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Back to Basics: Anti-D

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NHS Blood and Transplant.

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Anti-D

Objectives for Today..

- Describe the mechanisms that lead to haemolytic disease of the fetus and newborn (HDFN)
- Explain the role of anti-D in the prevention of HDFN
- Describe the potentially sensitising events (PSEs)

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•Quiz Time!!

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The Purpose of routine anti-D Ig prophylaxis (RAADP) is

- To prevent haemolysis in the mother and immunisation in the fetus
- To prevent immunisation in the mother and haemolysis in the fetus
- To prevent haemolysis in both mother and fetus
- To prevent immunisation in both mother and fetus

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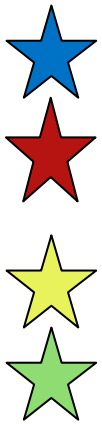
At what stage of gestation is RAADP administered if given as a single dose regime?



- Booking (12-16 weeks)
- 20 – 22 weeks
- 28 – 30 weeks
- 34 – 38 weeks

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Under what circumstances would you give Anti-D Ig to Rh positive women?

- If this is the second pregnancy and the first one was complicated by bleeding in the newborn
- Only at delivery if the baby is Rh negative
- Only if there is a miscarriage and the baby's Rh type cannot be established
- Never

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When contacting the laboratory to confirm if Anti-D is required, what do you need to ask for?

- The blood results
- Kleihauer result
- Does the patient need Anti-D?
- Mother's blood group

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When would you request a Kleihauer test?

- For any sensitising event before 20 weeks
- For any sensitising event after 20 weeks and postnatally
- To identify the mother's blood group
- To decide if Anti-D should be given or not

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A dose of 1500iu Anti-D given IM neutralises how many mls of fetal blood in maternal circulation?

- 2 mls
- 4 mls
- 12 mls
- 20 mls

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The window period for administering Anti-D after a sensitising event is

- 24 hours
- 36 hours
- 48 hours
- 72 hours

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What is the minimum standard dose of Anti-D Ig for a sensitising event **before** 20 weeks gestation?

- 250 iu
- 500 iu
- 1500 iu
- Doesn't need to be given before 20 weeks

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What is the minimum standard dose of Anti-D Ig given for a sensitising event **after** 20 weeks gestation? (BCSH and RCOG guidance)

- 250 iu
- 500 iu
- 1500 iu
- Does not need to be given if has had routine prophylaxis

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Is Anti-D Immunoglobulin a Blood Component?

- No!
- Anti-D Ig is a (POM) medicine made from blood (pooled, non UK plasma) rather than a blood component.
- It is covered by the Medicines Act rather than BSQR.
- Clinical adverse reactions to Anti-D are reported via the MHRA yellow card scheme
- Procedural errors associated with Anti-D are SHOT reportable

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Serious Hazards of Transfusion (SHOT)

- Haemovigilance Scheme
- Collects and analyses data on adverse events and reactions in blood transfusions
- Produces recommendations to improve patient safety

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SHOT 2014

- Anti-D continues to be a problem
- 359 cases looked at...
- 273 cases were due to omission or late administration of anti-D
- 66 inappropriate administration
- 16 Wrong dose according to local policy
- 4 handling and storage errors

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SHOT continued..

Who makes errors?

- 359 cases looked at...
- 17 cases originated from doctor
- 57 cases originated from the lab
- 285 cases originated from nurse / midwife

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Haemolytic Disease of the Fetus and Newborn

- Happens when maternal antibodies cause destruction of fetal red cells
- Can cause hydrops and fetal death
- Can be caused by different antibodies but Anti-D is the most important. Anti-c and Anti-K are also causes.

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Potentially Sensitising Events

- PV bleeding
- Abdominal Trauma
- Termination of Pregnancy
- Diagnosis of IUD
- Invasive antenatal procedures
- Stillbirth
- Miscarriage
- Ectopic Pregnancy
- External Cephalic Version
- Delivery of RhD positive baby
- Intra-operative cell salvage

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Anti-D Ig prophylaxis

- Post-delivery anti-D Ig prophylaxis for RhD negative women began in the UK in 1969
- The programme has been a huge success
- Deaths due to haemolytic disease:
  - 320/100,000 in the 1940s
  - 46/100,000 births pre-1969
  - 18.4/100,000 births by 1977
  - 1.6/100,000 births by 1990

