

Corona Virus Disease – 19: Transmission Prevention



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In preparedness of COVID-19.....



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Coronavirus Disease 2019 (COVID-19):

Novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

WHO declared COVID-19 a pandemic (11 Mar. 2020)

Affected nearly 1.5 million people and more than 80,000 people including HCPs have succumbed to it

Nepal reported 9 laboratory confirmed positive cases (as of now):

- 8 had travel history
- 1 had NO travel history (? heralds community level transmission)
- 1 recovered and 8 still in isolation; No critically ill COVID-19 cases yet

India reports over 5000 confirmed cases and nearly 200 deaths



Modes of transmission of the COVID-19 virus

Respiratory Droplets (>5-10 μm in diameter):

Portal of Entry: Mucosae (mouth and nose) or Conjunctiva (eyes) of a person in close contact (within 1 m) with COVID-19 patient with respiratory symptoms (coughs or sneezes)

Airborne i.e., through droplet nuclei ($\leq 5\mu\text{m}$ in diameter), POSSIBLE in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed

Fomites:

Direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person (e.g., stethoscope or thermometer)

SARS-CoV-2 RNA has been detected in **blood and stool** specimens **BUT** a joint WHO-China report said **fecal-oral transmission** did not appear to be a significant factor in the spread of infection UpToDate[®]

Aerosol Generating Procedures:

Related to ET intubation and invasive MV

- Endotracheal Intubation
- Bronchoscopy/UGI Endoscopy
- Open suctioning
- Administration of nebulized treatment
- Manual ventilation before intubation
- Disconnecting the patient from the ventilator
- Manual prone manoeuvre of the patient

Others

- NIPPV
- HFNC
- Chest physiotherapy
- Dental and ENT procedures
- Tracheostomy
- CPR
- Swab Collection:
Nasopharyngeal and Oropharyngeal

A recent publication in the *NEJM* demonstrated persistence of virus particles in air for up to 3 hours, with an experimentally induced aerosol-generating procedure

N Engl J Med. 2020 Mar 17. doi: 10.1056/NEJMc2004973. [Epub ahead of print]

Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1.

van Doremalen N¹, Bushmaker T¹, Morris DH², Holbrook MG¹, Gamble A³, Williamson BN¹, Tamin A⁴, Harcourt JL⁴, Thornburg NJ⁴, Gerber SI⁴, Lloyd-Smith JO⁵, de Wit E⁶, Munster VJ⁶.

Possibility of aerosol transmission of SARS-CoV-2 even if aerosol generating procedure NOT performed

However, this experimental aerosol-generation does not reflect a clinical setting in which aerosol-generating procedures are performed



Detection of COVID – 19 RNA in environmental samples by PCR-based assays is not indicative of viable virus that could be transmissible

Though this is a possibility, this observation has to be supported by further robust evidence

What WHO recommends for IPC

European Society of Intensive Care Medicine
Society of Critical Care Medicine

Droplet and contact precautions for those caring for COVID-19 patients

Airborne precautions during aerosol generating procedures

Frequent Hand Hygiene: [Alcohol Based Hand Rub, Soap/Water](#)

Avoid touching eyes, nose and mouth

Respiratory Etiquette: [coughing/sneezing into a bent elbow or tissue and then immediately disposing of the tissue](#)

Environmental cleaning and disinfection

Maintaining physical distances and avoidance of close, unprotected contact with people with fever or respiratory symptoms

Rational and appropriate use of PPEs by HCPs

Staff training on these recommendations + Selecting proper PPE and train in how to put on/remove and dispose

Rational use of PPE in Health Care Setting

- Global demand of PPE is rising in the background of insufficient global stockpile
- Misinformation, panic-buying and stockpiling - will result in further shortages of PPE
- This will compel HCPs to work without proper precautions:
Putting both HCPs and the community at risk of infection

What constitutes PPE:

- Gloves
- Goggles or a face shield
- Water resistant OR standard disposable coverall
- Medical masks or Respirators (i.e. N95 or FFP2 standard or equivalent)
- Aprons

Rational use of PPE in Chitwan Medical College

Personal Protective Equipment (PPE)

Category I PPE

- N-95 mask
- Goggles or visor
- Gloves
- Water resistant OR standard disposable coverall
- Cap: regular disposable

