

# Corona Virus (COVID- 19): An Overview

<sup>1</sup>Prof. Sujit Arun Desai, <sup>2</sup>Dr. Preeti Khulbe, <sup>3</sup>Dr. Arehalli Manjappa, <sup>4</sup>Dr. Santosh Kr Singh

<sup>1</sup>Prof. Sujit Arun Desai. (Annasaheb Dange College of D Pharmacy, Ashta, Sangli, M S, India and Research Scholar at School of Pharmacy, Suresh Gyan Vihar University, Jaipur, Rajasthan, India)

<sup>2</sup>Dr. Preeti Khulbe. (School of Pharmacy, Suresh Gyan Vihar University, Jaipur, Rajasthan, India)

<sup>3</sup>Dr. Arehalli Manjappa. (Tatyasaheb Kore College of Pharmacy, Warananagar, M S, India)

<sup>4</sup>Dr. Santosh Kr Singh (School of Pharmacy, Suresh Gyan Vihar University, Jaipur, Rajasthan, India)

**Abstract:** Four coronaviruses (HCoV-229E, HCoV-OC43, HCoV-NL63, HCoV-HKU1) are endemic in humans and mainly associated with mild respiratory illnesses; whereas the other two coronaviruses [Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV)] present as emerging infections causing severe respiratory syndrome. The coronavirus disease 2019 (COVID-19) has spread throughout China and received worldwide attention. On 30 January 2020, World Health Organization (WHO) officially declared the COVID-19 epidemic as a public health emergency of international concern.

As of 31 March 2020, a total of 7,50,890 confirmed cases globally, 82,545 confirmed in China and 1071 in India had been reported by WHO. Meanwhile, several independent research groups have identified that SARSCoV-2 belongs to  $\beta$ -coronavirus, with highly identical genome to bat coronavirus, pointing to bat as the natural host. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

**Keywords:** COVID-19,  $\beta$ -coronavirus, SARS-CoV, MERS-CoV

## INTRODUCTION:

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow). At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical findings become available?

Coronaviruses are a group of related viruses that cause diseases in mammals and birds. In humans, coronaviruses cause respiratory tract infections that can be mild, such as some cases of the common cold (among other possible causes, predominantly rhinoviruses), and others that can be lethal, such as SARS, MERS, and COVID-19. Symptoms in other species vary: in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. There are yet to be vaccines or antiviral drugs to prevent or treat human coronavirus infections.

Coronaviruses constitute the subfamily Orthocoronavirinae, in the family Coronaviridae, order Nidovirales, and realm Riboviria.[5][6] They are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry. The genome size of coronaviruses ranges from approximately 27 to 34 kilobases, the largest among known RNA viruses.[7] The name coronavirus is derived from the Latin corona, meaning "crown" or "halo", which refers to the characteristic appearance reminiscent of a crown or a solar corona around the virions (virus particles) when viewed under two-dimensional transmission electron microscopy, due to the surface being covered in club-shaped protein spikes.

Coronavirus disease (COVID-19) is an infectious disease caused by a new virus. The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe cases, difficulty breathing. You can protect yourself by washing your hands frequently, avoiding touching your face, and avoiding close contact (1 meter or 3 feet) with people who are unwell.

## How it spreads

Coronavirus disease spreads primarily through contact with an infected person when they cough or sneeze. It also spreads when a person touches a surface or object that has the virus on it, then touches their eyes, nose, or mouth.

