COVID-19 Update

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Monday April 27th
Those Aged 60+ are Most At Risk...
% confirmed cases who died (in Italy & China)

Especially Those with Existing Conditions
% with other serious ailments who die

- cardiovascular disease: 10.5%
- diabetes: 7.3%
- chronic respiratory disease: 6.3%
- abnormally high blood pressure: 6%
- cancer: 5.6%
- no existing conditions: 0.9%

Sources:
China Centre for Disease Control & Prevention, Italian Portal of Epidemiology for Public Health, study of 44,672 confirmed cases in Mainland China & 16,925 cases in Italy
High Risk Populations and Restart/Return to Work

- Majority (80-95%) will not have had an infection so are susceptible to the virus
- Ideally stay safe until vaccine available but....
- Organizations
  - Can recommend stay at home
  - Accommodate concern when possible
  - Cannot prohibit or treat differently
Immunity Tests

- 4 tests ‘approved’ by FDA under an EUA but also others being sold to organizations
- Serology tests identifying antibodies (IgM and IgG)
- Used to detect who has had the disease and maybe have developed immunity
Could Knowing Immunity Status Help Manage High Risk Populations

High Risk Workplace:
- Social distancing difficult
- Crowded
- Contact with many people
- Commute higher risk

Low Risk Workplace:
- Social distancing in place
- Cleaning routines
- Additional controls (PPE, screening, temp checks..)
- Commute lower risk e.g. drive own vehicle

Immunity from Serology testing

Not Immune
- Support Stay at Home or work with increased precautions/modified duties

Immune
- Work with caution +/− extra precautions

High Risk Workplace
- Work with caution +/− extra precautions

Low Risk Workplace
- Normal Work Standard Precautions

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Challenges

- Sensitivity - true positive rate
- Specificity - true negative rate
- Positive Predictive value = % true positive
- Negative predictive value = % true negative
### Prevalence

**Population:** 1000  
**Infected:** 3% (30)  
**Test Sensitivity** 93%  
**Test Specificity** 95%

<table>
<thead>
<tr>
<th>Test Result</th>
<th>Has Disease</th>
<th>Doesn’t have disease</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Positive</td>
<td>28</td>
<td>48</td>
<td>76</td>
</tr>
<tr>
<td>Test Negative</td>
<td>2</td>
<td>922</td>
<td>924</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>970</td>
<td>1000</td>
</tr>
</tbody>
</table>

- Total Positive tests = 76  
- False Positive tests = 48 (63%)  
- Positive Predictive value = 37%

- Total Negative tests = 924  
- False negatives = 2 (1%)  
- Negative Predictive Value = 99%

**Population:** 1000  
**Infected:** 40% (400)  
**Test Sensitivity** 93%  
**Test Specificity** 95%

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<th>Doesn’t have disease</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Positive</td>
<td>372</td>
<td>30</td>
<td>402</td>
</tr>
<tr>
<td>Test Negative</td>
<td>28</td>
<td>570</td>
<td>598</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>600</td>
<td>1000</td>
</tr>
</tbody>
</table>

- Total Positive tests = 402  
- False Positive tests = 30 (7%)  
- Positive Predictive value = 93%

- Total Negative tests = 598  
- False negatives = 28 (5%)  
- Negative Predictive Value = 95%
Serology Testing

- Useful at a community level to understand % who had been infected
- Specificity and sensitivity improve >15-21 days post illness
- Positive predictive value increases as % of population infected increases (NPV decreases)
- Identifying who may have antibodies for convalescent plasma donation
- **NOT** yet ready for use on an individual level – Immune therefore safe to be on the frontline
- **NOT** yet ready for organizations to use to manage return to work
Questions