Antenatal Antibodies – guidance for testing

Antibodies to red cell antigens may be detected in samples taken at booking, 28 weeks or during any other sample collection event. Red cell antibodies can develop in response to transfusion or pregnancy and are generally classified as clinically significant or non-clinically significant. Clinically significant antibodies can cause HDFN. When a red cell antibody is detected in an antenatal sample the transfusion laboratory will advise on the clinical significance and requirements for further testing. Some samples may be referred by the laboratory to the reference centre at NHSBT for specialised testing.

# Clinically significant antibodies

In general, anti-D, c, -E, -K, -e, -Ce, -Fya, -Jka, and -Cw have the greatest potential to cause HDFN.

Anti-D and anti-c levels are measured by quantification and require testing at 4 weekly intervals before 28 weeks and then 2 weekly intervals until delivery. Anti-K can cause HDFN and requires testing at the same intervals but cannot be quantified. The level of other clinically significant antibodies is measured by titration.

Anti-D is the red cell alloantibody most frequently responsible for serious HDFN and generally the significance of the anti-D level during pregnancy are as follows:

Anti-D < 4 IU/ml HDFN unlikely

Anti-D 4-15 IU/ml Moderate risk of HDFN

Anti-D > 15 IU/ml High risk of HDFN

The significance of anti-c in pregnancy is as follows:

Anti-c < 7.5 IU/ ml HDFN unlikely

Anti-c 7.5 - 9.5 IU/ml Moderate risk of HDFN

Anti-c >9.5 IU/ml High risk of HDFN

For mother’s with anti-D, C, c, E or K fetal genotyping from a maternal sample should be performed to support appropriate testing and ascertain the risk to the fetus. Paternal phenotype can be useful in some cases, the laboratory will advise on the requirement for this test.

# Non-clinically significant antibodies

Anti-Lea, -Leb, -P, -M, and -N have not been implicated in HDFN. In general, a titre of 32 or greater is likely to cause HDFN, although a clear-cut association between titre and HDFN has not been established.

The flow chart below summaries testing requirements where red cell antibodies have been detected in antenatal samples.

# Refer to maternity guidelines for more details

Northern Rh(D) negative – Antenatal and Postnatal Management (<https://royaldevonstaff.nhs.uk/maternity-policies-and-guidelines-north>)

Eastern Antenatal women who are RhD negative – management of (<https://royaldevonstaff.nhs.uk/maternity-resources-east>)

# Flow chart for testing guidance

 