

# CoViD in the Mountains



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# CoViD-19: Guidelines for Clinical Diagnosis and Management in Rural Setting

## CoViD-19: Guidelines for Clinical Diagnosis & Management in Rural Setting

Dr. Abhyu G  
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**Non-Infected** • Non-infected status cannot be confirmed with certainty due to high false negatives (PCR is negative during the first few days of infection) resulting in low sensitivity of tests.

**Asymptomatic** • **Positive RT-PCR**: signs and symptoms absent; almost half the total cases are asymptomatic carriers.  
• **Recent close contacts** are considered infected regardless of PCR results (Eg. Wife of infected husband).  
• **Contagious** even though asymptomatic; Incubation period of 5 days (can be up to 14 days).

**Mild Illness (1<sup>st</sup> week)**  
• Triad of: 1. **Fever** (>100.5 F or >38 C)  
2. **Non-productive Cough** ("dry" cough)  
3. **Lassitude** (tiredness or lack of energy)  
• **Constituent symptoms** include headache, loss of smell or taste, sore throat, conjunctivitis, loose motion, myalgia, arthralgia, rash, night sweats.

Medications (for mild to moderate cases):	Rationale:
<b>Supportive</b>	
1. Tab. Paracetamol 500mg QID for 3 days	- Safe analgesic, anti-pyretic & slight anti-inflammatory; use only as needed.
2. ORS 1L/day for 3 days, with proper nutrition and hydration	- Dehydration is detrimental and needs to be prevented; use only if there is diarrhea, nausea, vomiting or hypotension.
<b>Supplemental</b>	
3. Tab. Vitamin B complex OD for 14 days	- Though a high dose of supplements doesn't boost the immunity perse, a deficient state can reduce the body's capability to fight back.
4. Tab. Vitamin C 500mg BD for 14 days	
5. Tab. Vitamin D 10,000IU OD for 14 days	
6. Tab. Zinc + Selenium + Vitamin A, C, E OD for 14 days	
<b>Anti-viral &amp; Anti-biologic</b>	
7. Tab. Oseltamivir 75mg BD for 5 days	- Cannot rule out influenza; cost and availability are a concern.
8. Tab. Ivermectin 12mg OD for 3 days	- Anti-parasitic with anti-viral activity against SARS-CoV-2.
9. Tab. Azithromycin 500mg loading dose then 250mg OD for 5 days	- Possibility of primary infection itself being bacterial, and for prophylaxis against secondary bacterial infections.

**Moderate Illness (2<sup>nd</sup> week)**  
• When do we say "Moderate" instead of "Mild"?  
• When **Lower Respiratory Tract** is affected and symptoms are more prominent.  
• **Oxygen saturation is still maintained** and vitals are not grossly deranged.  
• **High-risk individuals** are classified as moderate even if symptoms are mild.  
- Age >65yrs  
- Presence of comorbidity (Hypertension, Diabetes, COPD, Asthma, Immuno-compromised)

**Severe Illness (3<sup>rd</sup> week)**  
• **Red Flag Signs:**  
- Dyspnea (breathlessness on exertion or at rest)  
- **Intense Cough** (often unable to complete sentences)  
- **High grade fever** >103 F or >39.5 C (often with chills & rigors)  
- **Dark urine** (often oliguric, sometimes anuric)  
• **Deranged vitals:**  
- Hypoxia SpO<sub>2</sub> <93% (or < appropriate value for that altitude)  
- Tachycardia PR >100bpm  
- Hypotension BP <90/60mmHg  
- Tachypnoea RR >30 breaths/min  
• **Auscultatory findings** like diffuse crackles and asymmetrical/diminished breath sounds might be present.  
• **Chest X-ray** might show consolidation opacities, diffuse infiltrates, interstitial thickening, central enlargement with constriction of peripheral pulmonary vasculature ("pruning"), pleural effusion. CXR can be completely normal.  
• **Investigations** associated with severe illness:  
- Elevated ESR/CRP  
- Low RBC count  
- Low to normal WBC count, with low lymphocytes and increased neutrophils

