

# N CORONA VIRUS

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# Introduction

Family - Coronaviridae

Single stranded positive sense RNA genome -ranging from 26-32 kilobase in length

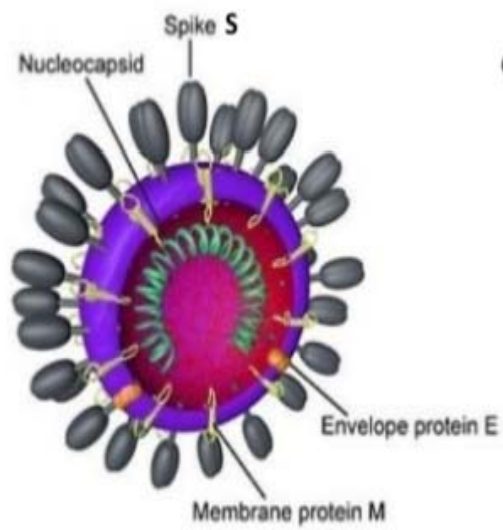
Host-Avian, mammals -camel ,bat, masked palm civets,mice,dogs, cats

2012-Middle east respiratory syndrome-Saudi Arabia

2018 Fatal acute diarrheal syndrome in pigs

2019 December-Wuhan Viral pneumonia

## Diagram of Coronavirus Virion



# Clinical features

- Uncomplicated illness- URTI-with nonspecific symptoms such as fever, cough, sorethroat, nasal congestion, malaise, headache, muscle pain.

Elderly and immunocompromised may present with atypical symptoms. These patients may not have any signs of dehydration , sepsis or shortness of breath.

- Mild pneumonia-Patient with pneumonia and no signs of severe pneumonia.

Child with non severe pneumonia has cough or breathing difficulty with fast breathing (<2 months -60breath/min, 2-11months  $\geq$ 50breath/min, 1-5 years >40breath/min)

▶ Severe pneumonia

Adolescent or adult -fever or suspected respiratory infection,  
respiratory rate >30 breaths

severe respiratory distress or SPO<sub>2</sub> <90% on room air

Children -Cough or difficulty in breathing

at least one of the following -central cyanosis

SPO<sub>2</sub> <90%

severe respiratory distress (eg-grunting,  
very severe chest indrawing).

Signs of pneumonia with a general danger sign;  
inability to breast feed or drink, lethargy or unconsciousness or  
convulsions with other signs of pneumonia .

- ▶ ARDS- Onset new worsening of symptoms within one week of clinical insult.

Chest imaging (radiograph, CT scan, lung ultrasound)- bilateral opacities, not fully explained by effusion, lobar or lung collapse or nodules.

Origin of edema respiratory not fully explained by cardiac failure or fluid overload.

- ▶ SEPSIS
- ▶ SEPTIC SHOCK

# EPIDEMIOLOGY

## ▶ CASE DEFINITIONS

1. *Asymptomatic travellers*-A traveller who has started journey from china (not necessarily limited to Wuhan city), or as the disease evolves from any country notified to be affected and has arrived in the state directly at one of the notified PoEs in the state or indirectly after landing at neighbouring or other airports in the country, and who has no symptoms whatsoever.

1. *Suspect case* -A person with SARI+ h/o fever and coughing requiring admission to hospital + no other etiology that fully explains the clinical presentation .And any one of the following
  - A history of travel to Wuhan ,Hubei Province China 14 days prior to symptom onset.
  - The disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for without regard to place of residence or history of travel.
  - The person develops an unusual or unexpected clinical course , especially sudden deterioration despite appropriate treatment without regard to place of residence or history of travel , even if another etiology has been identified that fully explains the clinical presentation.



- ▶ Close physical contact with a confirmed case of n CoV infection while that patient was symptomatic.
- ▶ A healthcare faculty in a country where hospital associated nCoV infections have been reported.
- ▶ Direct contact with animals in countries where then CoV is known to be circulating in animal populations or where human infections have occurred as a result of presumed zoonotic transmission.

3 **Confirmed case**-The person as described above in whom the recommended tests(RT-PCR)/ any other which may be notified later from NIV Pune.

**2 Screening, early identification and notification of suspect probable passengers**

**3 Contact tracing**-Process of identifying assessing and managing people who have been exposed to a disease to prevent onward transmission .


