Thanks to the administration of anti-D immunoglobulin, the number of deaths due to HDFN has fallen dramatically. But Tony Davies argues that too many mistakes are still being made.

A matter of life or death?

Here is no question that the impact of anti-D Ig prophylaxis has been immense since it was first introduced for postnatal use in 1969. Over the next 20 years, deaths due to haemolytic disease of the fetus and newborn (HDFN), caused by immune anti-D fall from 46 per 100,000 pregnancies to 1.6 per 100,000 (Pilgrim et al, 2009; Crowther et al, 2000).

How does it work?

The principle behind anti-D Ig prophylaxis is simple – administer an injection after a bleed of up to 4ml of fetal red cells, but for larger bleeds, additional doses are required. For this reason, it is important to check the size of the PHE at delivery and for PEs after 20 weeks’ gestation using a Kleihauer test in the first instance or referring a sample for flow cytometry. In addition to the established practice of giving anti-D Ig at delivery, NICE recommends the implementation of routine antenatal anti-D prophylaxis (RAADP) (NICE, 2002), and this has resulted in the rate of sensitisation further reducing from 1.1% to 0.2%. RAADP may be administered as a two-dose regime at 28 and 34 weeks’ gestation, or as a single (larger) dose between 28 and 30 weeks’ gestation.

Raising standards

The Serious Hazards of Transfusion (SHOT) haemovigilance scheme collects reports of failures in the requesting and administration of anti-D Ig and has identified some disturbing trends. The number of incidents reported has increased every year, from just 17 in 2000 to 249 in 2011, and this should be viewed, in part, as a good thing, illustrating an increased awareness of the benefits of learning from adverse events. However, the reports continue to show that mothers and babies are being put at risk by non-adherence to the national guidance (RCOG, 2011; Parker et al, 2006). The same mistakes are being made repeatedly by both clinical and laboratory staff, particularly failure to follow basic procedures and to take into account laboratory records or reports, and poor communication, decision making and understanding of the principles. It is noteworthy that 50% of the reports that SHOT analyses relate to omission or late administration of anti-D Ig, which has the greatest potential for future fetal morbidity or death, and that 75% of the cases involve midwives. Some incidents are clearly due to systems failure rather than individual error, and seem to result from the sheer speed with which women move through the system from delivery to discharge, so that anti-D administration is often overlooked. However, equally as many cases result from an apparent lack of knowledge about when and how much anti-D Ig should be administered during pregnancy. There is also misuse and misinterpretation of the Kleihauer test (which is performed after 20 weeks’ gestation solely to see if more than the standard dose of anti-D Ig is required), as well as confusion between administration of RAADP and administration in response to a sensitising event. Anti-D Ig must still be administered in response to a PSE, even if the woman has received or is due to receive her RAADP and vice versa.

SHOT data suggests a need for improved education and training. There is an excellent anti-D educational resource, with modules for laboratory and clinical staff, enabling accurate prediction of the fetal RhD type early in pregnancy and this will surely become standard practice before long. Effective provision of anti-D Ig prophylaxis can only be improved by laboratory and clinical staff working together to update us all to ensure we communicate effectively and that robust local protocols are implemented to reflect well-established national guidance.

The same mistakes are being made repeatedly by clinical and laboratory staff

Babies at risk

There is, however, a ‘wake-up call’ in the 2011 SHOT annual report, which details two cases of women who developed immune anti-D following delay or omission of prophylaxis during pregnancy, and a further seven cases where immune anti-D was misinterpreted as residual prophylactic anti-D Ig by a combination of laboratory error and failure of the clinical area to follow up laboratory requests for repeat samples. Six of these seven cases resulted in babies being born with varying degrees of HDFN, three requiring urgent transfusion support. While anti-D Ig is a prescription-only product, midwifery exemption allows qualified midwives to administer it in the course of a woman’s care without a separate prescription by a medical officer. The product is made from pooled plasma from non-UK blood donors with high levels of anti-D, and there is a very small residual risk of blood borne infections or allergic reactions. Because of this, informed consent should always be obtained prior to administration and a full audit trail is mandatory – both in the hospital transfusion laboratory computer and medical records – including the prescriber/midwife, the batch number and the dose, the date and time of administration. Midwives should also familiarise themselves with the particular products and doses available in their hospitals, as this may vary according to local policy. A generic flowchart to support appropriate practice is available to download from the SHOT website. Approximately 40% of RhD negative women will be carrying an RhD negative baby and therefore should not need prophylactic anti-D Ig. Techniques are now available to test a sample of fetal cells in the delivery period, enabling an accurate prediction of the fetal RhD type early in pregnancy and this will surely become standard practice before long.