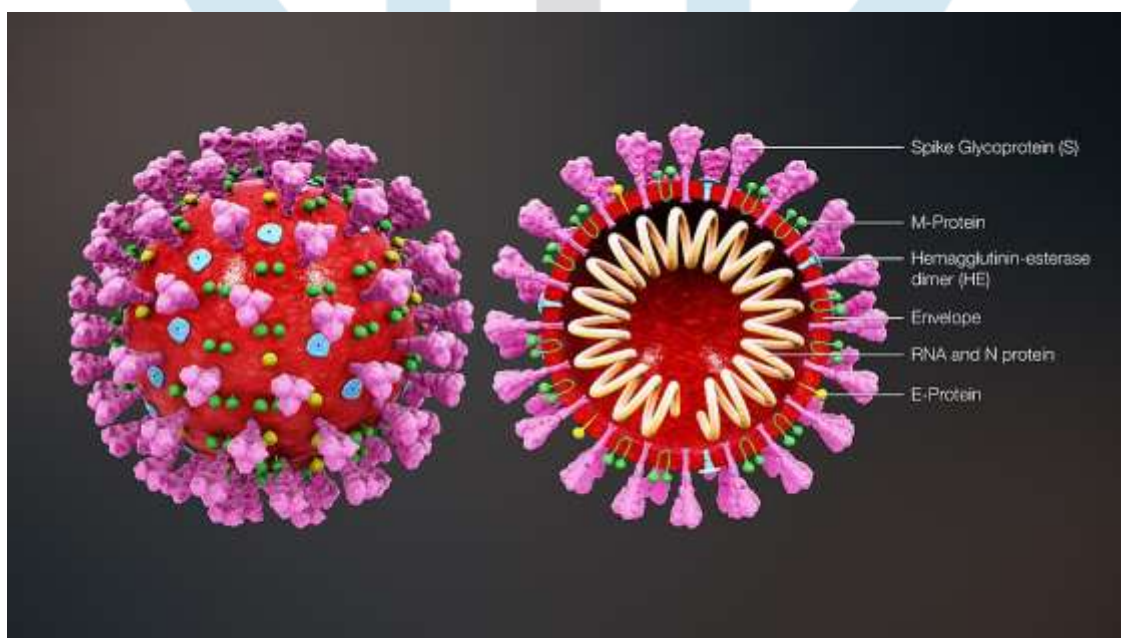
## History

Coronavirus disease was first described in 1931, with the first coronavirus (HCoV-229E) isolated from humans in 1965. Until the outbreak of severe acute respiratory syndrome in late 2002, only two human coronaviruses (HCoV) were known – HCoV-229E and HCoV-OC43. Once the SARS coronavirus (SARS-CoV) had been identified, two further human coronaviruses were identified. Three groups of coronaviruses exist: group 1 (HCoV-229E and HCoV-NL63), group 2 (HCoV-OC43 and HCoV-HKU1), group 3 (no human CoVs as yet). SARS-CoV is an outlier to all three groups, although some place it in group 2.

Human coronaviruses were discovered in the 1960s.[9] The earliest ones studied were from human patients with the common cold, which were later named human coronavirus 229E and human coronavirus OC43.[10] Other human coronaviruses have since been identified, including SARS-CoV in 2003, HCoV NL63 in 2004, HKU1 in 2005, MERS-CoV in 2012, and SARS-CoV-2 in 2019. Most of these have involved serious respiratory tract infections.

## DISEASES CAUSED:

Coronaviruses primarily infect the upper respiratory and gastrointestinal tract of mammals and birds. They also cause a range of diseases in farm animals and domesticated pets, some of which can be serious and are a threat to the farming industry. In chickens, the infectious bronchitis virus (IBV), a coronavirus, targets not only the respiratory tract but also the urogenital tract. The virus can spread to different organs throughout the chicken. Economically significant coronaviruses of farm animals include porcine coronavirus (transmissible gastroenteritis coronavirus, TGE) and bovine coronavirus, which both result in diarrhea in young animals. Feline coronavirus: two forms, feline enteric coronavirus is a pathogen of minor clinical significance, but spontaneous mutation of this virus can result in feline infectious peritonitis (FIP), a disease associated with high mortality. Similarly, there are two types of coronavirus that infect ferrets: Ferret enteric coronavirus causes a gastrointestinal syndrome known as epizootic catarrhal enteritis (ECE), and a more lethal systemic version of the virus (like FIP in cats) known as ferret systemic coronavirus (FSC). There are two types of canine coronavirus (CCoV), one that causes mild gastrointestinal disease and one that has been found to cause respiratory disease. Mouse hepatitis virus (MHV) is a coronavirus that causes an epidemic murine illness with high mortality, especially among colonies of laboratory mice. Sialodacryoadenitis virus (SDAV) is highly infectious coronavirus of laboratory rats, which can be transmitted between individuals by direct contact and indirectly by aerosol. Acute infections have high morbidity and tropism for the salivary, lachrymal and harderian glands. [3] A HKU2-related bat coronavirus called swine acute diarrhea syndrome coronavirus (SADS-CoV) causes diarrhea in pigs. Prior to the discovery of SARS-CoV, MHV had been the best-studied coronavirus both in vivo and in vitro as well as at the molecular level. Some strains of MHV cause a progressive demyelinating encephalitis in mice which has been used as a murine model for multiple sclerosis. Significant research efforts have been focused on elucidating the viral pathogenesis of these animal coronaviruses, especially by virologists interested in veterinary and zoonotic diseases. [13]



Structure: Cross-sectional model of a coronavirus

## Basic protective measures against the new coronavirus (COVID-19)

### ➤ Wash your hands frequently

Regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water.

**Why?** Washing your hands with soap and water or using alcohol-based hand rub kills viruses that may be on your hands.

➤ **Maintain social distancing**

Maintain at least 1 metre (3 feet) distance between yourself and anyone who is coughing or sneezing.

**Why?** When someone coughs or sneezes they spray small liquid droplets from their nose or mouth which may contain virus. If you are too close, you can breathe in the droplets, including the COVID-19 virus if the person coughing has the disease.

➤ **Avoid touching eyes, nose and mouth**

**Why?** Hands touch many surfaces and can pick up viruses. Once contaminated, hands can transfer the virus to your eyes, nose or mouth. From there, the virus can enter your body and can make you sick.

➤ **Practice respiratory hygiene**

Make sure you, and the people around you, follow good respiratory hygiene. This means covering your mouth and nose with your bent elbow or tissue when you cough or sneeze. Then dispose of the used tissue immediately.

