LETTER TO THE EDITOR

Self-Testing Versus Professional Testing for SARS-CoV-2: Reappraisal on Detection Rate

Somsri Wiwanitkit¹ and Viroj Wiwanitkit²

¹ Private Academic Consultant, Damipur, India
² Dr. DY Patil University, Pune, India

KEY WORDS
self, professional, testing, SARS-CoV-2

LETTER TO THE EDITOR

To the Editor, we would like to share ideas on using patient self-testing with a SARS-CoV-2 antigen-detecting rapid test. At present, laypersons suspected for SARS-CoV-2 infection might use a self-test with a SARS-CoV-2 antigen-detecting rapid test for getting a diagnosis of COVID-19. The self-testing can help decrease workload at a healthcare unit. However, the diagnosis accuracy of the testing is an important consideration. Indeed, a self-test might or might not decrease workload. In some settings, a policy is starting COVID-19 therapy only if there is a required final molecular diagnosis or confirmation by standard laboratory test, the self-test might not have much advantage.

In a recent report, the detection rate of COVID-19 by patient self-testing is lower than professional testing [1]. The rapid antigen test is well recognized for its problems with the diagnostic properties [2]. It is questionable whether using a self-test will result in an unacceptable increased rate false negative or not. At least, a decreased detection rate is proven [1]. Here, the authors reappraise available data on diagnostic accuracy of self-testing versus a professional SARS-CoV-2 antigen-detecting rapid test. Primary data from a previously published reference study are reanalyzed. Using molecular diagnostic as a gold standard, the inaccuracy, missed diagnosis of COVID-19 rate due to self-testing and professional testing with a SARS-CoV-2 antigen-detecting rapid test is compared. Simulation is done at both low (< 7.0 log₁₀ SARS-CoV-2 RNA
Table 1. Inaccuracy rate due to self-testing and professional testing with a SARS-CoV-2 antigen-detecting rapid test.

<table>
<thead>
<tr>
<th>Viral load</th>
<th>Viral load chance probability (%)</th>
<th>Inaccuracy rate (%)</th>
<th>Probability of missed COVID-19 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Self</td>
<td>Professional</td>
</tr>
<tr>
<td>Low</td>
<td>27.5</td>
<td>3.45</td>
<td>3.45</td>
</tr>
<tr>
<td>High</td>
<td>72.5</td>
<td>54.54</td>
<td>45.45</td>
</tr>
</tbody>
</table>

copies/mL) and high viral load (≥ 7.0 log_{10} SARS-CoV-2 RNA copies/mL). The result is shown in Table 1. Based on the present analysis, self-testing can result in more missed COVID-19 cases, about 0.65%. At low viral load, either self-testing or professional testing gives the same outcome. However, at a high viral load, self-testing is inferior to professional testing. About 65 of 10,000 COVID-19 cases with a high viral load, which might imply tentative for disease spreading, will not be detected. This might be an important consideration for disease control during the pandemic situation.

Declaration of Interest:
None.

References: