Additional Molecular PCR tests available at Southern.IML Pathology

<table>
<thead>
<tr>
<th>Test</th>
<th>Medicare rebatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bordetella pertussis/parapertussis PCR</td>
<td>Yes</td>
</tr>
<tr>
<td>Chlamydia trachomatis PCR</td>
<td>Yes</td>
</tr>
<tr>
<td>Clostridium difficile toxin (CDT) PCR</td>
<td>Yes</td>
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<tr>
<td>Faecal pathogen PCR</td>
<td>Yes</td>
</tr>
<tr>
<td>Genital mycoplasma PCR</td>
<td>Yes</td>
</tr>
<tr>
<td>Group B streptococcus (GBS) PCR</td>
<td>Yes</td>
</tr>
<tr>
<td>Hepatitis B Viral Load</td>
<td></td>
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<tr>
<td>Hepatitis C PCR</td>
<td>Medicare rebatable where Medicare criteria met.</td>
</tr>
<tr>
<td>Varicella zoster PCR</td>
<td>Yes</td>
</tr>
</tbody>
</table>

For further information, or to discuss a patient, please contact our clinical pathologists on 02 4224 7474

Introduction

Nucleic acid testing (NAT), most commonly using polymerase chain reaction (PCR), has many advantages over traditional microbiological techniques. These include greater diagnostic sensitivity and specificity and more rapid availability of results. Molecular tests have therefore become the diagnostic tests-of-choice for many infectious diseases.

Southern IML Pathology has been at the forefront in the provision of a high quality molecular diagnostic service to medical practitioners in private practice. Assays are currently available for a wide range of bacterial and viral pathogens and we are committed to the evaluation and implementation of additional molecular assays for the rapid and accurate diagnosis of infection.

Recently, Southern IML Pathology has introduced a range of new molecular tests which detect multiple organisms at once (‘multiplex’ assays) and which are Medicare rebatable.

This newsletter outlines key testing developments in this area. If you have any questions, our clinical microbiologists would be delighted to discuss any of the above-mentioned assays in more detail.

Dr Ian Chambers
Dr Miriam Paul
Dr Michael Wehrhahn

To comply with Medicare, the request must be written as follows. Where less common pathogens, e.g. helminthes are suspected, 2 OCP collections within a 7 day period are covered by Medicare.
Molecular diagnosis of infectious diseases – an update

Respiratory pathogen PCR

- *Bordetella pertussis* and *Bordetella parapertussis*
- Respiratory viruses (RV PCR)

In Winter 2013, Southern.IML Pathology expanded its respiratory PCR repertoire from influenza A (and its subtypes), influenza B and *Bordetella pertussis* and *parapertussis* to include another 14 viral targets in addition. This 16 target assay includes parainfluenza 1-4, respiratory syncytial virus (RSV) A and B, human metapneumovirus (HMPV), adenovirus, the three most common coronaviruses, the enterovirus group (which includes coxsackie A and B viruses, echoviruses and the remaining enteroviruses), rhinovirus and the relatively newly identified bocavirus. Since its introduction, more than 5000 samples have been tested using these 16 target assay and approximately half of these have had one or more viruses detected.

Genitourinary pathogen PCR

- *Chlamydia trachomatis* and *Neisseria gonorrhoeae* PCR
- HSV 1 and 2 PCRs
- Group B streptococcus PCR
- *Trichomonas vaginalis* PCR
- Genital mycoplasma PCR
  - *Mycoplasma genitalium* and *hominis*
  - *Ureaplasma urealyticum* and *parvum*

In addition to the longstanding use of PCR for the detection of the common sexually transmitted infections, *Chlamydia trachomatis* and *Neisseria gonorrhoeae*, Herpes simplex virus 1 and 2 and Group B streptococcus for prenatal screening, Southern.IML Pathology has recently been enhancing diagnosis of other important genital pathogens, such as *Trichomonas vaginalis* and the genital mycoplasmas. First pass urine, genital swabs (flocked swabs best) and ThinPrep® samples are all suitable for testing.

Vesicular rash PCR

- *Herpes simplex* (type 1 and 2) PCR
- *Varicella zoster virus* PCR
- *Enterovirus* PCR

In the last 12 months, Southern.IML Pathology has been using an assay that is performed on all requests for *Herpes simplex* virus 1 and 2 or *Varicella zoster virus*, as the vesicular rash caused by these three viruses may be identical. The respiratory virus PCR which includes enterovirus is similarly sensitive at detecting virus from flocked swabs of the vesicles of suspected Hand, Foot and Mouth disease.

**Weekly respiratory virus detections 2013**

- Flu A
- Flu B
- RSV
- HMPV
- Adenovirus
- Enterovirus
- Coronavirus
- Bocavirus
- Parainfluenzae

*Figure 1: Diagram showing the different viruses being detected and their peaks*

**Respiratory viruses detected in 2013**

- Bocavirus 3%
- Enterovirus 6%
- Corona 8%
- Rhinovirus 20%
- Flu A 22%
- Flu B 18%
- Adenovirus 9%
- Human Metapneumovirus 5%
- Parainfluenzae 5%
- Respiratory Syncytial Virus 4%

*Figure 2: Pie chart demonstrating proportions of different viruses*

Many patients have had the aetiological agent causing their clinical syndromes clarified: for example, flu-like illness has been confirmed as influenza or parainfluenza; pharyngitis has mainly been caused by adenovirus, RSV and enterovirus; croup has been mainly due to parainfluenza 1 and bronchiolitis has been due to RSV, human metapneumovirus, parainfluenza 3 and adenovirus. It is hoped that the confirmation of suspected viral illness, especially when severe, will assist in limiting the use of antibiotics and in turn reduce antibiotic resistance in the community. While nasopharyngeal aspirates and bronchoalveolar lavage samples have traditionally been the best samples for detecting viruses, with the advent of dry flocked swabs which have a far greater surface area to pick up virus, nasopharyngeal and even mid-nasal and throat swabs frequently detect virus.

**Genital mycoplasma PCR**

- *Mycoplasma genitalium* and *hominis*
- *Ureaplasma urealyticum* and *parvum*

In addition to the longstanding use of PCR for the detection of the common sexually transmitted infections, *Chlamydia trachomatis* and *Neisseria gonorrhoeae*, Herpes simplex virus 1 and 2 and Group B streptococcus for prenatal screening, Southern.IML Pathology has recently been enhancing diagnosis of other important genital pathogens, such as *Trichomonas vaginalis* and the genital mycoplasmas. First pass urine, genital swabs (flocked swabs best) and ThinPrep® samples are all suitable for testing.

**Two parasites now best detected by PCR**

1) *Trichomonas vaginalis* (detected with *Trichomonas* PCR)

2) *Dientamoeba fragilis* (detected with faecal PCR)