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Correction

'Diagnosing Asthma in General Practice with Portable Exhaled Nitric Oxide Measurement – Results of a Prospective Diagnostic Study: FENO ≤16 ppb better than FENO ≤12 ppb to rule out mild and moderate to severe asthma

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Correction

In our study to evaluate the diagnostic accuracy of FENO measurement with NioxMino® for the diagnosis of asthma in general practice, we found the cut-off at FENO ≤12 ppb to rule out mild and moderate to severe asthma with a negative predictive value of 81% (95%CI 64–91%) [1]. We oriented ourselves at the already established value of 12 ppb [2]. However, we overlooked in the ROC analysis that the overall diagnostic accuracy improves slightly when the cut-off is chosen at FENO ≤16 ppb (revised table two) [see table 1]. Negative likelihood ratio was 0.38 (95%CI 0.22–0.64) and positive likelihood ratio was 1.76 (95%CI 1.37–2.26) using the 16 ppb cut-off (revised table three) [see Table 2].

In patients with unsuspicious spirometric results (n = 101; not in table) there was no improvement of diagnostic accuracy. The best cut-off point was at FENO ≤16 ppb again. In this diagnostic group sensitivity was 78% (95%CI 63–89%), specificity was 45% (95%CI 34–57%), PPV was 45% (95%CI 34–57%) and NPV was 78% (95%CI 63–89%).

Table two [see Table 1 below] illustrates that the patient group with correctly excluded asthma by FENO measurement increases at FENO ≤16 ppb; and the range of the confidence interval narrows. Thus three patients need to be diagnosed for excluding asthma in order to save one bronchial provocation test when FENO ≤16 ppb is used as the cut-off point. With FENO ≤12 ppb five patients need to be tested in order to exclude asthma in one of them. Therefore, we suggest choosing FENO ≤16 ppb to rule out mild and moderate to severe asthma. This improves diagnostic efficiency compared to the ≤12 ppb cut-off point.

We would like to correct the following points in the manuscript:

In the Results section of the Abstract lines 6–7 should read as:

"16 ppb (n = 68; 42.5%), sensitivity was 79% (95%CI 67–88), specificity 55% (95%CI 45–64), PPV 50% (95%CI 40–60), NPV 82% (95%CI 72–90)".

Also in line 7, "Three" should say "Two".
Table 1: Sensitivity (sens), specificity (spec), positive predictive value (PPV) and negative predictive value (NPV) at different cut-off points (n = 160); unit of FENO is parts per billion

<table>
<thead>
<tr>
<th>Asthma diagnoses</th>
<th>FENO</th>
<th>sens [%] (95% CI)</th>
<th>spec [%] (95% CI)</th>
<th>PPV [%] (95% CI)</th>
<th>NPV [%] (95% CI)</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borderline BHR, mild BHR, moderate to severe BHR, positive bronchodilator reversibility (n = 75)</td>
<td>&gt; 12</td>
<td>85 (76–92)</td>
<td>24 (16–34)</td>
<td>50 (41–58)</td>
<td>65 (47–79)</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>&gt; 16</td>
<td>69 (58–79)</td>
<td>53 (42–63)</td>
<td>57 (46–66)</td>
<td>66 (54–76)</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>&gt; 20</td>
<td>64 (53–74)</td>
<td>58 (47–77)</td>
<td>57 (47–67)</td>
<td>65 (53–74)</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>&gt; 35</td>
<td>32 (25–42)</td>
<td>84 (74–90)</td>
<td>63 (47–77)</td>
<td>58 (49–67)</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>&gt; 46</td>
<td>32 (23–43)</td>
<td>93 (85–97)</td>
<td>80 (63–91)</td>
<td>61 (52–69)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>&gt; 76</td>
<td>13 (7–23)</td>
<td>100 (96–100)</td>
<td>100 (72–100)</td>
<td>57 (49–65)</td>
<td>11</td>
</tr>
<tr>
<td>Mild BHR, moderate to severe BHR, positive bronchodilator reversibility (n = 58)</td>
<td>&gt; 12</td>
<td>90 (79–95)</td>
<td>25 (17–34)</td>
<td>40 (32–49)</td>
<td>81 (64–91)</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>&gt; 16</td>
<td>79 (67–88)</td>
<td>55 (45–64)</td>
<td>50 (40–60)</td>
<td>82 (72–90)</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>&gt; 20</td>
<td>67 (54–78)</td>
<td>62 (52–71)</td>
<td>50 (39–61)</td>
<td>77 (67–85)</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>&gt; 35</td>
<td>36 (25–49)</td>
<td>83 (75–89)</td>
<td>55 (40–70)</td>
<td>70 (61–77)</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>&gt; 46</td>
<td>36 (25–49)</td>
<td>91 (84–95)</td>
<td>70 (52–83)</td>
<td>72 (63–79)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>&gt; 76</td>
<td>17 (10–29)</td>
<td>100 (96–100)</td>
<td>100 (72–100)</td>
<td>68 (60–75)</td>
<td>11</td>
</tr>
</tbody>
</table>

*prevalence of asthma = 46.9%, prevalence of no asthma = 53.1%
\[ prevalence of asthma = 36.3%, prevalence of no asthma = 63.7%\]

In the Conclusion section of the Abstract, in line 2, "FENO ≤ 12 ppb" should say "FENO ≤ 16 ppb".

In the Sensitivity analyses section, in line 2 of the third paragraph, "FENO ≤ 12 ppb" should say "FENO ≤ 16 ppb", "81% (95% CI 64–91)" should say "82% (95% CI 72–90)" and "34" should say "68". In line 3, "FENO ≤ 12 ppb" should say "FENO ≤ 16 ppb" and "five" should say "three". In line 4 "12 ppb" should say "16 ppb". The sentence starting in line 5 and ending in line 6 should read: *Sensitivity was 78% (95%CI 63–89), specificity was 45% (95%CI 34–57), PPV was 45% (95%CI 34–57), NPV was 78 (95%CI 63–89)*. In line 6, "16 (15.8%)" should say "37 (36.6%)", "FENO ≤ 12 ppb" should say "FENO ≤ 16 ppb" and *increased up to 82% (95% CI 64–92)* should say *was 77% (95% CI 61–88)*.

In the Discussion section, in line 4, "81%" should say "82%" and in line 5, "FENO ≤ 12" should say "FENO ≤ 16".

In the second paragraph, in line 1, "five" should say "three". In line 5, "16 patients had FENO ≤ 12 ppb" should say "37 patients had FENO ≤ 16 ppb". Also in line 5, "three" should say "two" and in lines 11 and 12 "FENO ≤ 12 ppb" should say "FENO ≤ 16 ppb" and 12 ppb < FENO should say 16 ppb > FENO.

In the third line of the third paragraph "12 to 46 ppb" should say "16 to 46 ppb" and in the seventh line, the sec-
ond half of the sentence that reads "and the difference of the 95\%CI (-9.8 ppb) and 20 ppb is close to our best cut-off point (12 ppb) to rule out asthma" should not be there.

In the conclusion section, in line 3 "FENO ≤ 12 ppb" should say "FENO ≤ 16 ppb" and "three" should say "two".

References