

APPLICABILITY

Document applies to any clinician in Alberta investigating a suspected congenital infection.

PURPOSE

This Quick Reference provides general guidance on appropriate test selection for congenital infections.

TEST SELECTION GUIDANCE

Test selection

Refer to the table below for specific specimen type and testing based on causative agent.

For further questions, consult the [Public Health Lab \(ProvLab\) Microbiologist On-Call](#).

Specimen Collection Requirements

For further information about each test, including collection requirements and appropriate requisitions, visit the APL Test Directory.

Suspected causative agent	Recommended test for neonate	Recommended test for mother	Additional notes
Cytomegalovirus (CMV)	<u>NAT testing</u> on: - Urine - Saliva	<u>IgM antibody</u> <u>IgG</u> seroconversion <u>IgG avidity</u> index <u>NAT testing</u> on: Amniotic fluid	- Intrauterine transmission is highest (30-40%) after primary infection and 1% or less in reactivations or secondary infections. - A positive finding on a urine collected within 10 days of birth is considered diagnostic of a congenital infection. After 10 days, CMV infection could be acquired postnatally. - Low avidity index on maternal blood suggests recent infection - NAT testing on amniotic fluid has the highest sensitivity 7 weeks after onset of maternal infection and after 21 weeks of gestation - Contact the Public Health Lab (ProvLab) Microbiologist On-Call to facilitate NAT testing on amniotic fluid
Enterovirus	<u>NAT testing</u> on: - EDTA blood - Throat swab - Stool - CSF	<u>NAT testing</u> on: Placenta tissue	Infection is usually acquired in the immediate perinatal period; the majority of cases occur between days 3 to 5 after delivery



Suspected causative agent	Recommended test for neonate	Recommended test for mother	Additional notes
Hepatitis B (HBV)	HBsAg serology Collect BEFORE administering the vaccine - HBV DNA on EDTA blood	HBsAg serology	STAT HBsAg testing is available for mothers with no prenatal testing or recent results by contacting the Public Health Lab (ProvLab) Microbiologist On-Call
Hepatitis C (HCV)	HCV Viral Load - At 2 months and - After 6 months HCV serology After 18 months	HCV serology NAT testing as needed	- Risk of perinatal transmission is 5% - Testing for HCV RNA at birth can occasionally result in a false positive finding, whereas testing at two separate time points later is a better predictor of transmission - Passive maternal antibody can be detectable for up to 18 months
Herpes simplex virus (HSV)	NAT testing on: - Mouth swab - Nasopharyngeal swab - Eye swab - Skin swab - Rectum swab - Lesion swab - CSF - EDTA blood	NAT testing on: Genital lesions	In up to 20% of neonatal infections there is an absence of vesicular lesions, hence swabs from the mouth, skin, nasopharynx, rectum and eye should be collected
Human immunodeficiency virus (HIV 1 & 2)	HIV proviral DNA at three suggested time points: 14 days, 2 months, and 6 months	HIV serology NAT testing as needed	- Vertical transmission rates can range from 15 to 20% when untreated, but are less than 1% if the mother's viral load is undetectable and the baby is treated at birth - HIV proviral DNA is the preferred assay and is performed at the National Laboratory for HIV Reference Services, Winnipeg - Samples must be shipped to Winnipeg within 24 hours of collection, i.e., only Monday, Tuesday & Wednesday, to maintain sample integrity - Passive maternal antibody can be detectable for up to 18 months



Suspected causative agent	Recommended test for neonate	Recommended test for mother	Additional notes
Parvovirus B19	<u>NAT testing</u> on: EDTA blood	<u>IgM antibody</u> <u>IgG</u> seroconversion <u>NAT testing</u> on: Amniotic fluid	- Parvovirus B19 infections can be either symptomatic or asymptomatic - Vertical transmission ranges from 17 to 33% - Contact the Public Health Lab (ProvLab) Microbiologist On-Call to facilitate NAT testing on amniotic fluid
Rubella	<u>IgM antibody</u> <u>IgG antibody</u> after 7 to 12 months <u>NAT testing</u> on: - Throat swab and - Urine	<u>IgM antibody</u> <u>IgG antibody</u> seroconversion <u>IgG avidity</u> index <u>NAT testing</u> on: - Throat swab and - Urine	- Detection of rubella IgM antibody in the first 3 months after birth is indicative of a congenital infection - Rubella virus is shed in the urine and throat for up to 6 months after birth - The detection of rubella IgG after 7 to 12 months is highly suggestive of a congenital infection
Syphilis	<u>Serology</u> <u>VDRL</u> on CSF <u>NAT testing</u> on: Lesions	<u>Serology</u> <u>NAT testing</u> on: Lesions	- Any RPR titre on the neonate's blood is suggestive of infection and should be tested in parallel with mother's blood - Contact the Public Health Lab (ProvLab) Microbiologist On-Call to discuss molecular testing on the neonate
<i>Toxoplasma gondii</i>	<u>IgM antibody</u> Other tests as needed	<u>IgM antibody</u> <u>IgG antibody</u> <u>NAT testing</u> on: Amniotic fluid	- Congenital toxoplasmosis is likely if neonatal IgM is positive and persists after 1 month of age or if the IgG antibodies persist after 12 months - Contact the Public Health Lab (ProvLab) Microbiologist On-Call to arrange for testing
Varicella zoster virus (VZV)	<u>NAT testing</u> on: Lesion swabs	<u>IgG</u> seroconversion <u>NAT testing</u> on: - Lesion swabs and - Amniotic fluid	Molecular detection of VZV is highly sensitive and specific



Suspected causative agent	Recommended test for neonate	Recommended test for mother	Additional notes
Zika virus	<u>IgM antibody</u> <u>NAT testing</u> on: • EDTA blood and • Urine	<u>IgM antibody</u> <u>IgG</u> seroconversion <u>NAT testing</u> on: • Blood, • Amniotic fluid and • Placental tissue	• Testing for congenital infection should be considered only when the mother has been shown to be previously positive by molecular testing on blood, urine, or a positive serology result including a plaque reduction neutralization test (PRNT) result • On the neonate, submit specimens for both serologic and molecular testing and contact the Public Health Lab (ProvLab) Microbiologist On-Call to discuss testing • To request serology testing for Zika virus, see the APL Zika Virus Testing Bulletin 20240304 and contact the Public Health Lab (ProvLab) Microbiologist On-Call. • For more information regarding Zika virus infection and testing, refer to the APL Zika Virus Testing Bulletin 20240304