



Back to Basics: Anti-D

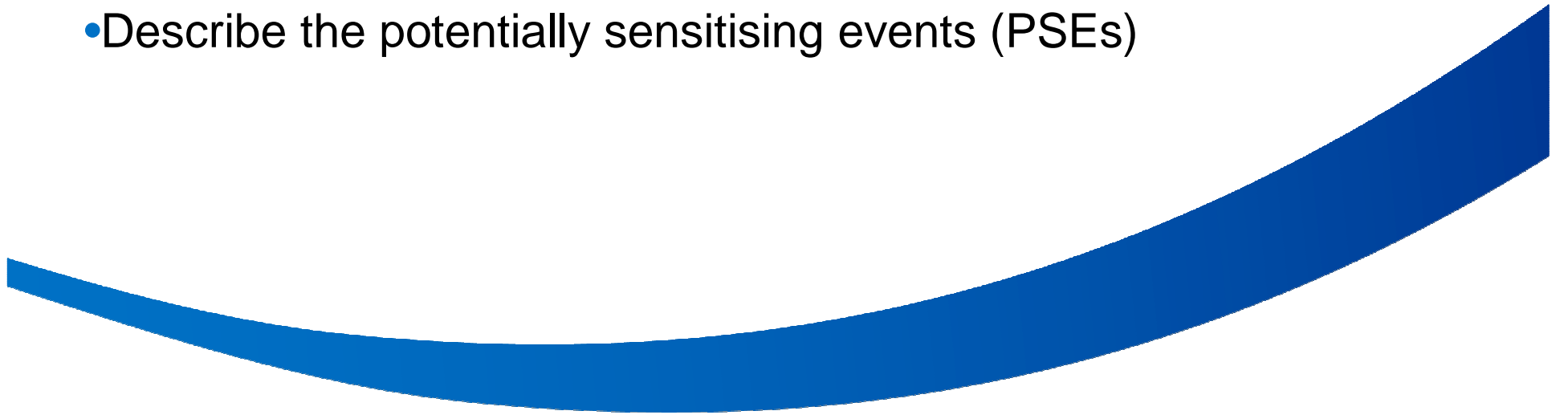
27th January 2016

Katy Cowan - Patient Blood Management Practitioner,
NHS Blood and Transplant.

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)



•Quiz Time!!



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

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



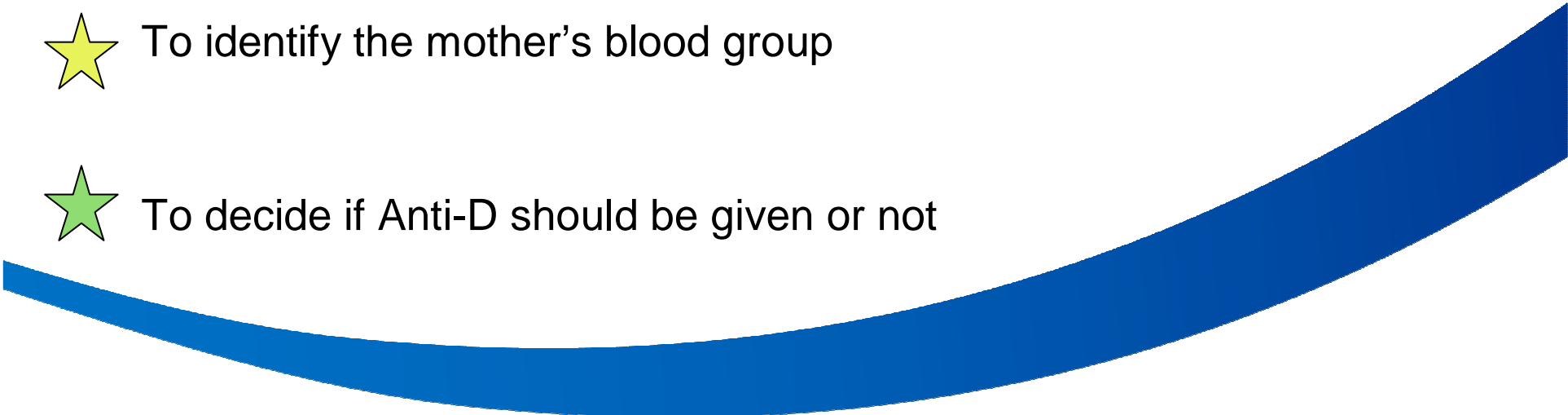
Under what circumstances would you give Anti-D Ig to Rh positive women?