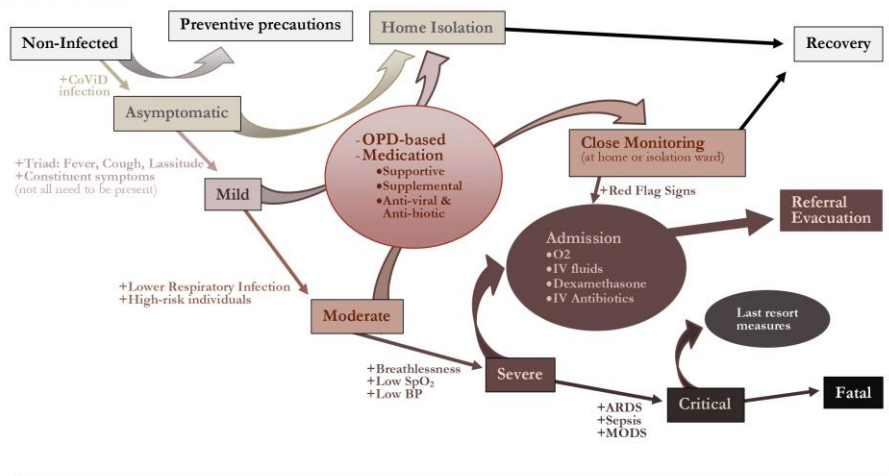
Approach during admission, until transfers possible:	Approach during admission, until transfers possible:
1. Oxygen administration via venturi mask.	- To maintain target oxygen saturation
2. IV fluids (Ringer's Lactate or Normal Saline).	- To maintain blood pressure and prevent shock.
3. Inj. Dexamethasone 6mg OD for 10 days.	- Shown to reduce mortality.
4. Inj. Ceftriaxone 1gm IV OD for 5 days.	- Empirical treatment for possible bacterial infection and sepsis.

**Critical Illness**  
• ARDS (Acute Respiratory Distress Syndrome)  
• Septic Shock  
• MODS (Multiple Organ Dysfunction Syndrome)

• **Critical illness** is best treated at tertiary care hospitals but many times referral or evacuation is not possible. Following **Last resort measures** could be tried:  
- Prone position breathing on oxygen supplementation  
- Ventilatory support (BiPAP), if available.  
- If spontaneous breathing ceases, Manual ventilation with Ambu-bag.  
- In case of acute circulatory failure, vasopressors (Inj. Adrenaline 1:10000 0.5ml IV) and IV fluid bolus (0.9% Normal saline 30ml/kg, first 3 hours).  
- If cardiac activity ceases, Manual Defibrillation should be attempted.

**Fatal Illness**  
• RT-PCR stays positive only for 10 days in mild to moderate cases, and up to 20 days in severe cases. Thus, in CoViD-19 related deaths, PCR can be negative.  
• **Criteria for declaring death:**  
- Somatic (no bodily movements)  
- Circulatory and respiratory function absent  
- Neurological (tests for brainstem reflexes)  
• CPR outcomes are poor but if it is decided upon, medical providers are advised to use full PPE.  
• **Strict PPE protocol** to be followed by family members and individuals involved during the transport and cremation of the deceased.

## SUMMARY



## CAUTION (The following might be dangerous for CoViD-19 patients and are best avoided)

Ibuprofen and NSAIDs other than Paracetamol	Might increase the risk of severe and fatal corona virus disease.
Steam inhalation	Might aid transportation of virus from upper respiratory tract to lower respiratory tract, and deeper into the lungs.
Cough Syrup with Anti-tussive (Eg. Promethazine, Dextromethorphan, Codeine)	Respiratory depressants might deplete oxygen saturation and lead to complications.
Proton Pump Inhibitors (Eg. Pantoprazole)	PPIs are associated with increased odds for reporting positive CoViD-19 tests. H2-receptor antagonists (Eg. Ranitidine) seems to inhibit SARS-CoV-2 replication leading to decreased viral loads, and thus are a safer option.
Vitamin B, Vitamin D, Zinc supplementation	Overenthusiastic supplementation can lead to toxicity. Doses beyond what is recommended are not advised.
Corticosteroids (Eg. Dexamethasone, Prednisolone)	Use of corticosteroid for mild to moderate cases might lead to reduced immune response, spread of infection within the body and severe illness. However, judicious use of corticosteroids in severe and critical cases might be beneficial.
Intravenous Anti-biotics	Not advised for mild to moderate cases but can be used in severe cases where bacterial infection cannot be ruled out.
Nebulization	Might promote spread of virus through aerosols. Bronchodilators (Eg. Salbutamol, Ipratropium) are not routinely used in covid patients. However, in Asthmatics and patients presenting with wheeze, MDI (Metered Dose Inhaler) is preferable to Nebulization.
Aspirin, LMWH (Low Molecular Weight Heparin)	Perhaps useful in preventing and treating coagulation related long-term complications, but haphazard use might lead to dangerous bleeding.
Hydroxychloroquine, Chloroquine, Anti-Retroviral drugs (Eg. Lopinavir, Ritonavir)	Do not seem to benefit in the outcomes of hospitalized patients.
Remdesivir injection, Convalescent Plasma Therapy	Besides the efficacy being questionable, it is expensive and practically unavailable in rural settings.