- People who have been exposed to 2019 nCoV are to be followed for 28 days from the date of the probable last exposure /arrival from 2019-nCoV affected countries.
- Any person who has had contact with a patient under investigation /treatment for suspected ,probable or confirmed case of 2019 nCoV should be carefully monitored for the appearance of symptoms of 2019-nCoV.

**4 Patient care** -No specific management , generally managed as viral respiratory /disseminated infection as per symptoms and signs.

# Collection of specimen for laboratory diagnosis

WHO guidance on specimen collection ,processing and laboratory testing including related biosafety procedure.

- Collect blood culture for bacteria that cause pneumonia and sepsis ideally before antimicrobial therapy.
- Collect specimens
  - Upper respiratory tract(nasopharyngeal, oropharyngeal)
  - Lower respiratory tract (expectorated sputum, endotracheal aspirate or bronchoalveolar lavage) by RT-PCR.
- Serology for diagnostic purpose is recommended only when RT-PCR is not available.

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- ▶ In hospitalized patients with confirmed nCoV infection , repeat URT and LRT samples should be collected to demonstrate viral clearance.
  - ▶ Frequency of sample collection will depend on local circumstances but should be atleast every 2 to 4 days until there are two consecutive negative results in a clinically recovered patient atleast 24 hours apart.
  - ▶ Samples should be safely packed in triple container packing and should be transported under cold chain (4C) if arrives at the laboratory within 48hours and -70c if required for longer duration to the testing laboratory with prior intimation
  - ▶ Personal protective equipments (apron, hand gloves, face shield ,N95 masks etc )need to be used and all biosafety precautions should be followed .

# PRINCIPLES OF INFECTION PREVENTION AND CONTROL STRATEGIES ASSOCIATED WITH HEALTH CARE WITH SUSPECTED nCoV

## A. Early recognition and source control-

AT TRIAGE- Give suspected patient a medical mask and direct patient to separate area. Keep at least 1 meter distance between suspected patient and other patient. Perform hand hygiene.

Encourage HCW to have high level of clinical suspicion

Institute screening questionnaire

Promotion of respiratory hygiene-offer medical mask

cover nose and mouth during coughing or sneezing with tissue or flexed elbow

perform hand hygiene after contact with respiratory secretions.

## ***B Application of standard precautions for all patients***

APPLY CONTACT PRECAUTION-medical mask, eye protection, gloves, gown.

Ensure adequate room ventilation. Perform hand hygiene, respiratory hygiene.

- ▶ APPLY AIRBORNE PRECAUTION WHEN PERFORMING AEROSOL GENERATING PROCEDURE-Use PPE including gloves, long sleeved gowns, eye protection and fit tested particulate respirators(N95 or equivalent or higher level of protection)
- ▶ Safe waste management
- ▶ Prevention of needled stick or sharps injury

Environment cleaning and disinfection procedures are followed consistently and correctly

*C Implementation of empiric additional precautions*

*D Environment and engineering controls*

# MANAGEMENT

- ▶ EARLY SUPPORTIVE THERAPY AND MONITORING
- ▶ SPECIMEN COLLECTION FOR LAB DIAGNOSIS
- ▶ MANAGEMENT OF HYPOXEMIC RESPIRATORY FAILURE AND ARDS
- ▶ MANAGEMENT OF SEPTIC SHOCK



# Management domains of a hospitalized suspect case

- ▶ Isolation
- ▶ Secondary care
- ▶ Tertiary care
- ▶ Ventilator readiness
- ▶ ICU Space creation
- ▶ Clinical management team sensitization
- ▶ Referral system
- ▶ Strict hospital infection control measures.
- ▶ Necessary capacity building
- ▶ Help desk functionality

