

# **Lab diagnosis, sample collection and packaging procedures**

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# Objectives

- **Lab dx of COVID-19**
- **Specimen collection Procedures**
- **Specimen storage, handling, shipping**
- **Disposing infectious waste in the field**
- **Sample collection and packaging demonstrations**
- **Demonstration of sample collection**

# Introduction

## Case definitions

### Suspect case

Any person with any acute respiratory illness (fever or cough or difficulty in breathing) AND at least one of the following:

- A history of travel to or residence China /other countries with COVID-19 in the 14 days prior to symptom onset, or
- Close contact\* with a confirmed or probable case of 2019-nCoV in the 14 days prior to illness onset, or
- Close contact\* with an individual with a history of respiratory illness and travel to China within the last 30 days, or
- Worked or attended a health care facility in the 14 days prior to onset of symptoms where patients with hospital-associated 2019-nCov infections have been reported.

# Diagnosis of 2019-nCoV

- **Positive clinical presentation(High index of suspicion)**
- **Epidemiological link**
- **Take appropriate samples for testing**
  - **Oral-phalangeal swab**
  - **Naso-phalangeal swab**
  - **Serum samples**

# Preferred Specimens

## URTI

- A nasopharyngeal swab, or
- A nasal aspirate or
- two swabs combined (ex. NPS/OPS)

## LRTI

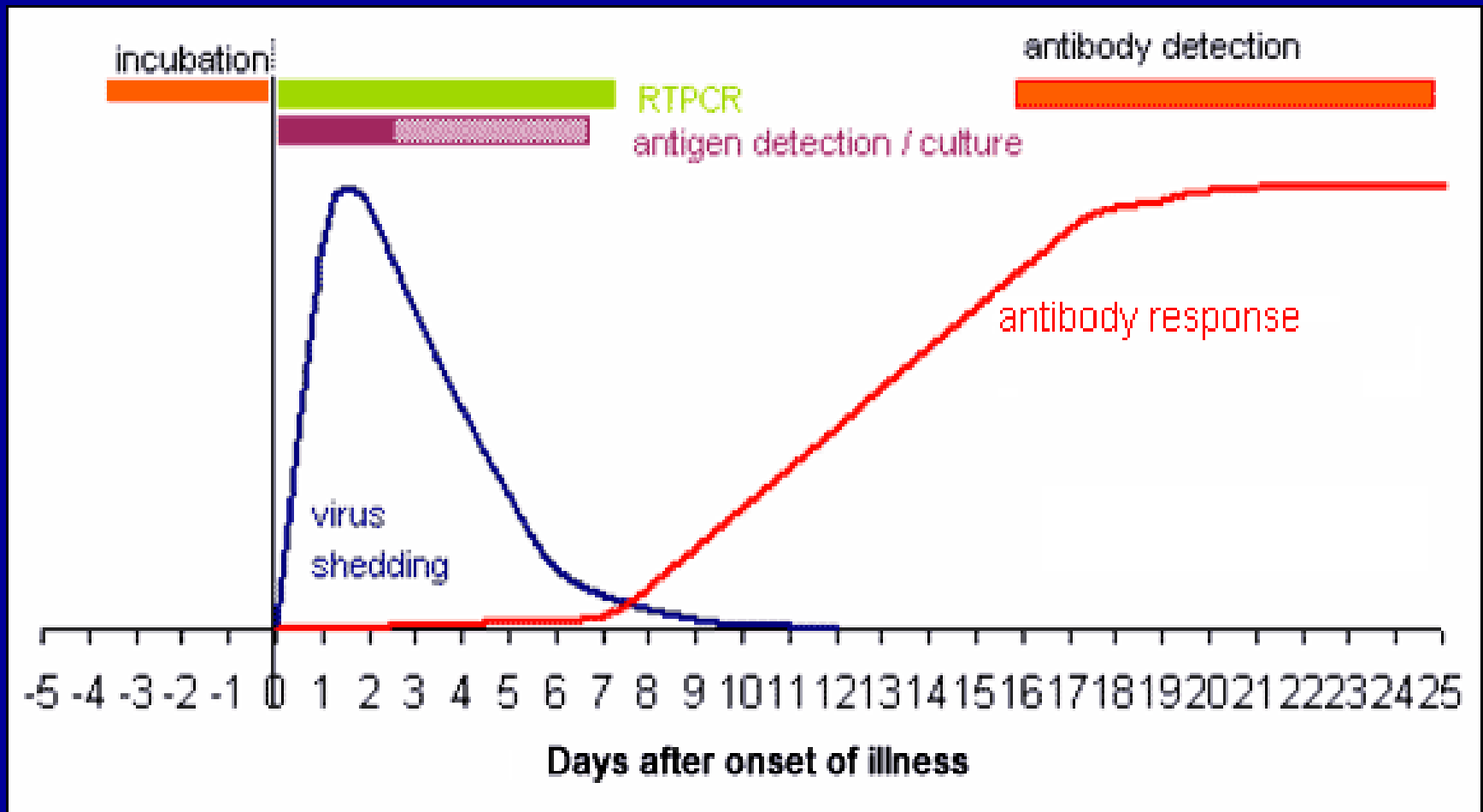
- endotracheal aspirate
- Broncho-alveolar lavage fluid (BAL)