**Why?** Droplets spread virus. By following good respiratory hygiene you protect the people around you from viruses such as cold, flu and COVID-19.

➤ **If you have fever, cough and difficulty breathing, seek medical care early**

Stay home if you feel unwell. If you have a fever, cough and difficulty breathing, seek medical attention and call in advance. Follow the directions of your local health authority.

**Why?** National and local authorities will have the most up to date information on the situation in your area. Calling in advance will allow your health care provider to quickly direct you to the right health facility. This will also protect you and help prevent spread of viruses and other infections.

➤ **Stay informed and follow advice given by your healthcare provider**

Stay informed on the latest developments about COVID-19. Follow advice given by your healthcare provider, your national and local public health authority or your employer on how to protect yourself and others from COVID-19.

**Why?** National and local authorities will have the most up to date information on whether COVID-19 is spreading in your area. They are best placed to advise on what people in your area should be doing to protect themselves.

**Protection measures for persons who are in or have recently visited (past 14 days) areas where COVID-19 is spreading**

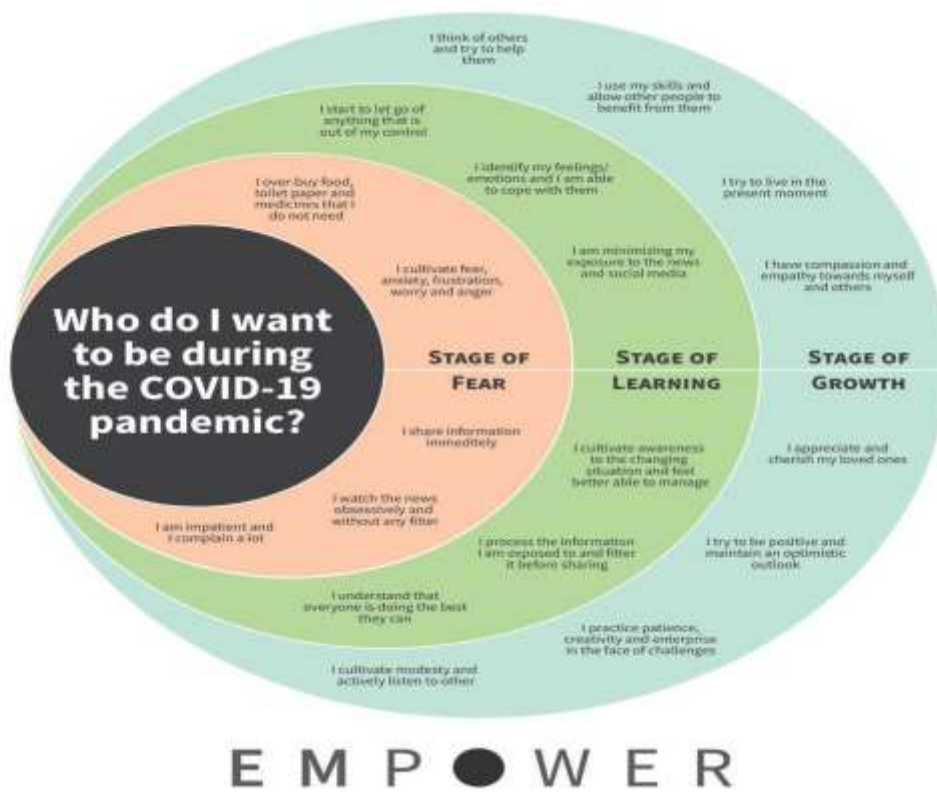
Follow the guidance outlined above.

1. Stay at home if you begin to feel unwell, even with mild symptoms such as headache and slight runny nose, until you recover. **Why?** Avoiding contact with others and visits to medical facilities will allow these facilities to operate more effectively and help protect you and others from possible COVID-19 and other viruses.
2. If you develop fever, cough and difficulty breathing, seek medical advice promptly as this may be due to a respiratory infection or other serious condition. Call in advance and tell your provider of any recent travel or contact with travelers. **Why?** Calling in advance will allow your health care provider to quickly direct you to the right health facility. This will also help to prevent possible spread of COVID-19 and other viruses.

**Prevention:**

To prevent infection and to slow transmission of COVID-19, do the following:

1. Wash your hands regularly with soap and water, or clean them with alcohol-based hand rub.
2. Maintain at least 1 metre distance between you and people coughing or sneezing.
3. Avoid touching your face.
4. Cover your mouth and nose when coughing or sneezing.
5. Stay home if you feel unwell.
6. Refrain from smoking and other activities that weaken the lungs.
7. Practice physical distancing by avoiding unnecessary travel and staying away from large groups of people.



**Symptoms:**

The COVID-19 virus affects different people in different ways. COVID-19 is a respiratory disease and most infected people will develop mild to moderate symptoms and recover without requiring special treatment. People who have underlying medical conditions and those over 60 years old have a higher risk of developing severe disease and death.

People may be sick with the virus for 1 to 14 days before developing symptoms. The most common symptoms of coronavirus disease (COVID-19) are fever, tiredness, and dry cough. Most people (about 80%) recover from the disease without needing special treatment.

