COVID 19 - WHAT SHOULD WE KNOW

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WHAT IS COVID 19
Global pandemic
# India statistics

**COVID19 STATEWISE STATUS**

Covid India As On: 30 July 2020, 08:00 IST (GMT+5:30)

Passenger screened on Airport: 15,24,266  Active Cases: 5,28,242  Cured/Discharged: 10,20,582  Migrated: 1  Deaths: 34,968


Last Total Active Case: 5,09,447  Last Total Cured: 9,88,029  Last Total death: 34,193  Total Samples Tested: 18190382  Samples Tested Today: 446642

Last Sample Tested Date: July 29, 2020  Whatsapp Chatbot: https://wa.me/919013151515  FB URL: https://www.messenger.com/t/MyGovIndia

Covid Statewise data:

<table>
<thead>
<tr>
<th>STATE NAME</th>
<th>TOTAL CONFIRMED</th>
<th>CURED/ DISCHARGED/MIGRATED</th>
<th>DEATH</th>
<th>WHATSAPP CHATBOT URL</th>
<th>FB CHATBOT URL</th>
<th>E-PASS URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andaman and Nicobar</td>
<td>428</td>
<td>201</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>120390</td>
<td>55406</td>
<td>1213</td>
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<td></td>
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<tr>
<td>Arunachal Pradesh</td>
<td>1410</td>
<td>677</td>
<td>3</td>
<td></td>
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<tr>
<td>Assam</td>
<td>36295</td>
<td>27832</td>
<td>92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bihar</td>
<td>46080</td>
<td>30320</td>
<td>278</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Transmission

Sick Person

Get into your nose

Eyes

Mouth
Pathophysiology

- Cytokine storm
  - TNFα
  - IL-6
- Monocyte
  - IL-10
  - IL-8
- Pneumonia
- ARDS
- Hypercoagulability
- Endothelial dysfunction
- DAMPS
- Mechanical ventilation
  - ECMO
- Myocardial dysfunction
  - Endothelial damage
  - Microthrombi
  - Rhabdomyolysis
  - Microembolism
  - Kidney infarction
Spectrum of illness

Disease spectrum

- 14% Severe disease
- 81% Mild disease
- 5% Critical care admission


Li Long-Quan et al, 2019 novel coronavirus patients' clinical characteristics, discharge rate and fatality rate of meta-analysis, Journal of Medical Virology (accepted for publication)
Symptoms

Know the symptoms of COVID-19, which can include the following:

- Cough, shortness of breath or difficulty breathing
- Fever or chills
- Muscle or body aches
- Vomiting or diarrhea
- New loss of taste or smell
Symptoms

- Fever: 88%
- Fatigue: 38%
- Mucus production: 33%
- Sore throat: 15%
- Dry cough: 68%
- Muscle pain: 15%
- Shortness of breath: 19%

SOURCE: WHO
Dangerous symptoms

- Fever and tiredness
- Continuous cough
- Loss of taste or smell
- Breathing difficulties
## Diagnostic tests for covid

<table>
<thead>
<tr>
<th>Test</th>
<th>Antigen-based immunoassay</th>
<th>Antibody-based immunoassay</th>
<th>Real-time PCR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antigen</strong></td>
<td>Antigen</td>
<td>Antibody</td>
<td>Gene</td>
</tr>
<tr>
<td><strong>Incubation period</strong></td>
<td>From a few days after onset of symptoms</td>
<td>From 7-28 days after onset of symptoms</td>
<td>All of stages</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>50-70% (expected)*</td>
<td>More than 95%</td>
<td>More than 95%</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>50-70%*</td>
<td>Not clear*</td>
<td>More than 95%</td>
</tr>
<tr>
<td><strong>Stage of infection</strong></td>
<td>Depending on the amount of viral antigen</td>
<td>At the later stage of infection</td>
<td>From the early stage of infection</td>
</tr>
<tr>
<td><strong>Use</strong></td>
<td>Only some regions</td>
<td>Only some regions</td>
<td>All of countries (recommended by WHO &amp; other organizations)</td>
</tr>
</tbody>
</table>

*ventional antigen-based immunoassay and affected by seasonal coronaviruses*

*presentation from the forum of KOFST (The Korean Federation of Science and Technology Societies)*
Swab collection

nasal

oral
Swab collection

Sample Collection and Diagnosis of COVID-19

1. Nasopharyngeal swab
2. RNA Detection by Real time PCR
3. COVID-19 IgG/IgM Rapid Test for antibodies detection
4. Xpert Xpress SARS-CoV-2

Specimen Collection
Electron Microscopy
Testing for covid

Diagnosis for COVID-19

Current Diagnostic Tool for COVID-19 RT-PCR
- Sample Collection
- Gene Amplification Genetic Analysis
- Result Check
  - Over 4 hrs.