**Blood: Serum and/or whole blood (PCR and serology)**

# Timelines

- Collect as soon as possible after symptoms begin (ideally within 7 days), before antiviral medications are administered
- A single negative test result does not exclude infection if the clinical index of suspicion is high and a repeat sampling and testing preferably with a lower respiratory tract specimen is strongly

# Specimen collection & timelines



# Materials

- Coolbox and ice packs
- Hand sanitizer
- Scissors
- Cryovial (3ml) pre-filled with virus transport media (VTM)
- Fine tipped permanent marker (sharpie) for labeling



# Materials cont..

- Bleach (Jik) and spray bottle
- Barcodes and Bar code scanner(\_+)
- Stationary: pens, Field specimen collection forms and specimen transportation log forms, masking tapes

# Materials

- Specimen log book
- PPE (gloves, and facemask)
- Absorbent materials-Paper towel
- OP and NS swabs sticks
- Waste segregation polythene bags
- Wooden tongue depressors

# What is Viral Transport Medium?

- **Used in the collection of samples for viral isolation and testing**
- **Prevents specimen from drying out**
- **Prevents bacteria and fungi growth**

# Specimen Collection

## *Personal Protective Equipment (PPE)*

- Gloves
- Mask (fitted N-95)
- Protective clothing
- Eye protection
- Sharps protection



# Polyester Fiber-Tipped Applicator



- Should be drayon, rayon, or polyester-fiber swabs
- Do **not** use calcium alginate or cotton swabs nor ones with wooden sticks; they inhibit PCR

# Preliminaries

- **Fill out the COVID-19 questionnaire**
- **Fill out the lab request form**
- **Create a rapport with patient**
- **Do verbal consenting**
- **Identify your working area**
- **Plan the sample collection**
- **Wash you hands**
- **Put on the appropriate PPEs**

# PERSONAL SAFETY

- Ensure you have and wear PPE: Gloves, Masks, apron
- Ensure the safety of HCWs as well
- Ensure you have medical waste disposal mechanism around
- **The need for working environment sanitization after the procedure**

# NASAL SWAB COLLECTION

- Disinfect the scissors with bleach (Jik)
- Label your VTM with a bar code
- Reassure the patient by explaining the procedure that it will take a few minutes
- The patient should not blow their noses, just clean the outside of the nose.(Blowing the nose may leads to less optimal samples)