- ★ 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

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

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
- 

**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



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

★ 24 hours

★ 36 hours

★ 48 hours

★ 72 hours



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



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

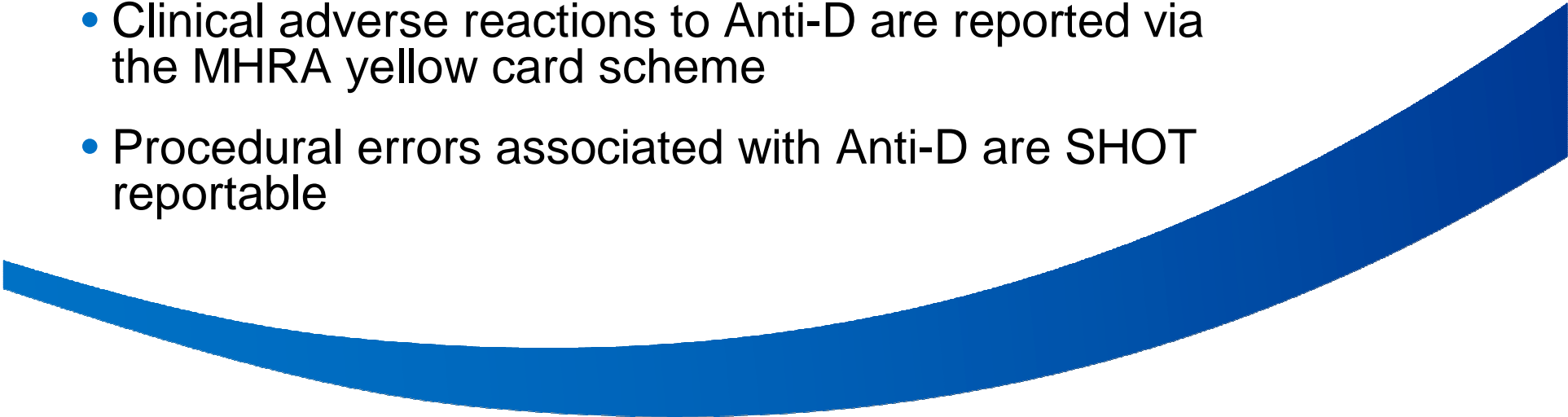
★ 250 iu

★ 500 iu


★ 1500 iu

★ Does not need to be given if has had routine prophylaxis

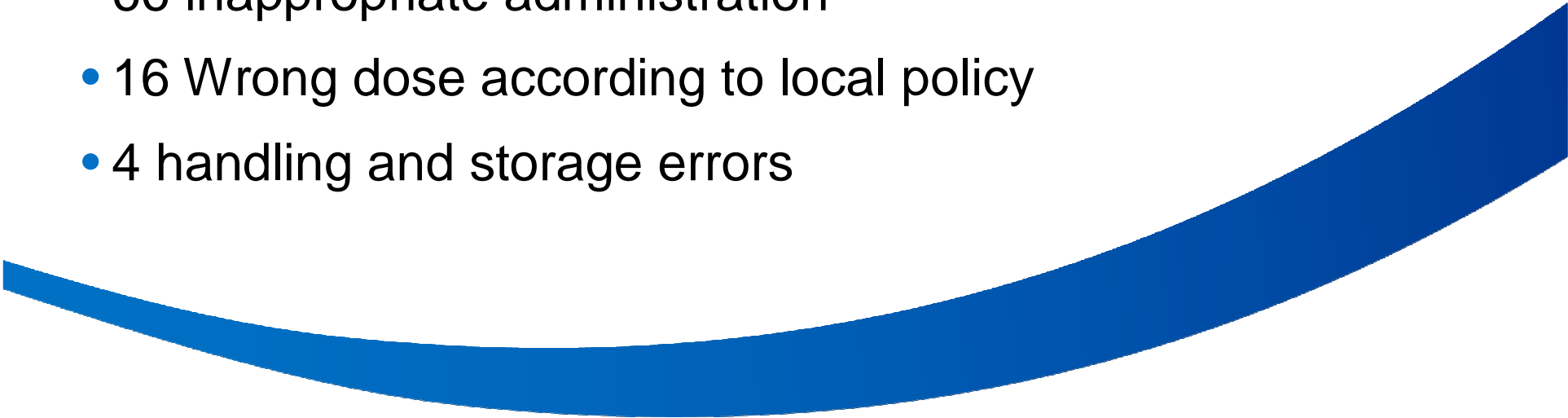
Is Anti-D Immunoglobulin a Blood Component?