Celltrion’s COVID-19 RDT KIT
- Sample Collection
- Rapid Diagnostic Test (RDT)
- Result Check
  - Less than 20 min.
Stages of disease

- **Stage I (Early Infection)**
  - Viral response phase
  - Clinical Symptoms: Mild constitutional symptoms, fever >99.6°F, dry cough, diarrhea, headache
  - Clinical Signs: Lymphopenia, increased prothrombin time, increased D-Dimer and LDH (mild)

- **Stage II (Pulmonary Phase)**
  - IIA
  - Shortness of Breath
  - Hypoxia (PaO2/FiO2 ≤ 300 mmHg)
  - Abnormal chest imaging
  - Transaminitis
  - Low-normal procalcitonin

- **Stage III (Hyperinflammation Phase)**
  - IIB
  - ARDS
  - SIRS/Shock
  - Cardiac Failure
  - Elevated inflammatory markers (CRP, LDH, IL-6, D-dimer, ferritin)
  - Troponin, NT-proBNP elevation

**Potential Therapies**
- Remdesivir, chloroquine, hydroxychloroquine, convalescent plasma transfusions
- Reduce immunosuppression
- Corticosteroids, human immunoglobulin, IL-6 inhibitors, IL-2 inhibitors, JAK inhibitors
## Clinical severity

<table>
<thead>
<tr>
<th>Symptomatic</th>
<th>Moderate</th>
<th>Severe</th>
<th>Critical</th>
</tr>
</thead>
</table>
| Meets case definition                | • Clinical signs of pneumonia (febrile, cough, dyspnoea, tachypnoea)  
• Saturations ≥ 90% in air          |          | Signs of pneumonia and any of:  
• respiratory rate > 30 breaths/min  
• severe respiratory distress  
• Saturations < 90% in air          | • ARD   
• Septic shock                        |
| No evidence of pneumonia or hypoxia  | • Clinical signs of non-severe pneumonia (cough or dyspnoea + tachypnoea with or without recessions) |          |          |
|                                      |          | Signs of pneumonia and any of:  
• Central cyanosis  
• Saturations < 90% in air  
• Severe respiratory distress (e.g. grunting, very severe recessions)  
• Any red flag: inability to take oral intake/breastfeed, lethargy, loss of consciousness, seizures  
• Tachypnoea (breaths/min):  
< 2 months: ≥ 60  
2–11 months: ≥ 50  
1–5 years: ≥ 40 | •         |
Risk factors

1] age over 60
2] comorbidities
   Obesity
   Diabetes
   Hypertension
   CKD
   Cardiovascular diseases
Who can stay at home

- Mild patients with no risk factors
- Fever less than 102
- Respiratory rate less than 24
- SpO2 more than 95%
Practices during home care

- ISOLATION - room with windows and bathroom
- Mask, Disposables, care of clothes, no common use of items, mobiles etc.

- DIET
  - Light, hot, easily digestible diet as per appetite
  - No appetite - judicious fasting
    - Mild appetite - ganji, soup, electral water,
  - Moderate appetite - java, kichdi, pappu kattu, all boiled with spiced water
  - No heavy, fatty, sticky foods for 1 week
  - Ghee processed with spices after 1 week
  - Warm water or water boiled with spices
  - Regulated life style - sleep on time,
  - avoid sex, exercise, emotional excitement
  - Pray, meditate, stay positive
Self monitoring

- Thermometer
- Pulse oxymeter
- Digital BP apparatus
- Glucometer if diabetic
- metered dose Inhaler or nebulizer, if Asthmatic
Pulse oxymeter & digital BP apparatus