More rarely, the disease can be serious and even fatal. Older people, and people with other medical conditions (such as asthma, diabetes, or heart disease), may be more vulnerable to becoming severely ill.

**Common symptoms include:**

1. fever
2. tiredness
3. dry cough.

**Other symptoms include:**

1. shortness of breath
2. aches and pains
3. sore throat

and very few people will report diarrhoea, nausea or a runny nose.

People with mild symptoms who are otherwise healthy should self-isolate and contact their medical provider or a COVID-19 information line for advice on testing and referral.

People with fever, cough or difficulty breathing should call their doctor and seek medical attention.

The virus associated with the **outbreak originating in Wuhan, China**, has been designated **severe acute respiratory syndrome coronavirus 2 (SARS-CoV2)**. The disease caused by that virus is now officially called **COVID-19**.

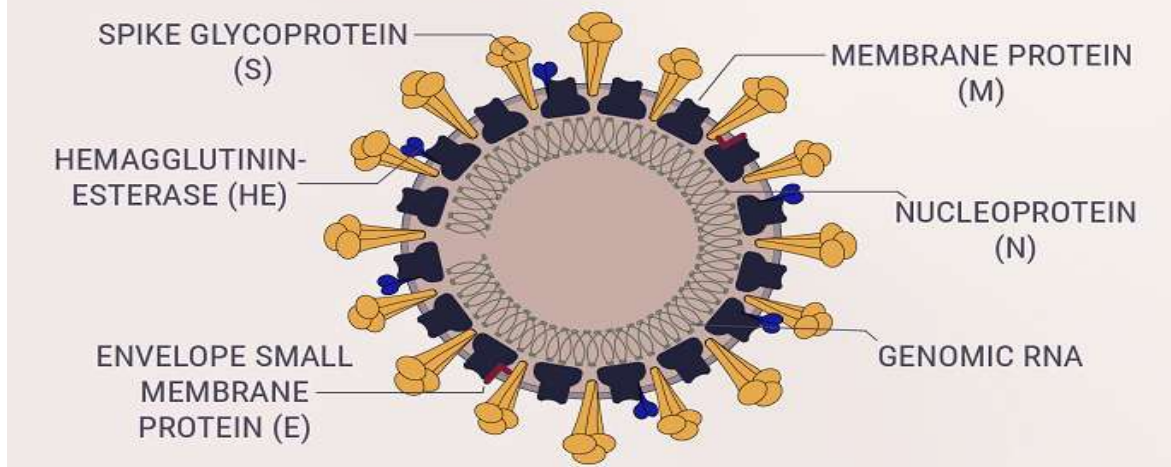


Figure: COVID-19

#### When to use a mask:

1. If you are healthy, you only need to wear a mask if you are taking care of a person with suspected 2019-nCoV infection.
2. Wear a mask if you are coughing or sneezing.
3. Masks are effective only when used in combination with frequent hand-cleaning with alcohol-based hand rub or soap and water.
4. If you wear a mask, then you must know how to use it and dispose of it properly.

#### When and how to wear medical masks to protect against coronavirus

1. Before putting on a mask, clean hands with alcohol-based hand rub or soap and water.
2. Cover mouth and nose with mask and make sure there are no gaps between your face and the mask.
3. Avoid touching the mask while using it; if you do, clean your hands with alcohol-based hand rub or soap and water.
4. Replace the mask with a new one as soon as it is damp and do not re-use single-use masks.
5. To remove the mask: remove it from behind (do not touch the front of mask); discard immediately in a closed bin; clean hands with alcohol-based hand rub or soap and water.

#### Do's and Don't

There's currently no vaccine to prevent coronavirus disease (COVID-19).

You can protect yourself and help prevent spreading the virus to others if you:

#### Do's

- Wash your hands regularly for 20 seconds, with soap and water or alcohol-based hand rub
- Cover your nose and mouth with a disposable tissue or flexed elbow when you cough or sneeze
- Avoid close contact (1 meter or 3 feet) with people who are unwell
- Stay home and self-isolate from others in the household if you feel unwell

#### Don't

- Touch your eyes, nose, or mouth if your hands are not clean

#### Treatment of COVID 19

There is no specific medicine to prevent or treat coronavirus disease (COVID-19). People may need supportive care to help them breathe.

If you develop a fever, cough, and have difficulty breathing, promptly seek medical care. Call in advance and tell your health provider of any recent travel or recent contact with travelers.

#### **Current therapies:**

Given the lack of effective antiviral therapy against COVID-19, current treatments mainly focused on symptomatic and respiratory support according to the Diagnosis and Treatment of Pneumonia Caused by COVID-19 (updated to version 6) issued by National Health Commission of the People's Republic of China. Nearly all patients accepted oxygen therapy, and WHO recommended extracorporeal membrane oxygenation (ECMO) to patients with refractory hypoxemia. Rescue treatment with convalescent plasma and immunoglobulin G are delivered to some critical cases according to their conditions.

