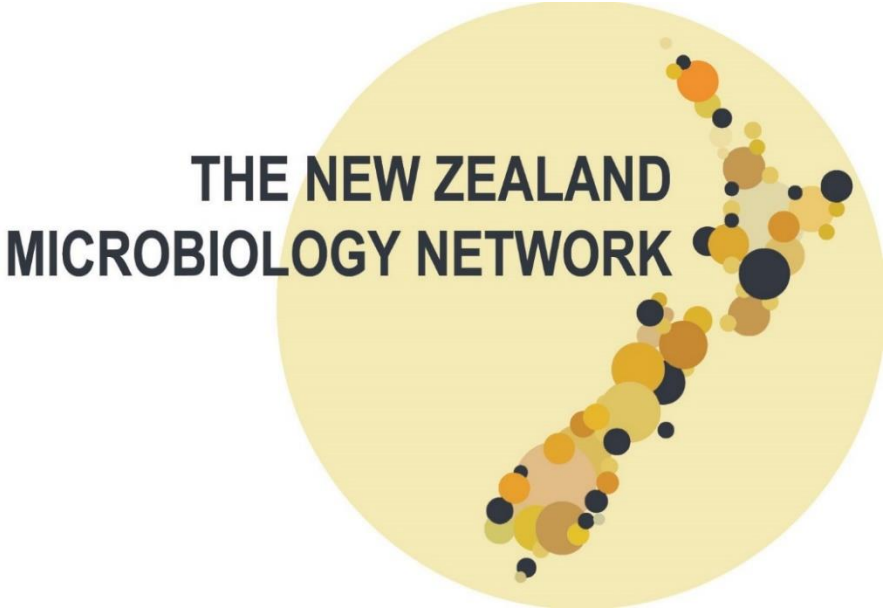

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Recommendations for diagnostic testing requests

Infectious Serology/Antigen Testing

The New Zealand Microbiology Network (NZMN) reviewed a number of diagnostic tests in August 2024 within the area of "Infectious Serology & Antigen testing" and made recommendations where tests were deemed not to be the most appropriate test in specific circumstances or where another test is known to be superior.

The NZMN makes the following recommendations with respect to these tests:

Test	Status	Recommended request	Rationale
***Bordetella pertussis* serology**	• Not recommended during the first 4 weeks of the illness. • The usefulness of B. pertussis serology in patients with a longer duration of symptoms is controversial. • Serology is still in use for epidemiological surveillance but difficult to access in NZ. • Serology is not reliable for confirming immune status.	***Bordetella pertussis* PCR** (Within 4 weeks of start of symptoms)	PCR is the test of choice during the acute stages of pertussis infection, up to 4 weeks after the onset of symptoms. Serology is often utilised in patients who have a longer duration of symptoms. However, *Bordetella pertussis* serology suffers from sub-optimal sensitivity and specificity and should only be considered for use in carefully selected patients. In addition, the presence of *B. pertussis* IgG per se is not a reliable indicator for a patient's immune status.[1]
***Helicobacter* serology**	Serology is no longer the recommended test but may be required in limited circumstances where proton pump inhibitors are unable to be halted prior to faecal antigen testing.	***Helicobacter pylori* faecal antigen test**	*Helicobacter pylori* serology can be positive in both past treated infection as well as current infection. Therefore, specificity for current infection is poor. In contrast the