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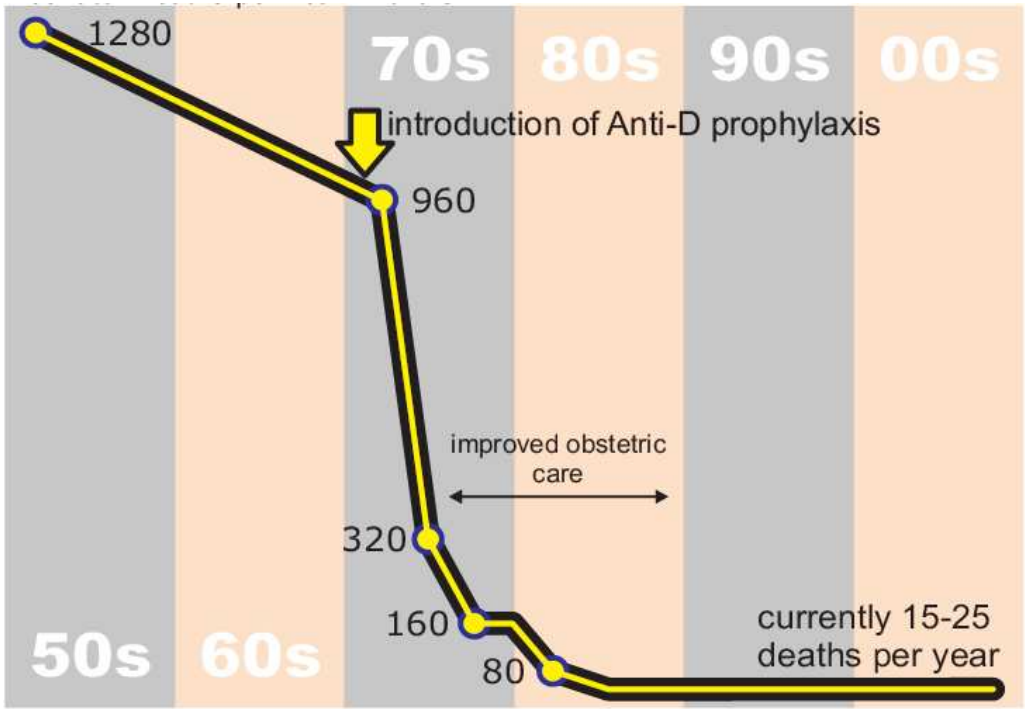
The impact of Anti-D Ig



What Guidelines are there ?

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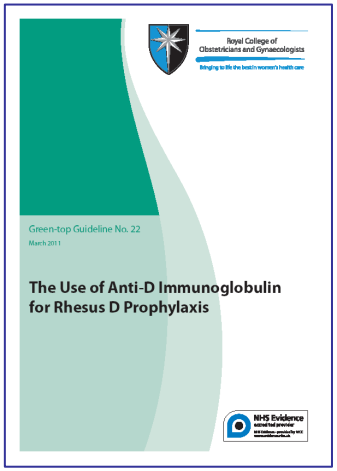