- 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
- 

Serious Hazards of Transfusion (SHOT)

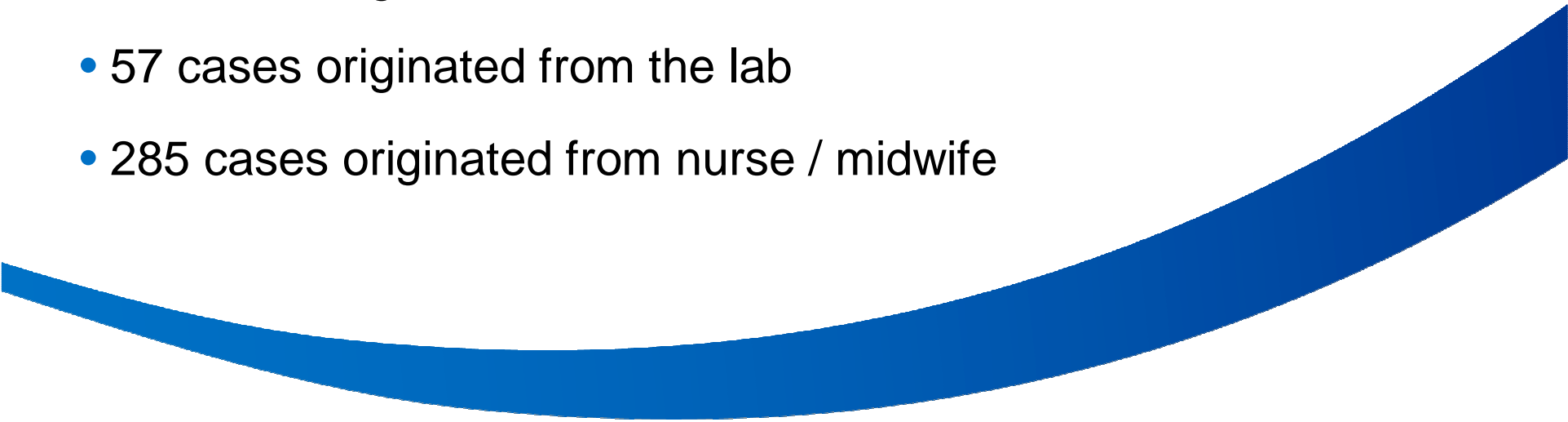
- Haemovigilance Scheme
 - Collects and analyses data on adverse events and reactions in blood transfusions
 - Produces recommendations to improve patient safety
- 

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
- 

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
- 

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.

