National Training of Trainers for COVID-19

March 6, 2020
Samples to be collected

• Essential samples:
  - Throat swab (oropharyngeal swab).
  - Nasal swab (Nasopharyngeal swab)

• Other preferred samples:
  - Bronchoalveolar lavage
  - Tracheal aspirate
  - Sputum
  \[\text{Wide mouth sterile plastic containers}\]

• In lab confirmed patients:
  - Blood
  - Stool and urine  \[\text{Wide mouth sterile plastic containers}\]
## Personal protective equipment

Table 1. Recommended type of personal protective equipment (PPE) to be used in the context of COVID-19 disease, according to the setting, personnel and type of activity

<table>
<thead>
<tr>
<th>Setting</th>
<th>Target personnel or patients</th>
<th>Activity</th>
<th>Type of PPE or procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inpatient facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient room</td>
<td>Healthcare workers</td>
<td>Providing direct care to COVID-19 patients.</td>
<td>Medical mask, Gown, Gloves, Eye protection (goggles or face shield).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aerosol-generating procedures performed on COVID-19 patients.</td>
<td>Respirator N95 or FFP2 standard, or equivalent. Gown, Gloves, Eye protection, Apron.</td>
</tr>
<tr>
<td>Cleaners</td>
<td></td>
<td>Entering the room of COVID-19 patients.</td>
<td>Medical mask, Gown, Heavy duty gloves, Eye protection (if risk of splash from organic material or chemicals), Boots or closed work shoes.</td>
</tr>
<tr>
<td>Visitors$^b$</td>
<td></td>
<td>Entering the room of a COVID-19 patient</td>
<td>Medical mask, Gown, Gloves.</td>
</tr>
<tr>
<td>Other areas of patient transit (e.g., wards, corridors).</td>
<td>All staff, including healthcare workers.</td>
<td>Any activity that does not involve contact with COVID-19 patients.</td>
<td>No PPE required</td>
</tr>
</tbody>
</table>
Collection of OP and NP swabs

• Optimal timing:
  - Within 3 days of symptom onset and no later than 7 days.
  - Preferably prior to initiation of antimicrobial chemoprophylaxis or therapy.
Collection of Oropharyngeal swab

Materials:
• Sterile Dacron/Nylon flocked swab
• Viral Transport Medium (3 ml sterile VTM)

Procedure:
• Hold the tongue out of the way with a tongue depressor.
• Use a sweeping motion to swab posterior pharyngeal wall and tonsillar pillars
• Have the subject say “aahh” to elevate the uvula.
• Avoid swabbing soft palate and do not touch the tongue with swab tip.
• Put the swab in VTM
Collection of Nasopharyngeal swabs

• Materials
  • Sterile Dacron/Nylon flocked swab
  • Viral Transport Medium (3 ml sterile VTM)

• Procedure
  • Tilt patient’s head back 70 degrees
  • Insert swab into nostril (Swab should reach depth to distance from nostrils to outer opening of the ear
  • Leave swab in place in place for several seconds to absorb secretions
  • Slowly remove swab while rotating it
  • Place tip of swab into VTM and snap/cut off the applicator stick
Blood collection from positive cases

• Blood sample collection from all positive cases
• Plasma sample collection in EDTA vials
• Resin separator tubes for serum sample collection
Guidance for specimen Collection

• A BSL2 containment level is required to handle suspected samples.
• Consider all specimens as POTENTIALLY HAZARDOUS / INFECTIOUS.
• Handle all specimens with gloves in a secure manner.
• Place each specimen into a separate container labeled with the patient's name and identification number, the collection site, the date of collection and the time of the collection.
• Do not contaminate the outside of the specimen container.
• Do not handle laboratory requisition forms with gloves.
Storage of Specimen

• Keep refrigerated (2-8 °C) if it is to be processed (or sent to a reference laboratory) within 48 hours.
• Keep frozen (-10 to -20 °C) if it is to be processed after the first 48 hours or within 7 days.
• Keep frozen (-70 °C) if it is to be processed after a week. The sample can be preserved for extended periods.
Guidelines followed for sample packaging & transport

• WHO Guidelines for Transport of Infectious Substances:
  

• IATA guidelines
Classification of Infectious Substances

- Category A: An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals.

