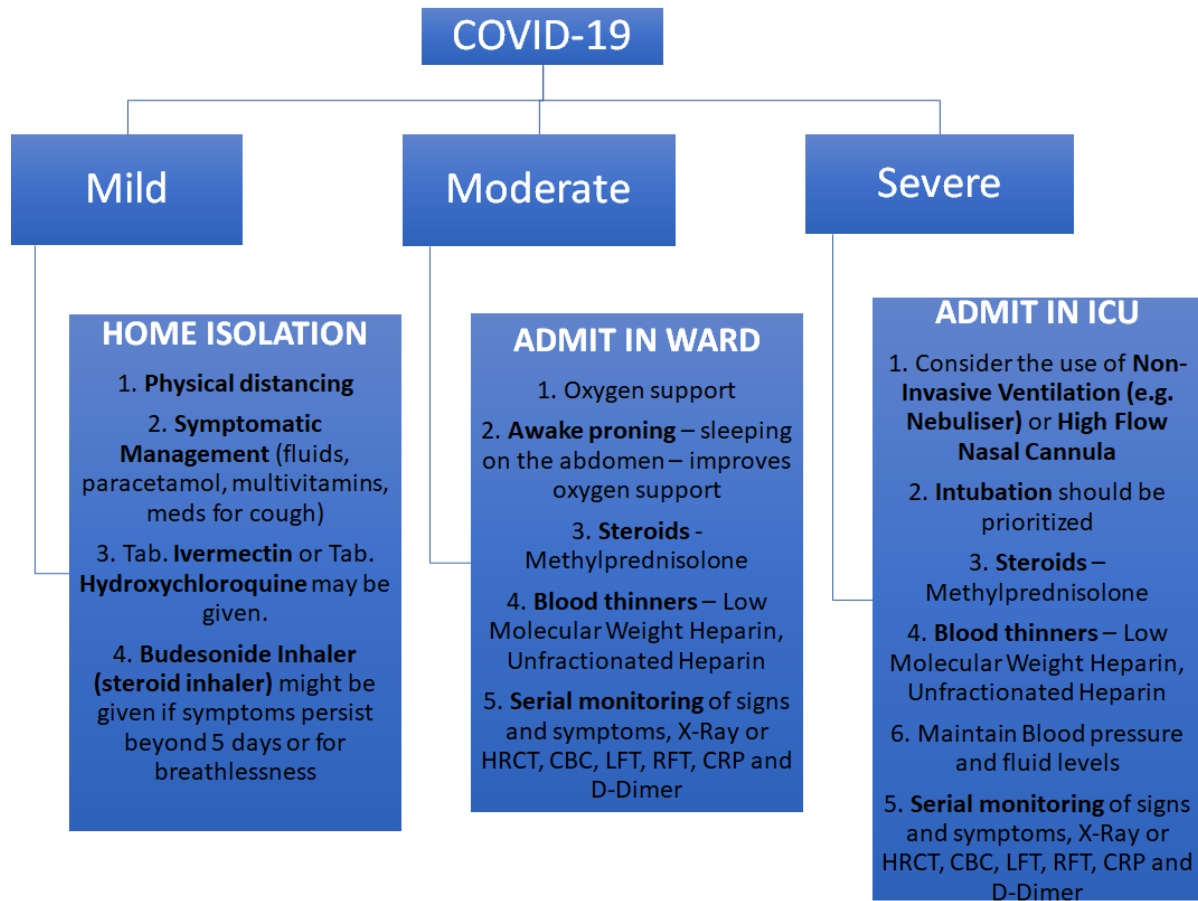


DRUGS AND MANAGEMENT PROTOCOLS FOR COVID-19





Latest AIIMS guidelines for COVID-19 management





RAMAIAH
International Centre for
Public Health Innovations

Medications used to treat COVID-19

IVERMECTIN

**HYDROXY-
CHLOROQUINE
(HCQ)**

REMDESIVIR

FAVIPIRAVIR

TOCILIZUMAB

STEROIDS

**BLOOD THINNERS
OR
ANTICOAGULANTS**

**CONVALESCENT
PLASMA**



Ivermectin



Source: <https://www.medpagetoday.com/special-reports/exclusives/88310>

What is it?