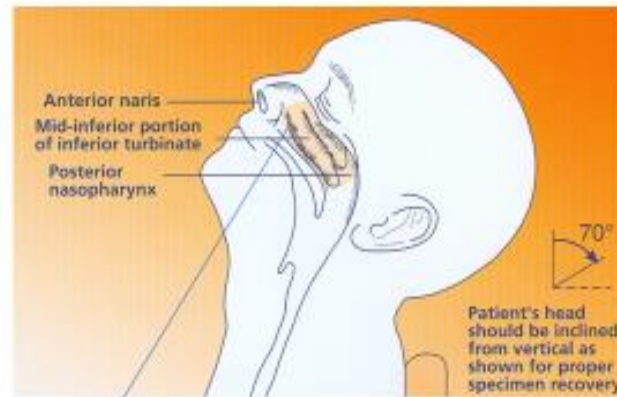


# NP COLLECTION conti..

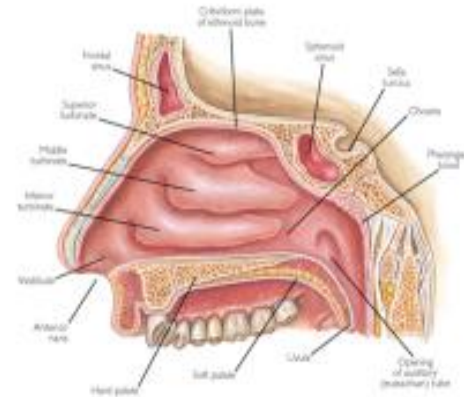
- Remove the swab stick from the packaging holding it and peel off as indicated on the packaging.
- Ensure that your swab is not damaged, or expired
- Sterility should be maintained

