Recommendations for diagnostic testing requests (November 2017)

Infectious Serology/Antigen Testing

The New Zealand Microbiology Network (NZMN) reviewed a number of diagnostic tests in November 2017 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.	***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 is not a reliable indicator for a patient's immune status.
***Legionella* serology**	• Not recommended in primary care. • May be of value to Public Health and in outbreak situations.	**Legionella PCR** (Optimal sensitivity if 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.	**Legionella PCR**	Current urinary antigen tests for Legionella are designed to detect *Legionella pneumophila* serogroup 1. It will not detect the predominant circulating Legionella species in NZ, *Legionella longbeacheae*. Negative results can therefore be misleading and lead to sub-optimal management.
Herpes simplex Virus (HSV) IgG	Requests acceptable for pre-transplant screening and perinatal testing. There is little value in performing serogroup specific HSV serology for any clinical situation.	**Herpes simplex virus (HSV) PCR is a better approach in almost all situations**	Molecular testing for HSV has now superseded serological testing for the vast majority of clinical indications. 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.
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.	**Should only be performed on provision of appropriate clinical details.**	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 cut-offs for streptococcal serology have not been validated for the NZ population. Any streptococcal serology performed requires very careful interpretation.
Paul-Bunnell test, monospot test .	Should not be requested	**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.
TORCH screen (Toxoplasma, rubella, cytomegalovirus and herpes simplex serology)	Should not be requested	**Request appropriate individual specific tests**	A nice acronym, but rarely of clinical value. Molecular assays selected according to the specific clinical situation are often more useful, particularly with regards to HSV and CMV infection. Click on link to the ASID perinatal infections handbook

***Helicobacter* serology**	Serology is no longer the recommended test.	***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 *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.
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 and some serological assays are prone to non-specific reactions. Therefore mumps IgM is not a reliable 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.