#### **Antiviral treatments:**

Based on the experience of fighting the epidemic SARSCoV and MERS-CoV previously, we may learn some lessons for some treatment strategies against coronavirus. Antiviral drugs and systemic corticosteroid treatment commonly used in clinical practice previously, including neuraminidase inhibitors (oseltamivir, peramivir, zanamivir, etc), ganciclovir, acyclovir, and ribavirin, as well as methylprednisolone for influenza virus, are invalid for COVID-19 and not recommended. Remdesivir (GS-5734) is a 1'-cyano-substituted adenosine nucleotide analog prodrug and shows broad spectrum antiviral activity against several RNA viruses. Based on the data collected from in vitro cell line and mouse model, remdesivir could interfere with the NSP12 polymerase even in the setting of intact ExoN proofreading activity. Remdesivir has been reported to treat the first US case of COVID-19 successfully. Chloroquine is a repurposed drug with great potential to treat COVID-19. Chloroquine has been used to treat malaria for many years, with a mechanism that is not well understood against some viral infections. Several possible mechanisms are investigated: Chloroquine can inhibit pH-dependent steps of the replication of several viruses, with a potent effect on SARS-CoV infection and spread. Moreover, chloroquine has immunomodulatory effects, suppressing the production/release of TNF- $\alpha$  and IL-6. It also works as a novel class of autophagy inhibitor, which may interfere with viral infection and replication. Several studies have found that chloroquine interfered with the glycosylation of cellular receptors of SARS-CoV and functioned at both entry and at post-entry stages of the COVID-19 infection in Vero E6 cells. A combination of remdesivir and chloroquine was proven to effectively inhibit the recently emerged SARS-CoV-2 in vitro. Scientists previously confirmed that the protease inhibitors lopinavir and ritonavir, used to treat infection with human immunodeficiency virus (HIV), could improve the outcome of MERS-CoV and SARSCoV patients. It has reported that  $\beta$ -coronavirus viral loads of a COVID-19 patient in Korea significantly decreased after lopinavir/ritonavir (Kaletra®, AbbVie, North Chicago, IL, USA) treatment. Additionally, clinicians combined Chinese and Western medicine treatment including lopinavir/ritonavir (Kaletra®), arbidol, and Shufeng Jied Capsule (SFJDC, a traditional Chinese medicine) and gained significant improvement in pneumonia associated symptoms in Shanghai Public Health Clinical Center, China. The other antiviral drugs include nitazoxanide, favipiravir.[18]



**CURRENT ACTIVITIES BY PHARMA:**

Addressing the Fight with the COVID-19 Disease as following table

Organization	Type	Target	Phase	Current status & plans	Timeline	Source
GILEAD	Treatment	Remdesivir	II	Remdesivir is now being tested in five Covid-19 clinical trials that have been set up at breakneck speed.	CT results are expected in April 2020	<a href="#">link</a>
SANOFI	Treatment + Vaccine	Plaquenil®	Preclinical	Conduct additional CTs and supply millions of doses of an existing anti-malaria product	N/a	<a href="#">link</a>
BIONTECH	Treatment + Vaccine	New mRNA vaccine	Preclinical	Co-development of a new product clinical testing in humans. Germany's BioNTech uses strands of mRNA to spur the production of protective antibodies.	CTs are planned to be started in April 2020	<a href="#">link</a>
Janssen/Johnson & Johnson	Vaccine	Covid-19 vaccine	Preclinical	J&J is using the same vector platform it used to develop its Ebola vaccine	R&D - in Jan 2020 & CT to be started by the end of Nov 2020	<a href="#">link</a>
abbvie	Treatment	lopinavir/ritonavir combination	II	The company is collaborating with select health authorities and institutions globally to determine antiviral activity as well as efficacy and safety of lopinavir/ritonavir against COVID-19.	N/a	<a href="#">link</a>
vaccitech	Vaccine	lopinavir/ritonavir combination	II	A platform to run next-generation sequencing workflows focused in microbiology and infectious disease, including for the novel coronavirus.	Started in March 2020	<a href="#">link</a>
REGENERON	Treatment	Monoclonal antibody therapy	Preclinical	To select the top 2 antibodies for a cocktail therapy, which can either be administered to at-risk people before exposure as a vaccine or as treatment for those already infected.	Potential to enter human CT by early summer 2020	<a href="#">link</a>
Sinovac	Treatment	Combination of two antivirals	I	The Chinese manufacturer is testing a combination of antivirals, one approved for HIV and one approved for hepatitis C, that might treat coronavirus infection.	N/a	<a href="#">link</a>
Novartis	Treatment	Polyclonal antibody therapy	Preclinical	Collaboration with several health and regulatory agencies and health care partners across the globe on its TAK-968. The company is trying to access to source plasma from people who have successfully recovered from COVID-19.	Started in March 2020	<a href="#">link</a>
Novartis	Vaccine	Self-assembling vaccine (SAV)	Preclinical	An agreement with Vutrin Therapeutics was signed, to form a "NaluVax" JV, to commence preclinical studies for the development of vaccine prospects against COVID-19 based upon Vutrin's proprietary, a self-assembling vaccine (SAV) platform.	End of March 2020	<a href="#">link</a>
moderna	Vaccine	mRNA-1273	I	A vaccine candidate was identified by Moderna just 42 days after the novel coronavirus was sequenced. The clinical trial started recruiting healthy participants in the first week of March.	CT results are expected in summer 2020	<a href="#">link</a>
CarSinoBio	Vaccine	Covid-19 vaccine	I	CarSino's approach involves taking a snippet of coronavirus' genetic code and entraining it with a harmless virus, thereby exposing healthy volunteers to the novel infection and spurring the production of antibodies.	CT to be started in March 2020	<a href="#">link</a>
ACUREBIO	Vaccine	Covid-19 vaccine	Preclinical	The company in partnership with Duke University plans to take an RNA virus that has been edited to encode for proteins that will protect against infection and load it into a lipid nanoparticle.	CT to be started in March-April 2020	<a href="#">link</a>
Lilly	Treatment	Antibody drug	Preclinical	Eli Lilly has partnered with a Canadian firm called AbCellera to develop antibody treatments for coronavirus infection. Using a blood sample from a coronavirus survivor, AbCellera identified more than 500 antibodies that might protect against the virus.	CTs in humans to be started in the next four months of 2020	<a href="#">link</a>
Clever	Vaccine	Covid-19 vaccine	Preclinical	GSK is lending its technology to a Chinese - Clever Biopharmaceuticals - all work on a coronavirus vaccine. Clever's approach involves injecting proteins that spur an immune response, thereby priming the body to resist infection.	N/a	<a href="#">link</a>
inovio	Vaccine	Covid-19 vaccine	Preclinical	Inovio has spent the last four decades working to turn DNA into medicine, and the company believes its technology could quickly generate a vaccine for the novel coronavirus. The company has partnered with a Chinese manufacturer, Beijing Advaccine Biotechnology.	CTs are planned to be started in April 2020	<a href="#">link</a>