- Anti-parasitic usually used to treat river blindness, strongyloidiasis and other diseases caused by soil transmitted helminth worms.
- It is also used to treat scabies.

How does it work?

- Not known how exactly ivermectin works in COVID-19
- Thought to act by inhibiting transport proteins in the body so that the virus cannot enter the cells and multiply.
- It may also block the attachment of the spike protein on the virus to the cells

How is it used?

- WHO advises that Ivermectin only be used to treat COVID-19 within clinical trials.
- Has been used worldwide with success and has been touted as a 'wonder drug'.
- AIIMS/ICMR COVID-19 National Task Force suggest that Ivermectin could be given for 3 days in adult patients with **Mild COVID-19** disease who are under home isolation.
- It is not recommended for use in children.

Common side effects

- Ivermectin is generally well tolerated.
- Side effects may include dizziness, itching, nausea, or loose stools.
- It should be avoided in pregnant and lactating women.

Hydroxychloroquine (HCQ)



Source: <https://www.sciencenews.org/article/fda-canceled-emergency-use-hydroxychloroquine-covid-19-coronavirus>

What is it?

- Mainly an antimalarial
- Also used in some autoimmune diseases like Rheumatoid Arthritis and SLE
- Reduces the activity of the immune system

How does it work?

- Thought to act against SARS-CoV-2 by blocking receptors on the cells called sialic acid receptors.
- By blocking them, it prevents the virus from going into the human cells and multiplying.
- It is also thought to prevent cytokine storm, or intense inflammation by preventing protein splitting at the ACE2 binding site on cells.

How is it used?

- Studies have shown that it has no effect on the number of deaths and the number of people who need ventilators.
- The latest recommendations from the AIIMS/ICMR COVID-19 National Task Force suggest that HCQ may be prescribed for 5 days in adult patients with **Mild COVID-19** disease who are under home isolation.
- It is not recommended for use in children.

Common side effects

- Stomach and gut related symptoms, vision problems and slowing of heart in individuals who have heart disease.
- An ECG should ideally be done before prescribing the drug to measure QTc interval (and HCQ avoided if QTc is >500 ms)

Remdesivir



Source: <https://www.indiatvnews.com/news/india/remdesivir-may-be-dropped-soon-as-there-is-no-proof-of-its-effectiveness-in-treating-covid19-patients-705500>

What is it?

- Remdesivir is the first drug that was approved by the FDA of the US to treat COVID-19.

How does it work?

- Remdesivir is an antiviral that works by preventing the virus from making its own genetic material, thus stopping its multiplication

How is it used?

- The WHO issued a conditional recommendation against the use of Remdesivir - not clearly supported by any evidence that it improves outcomes in hospitalized patients.
- AllMS/ICMR COVID-19 National Task Force suggest that Remdesivir has received Emergency Use Authorization (EUA) in patients with **moderate to severe COVID-19** who require oxygen and within 10 days of onset of symptoms.
- Given intravenously for 5 days.
- Can also be used in a restricted manner in children with severe COVID-19.

Common side effects

- Liver and kidney toxicity.
- Important to test liver and kidney function before prescribing Remdesivir for a patient.

Favipiravir



Source: <https://www.thehindu.com/sci-tech/health/glenmark-unveils-oral-antiviral-for-covid-19/article31878134.ece>

- Favipiravir was first used against COVID-19 in Wuhan.
- The DCGI (Drug Controller General of India) approved emergency use of Favipiravir for the use of mild and moderate COVID-19 infections in July 2020.
- However, it is not included in the latest clinical guidelines for treatment of COVID-19 published by the AIIMS/ICMR COVID-19 National Task Force.
- Favipiravir is an antiviral that works by preventing the virus from making its own genetic material, thus halting its multiplication
- Early studies have shown that there was 28.7% faster clearance of shedding of the virus from patients who were treated with Favipiravir versus the normal standard of care. However, further large scale studies need to be conducted for more concrete evidence.