Pulse oxymeter

Digital BP apparatus
Danger signs

- SPO2<94/90
- BP less than 100/70
- Pulse rate more than 110
- Sugars more than 250
- Breathlessness
- Weakness
- Giddiness –orthostatic
- Confusion, drowsiness
- Reduced urine output
Prior medications

• BP – medicines generally need reduction
• Sugar medicines as per food intake
• Continue only essential, life-saving medications – avoid iron, calcium etc.
• Use only paracetamol for fever. Up to 3 gms/day
Regular testing

• Every 48/72/96 hours
• CBP.CR.P.D-Dimer
• Up to 14 to 21 days
## ANNEXURE II

### Clinical Guidance for management Covid-19 Suspect/confirmed cases

#### Covid-19 Suspect/Confirmed Case

<table>
<thead>
<tr>
<th>Stratification on the basis of disease severity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mild</strong></td>
</tr>
<tr>
<td>(Fever and/or uncomplicated Upper Respiratory Tract Infection) without dyspnoea or hypoxemia</td>
</tr>
<tr>
<td>Admit in DCHC / Dedicated COVID Health Centre</td>
</tr>
<tr>
<td>- Contact and droplet precautions</td>
</tr>
<tr>
<td>- Strict hand hygiene</td>
</tr>
<tr>
<td>- Symptomatic management with adequate hydration</td>
</tr>
<tr>
<td>- Tab HCQ (400 mg BD x 1 day f1b 400 mg OD x 4 days) may be considered in patients with high-risk features</td>
</tr>
<tr>
<td>- RR ≥24/min or SpO₂ &lt; 94% on room air</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
</tr>
<tr>
<td>Pneumonia with no signs of severe disease</td>
</tr>
<tr>
<td>RR ≥24/min or SpO₂ ≤ 94% on room air</td>
</tr>
<tr>
<td>Admit in DCHC / Dedicated COVID Health Centre</td>
</tr>
<tr>
<td>Oxygen Support</td>
</tr>
<tr>
<td>- Target SpO₂: 92-96% (≥88-92% in patients with COPD)</td>
</tr>
<tr>
<td>- Preferred device for oxygen: Non-rebreathing face mask (if HFNC or simple nasal cannula is used, N-95 or surgical mask should be applied over it)</td>
</tr>
<tr>
<td>- Awake proning may be used in patients who continue to have hypoxemia despite oxygen &gt;4L/min if no contraindications</td>
</tr>
<tr>
<td><strong>Anticoagulation</strong></td>
</tr>
<tr>
<td>- Prophylactic dose of LMWH/UFH, if no contraindications (e.g. enoxaparin 40 mg daily SC)</td>
</tr>
<tr>
<td>- IV Methylprednisolone 0.5-1 mg/kg or Dexamethasone 0.1-0.2 mg/kg for 3-5 days</td>
</tr>
<tr>
<td><strong>Corticosteroids</strong></td>
</tr>
<tr>
<td>- IV Methylprednisolone 1-2 mg/kg or Dexamethasone 0.2-0.4 mg/kg for 5-7 days</td>
</tr>
<tr>
<td><strong>Antivirals</strong></td>
</tr>
<tr>
<td>- Tab HCQ (400 mg BD x 1 day f1b 400 mg OD x 4 days) if no contraindications and after assessment of ECG for QT interval, CRP, D-dimer &amp; Ferritin every 48-72 hours (if available), CBC with differential count, absolute lymphocyte count, KFT/LFT to be done daily</td>
</tr>
<tr>
<td><strong>Investigational Therapies</strong></td>
</tr>
</tbody>
</table>

### Oxygenation

- Cautious trial of CPAP with oro-nasal mask/NIV with helmet interface/HFNC, if work of breathing is low. Consider intubation if work of breathing is high/not tolerating NIV
- Lung protective ventilation strategy by ARDSnet protocol
- prone ventilation to be considered when there is refractory hypoxemia

### Anticoagulation

- High dose prophylactic UFH or LMWH (e.g. enoxaparin 40 mg or 0.5 mg/kg BD SC) if not at high risk of bleeding
- Corticosteroids
- IV Methylprednisolone 1-2 mg/kg or Dexamethasone 0.2-0.4 mg/kg for 5-7 days
- If sepsis/ septic shock: Manage as per existing protocol & local antibiogram
- Use sedation and nutrition therapy as per existing guidelines