# PREVENTION OF COMPLICATION

- ▶ REDUCE DAYS OF INVASIVE MECHANICAL VENTILATION

  - Use weaning protocols

  - Minimise continuous or intermittent sedation

- REDUCE INCIDENCE OF VENTILATOR ASSOCIATED PNEUMONIA

  - Oral intubation

  - keep patient in semirecumbent position

  - Use closed suction system

  - Change heat moisture exchanger

- REDUCE INCIDENCE OF VENOUS THROMBOEMBOLISM-

  - Use pharmacological prophylaxis or mechanical prophylaxis

- REDUCE INCIDENCE OF CATHETER RELATED BLOODSTREAM INFECTION

- REDUCE INCIDENCE OF PRESSURE ULCERS-

  - Turn patient every 2 hrs



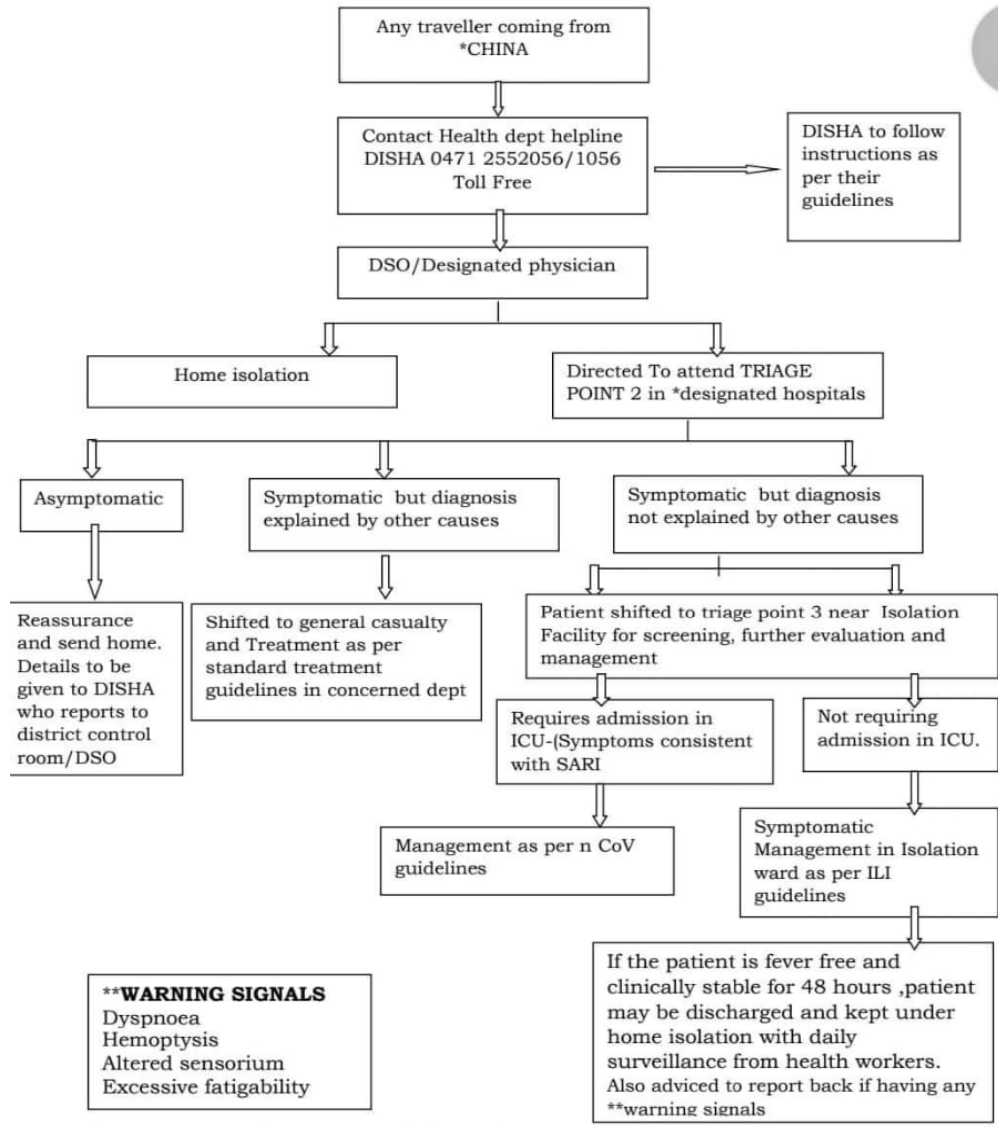
▶ REDUCE INCIDENCE OF STRESS ULCERS AND GASTROINTESTINAL BLEEDING-

Give early enteral nutrition.

Administer H2 receptor blockers or PPIs in patients with risk factors

▶ REDUCE INCIDENCE OF ICU RELATED WEAKNESS-actively mobilise the patient

**7. Algorithm to be followed in in case of suspected corona virus cases**



**\*\*WARNING SIGNALS**  
 Dyspnoea  
 Hemoptysis  
 Altered sensorium  
 Excessive fatigability

If the patient is fever free and clinically stable for 48 hours ,patient may be discharged and kept under home isolation with daily surveillance from health workers. Also advised to report back if having any \*\*warning signals

\* affected countries as notified by WHO/MOHFW from time to time

**THANK YOU**