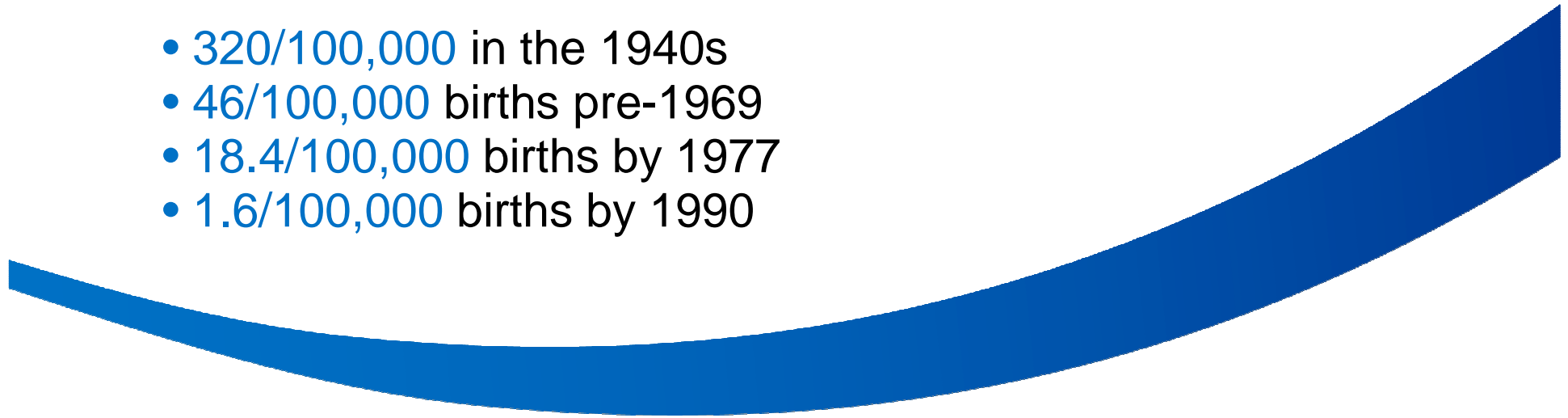


Potentially Sensitising Events

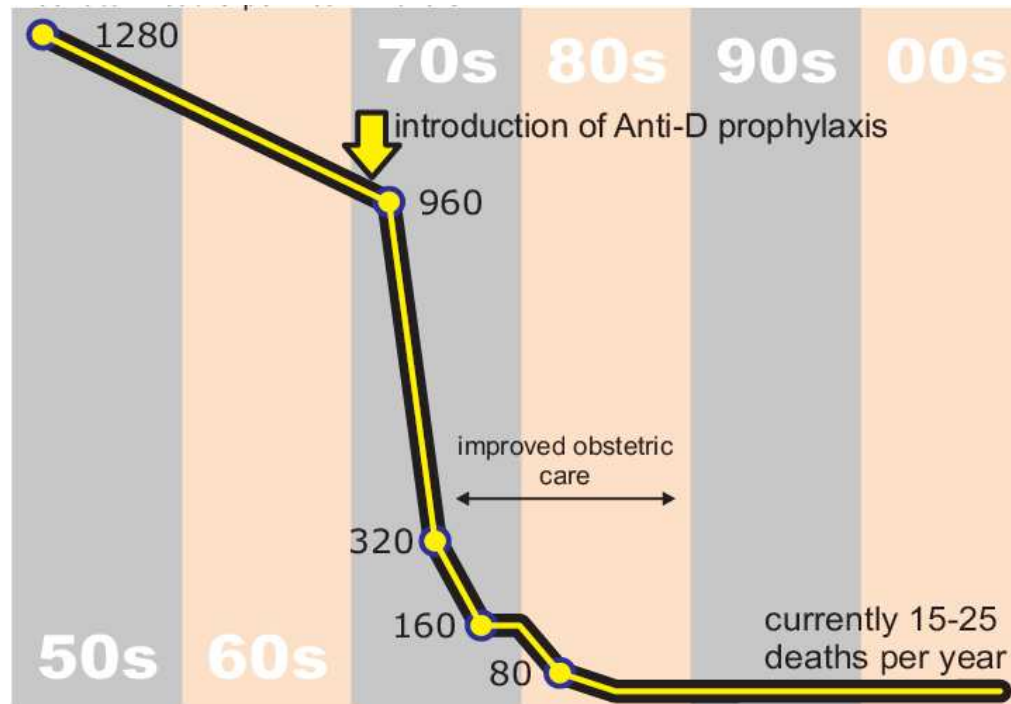
- PV bleeding
 - Abdominal Trauma
 - Termination of Pregnancy
 - Diagnosis of IUD
 - Invasive antenatal procedures
 - Stillbirth
 - Miscarriage
 - Ectopic Pregnancy
 - External Cephalic Version
 - Delivery of RhD positive baby
 - Intra-operative cell salvage
- 

Anti-D Ig prophylaxis

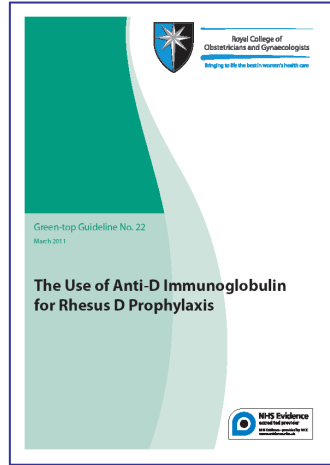
- Post-delivery anti-D Ig prophylaxis for RhD negative women began in the UK in 1969
- The programme has been a huge success
- Deaths due to haemolytic disease:
 - 320/100,000 in the 1940s
 - 46/100,000 births pre-1969
 - 18.4/100,000 births by 1977
 - 1.6/100,000 births by 1990



The impact of Anti-D Ig



What Guidelines are there ?



Royal College of Obstetricians and Gynaecologists
Bringing up the health of women's health care

Green-top Guideline No. 22
March 2011

The Use of Anti-D Immunoglobulin for Rhesus D Prophylaxis

NHS Evidence
Guideline 62



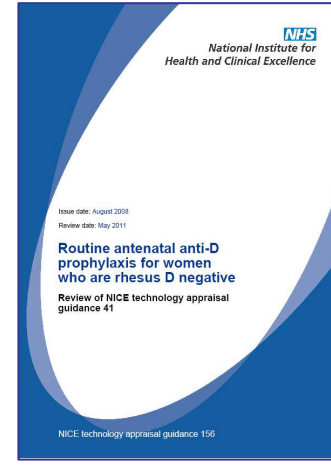
TRANSFUSION MEDICINE
Other: Journal of the British Blood Transfusion Society