#### Investigational Therapies

- Use of Convalescent plasma (200 ml single dose, may be repeated after 24 hrs, may be considered in moderate to severe patients with persistent or increasing oxygen requirement
- *Use of Convalescent plasma (200 ml single dose, may be repeated after 24 hrs, may be considered in moderate to severe patients with persistent or increasing oxygen requirement
- IV Ivermectin 2 mg/kg (max dose 800 mg once; usual dose 500 mg) may be considered (if no contraindications) in patients moderate-severe disease with progressively increasing oxygen requirements despite use of corticosteroids with raised inflammatory markers; dose can be repeated after 12 to 24 hours if no improvement occurs with the first dose

**Testing:** While attending suspect cases, as per above protocol based on clinical assessment, testing shall be resorted to, and if negative, manage in non-COVID facility according to clinical diagnosis

**Discharge:** After clinical improvement, discharge as per revised discharge policy (available at: https://www.mohfw.gov.in/pdf/ReviseddischargePolicyforCOVID19.pdf)

### Risk of bleeding

- use validated score for assessing bleeding risk (e.g HAS-BLED score)
- Use D-dimer and SIC score for further risk stratification. (SIC score 24 portends high thrombotic risk). Follow AHA/ESC and ISTH guidelines in case patient is on antiplatelet agents

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1. Very mild/pre-symptomatic/ asymptomatic cases can be considered for home isolation subject to fulfillment of conditions stipulated in guidelines (https://www.mohfw.gov.in/pdf/RevisedHomeIsolationGuidelines.pdf).
2. High-risk patients for severe disease include:
   - Age: 60 years or more
   - Hypertension, DM (diabetes mellitus) & other immunocompromised states
   - Cerebrovascular disease and Obesity (BMI > 25 kg/m²)
   - Chronic lung/kidney/liver disease
3. LMWH: Low Molecular Weight Heparin: if no contraindication or high risk of bleeding; UFH: Unfractionated heparin
4. Higher chances of NIV failure
5. Risk of bleeding: use validated score for assessing bleeding risk (e.g. HAS-BLED score), Use D-dimer and SIC score for further risk stratification (SIC score 24 portends high thrombotic risk). Follow AHA/ESC and ISTH guidelines in case patient is on antiplatelet agents.
Emergency plan

• Hospital details
• Transport
• Finances
• Stay calm, stay positive
Protect yourself and others!

Follow these Do's and Don'ts

Do's:
- Practice frequent hand washing.
- Cover your nose and mouth with a mask or tissue while sneezing and coughing.
- Throw used tissues into closed bins immediately after use.
- See a doctor if you feel unwell (fever, difficulty breathing and cough).
- While visiting doctors, wear a mask and evidence your mouth and nose.
- If you have these symptoms please call the helpline number at Ministry of Health & Family Welfare's 2027 helpline at 15151571010/11.

Don'ts:
- Have close contact with anyone, if you're experiencing cough and fever.
- Touch your eyes, nose and mouth.
- Do not go to public places.
Mask
Hand washing

Sing these words to the melody of “Twinkle Twinkle” while washing your hands!

1. Palm to palm
   - Twinkle Twinkle little star 🎶

2. Between fingers
   - See how clean my two hands are 🎶

3. Back of hands
   - Soap and water wash and scrub

4. Fingernails

5. Base of thumbs

6. Wrists
Distance

SOCIAL DISTANCING
STOP COVID-19

MINIMUM 2M (6FT)
Prevention

- Do not touch face, eyes, mouth, nose
- Avoid public places, transport
- Avoid unnecessary travel
- Social distancing
- Avoid overcrowding – markets, wine shops, etc.
Quarantine

- Isolate yourself when you have come into contact with an infected person for 14 days
- Use mask
- Wash hands
- Do not share objects
- Maintain distance at all times
- Use disposables
- Eat light, eat right
- Drink water boiled with spices or lukewarm
- Sleep early, sleep well
- Avoid sex, anxiety, vigorous exercise
- Use zinc and vitamin D
How to boost your immunity

• Timely diet as per season and health
• Healthy fats and fruits
• Timely sleep
• Moderation in activities, sex etc.
• Regular exercise
• Peaceful mind—yoga, prayer, meditation
• Vitamin D and Zinc
Protect nature – it will protect you

Protect forests and wild animals

Protect nature