Category II PPE

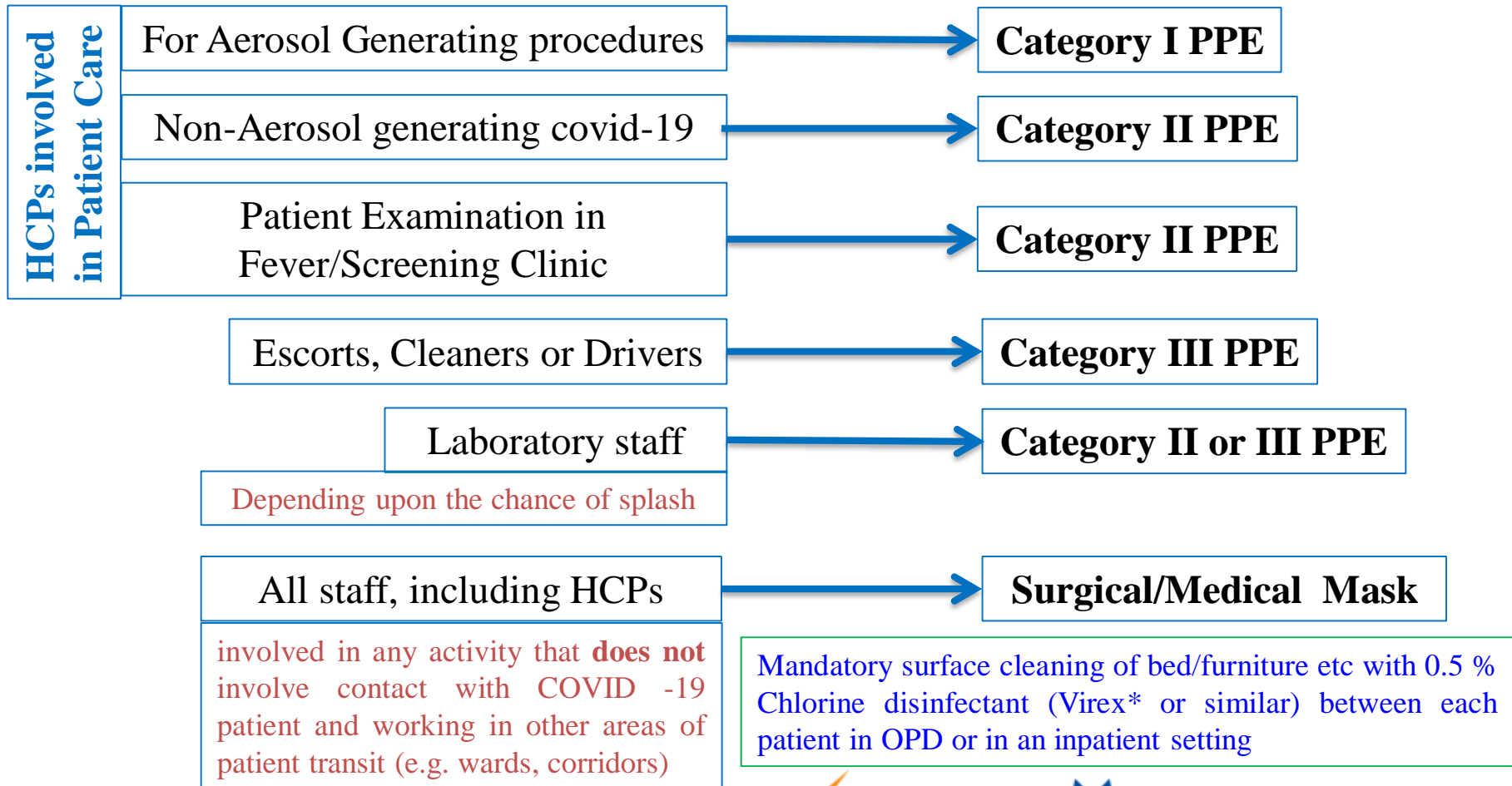
- Surgical mask (seal the top edge with tape)
- Goggles or visor
- Gloves
- Water resistant OR standard disposable coverall
- Cap: regular disposable

Category III PPE

- Surgical mask (seal the top edge with tape)
- Gloves
- Water resistant OR standard disposable coverall (if physical contact expected)



Handling Suspected or Laboratory Confirmed COVID-19 Patient





Thank You



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