Test	Status	Recommended request	Rationale
			Helicobacter pylori faecal antigen test has high sensitivity and specificity for the diagnosis of active infection and can also be used to confirm eradication following treatment.[2]
Herpes simplex Virus (HSV) IgG	Requests acceptable for pre-transplant screening and perinatal testing. Type specific HSV serology is useful to diagnose acute herpetic PCR positive ulcers as a primary infection as type specific antibodies can take up to 6 weeks to develop. It is also sometimes used identify sero-discordant couples during pregnancy.	***Herpes simplex virus* (HSV) PCR** **Requests for serology require appropriate clinical details for approval**	Molecular testing for HSV has now superseded serological testing. The sub-optimal sensitivity and specificity of HSV serology can be misleading and lead to sub-optimal clinical management, particularly when used in relation to sexually transmitted infection.[3]
***Legionella* serology**	• Not recommended in primary care. • May be of value to Public Health and in outbreak situations and for surveillance purposes.[4]	***Legionella* PCR** (Optimal sensitivity if performed on lower respiratory tract sample taken within first three days of symptoms. Recommended samples are BAL, ET aspirate, sputum)	Due to the poor specificity of high Legionella titres for disease, acute and convalescent Legionella titres are required to elicit a diagnosis. Legionella serology is thus only useful to retrospectively diagnose infection. It has limited value in the acute clinical setting.
***Legionella* urinary antigen**	• Not recommended in primary care. • May be considered in the hospital setting with careful and expert interpretation of the results. • Maybe difficult to access in NZ.	***Legionella* PCR** (Optimal sensitivity if sample taken within first three days of symptoms. Recommended samples are BAL, ET aspirate, sputum)	The most common urinary antigen tests for Legionella in use detect *Legionella pneumophila* serogroup 1 although some laboratories are using a test that can also detect *Legionella longbeacheae.* Negative results can therefore be misleading and lead to sub-optimal management.[5]

Test	Status	Recommended request	Rationale
Mumps IgM and paired serology	Mumps IgM and paired IgG serology should not be requested	**Mumps PCR** (within 7 days of onset of symptoms. Within 3 days is optimal, particularly if previously vaccinated.)	• Mumps IgM may not be positive in previously vaccinated individuals[6] before day 4 of clinical presentation and some serological assays are prone to non-specific reactions. Therefore, mumps IgM is not a reliable and robust indicator of recent infection. • Paired mumps IgG serology is not useful for the diagnosis of an acute illness since it requires acute and convalescent sera and would only allow for retrospective diagnosis. Moreover, the paired serology would only be useful if it either demonstrated seroconversion or a 4-fold increase in titre. Very few laboratories worldwide use assays that are quantitative for IgG antibodies against mumps. Mumps PCR on saliva is the most reliable diagnostic test in acute parotitis and optimal results are achieved when a saliva swab is taken after a 30 second parotid massage. In vaccinated patients it is important to test by PCR within the first 3 days of symptom onset.

Test	Status	Recommended request	Rationale
***Mycoplasma pneumoniae* IgM serology**	Serology is no longer the recommended test	***Mycoplasma* PCR (throat swab is the preferred specimen)**	Commercially available kits lack specificity and have variable sensitivity. Presence of IgM may indicate recent infection, however recurrent infection in adults often does not elicit an IgM response.[7] There is no testing available in NZ for intrathecal mycoplasma antibodies in suspected cases of *M. pneumoniae* meningoecephalitis. If required this test may be able to be done in a reference laboratory in Australia.
Paul-Bunnell test, monospot test	Should not be requested[8]	**EBV serology**	Paul-Bunnell and monospot tests, looking for heterophile antibodies to EBV, have sub-optimal sensitivity and specificity. EBV serology, using a combination of VCA IgM and IgG, and EBNA antibodies, is now the test of choice.
Streptococcal serology (ASOT, anti-DNase B)	Streptococcal serology is only clinically useful where the result may assist in the diagnosis of a non-suppurative complication of Group A streptococcal infection, e.g. Rheumatic Fever, Glomerulonephritis, certain dermatological conditions. A positive serology result is often required to enable a diagnosis of Rheumatic Fever.	**Should only be performed on provision of appropriate clinical details** **Interpretation needs to align with NZ National Heart Foundation guidelines.**	Streptococcal serology performed for soft tissue infection, sore throat or other reasons than those detailed, gives a retrospective diagnosis only, lacks sensitivity and specificity and does not affect clinical management of the patient. Note that the manufacturers' suggested cut-offs for streptococcal serology have not been validated for

Test	Status	Recommended request	Rationale
			the NZ population. Any streptococcal serology performed requires very careful interpretation.[9]
TORCH screen (Toxoplasma, rubella, cytomegalovirus and herpes simplex serology)	Should not be requested as an acronym	**Request appropriate individual specific tests with accompanying detailed clinical information.**	The clinical features must be carefully considered and applied appropriately to the test(s) requested. Please consult the ASID perinatal infections handbook.[10]

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