**Conclusion:**

The outbreak of COVID-19 swept across China rapidly and has spread to 85 countries/territories/areas outside of China as of 5 March 2020. A pneumonia of unknown cause detected in Wuhan, China was first reported to the WHO Country Office in China on 31 December 2019. WHO is working 24/7 to analyse data, provide advice, coordinate with partners, help countries prepare, increase supplies and manage expert networks. The outbreak was declared a Public Health Emergency of International Concern on 30 January 2020. The international community has asked for US\$675 million to help protect states with weaker health systems as part of its Strategic Preparedness and Response Plan.

Scientists have made progress in the characterization of the novel corona virus and are working extensively on the therapies and vaccines against the virus.

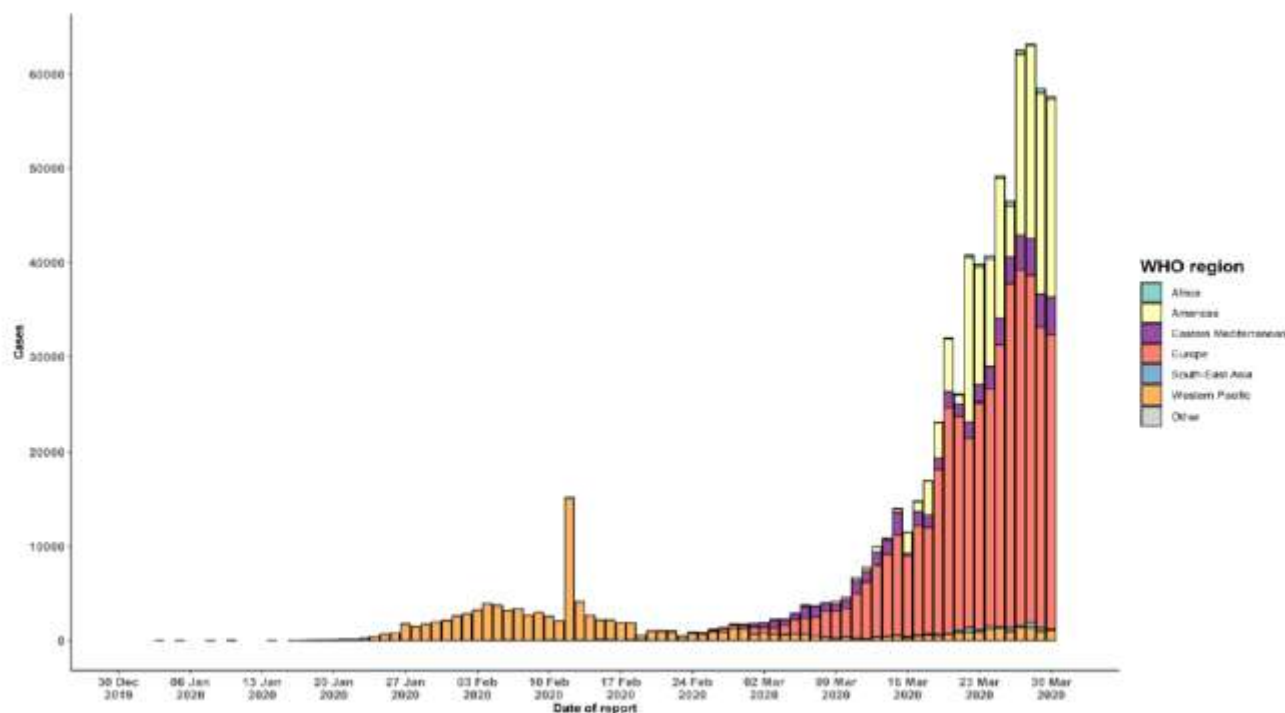


Figure. Epidemic curve of confirmed COVID-19, by date of report and WHO region through 31 March 2020

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**COVID-19 world wide data**

About this data it changes rapidly

This data changes rapidly, so what's shown may be out of date. Table totals may not always represent an accurate sum. Information about reported cases is also available on the World Health Organization site.

It doesn't include all cases

Confirmed cases aren't all cases. They only include people who tested positive. Testing rules and availability vary by country.

Source: Wikipedia

Location	Confirmed	Cases per 1M people	Recovered	Deaths
 Worldwide	932,605	132.35	193,259	46,809
United States	216,154	660.85	8,878	5,115
Italy	110,574	1,750.55	16,847	13,155
Spain	104,118	2,101.26	22,647	9,387
China	81,554	59.38	76,238	3,312
Germany	77,981	949.4	11,722	931
France	56,337	833.8	7,882	4,025
Iran	47,593	587.62	15,473	3,036
United Kingdom	29,474	454.19	135	2,352
Switzerland	17,785	2,621.22	4,013	488
Turkey	15,679	187.31	333	277
Belgium	13,964	1,354.78	2,132	828
Netherlands	13,614	836.03	0	1,173
Austria	10,711	1,366.9	1,436	146
South Korea	9,976	195.46	5,828	169

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Canada	9,713	281.11	1,540	111