Tocilizumab



Source: <https://www.freepressjournal.in/mumbai/mumbai-man-desperately-searching-for-covid-19-drug-tocilizumab-duped-of-rs-41500>

What is it?

- Biologic medication that reduces inflammation in the body.
- Primarily used to treat autoimmune diseases like Rheumatoid Arthritis and Giant Cell Arteritis

How does it work?

- The dangerous effects of COVID-19 are generally caused because of highly increased inflammation in the body.
- By reducing this, it is thought to reduce the severity of COVID-19 disease.
- It prevents the binding of a chemical produced in the body called IL-6 to its receptors on the cells of the body, reducing inflammation

How is it used?

- AIIMS/ICMR COVID-19 National Task Force suggest that Tocilizumab may be used off-label if a patient has **severe disease** (preferably within 24 to 48 hours of onset or ICU Admission), markedly increased markers of inflammation in the body and is not improving despite use of steroids.
- It is given as a single dose.
- Tocilizumab is currently undergoing consideration for use by authorities on a state-by-state basis.

Common side effects

- Common cold, headache, high blood pressure, irritation at the injection site.
- Some people may also experience an increase in cholesterol and liver enzymes.

Steroids



Source: <https://theconversation.com/the-evidence-is-in-who-says-corticosteroids-really-do-save-lives-of-people-critically-ill-with-covid-19-145536>

What is it?

- Medications that are given to reduce inflammation in the body. They are commonly used for autoimmune diseases like rheumatoid arthritis and others.
- The most commonly known steroid that is used for COVID-19 treatment is dexamethasone.
- Other steroids that are used are methylprednisolone or hydrocortisone.

How does it work?

- The dangerous effects of COVID-19 are generally caused because of highly increased inflammation in the body. By reducing this, it is thought to reduce the severity of COVID-19 disease.
- Corticosteroids work at the genetic level to stop the cell from producing and recruiting substances that are needed to cause an inflammatory response.

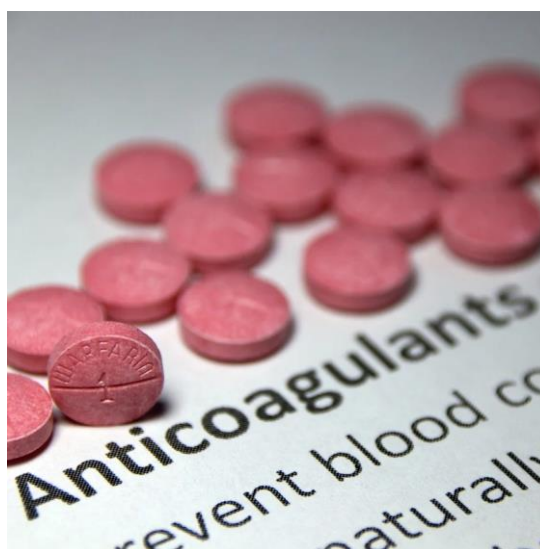
How is it used?

- The WHO strongly recommends the use of systemic corticosteroids in patients with **severe and critical COVID-19**.
- AIIMS/ICMR COVID-19 National Task Force suggest that methylprednisolone or an equivalent dose of dexamethasone is started **for moderate and severe COVID-19 disease for 5 to 10 days**.

Common side effects

- High blood glucose, secondary infections, weight gain, easy bruising, psychiatric effects, activation of underlying infection, etc.

Anticoagulants



Source: <https://www.stoptheclot.org/about-clots/managing-anticoagulants/>

What is it?

- Medications that prevent clots from forming in the blood.
- They are generally used in patients who have experienced heart attacks, stroke, or have underlying arrhythmias like atrial fibrillation.

How does it work?

- COVID-19 is known to lead to a state where the blood is more likely to clot (hypercoagulable).
- This can lead to a cascade of events in the body where clots are formed and broken down.
- This can cause severe effects on all the vital organs in the body.

How is it used?