DISCLAIMER: The above content was developed on the basis of recent findings regarding CoViD-19. Being a relatively new disease, guidelines are constantly evolving and medical practitioners are advised to apply them as per their own clinical judgement.

(formulated) 16<sup>th</sup> October, 2020  
(1<sup>st</sup> revision) 21<sup>st</sup> November, 2020  
(2<sup>nd</sup> revision) 28<sup>th</sup> November, 2020

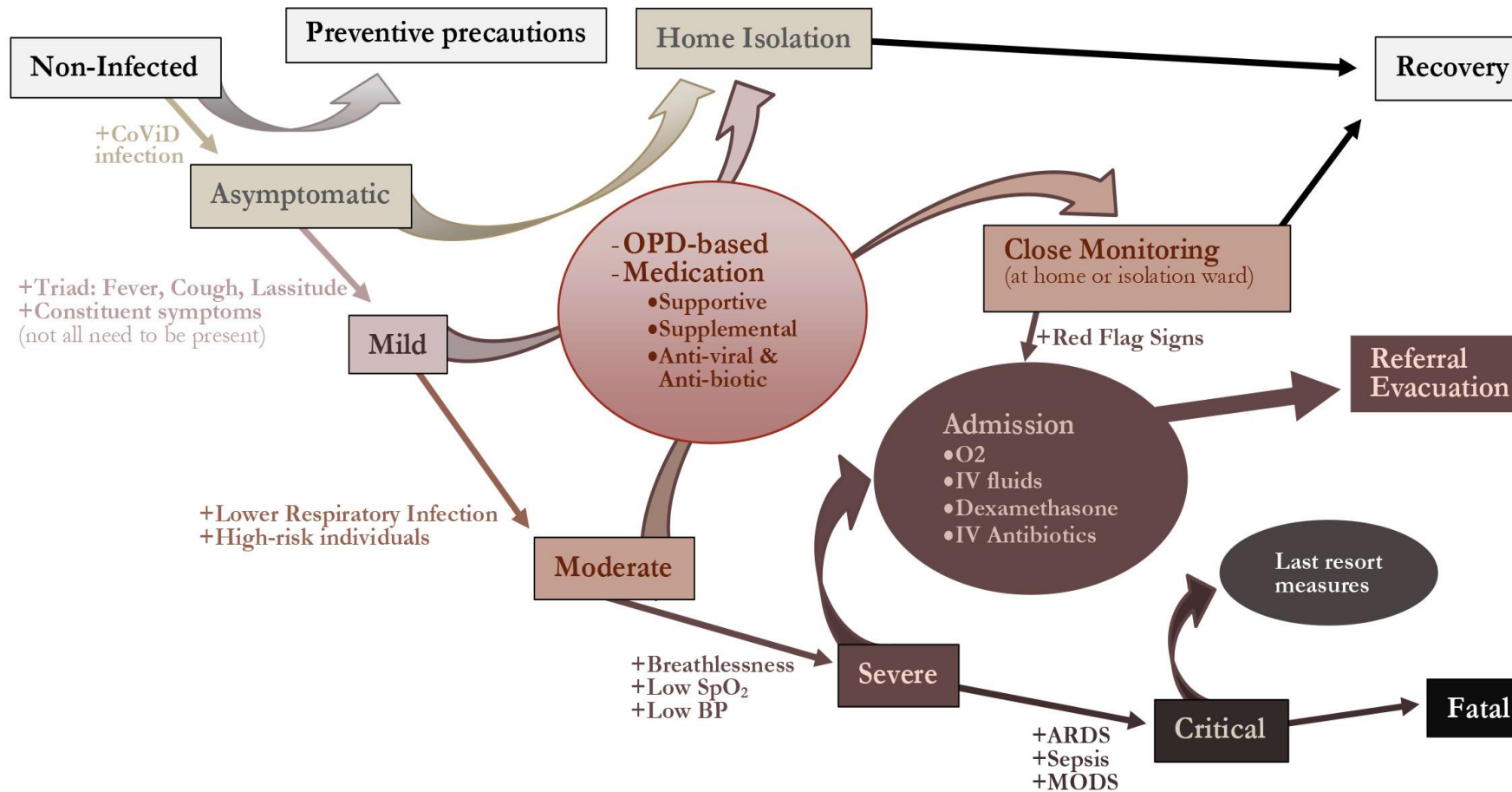
How to differentiate CoViD from other forms of cough and cold?