BCSH guideline for the use of anti-D immunoglobulin for the prevention of haemolytic disease of the fetus and newborn

H. Gower¹, E. Mannix², F. Evans³, F. Török⁴, N. Robinson⁵, J. Wilson⁶, J. Smith⁷ & S. Jallat⁸

Department of Haematology, University Hospitals of Leicester, Leicestershire, UK; ¹NIH Blood & Tissue Bank, UK; ²NIH Blood & Tissue Bank, UK; ³Department of Haematology, University of Oxford, UK; ⁴Department of Haematology, University of Oxford, UK; ⁵NIH Blood & Tissue Bank, UK; ⁶Department of Haematology, University of Oxford, UK; ⁷Department of Haematology, University of Oxford, UK; ⁸NIH Blood & Tissue Bank, UK

Issued: 20 July 2011; updated for publication: November 2011



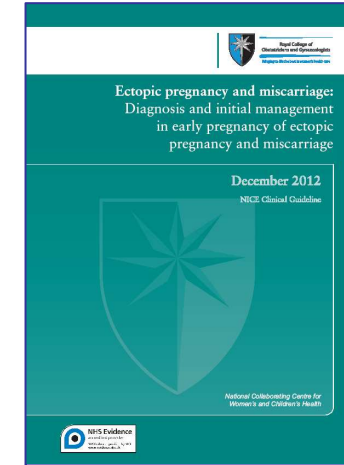
NHS
National Institute for Health and Clinical Excellence

Routine antenatal anti-D prophylaxis for women who are rhesus D negative

Review of NICE technology appraisal guidance 41

Issue date: August 2008
Review date: May 2011

NICE technology appraisal guidance 156

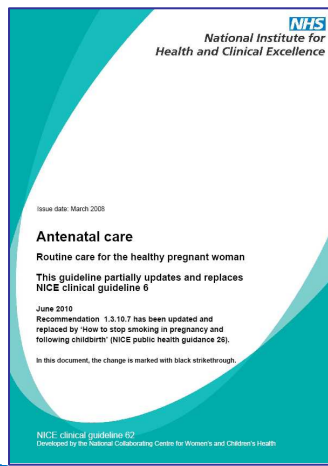


Royal College of Obstetricians and Gynaecologists
Bringing up the health of women's health care

Ectopic pregnancy and miscarriage: Diagnosis and initial management in early pregnancy of ectopic pregnancy and miscarriage

December 2012
NICE Clinical Guideline

NHS Evidence
Guideline 128



NHS
National Institute for Health and Clinical Excellence

Antenatal care

Routine care for the healthy pregnant woman

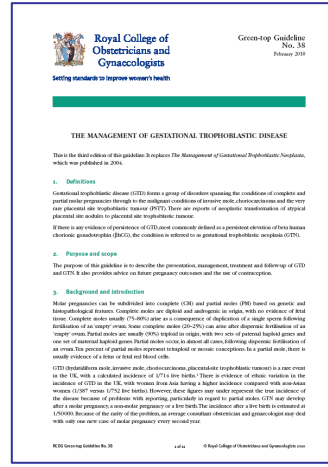
This guideline partially updates and replaces NICE clinical guideline 6

June 2010

Recommendation 1.3.10.7 has been updated and replaced by How to stop smoking in pregnancy and following childbirth (NICE public health guidance 28).

In this document, the change is marked with black strike-through.

NICE clinical guideline 62
Developed by the National Collaborating Centre for Women's and Children's Health



Royal College of Obstetricians and Gynaecologists
Setting standards to improve women's health

Green-top Guideline No. 38 March 2010

THE MANAGEMENT OF GESTATIONAL TROPHOBLASTIC DISEASE

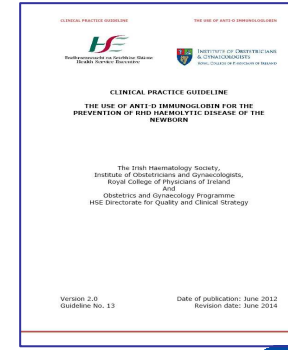
This is the third edition of this guideline. It replaces The Management of Gestational Trophoblastic Neoplasia, which was published in 2004.

1. **Definition**
Gestational trophoblastic disease (GTD) refers to a group of disorders spanning the conditions of complete and partial molar pregnancy, through to the malignant conditions of invasive mole, choriocarcinoma and the very rare placental site trophoblastic tumour (PTST). There are reports of asymptomatic manifestation of atypical placental site tumours to placental site trophoblastic tumour.