Portugal	8,251	772.8	43	187
Brazil	6,836	33.16	127	240
Israel	6,092	534.24	224	25
Australia	5,108	223.16	422	23
Sweden	5,009	498.32	103	259
Norway	4,877	915.2	0	44
Czechia	3,508	329.4	61	39
Ireland	3,447	659.94	5	85
Denmark	3,107	559.92	894	104
Chile	3,031	173.41	234	16
Malaysia	2,908	87.51	645	45
Russia	2,777	19.4	190	24
Ecuador	2,748	165.99	58	93
Poland	2,554	68.7	35	43
Romania	2,460	114.6	252	92
Luxembourg	2,319	2,896.63	80	29
Philippines	2,311	22.17	50	96
Japan	2,178	17.18	472	57

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Pakistan	2,110	10.5	82	26
India	1,834	1.45	144	41
Thailand	1,771	26.44	416	12
Saudi Arabia	1,720	60.83	264	16
Indonesia	1,677	6.44	103	157
Finland	1,441	265.55	0	17
Greece	1,415	131.28	52	50
South Africa	1,380	24.88	31	5
Peru	1,323	42.2	447	47
Panama	1,317	357.38	9	32
Dominican Republic	1,284	121.17	9	57
Iceland	1,220	3,609.58	236	2
Mexico	1,215	9.64	35	29
Colombia	1,065	22.53	39	17
Serbia	1,060	131.44	42	28
Argentina	1,054	23.2	240	27
Singapore	1,000	213.77	245	4
Croatia	963	205.5	73	6
Algeria	847	20.45	61	58

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Slovenia	841	479.64	10	15
Qatar	835	361.39	71	2
United Arab Emirates	814	155.08	61	8
Ukraine	794	18.52	13	20
Egypt	779	7.77	179	52
Estonia	779	608.89	33	5
Hong Kong	765	74.42	147	4
Iraq	728	17.82	182	52
New Zealand	723	161.31	92	1
Morocco	654	19.47	29	39
Lithuania	581	194.77	7	8
Armenia	571	227.13	31	3
Bahrain	569	406.72	316	4
Hungary	525	52.46	40	20
Lebanon	479	77.15	43	14
Bosnia and Herzegovina	459	140.12	19	13
Latvia	446	237.62	1	0
Moldova	423	107.73	23	5
Tunisia	423	37.58	5	12

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Bulgaria	422	63.27	20	9
Slovakia	400	66.67	7	1
Andorra	390	5,119.66	11	14
Kazakhstan	386	19.84	26	3
Costa Rica	375	74.4	4	2
Azerbaijan	359	34.18	26	5
North Macedonia	354	170.43	17	10
Uruguay	350	107.69	62	2
Taiwan	329	13.79	45	5
Kuwait	317	112.08	80	0
Cyprus	315	254.95	18	9
Burkina Faso	282	14.56	46	16
Réunion	281	327.96	6	0
Jordan	278	31.67	36	5
Albania	259	86.27	67	15
Afghanistan	237	7.06	5	4
San Marino	236	7,077.74	13	26
Cameroon	233	9.56	10	6
Vietnam	218	2.23	63	0
Cuba	212	19.03	12	6

