Laboratory Testing for COVID-19

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- Timeline
- Assays
- Testing Algorithm
- Statistics

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<td>First patient with pneumonia of unknown origin</td>
<td>New case in Thailand</td>
<td>Outbreak recognized to be caused by a new coronavirus</td>
<td>WHO assays published</td>
<td>Taqman Real time assays available (Calgary &amp; Edmonton)</td>
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<td>WHO alerted Pneumonia-like cases in Wuhan</td>
<td>Wuhan Seafood market closed</td>
<td>COVID-19 sequences deposited in GISAID</td>
<td>Two gel based assay introduced @ Calgary site</td>
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Design primers for the specific detection of SARS CoV2 (COVID-19) to exclude other coronaviruses

Envelope protein (E gene)
Sensitivity = 145 copies/ml of specimen
WHO developed assay [Corman et al Eurosurv 2020]

RNA dependent RNA polymerase (RdRp)
Sensitivity = 638 copies/ml of specimen
ProvLab developed assay

Acceptable Specimen types:
- Nasopharyngeal swab
- Auger suctions
- Bronchoalveolar lavage
- Endotracheal secretions
- Nasopharyngeal aspirate
- Tracheal secretions
- (Nasal swab)
- (Throat swab)

Respiratory Panel
- Influenza A - H1 & H3 subtypes
- Influenza B
- Respiratory Syncytial virus
- Human Metapneumovirus
- Paramyxoviruses 1-4
- Enterovirus/rhinovirus
- Adenovirus
- Human coronaviruses
  - HKU1
  - OC43
  - NL63
  - 229E
- Chlamydophila pneumoniae
- Legionella pneumophila
- Mycoplasma pneumoniae

COVID-19 + Resp Panel
Positive
Sequence for confirmation
- Spike gene
- RdRp gene
- E gene

Resp Panel result + COVID Negative result
National Microbiology lab for confirmation
Notify Zone MOH and Provincial MOH

MOH-approved
MVOC-approved
Not approved
Influenza A & B or Resp Panel testing
Total Tested = 106
Total Positive for various agents = 36 (34%)

- Influenza A & B
- Human coronavirus
- RSV
- Rhino/enterovirus
- Parainfluenzae
- C. pneumoniae*

Acknowledgements:

- Research Team – developed and implemented assays
- Molecular Diagnostic Team – performing extraction of nucleic acid testing for respiratory viruses & COVID-19
- Virology Diagnostic Team & Non-Clinical Teams – support ancillary areas (data entry, resulting etc)