# NP COLLECTION AREA- Anatomy

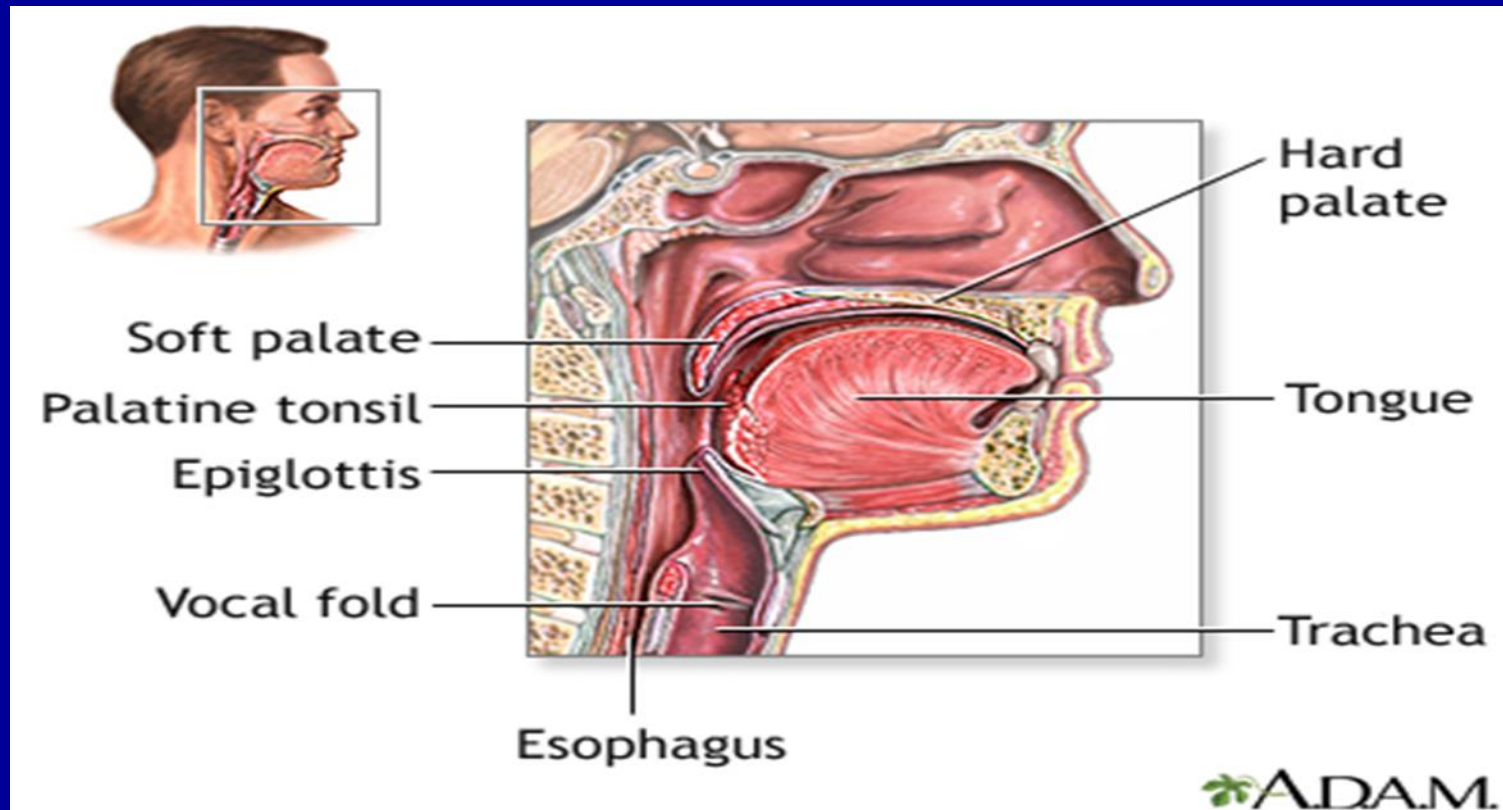
## Nasal swab



Insert swab up to here



# NASAL AREA



# NP COLLECTION

- ❖ Ensure you stand on the patient's side as s/he is likely to sneeze after the procedure
- ❖ Visualize the patients' nostrils correctly, adequate lighting is necessary
- ❖ Position and tilt the patients head at <sup>20</sup>

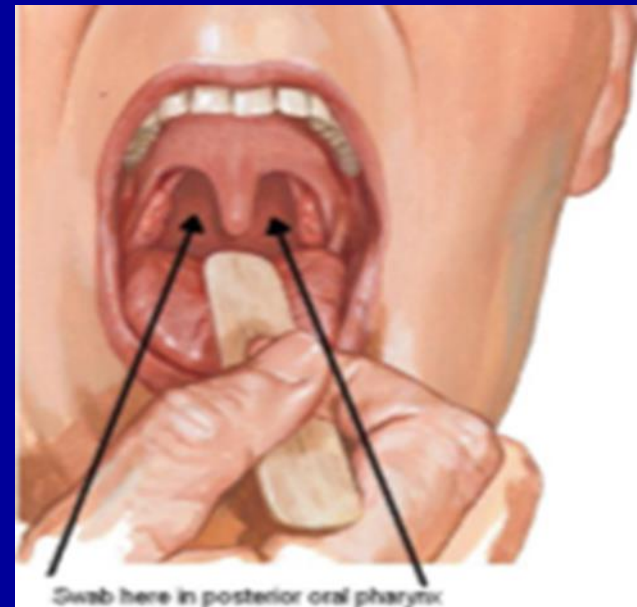
# NASAL SWAB COLLECTION

- After inspecting the nasal turbinate insert the sterile nasal swab into one of the nostrils.
- Gently rotating the swab, insert swab less than one inch or 2 cm into nostril (until resistance is met at turbinates).

# N/P WAB COLLECTION

- Remove the nasal swab and place it in the labelled cryovial and lift the swab and cut swab tip from neck with the disinfected scissors and place the cryovial on the cryovial rack

# OP SWAB COLLECTION- Anatomy



# OP swabbing

- **Swab the wall of the throat gently without touching the tongue or the tonsils**



# OP SWAB COLLECTION

- Place swab directly into the cryovial containing the NS swab from the patient ensuring that the tipped side gets into the VTM.
- Lift the swabs slightly upward and cut the plastic handle using the scissors previously disinfected. *The part of the*

# After Collecting the swabs

- ▶ Place the swab into the tube containing viral transport medium (VTM), cut the shaft with scissors disinfected with bleach spray

# SAMPLES DOCUMENTATION

- Each package with specimen(s) should include line list:
  - Patient name
  - Patient ID number
  - Specimen type(s)
  -

