The Laboratory Services Reform Programme

ADVICE NOTE

Antenatal Testing (Immunity and Infection) In Pregnancy

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Clinical Practice Guidance Document Cover Sheet

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The Laboratory Services Reform Programme offers the following advice:

1.1 Advice for Laboratory Users

1. Serological testing for evidence of infection with specific pathogens and for evidence of immunity to specific infection is appropriate in advance of planned pregnancy and/or during pregnancy to assist in managing the risk of mother to child transmission of infection.
2. All women who are planning pregnancy and who do not have previous documented serological evidence of immunity to Rubella virus infection should be offered testing for IgG to Rubella virus. If documented serological evidence of immunity is available, checked and confirmed, repeat testing is not required. If immunity is not confirmed before pregnancy the test should be offered at the first practical opportunity during ante-natal care, generally at the booking visit.
3. All women who are pregnant should be offered serological testing for infection with HIV virus at the first practical opportunity. Repeat testing should be performed in each pregnancy.
4. Women who are pregnant should be offered serological testing for infection with Hepatitis B virus by testing for surface antigen (HepBsAg) at the first practical opportunity. Repeat testing should be performed in each pregnancy.
5. All women who are pregnant should be offered serological testing for infection with *Treponema pallidum* at the first practical opportunity. Repeat testing should be performed in each pregnancy.
6. Options for testing of antenatal patients for serological evidence of previous primary infection with Varicella Zoster Virus include (a) testing all women who are planning pregnancy and who do not have previous documented serological evidence of VZV IgG. Re-testing is not required in women with previously documented VZV IgG, (b) providing testing for VZV IgG as an additional test on specific request on the request form with relevant clinical details, (c) performing the test on stored serum (see section 1.2) or on a fresh sample in the event of exposure.
7. Routine testing for serological evidence of infection with Hepatitis C Virus is not required in general but may be considered if the prevalence of infection in the community served is high.
8. Routine testing for serological evidence of infection with Cytomegalovirus, Measles virus and *Toxoplasma gondii* by testing for either IgM or IgG antibody are not required.
9. Routine testing for serological evidence of immunity to Parvovirus is not required.
10. Additional testing (beyond routine) both in terms of repeat testing and a wider range of tests (for example CMV, *T. gondii*, Measles virus, Chaga's disease, Zika virus) should be available based **on relevant clinical indications**. Clinical indications for additional testing may include risk factors such as history of residence or travel to specific locations outside of Ireland or membership of specific population groups at particular risk for specific infections.

11. Users should ensure that test results are viewed and followed up appropriately including submission of additional samples if additional testing if required or the initial sample was unsuitable for testing for any reason.

1.2 Advice for Laboratories

1. The residue of samples of serum for routine ante-natal testing should be stored frozen for a minimum of 24 months to facilitate subsequent additional testing if required.
2. New detection of evidence of HIV virus infection, Hepatitis B virus infection, *T. pallidum* infection requires action to ensure that the result is noted by the clinical team (see advice on critical results)

2 Background

For women who are planning pregnancy or who are pregnant, it is important to establish their status with respect to infection, or immunity to infection, with certain pathogens of particular consequence in pregnancy. This requires consideration of vaccination records, records of previous laboratory testing and consideration of any exposures specific to the individual patient that may require specific management. It will also require testing of a serum sample as outlined above.

Rubella. Primary infection with Rubella virus in pregnancy is associated with a high risk of foetal infection and congenital disease. This can be prevented by vaccination against Rubella virus, included in the MMR vaccine. If a pregnant woman does not have demonstrated immunity, this live virus vaccine is recommended **afte**r delivery. Rubella immunity status should ideally be established before pregnancy. If that is not established, a test during pregnancy informs decisions on vaccination after delivery. Even in the context of a record of vaccination it is important to check for laboratory evidence of acquired immunity to rubella virus. **If there is a previous record of laboratory evidence of immunity (IgG at or above the threshold level for evidence of immunity) prior to pregnancy (or in a previous pregnancy) the test should not be repeated**.

HIV. It is essential to test for evidence of current HIV virus infection in each pregnancy. HIV infection is often asymptomatic or subclinical for years and is associated with a significant risk of foetal infection. The risk of mother to child transmission can be managed if infection is identified.

Hepatitis B virus. Hepatitis B virus infection may be asymptomatic. There is a high risk of mother to child transmission of Hepatitis B virus infection in particular at or around the time of birth. Detection of maternal infection allows measures to protect the infant against risk of transmission.

Syphilis. Infection with *T. pallidum* may be asymptomatic. Infection during pregnancy is associated with a high risk of foetal infection and congenital disease. This can be prevented by detection and treatment of the mother during pregnancy and appropriate follow up of the infant.

Varicella Zoster Virus (VZV). Primary infection with VZV (chickenpox) during pregnancy is associated with a risk of foetal infection and congenital disease. Immunity to primary infection may be acquired by prior infection with VZV or vaccination. Serological evidence of immunity is demonstrated by detection of IgG to VZV (at a level consistent with immunity). If a woman who is not known to be immune is exposed to a person with chickenpox or shingles during pregnancy current approaches to prophylactic treatment generally allow some days before prophylactic treatment commences. There is generally time

to perform at test for IgG on stored serum on the next working day. This means that a number of approaches to managing this are reasonable as outlined in point 6 above.

Hepatitis C Virus (HCV). HCV virus infection is often asymptomatic. Detection permits consideration of treatment to prevent irreversible end organ damage. Risk of mother to child transmission of HCV is low. Routine screening for HCV is not currently recommended in Ireland, however some work has been done in this area and some consider that ante-natal serology for other agents represents an opportunity for HCV screening. Prevalence of HCV in the population served by and laboratory capacity to provide this as an additional to minimum test requirements are important considerations.

Cytomegalovirus (CMV) as with other herpes viruses is associated with life-long infection. Detection of CMV IgG is therefore evidence of previous primary infection and consequently of persistent infection. Periodic reactivation of latent infection can occur during life. Primary infection may be asymptomatic or may be associated with clinical illness. Reactivation is usually asymptomatic other than in those who are profoundly immunocompromised. Both primary infection and reactivation during pregnancy are associated with a risk of mother to child transmission and with congenital disease. Routine testing for serological evidence of prior infection with CMV in advance of or during pregnancy is not recommended in Ireland.

Toxoplasma gondii Primary infection with *T. gondii* in pregnancy is associated with a risk of mother to child transmission and congenital disease. Detection of IgG to *T. gondii* is evidence of previous primary infection and likely also of persistent asymptomatic infection. Routine testing for serological evidence of prior infection with *T. gondii* in advance of or during pregnancy is not recommended in Ireland.

Parvovirus B19 infection during pregnancy is associated with a risk of mother to child transmission and can result in serious intrauterine disease or death. Primary infection may be asymptomatic and asymptomatic maternal infection may be followed by foetal disease. Detection of IgG to Parvovirus is evidence of immunity to primary infection. Routine testing for serological evidence of prior infection with Parvovirus B19 in advance of or during pregnancy is not recommended in Ireland. When exposure to Parvovirus B19 occurs during pregnancy or if there are clinical features of suspected Parvovirus B19 infection in pregnancy serological testing of a stored and or recent sample of serum my assist in assessing risk of infection and foetal disease.

3 References

Authors: Developed by the Laboratory Services Reform Programme incorporating The National Clinical Pathology Programme.

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