- The WHO recommends that all hospitalized patients receive low dose anticoagulants.
- As of yet, it has not been recommended for patients with mild COVID-19.
- AIIMS/ICMR COVID-19 National Task Force suggest that unfractionated heparin or low molecular weight heparin is given to all patients with **moderate and severe COVID-19** as a precaution, provided they do not have a risk of bleeding.

Common side effects

- Risk of bleeding
- Nosebleeds, bleeding gums, blood in urine, stool, vomiting or coughing up blood.
- Stroke – brain bleed

Convalescent Plasma



Source: <https://cen.acs.org/pharmaceuticals/biologics/Convalescent-plasma-data-trickle-COVID-19-studies/98/i23>

What is it?

- Convalescent plasma therapy is when a part of the blood called plasma is extracted from people who is recovering from the disease and it is used in the treatment of affected individuals.

How does it work?

- Extracting antibodies that have already been formed from people who have been infected with the COVID-19 disease and use those antibodies to treat people with early moderate disease.

How is it used?

- Convalescent plasma therapy is no longer recommended for treatment of COVID-19 according to the latest AIIMS guidelines.
- An IV line is inserted into a vein of the arm
- The sterile plasma bag is attached to the tube and plasma drips down the tube. It is given slowly initially to check for any adverse effects
- The procedure takes 1-2 hours to complete.
- After the procedure patient will be monitored for any side effects.

Common side effects

- Allergic reactions.
- Lung damage
- Difficulty in breathing and infections (which are much rarer with the advent of testing and cross matching)



References

- <https://www.mohfw.gov.in/pdf/COVID19ManagementAlgorithm22042021v1.pdf>
- <https://covid.aiims.edu/clinical-guidance-for-management-of-adult-covid-19-patients/>
- [WHO advises that ivermectin only be used to treat COVID-19 within clinical trials.](#)
- [Ivermectin | COVID-19 Treatment Guidelines \(nih.gov\)](#)
- [Hydroxychloroquine in COVID-19: Potential Mechanism of Action Against SARS-CoV-2](#)
- <https://www.cochrane.org/news/chloroquine-or-hydroxychloroquine-useful-treating-people-covid-19-or-preventing-infection>
- <https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-hydroxychloroquine>
- [Remdesivir | C27H35N6O8P - PubChem](#)
- [Antiviral Therapy | COVID-19 Treatment Guidelines covid19treatmentguidelines.nih.gov](#)
- [20 November 2020 WHO recommends against the use of remdesivir in COVID-19 patients](#)
- [Government of India Ministry of Health and Family Welfare Protocol for Management of Covid - 19 in the Paediatric Age Group](#)
- https://cdsco.gov.in/opencms/opencms/system/modules/CDS.CO.WEB/elements/download_file_division.jsp?num_id=NjlxMw==
- [Favipiravir: A new and emerging antiviral option in COVID-19](#)
- [Tocilizumab in COVID-19: some clarity amid controversy](#)
- [CLINICAL GUIDANCE FOR MANAGEMENT OF ADULT COVID-19 PATIENTS](#)
- [WHO's Therapeutics and COVID-19: living guideline](#)
- [Corticosteroids | COVID-19 Treatment Guidelines](#)
- [26 January 2021 WHO recommends follow-up care, low-dose anticoagulants for COVID-19 patients](#)
- [Convalescent plasma therapy](#)
- [Convalescent plasma in the management of moderate covid-19 in adults in India: open label phase II multicentre randomised controlled trial \(PLACID Trial\)](#)

Disclaimer:

All efforts have been made to present authentic information in this document using evidence-based resources for public use. These documents are solely owned by Ramaiah International Centre for Public Health Innovations (RICPHI), Bengaluru. Any attempt to replicate or reproduce this content for commercial purposes is strictly prohibited. RICPHI does not guarantee that the information uploaded is up to date because medical knowledge is constantly changing. However, this content may be downloaded and used widely for the benefit of capacity building of health providers and masses with due permission from RICPHI by writing to ricphi.admin@ramaiahgroup.org.

For more information contact:

Director

Ramaiah International Centre for Public Health Innovations
MSR Nagar, MSRIT Post, Bengaluru, Karnataka- 560054