# Essential documentations

## Date collected

- Clinical contact name, phone #, email
- Clinical submitter, affiliation, phone #, email
- Relevant clinical information (symptoms, date of symptom onset, travel history, history of exposure) For deaths: preliminary autopsy report

# HOW TO LABEL SAMPLES

**Label each specimen with:**

- Sample bar code
- Subject's unique identification number
- Date of sample collection



# **SPECIMEN TRACKING SYSTEM**

## **Maintain a record to track:**

- **Patient Identification number**
- **Subject information**
- **Specimen collection date**
- **Specimen collection location**

# SPECIMEN STORAGE

- Store the specimen in your Fridge
- Monitor the Fridge temperature on daily account
- Package the specimen when ready to ship them

# **PART 2**

## **SPECIMEN STORAGE HANDLING ,PACKAGING AND SHIPMENT.**



# PERSONAL PROTECTIVE EQUIPMENT

- **Masks (N-95 or N/P/R-100) or Masks**
- **Gloves**
- **Protective eye ware (goggles)**
- **Hair covers(where possible)**
- **Protective clothing (gown, lab coat or apron)**
- **Use safe handling practices for infectious material**

# HOW TO STORE SPECIMENS

- Transport to laboratory as soon as possible, ideally in a cold box with ice packs
- Store specimens at 4 °C before and during transportation within 48 hours
- Store specimens at -70 °C beyond 48 hours
- Do not store in standard freezer – keep on ice or in refrigerator
- Avoid freeze-thaw cycles
  - Better to keep on ice for a week than to have repeat freeze and thaw

# Transport regulations

- ▶ Transport of infectious substances is subject to strict national and international regulations:
  - ▶ proper use of packaging materials
  - ▶ proper labelling, notification
- ▶ Compliance:
  - ▶ reduces likelihood of damaging packages
  - ▶ minimizes exposure
  - ▶ improves carrier's efficiency and confidence in package delivery

# **PACKAGING SPECIMENS FOR SHIPMENT.**

- **Use three packaging layers**
- **First layer should be water tight-Ensure the VTM is tightly closed.**
- **Wrap the VTM with absorbent paper**
- **Second layer: Put the VTM in a ziplock bag and place ziplock bag in a Secondary Container.**