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Oman	210	49.89	34	1
Ghana	195	6.8	3	5
Côte d'Ivoire	190	8	9	1
Senegal	190	12.75	45	1
Malta	188	444.54	2	0
Uzbekistan	181	6.69	12	2
Nigeria	174	0.89	9	2
Faroe Islands	173	3,414.25	75	0
Honduras	172	18.74	3	10
Belarus	163	16.9	47	2
Mauritius	161	118.32	0	6
Sri Lanka	146	6.51	21	2
Venezuela	143	4.53	41	3
Palestine	134	26.52	18	1
Brunei	131	380.22	52	1
Martinique	131	337.53	27	3
Guadeloupe	125	307.31	22	6
Kosovo	125	72.43	1	1
Montenegro	120	200.38	0	2

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Bolivia	117	10.55	0	7
Georgia	117	24.7	23	0
Kyrgyzstan	111	15.27	3	0
Cambodia	109	6.95	25	0
Democratic Republic of the Congo	109	1.24	3	9
Mayotte	101	441.46	10	1
Guernsey	91	1,434.45	0	1
Trinidad and Tobago	87	71.48	1	3
Rwanda	82	7.19	0	0
Jersey	81	790.9	0	2
Kenya	81	1.66	3	1
Northern Cyprus	77	236.2	29	2
Niger	74	4.28	0	5
Gibraltar	69	3,290.89	14	0
Paraguay	69	9.94	1	3
Liechtenstein	68	658.26	0	0
Isle of Man	65	739.17	0	0
Madagascar	57	2.28	0	0
Aruba	55	510.93	1	0
Monaco	55	1,436.03	2	0

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Bangladesh	51	0.31	25	5
Jamaica	44	14.68	2	3
Uganda	44	1.21	0	0
French Guiana	43	150.79	0	0
Macao	41	73.78	10	0
Guatemala	39	2.65	12	1
French Polynesia	37	129.73	1	0
Togo	36	4.41	10	2
Zambia	36	2.37	0	0
Barbados	34	116.84	0	0
El Salvador	32	4.98	0	1
Mali	31	1.63	0	3
Djibouti	30	38.91	0	0
Guinea	30	2.43	0	0
Bermuda	27	376.61	10	0
Ethiopia	26	0.25	2	0
Republic of the Congo	22	6.43	0	2
Saint Martin	21	291.93	2	2
Tanzania	20	0.36	1	1
Maldives	18	46.53	13	0



Location	Confirmed	Cases per 1M people	Recovered	Deaths
Gabon	16	8.24	0	1
New Caledonia	16	57.31	0	0
Sint Maarten	16	—	1	1
Equatorial Guinea	15	21.95	1	0
Eritrea	15	2.33	0	0
Haiti	15	1.39	0	0
The Bahamas	15	45.42	0	0
Mongolia	14	4.74	2	0
Myanmar (Burma)	14	—	0	1
Namibia	14	6.66	2	0
Saint Lucia	13	78.03	0	0
Cayman Islands	12	205.34	0	1
Dominica	12	170.02	0	0
Guyana	12	16.61	0	1
Curaçao	11	73.51	2	1
Greenland	10	176.11	2	0
Grenada	10	90.64	0	0
Libya	10	1.49	1	0
Mozambique	10	0.39	0	0
Seychelles	10	103.6	0	0

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Suriname	10	17.4	0	0
Syria	10	0.61	0	2
Benin	9	0.93	1	0
Eswatini	9	7.92	0	0
Guinea-Bissau	9	5.24	0	0
Laos	9	1	0	0
Angola	8	0.28	1	2
Saint Kitts and Nevis	8	150.65	0	0
Zimbabwe	8	0.57	0	1
Antigua and Barbuda	7	73.66	0	0
Chad	7	0.57	0	0
Sudan	7	0.19	1	2
Cape Verde	6	10.71	0	1
Central African Republic	6	1.16	0	0
Liberia	6	1.09	0	0
Mauritania	6	1.87	2	1
Saint Barthélemy	6	—	1	0
Vatican City	6	—	0	0
Fiji	5	5.41	0	0
Montserrat	5	—	0	0

Location	Confirmed	Cases per 1M people	Recovered	Deaths
Nepal	5	0.13	1	0
Turks and Caicos Islands	5	96.19	0	0
Åland Islands	5	169.46	0	0
Bhutan	4	7.31	0	0
Botswana	4	2.31	0	1
Nicaragua	4	0.68	0	1
The Gambia	4	1.72	0	1
Belize	3	6.39	0	0
British Virgin Islands	3	83.02	0	0
Somalia	3	0.29	0	0
Anguilla	2	144.16	0	0
Burundi	2	0.22	0	0
Sierra Leone	2	0.35	0	0
Papua New Guinea	1	0.14	0	0
Saint Vincent and the Grenadines	1	9.97	1	0
Timor-Leste	1	0.68	0	0