If there is an evidence of persistence of GTD, most commonly defined as persistent elevation of beta-human chorionic gonadotrophin (βhCG), the conditions referred to as gestational trophoblastic neoplasia (GTN).
2. **Purpose and scope**
The purpose of this guideline is to describe the preventative, management treatment and follow-up of GTD and GTN. It also provides advice on future pregnancy outcomes and the use of contraception.
3. **Background and Introduction**
Molar pregnancies can be subdivided into complete (CM) and partial moles (PM) based on genetic and histopathological features. Complete moles are diploid and androgenic in origin, with no evidence of fetal tissue. Complete moles usually (75–80%) arise as a consequence of duplication of a single sperm following fertilisation of an 'empty' ovum. Some complete moles (20–25%) can arise after subsequent fertilisation of a 'trough' ovum. Partial moles are usually (90%) androgenic in origin, with two sets of paternal haploid genes and one set of maternal haploid genes. Fetal tissue may or may not be present in partial moles. Fertilisation of an ovum. The presence of partial moles appears to depend on zygotic conception of a partial mole; there is usually evidence of a fetus and fetal blood cells.

GTD (invasive mole, invasive mole, choriocarcinoma, placental trophoblastic tumour) is a rare event in the UK, with a calculated incidence of 0.5% live births. There is evidence of ethnic variation in the incidence of GTD in the UK, with women from Asia having a higher incidence compared with non-Asian women (3.0% versus 0.7% live births). However, data from Asia have reported the true incidence of the disease because of problems with reporting, particularly in regard to partial moles. GTD may develop after either a molar pregnancy, a non-molar pregnancy or a fresh fetus. The condition also often occurs coincident at 150000. Because of the rarity of the condition, we manage consultant obstetricians and gynaecologists more deal with such rare cases of molar pregnancy over their lives.

RCOG Green-top Guideline No. 38
© Royal College of Obstetricians and Gynaecologists 2010



CLINICAL PRACTICE GUIDELINE
THE USE OF ANTI-D IMMUNOGLOBULIN

Professional Society for Obstetric Medicine
The Society for Obstetric Medicine

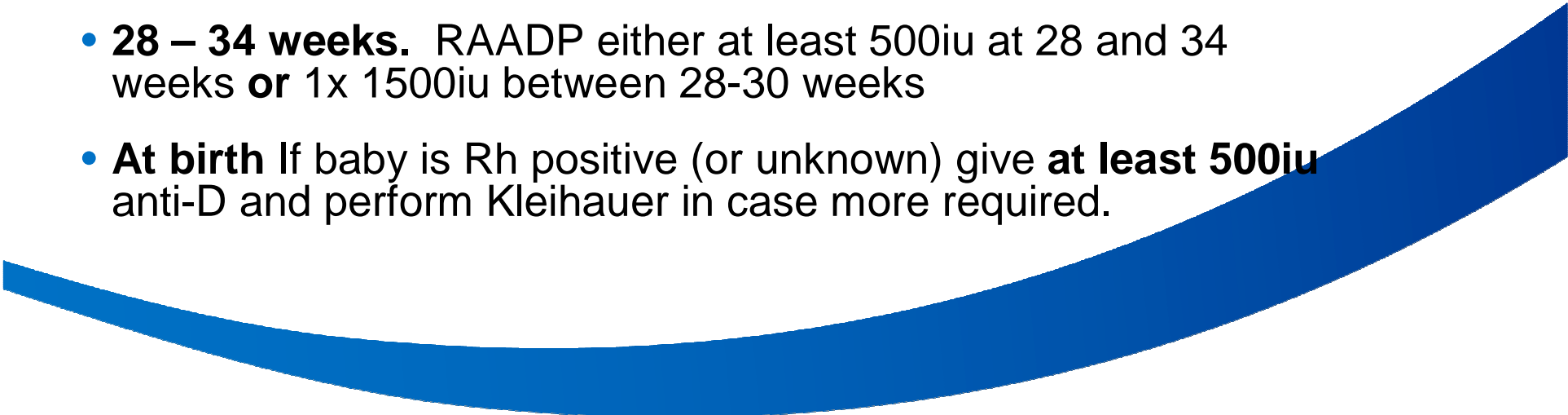
INSTITUTE OF OBSTETRICIANS AND GYNAECOLOGISTS
Royal College of Physicians and Obstetricians

And
Obstetrics and Gynaecology Programme
HSI, Directorate for Quality and Clinical Strategy