# **SPECIMEN PACKAGING**

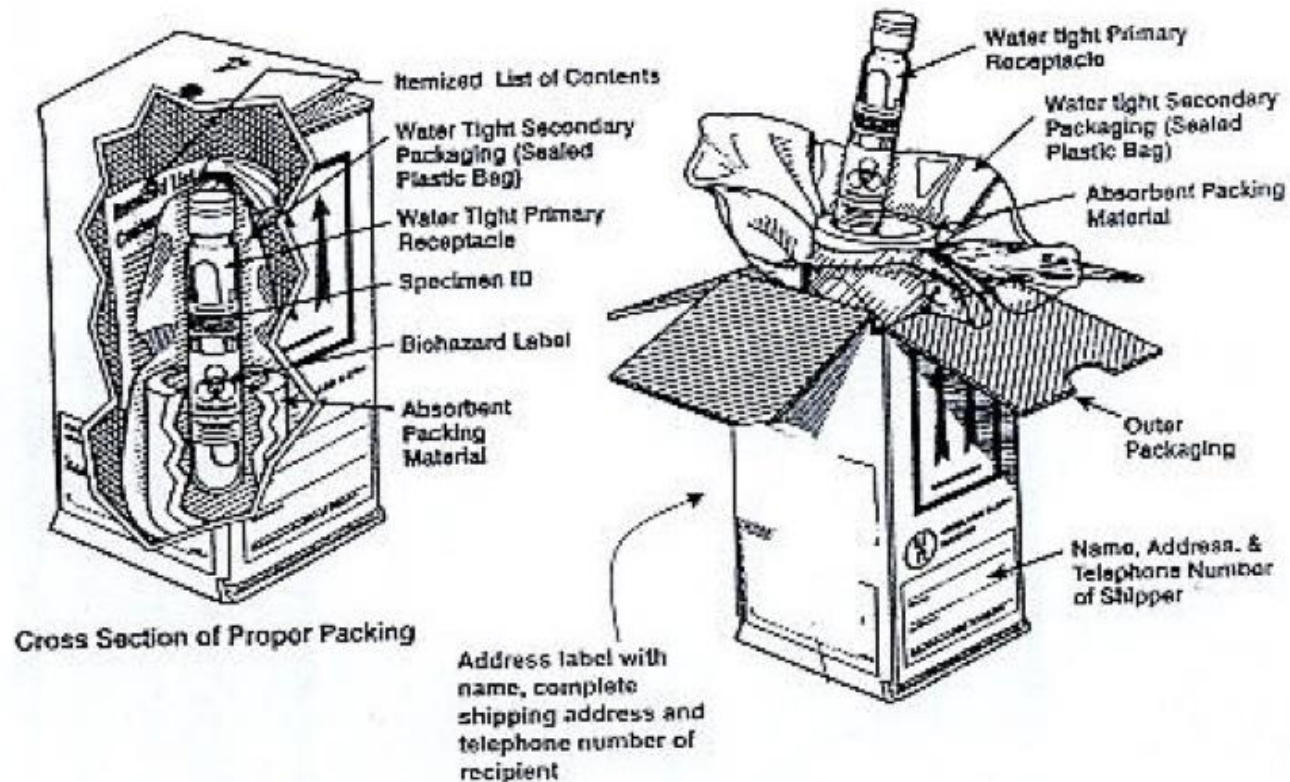
- **Third layer: Place the secondary container in a cool box with ice packs**
- **Seal and label the cool box with Lab contacts**
- **Notify the Lab coordinator**

# Transporting Specimens

- **Refer to WHO guidelines for the safe transport of infectious substances and diagnostic specimens**
- **Follow local regulations on the transportation of infectious material**
- **Coordinate with the laboratory**

# **PACKAGING SPECIMEN FOR SHIPMENT -Demonstration**

# Transporting Specimens from Field to Lab



The labeling for contents should include the words:  
“UN 3373 Diagnostic Specimens”



# WASTE DISPOSAL IN THE FIELD

# Items Requiring Disposal

- Infectious blood, body fluids, leftover biological samples
  - Disposable needles and syringes\*
  - Disposable or non-reusable protective clothing\*
  - Disposable or non-reusable gloves
  - Used laboratory supplies\*
  - Used disinfectants
- \* ***Incineration recommended***

# **DISPOSAL SAFETY PRECAUTIONS.**

- **Use safe handling practices for infectious material**
- **Locate disposal site on health facility grounds, away from traffic flow and public view**
- **Follow local public health guidelines for medical waste disposal**
- **Do not leave unburned waste in an incinerator or pit**

# Points to Consider

- **The time of specimen collection relative to symptom onset and clinical presentation are very important when considering what specimens to collect**
- **Maintain proper infection control when collecting specimens**
- **Use approved collection methods and equipment when collecting specimens**

# Points to Consider

- The time of specimen collection relative to symptom onset and clinical presentation are very important when considering what specimens to collect
- Maintain proper infection control when collecting specimens
- Use approved collection methods and equipment when collecting specimens
- Handle, store and ship specimens appropriately to the laboratory for analyses

# Storage

- **Specimens must be kept cool**
  - **If transported  $\leq 72\text{h}$ , keep at  $4^{\circ}\text{C}$**
  - **If transported  $>72\text{h}$ , keep at  $-70^{\circ}\text{C}$  (ship on dry ice)**
  - **Avoid repeated freeze/thaw cycles; do not use frost-free freezers**
  - **Sera may be stored at  $4^{\circ}\text{C}$  for up to one week; long term storage at  $-20^{\circ}\text{C}$  in non-frost-free freezer acceptable**

# DEMONSTRATION

- **Sample collection and packaging demonstration**

# QUESTIONS??

- Thank you