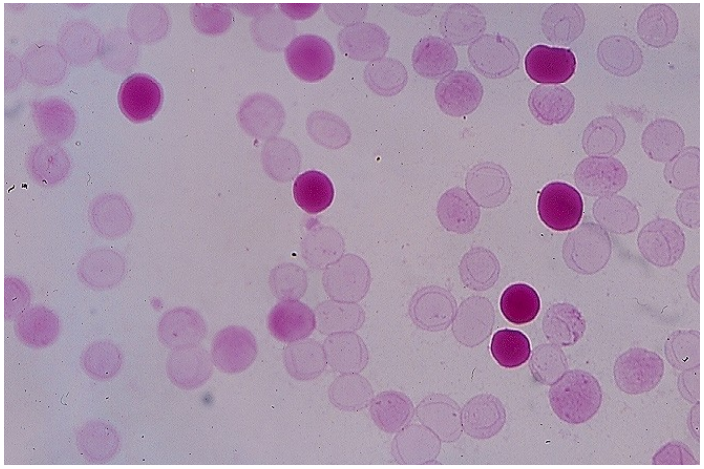
Recurrent Bleeds

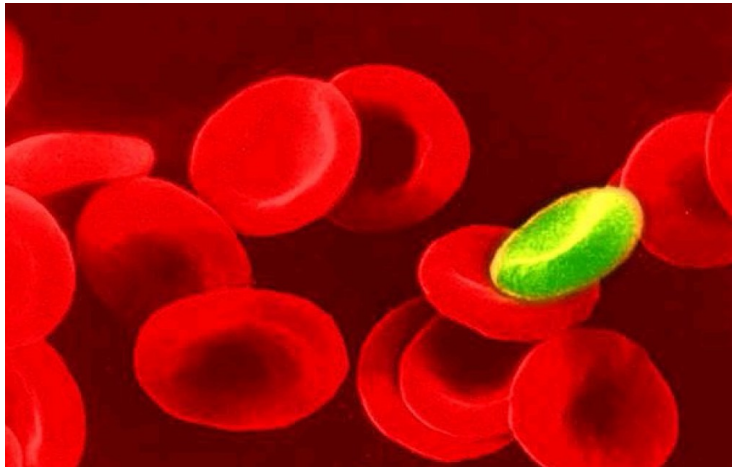
<12 weeks	**NO** Anti-D required:- If threatened miscarriage with viable fetus + bleeding stops before 12 weeks
12^{+0} to 19^{+6}	250iu every 6 weeks
20^{+0}	At least 500iu at a minimum of 6 weekly intervals. If concern over frequency of bleed repeat FMH every 2 weeks. Repeat FMH, 72hrs post injection Additional Anti-D as advised

How do we know if more Anti-D is required?

Kleihauer Test.



Flow Cytometry



Future

- DNA harvested from fetal lymphocytes or free fetal DNA in the maternal circulation may be used to determine the D status of the fetus
- Thus antenatal prophylaxis may only be given to a D negative woman carrying a D positive fetus. (40%)
- Issues over differences between genotype and phenotype in non-Caucasians will need to be fully resolved prior to this policy being implemented

In the interim….

- Right sample/s at the right time
- Appropriate dose of Anti D Ig
- Given in appropriate time scale
- Treat RAADP separately from PSE
- Good record keeping
- Prevent production of red cell antibodies in females of child bearing age