Version 2.0
Guideline No. 13

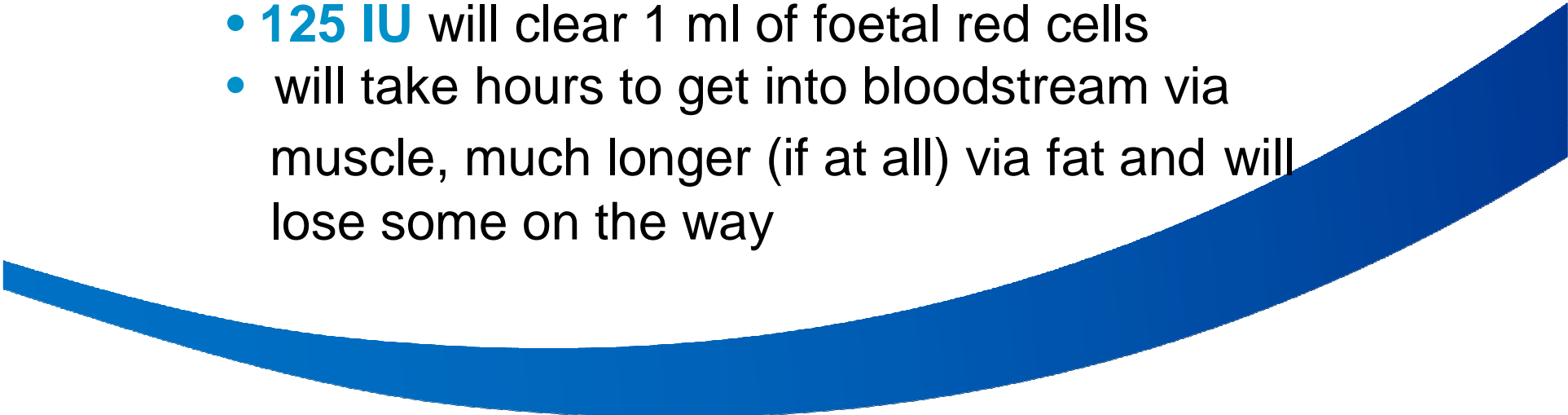
Date of publication: June 2012
Revision date: June 2014

When and What should midwives be doing?

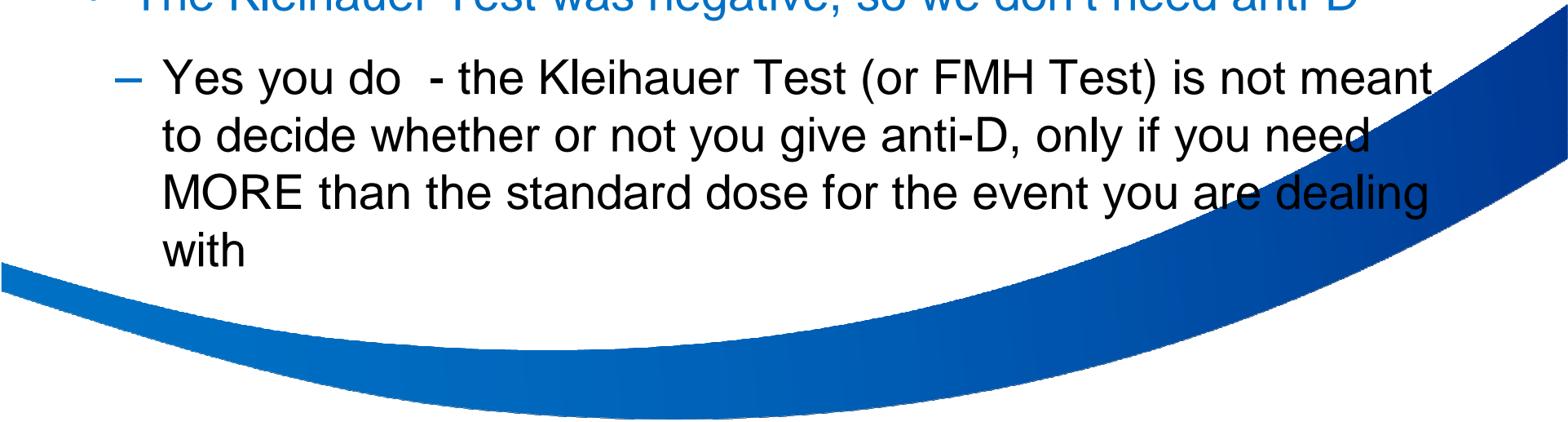
- **<12/13 weeks.** Give **at least 250iu** anti-D for surgical interventions (ectopics, molar, TOP) or persistent, painful bleeding within 72 hours of event.
 - **12/13 – 20 weeks.** Give **at least 250iu** anti-D for PSEs
 - **>20 weeks.** Give **at least 500iu** anti-D for PSEs and perform Kleihauer 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.
- 

