COVID-19 Rapid Antigen Testing
Overview

• Abbott BINAXNOW
• Anterior nare swab
• Detects viral antigen
• Results available within 15 minutes
• 600,000 kits may be allocated to Fire/EMS by Testing Task Force

Overview

• Covered under MIEMSS CLIA waiver

• No physician orders required

• Requires reporting of **all** results via CRISP
Antigen Testing vs. PCR

Test Results

• Symptomatic patients within 7 days of onset
  • Sensitivity 97%
  • Specificity 98.5%

• Invalid result – repeat antigen test
Use Cases

- Evaluate a symptomatic person**
- Contact tracing / investigation / surveillance
- Screening (with frequency)
<table>
<thead>
<tr>
<th></th>
<th>Symptomatic person</th>
<th>Asymptomatic person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigen test POS</td>
<td>Positive</td>
<td>*Obtain PCR test</td>
</tr>
<tr>
<td>Antigen test NEG</td>
<td>*Serial Testing</td>
<td>Negative</td>
</tr>
</tbody>
</table>
### Specificity

Specificity = \( \frac{\text{True Negative}}{(\text{True Negative} + \text{False Positive})} \)

### Positive Predictive Value

Positive Predictive Value = \( \frac{\text{True Positive}}{(\text{True Positive} + \text{False Positive})} \)
Positive Predictive Value** if disease prevalence among the tested population is 10%

![Table]

<table>
<thead>
<tr>
<th></th>
<th>Has COVID-19</th>
<th>Doesn't Have COVID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Result Positive</td>
<td>9.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Test Result Negative</td>
<td>0.3</td>
<td>88.2</td>
</tr>
<tr>
<td>Total (if 100 tested)</td>
<td>10</td>
<td>90</td>
</tr>
</tbody>
</table>

** Assuming test sensitivity = 97%, and specificity = 98%

Positive Predictive Value = 84%
(84% of people with a positive result will actually have COVID-19)
Positive Predictive Value** if disease prevalence among the tested population is 5%

<table>
<thead>
<tr>
<th></th>
<th>Has COVID-19</th>
<th>Doesn’t Have COVID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Result Positive</td>
<td>4.85</td>
<td>1.9</td>
</tr>
<tr>
<td>Test Result Negative</td>
<td>.15</td>
<td>93.1</td>
</tr>
<tr>
<td>Total (if 100 tested)</td>
<td>5</td>
<td>95</td>
</tr>
</tbody>
</table>

** Assuming test sensitivity = 97%, and specificity = 98%

Positive Predictive Value = 72%

(72% of people with a positive result will actually COVID-19)
Currently, across the state, PCR testing of EMS/Fire personnel is Positive 8-9%. Presumably, these people are being tested because of suspicion (i.e., higher pre-test probability) or concern as a contact. Lower prevalence, and decreased positive predictive value, should be anticipated if testing was to be used for screening. That’s not bad, but something to plan for.
Process

- EMSOP submits a written plan and is approved by MIEMSS
  - Process for manually reporting all COVID-19 antigen tests (pos and neg) into CRISP
  - Process for ensuring clinicians who require a PCR test receive one within 24-48 hours of positive antigen result
  - Process to ensure weekly COVID-19 antigen inventory is submitted through SmartSheet form
Logistics

• Test kits distributed in sets of 40

• Same process as currently used for PCR test kits

• Six month expiration (rolling) from date of arrival at MDH
Training

- Abbott offers virtual super-user training

- Training resources