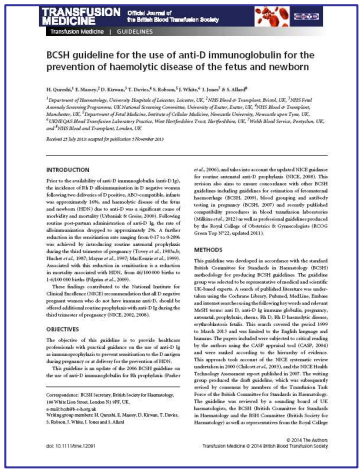

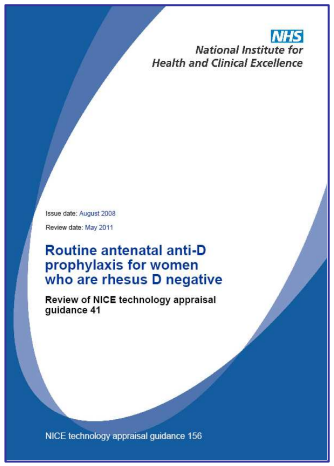

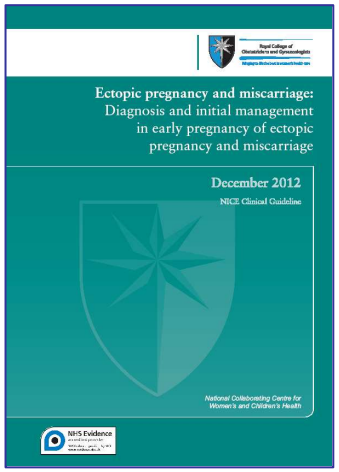

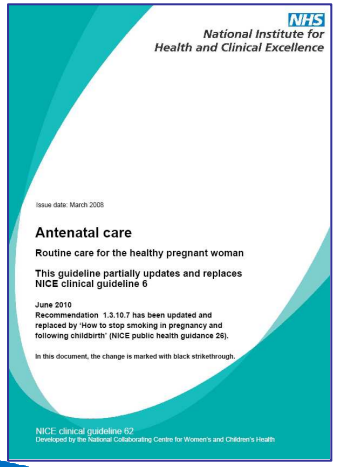

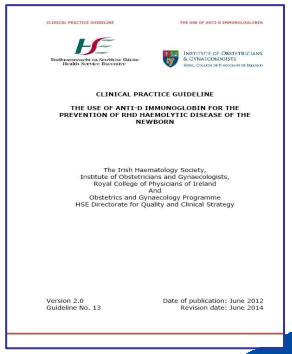

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When and What should midwives be doing?

- **<12/13 weeks**. Give **at least 250iu** anti-D for surgical interventions (ectopics, molar, TOP) or persistent, painful bleeding within 72 hours of event.
- **12/13 – 20 weeks.** Give **at least 250iu** anti-D for PSEs
- **>20 weeks.** Give **at least 500iu** anti-D for PSEs and perform Kleihauer in case more is required
- **28 – 34 weeks.** RAADP either at least 500iu at 28 and 34 weeks **or** 1x 1500iu between 28-30 weeks
- **At birth** If baby is Rh positive (or unknown) give **at least 500iu** anti-D and perform Kleihauer in case more required.

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What Dose should we be using ?

- **Anti-D Ig given IV**
  - **100 IU** will clear 1 ml of foetal red cells
  - is instantly available

- **Anti-D Ig given IM**
  - **125 IU** will clear 1 ml of foetal red cells
  - will take hours to get into bloodstream via muscle, much longer (if at all) via fat and will lose some on the way

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Common misconceptions around anti-D

- "We have sent a Kleihauer Test post natally"
  - No you haven't, you have sent Mother and Cord samples for grouping – the Kleihauer is a reflex test dependent on results of the grouping
- "The Kleihauer Test was negative, so we don't need anti-D"
  - Yes you do - the Kleihauer Test (or FMH Test) is not meant to decide whether or not you give anti-D, only if you need MORE than the standard dose for the event you are dealing with

Common misconceptions around anti-D

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- "We have given anti-D recently for a PSE, so we don't need to give RAADP"
  - Yes you do – you have NO IDEA how much of that anti-D is left in the system, and whether there is enough to cover the woman through the third trimester
- "The antibody screen is positive following prophylaxis, so we don't need to give any more"
  - Yes you do - the positive antibody screen only tells you that SOME anti-D is there – not how much, or whether there will be enough to cover the event

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Common misconceptions around anti-D

- "We only need to give anti-D at delivery of a fetal death"
  - No you don't - you should give anti-D Ig at DIAGNOSIS of the foetal death AND at delivery – the two events may be days apart

- "You can give too much anti-D"
  - You would need to give 15,000 IU anti-D at once, IV, and more than 20,000 IU IM, to get to a maternal plasma level which MIGHT cause problems in the baby

Anti-D Summary

- Effective anti-D prophylaxis is a *partnership* between the laboratory and the clinical area
- Requests for anti-D should be driven by the clinicians, especially in early pregnancy
- The clinical area must be responsive to requests for follow-up from the laboratory, and the lab must not assume that action will be taken purely because they have issued a report

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When should Anti-D Ig be given before 12 weeks gestation in Rh negative women (You can choose more than one answer)

- A. Medical termination of pregnancy
- B. Surgical termination of pregnancy
- C. Ectopic pregnancy
- D. Routinely at booking
- E. To any mother who has had haemolytic disease of the newborn in a previous pregnancy
- F. Recurrent PV bleeding