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
- 

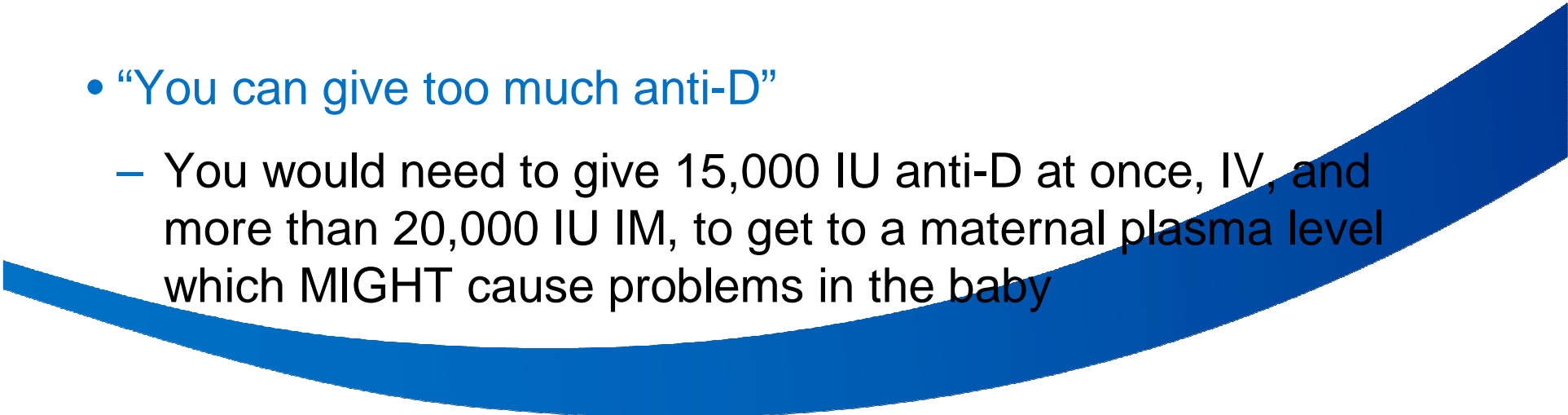
Common misconceptions around anti-D

- “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
- 

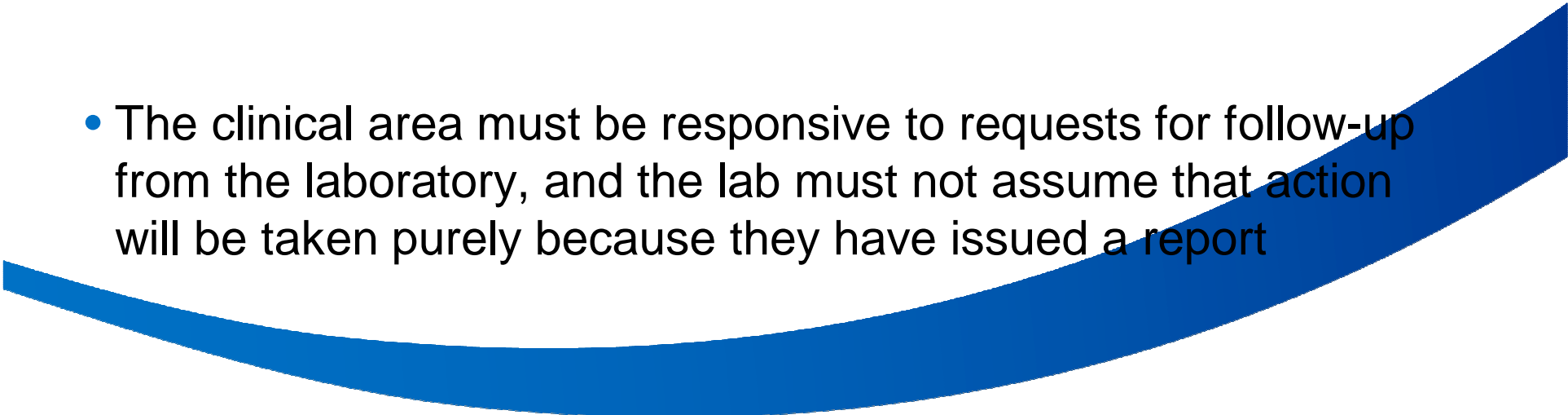
Common misconceptions around anti-D

- “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

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
- 

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
- 