- UN 2814 for Infectious substances which cause disease in humans or both in humans and animals.

- UN 2900 for Infectious substances which cause disease only in animals.
Classification of Infectious Substances

• **Category B**: An infectious substance which does not meet the criteria for inclusion in Category A.

  - Infectious substances in Category B shall be assigned to UN 3373

*SARS-CoV-2 virus infectious/potentially infectious material falls under category B*
Packaging System

• The original samples should be packed, labeled and marked, and documented as Category B.

• Standard triple packing for Category B to be followed.

• Samples to be sent on dry ice (if possible). However using cold packs is acceptable.

• Sender should provide prior intimation about shipment of samples to the nearest certified laboratory.
## Triple packaging system

<table>
<thead>
<tr>
<th>Primary Container</th>
<th>Secondary Container</th>
<th>Outer Container/ Packaging Box</th>
</tr>
</thead>
</table>
| • Watertight and leak proof  
| • Cap correctly and securely closed.  
| • Keep in upright position during transport | • Watertight  
| | • Several clinical specimens may be placed into one secondary container  
| | • Containers have to be cleansed and disinfected if they are to be re-used  
| | E.g.: Disposable, zip-lock plastic bags; Large centrifuge tubes (50 ml) with screw caps | • Made of strong material that can be cleansed and disinfected  
| | | • Should have the Biohazard warning label  
| | | • A content list in a sealed plastic bag inside the transport box may also be included |
Absorbant packing material
(Sufficient absorbant material must be placed between the primary and secondary receptacles)

1. Primary receptacle (leakproof, 95kPa)
2. Secondary receptacle (leakproof)
3. Outer container (w/list of itemized contents)
Transport Precautions

- Adequate cushioning materials inside the box to absorb shocks during transport
- Adequate absorbing material to absorb any spillage should it occur
- Do not stick the request form on the specimen
- Specimen request forms should be put into a separate plastic bag
- The outer container, secondary containers and specimen racks for transport should be thoroughly cleansed and disinfected periodically (i.e. at least daily) and when contaminated.
Labeling of Package

- Sender’s, name, address and telephone number
- Whom to contact in case of emergency with telephone number
- Receiver’s name, address and telephone number
- Proper shipping name (e.g. “BIOLOGICAL SUBSTANCE, CATEGORY B”)
- UN number e.g. 3373
- Temperature storage requirements
- Quantity of dry ice inside the container
- Arrow mark to indicate upright direction
Responsibility of Sender

• Make advance arrangements with the carrier
  - that the shipment will be accepted for appropriate transport
  - that the shipment (direct transport if possible) is undertaken by the most direct routing

• Prepare necessary documentation, including permits, dispatch and shipping documents

• Notify the receiver in advance of transportation arrangements and expected date of delivery of shipment
Responsibility of Receiver

- Acknowledge receipt of specimen
- Verify the integrity of packaging
- Box to be opened by personnel wearing adequate PPE.
- Open within Biosafety cabinet
- Check the specimens with the data sent
- Apply acceptance and rejection criteria
Types of Tests

• No validated serological tests
• Only molecular diagnosis
  - PCR based test aims at detection of the virus.
• Real time PCR platform is required.
51 VRDLs doing SARS-CoV-2 testing

56 VRDLs as collection sites
Tests for SARS-CoV-2

• No validated serological tests are available.
• Only Molecular tests available.
• Laboratory protocols designed on the basis of WHO guidance and sequences available in GISAID.
• First line screening assay: E gene.
• Confirmatory assays: RdRp and ORF 1b.
• SoPs and testing protocol shared with all testing laboratories.
Thank You