Undiagnosed *Bordetella pertussis* among *Chlamydophila pneumoniae* and *Mycoplasma pneumoniae* patient samples

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### Aim

To investigate the rate of undiagnosed *Bordetella pertussis* cases among specimens from outcare patients with suspected infection of *Chlamydophila pneumoniae* and *Mycoplasma pneumoniae*.

### Background

*Bordetella pertussis* is a re-emerging infection. Despite high vaccine-coverage in many countries the prevalence has risen.

Persons at any age can be infected but infants whom have not received vaccination are at highest risk of severe and life-threatening disease.

Immunity after vaccination or infection is not life-long. Symptoms after re-infection can be milder and unspecific. The infection is very contagious.

Most *B. pertussis* infections are untreated and rarely diagnosed, especially among adolescents and adults.

### Methods

- 200 respiratory swab samples from outcare patients were analyzed with real-time PCR for *B. pertussis* (gene-target IS481)
- Samples were randomly picked between January 2014-October 2015 and was previously analyzed for *C. pneumoniae* and *M. pneumoniae*
- Specimens which were PCR positive for *C. pneumoniae*, *M. pneumoniae* or came from a patient which had a culture positive nasopharyngeal sample taken at that time were excluded
- The samples were from two counties in Sweden
- Each sample was run as duplicate
- Mean age of the patients was 44 years (range 3-96 years)
- Half of the samples were from men and half from women

### Results

Seven (3.5%) of 200 samples were PCR-positive for *B. pertussis*. These were previously undiagnosed for *B. pertussis*.

The PCR-positive samples had a mean Ct-value of 27.3 and the mean-age of the patients was 32 years.

Clinical information on the referral was attached with only two of the seven samples which stated that the patient had been suffering from long-lasting cough.

### Conclusion

*B. pertussis* is an undiagnosed infection especially among adolescents and adults.

Clinical awareness of *B. pertussis* infection needs to be increased.

Ideally *B. pertussis*, in addition to *C. pneumoniae* and *M. pneumoniae* PCR-tests should be performed for outpatients with long-lasting cough since the symptoms can be alike.

Diagnostics is important so that the spread of the disease can be monitored and exposed persons at risk can receive adequate care.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Average Ct-value</th>
<th>Patient age (years)</th>
<th>Patient sex</th>
<th>Clinical comment on the referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>34.8</td>
<td>49</td>
<td>F</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>15.9</td>
<td>46</td>
<td>M</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>32.4</td>
<td>12</td>
<td>F</td>
<td>“Long-lasting cough and fatigue”</td>
</tr>
<tr>
<td>4</td>
<td>28.9</td>
<td>22</td>
<td>F</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>19.5</td>
<td>35</td>
<td>F</td>
<td>“Have been coughing for four weeks.”</td>
</tr>
<tr>
<td>6</td>
<td>23.6</td>
<td>17</td>
<td>M</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>35.6</td>
<td>45</td>
<td>M</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 1. Information about the seven *B. pertussis*-positive samples.