No testing available

Rely on clinical presentation

# CoViD-19: Guidelines for Clinical Diagnosis and Management in Rural Setting

## SUMMARY



Categorized into 7 stages.

Simple instructions on managing each stage

Over 350 patients with CoViD were encountered at MMI Dingboche Clinic  
April - June, 2021



# Public Awareness Campaigns 2020

Lukla: CoViD-19 Public Awareness Campaign Nov, 2020



Phakding: CoViD-19 Public Awareness Campaign Nov, 2020





# Public Awareness Campaigns 2020

**Namche Bazaar: PPE demonstration** Nov, 2020



**Khumjung: CoViD-19 Public Awareness Campaign** Nov, 2020





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# Public Awareness Campaigns 2020

**Tengboche Monastery: CoViD-19 Campaign** Nov, 2020



**Dingboche: CoViD-19 Campaign** Nov, 2020





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# CoViD-19 invigilation program 2021

News broke out that some of the climbers at Everest Base Camp were infected.

CoViD-19 invigilation program (12th April to 2nd May, 2021)





CoViD in the Mountains

# CoViD-19 invigilation program 2021

Our team consisted of:

1. **Ward Chairperson:**
2. **Lab Assistant:**
3. **Security personnel:**
4. **Medical Officer:**

*Mr. Laxman Adhikari*  
*Mr. Pasang Tshering Sherpa*  
*Mr. Kamal Katwal*  
*Dr. Abhyu Ghimire*

CoViD invigilation team **visiting Everest ER**





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# CoViD-19 Outbreak

CoViD presents in a **peculiar way** in the mountains. It's all nice and calm when suddenly there is a **sporadic case**, and before you know, the **whole village** gets infected.

A **medical response team** has to be **promptly organized** and **dispatched** to the place **where the outbreak** has happened, which might be a **few day's walk** from the nearest clinic.

Gorakhshep



Rapid Antigen Test kit





CoViD in the Mountains

# Visits to remote villages

Phortse: House to house visit



Chhukung: Antigen test being performed





# A Challenging Situation

On one such occasion, a patient was suffering from **CoViD ARDS (SpO<sub>2</sub> 30-40%)** and **needed immediate transfer**.

Sadly the **weather was not favorable** and we didn't know how long it would take for the **requested helicopter** to arrive.

The patient **needed Oxygen until evacuation** was possible.



# Abandoned cylinders



We received information that there were **two huge abandoned cylinders at Namche Bazaar.**

**One** of which might have **oxygen**, the **other** possibly **nitrogen**.

Now the problem was to find out **which is which.**



# Which one is Oxygen?

A **simple experiment** was devised based on the fact that **oxygen aids combustion** whereas **nitrogen is an extinguisher**.

We held a **burning matchstick** in front of the hose of the respective cylinders and as expected, the flame **burnt with much vigour for oxygen** whereas it was instantly **put out by nitrogen**.

## Oxygen Vs Nitrogen





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# Transporting the oxygen cylinder

We mounted this huge oxygen cylinder (approximately 70kgs) onto a stretcher.





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# Transporting the oxygen cylinder

With the help of **local youths and the police**, we took turns to **carry this up the mountain**, to the patient.





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# Helicopter evacuation after 2 days

The patient **barely pulled through the next 2 days.** Finally, there was a **weather window** and the patient was **evacuated to a tertiary care centre** in Kathmandu.





# Thank you!!!

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