

CORONA VIRUS

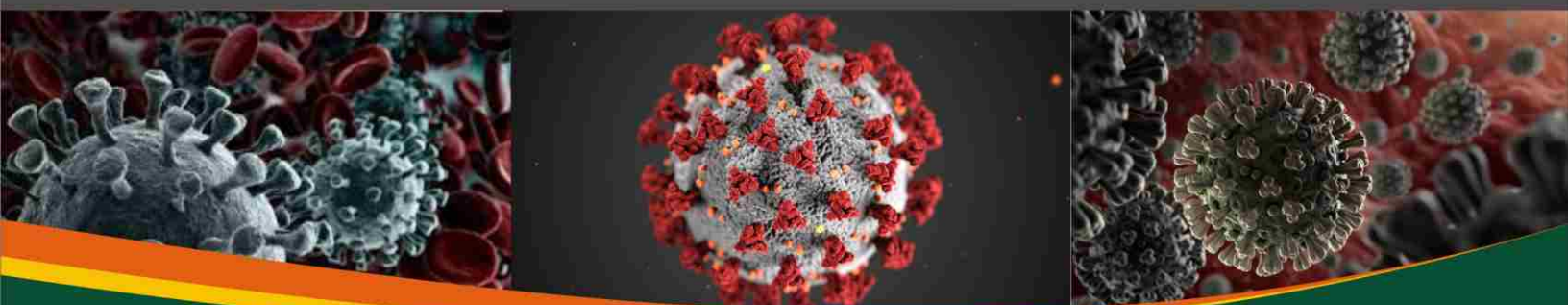
COVID-19 / SARS-CoV-2

Compiled & Edited by



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CORONAVIRUS

COVID-19

What are CORONAVIRUSES

Coronaviruses (CoV) are a **large family of viruses that cause illness** ranging from the **common cold** to more severe diseases such as Middle East Respiratory Syndrome (**MERS-CoV**) and Severe Acute Respiratory Syndrome (**SARS-CoV**).

What is Novel CORONAVIRUS?

A novel coronavirus (SARS-CoV-2) is a new strain that has not been previously identified in humans.



Origin Or Epicenter?

Wuhan, China

This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019.

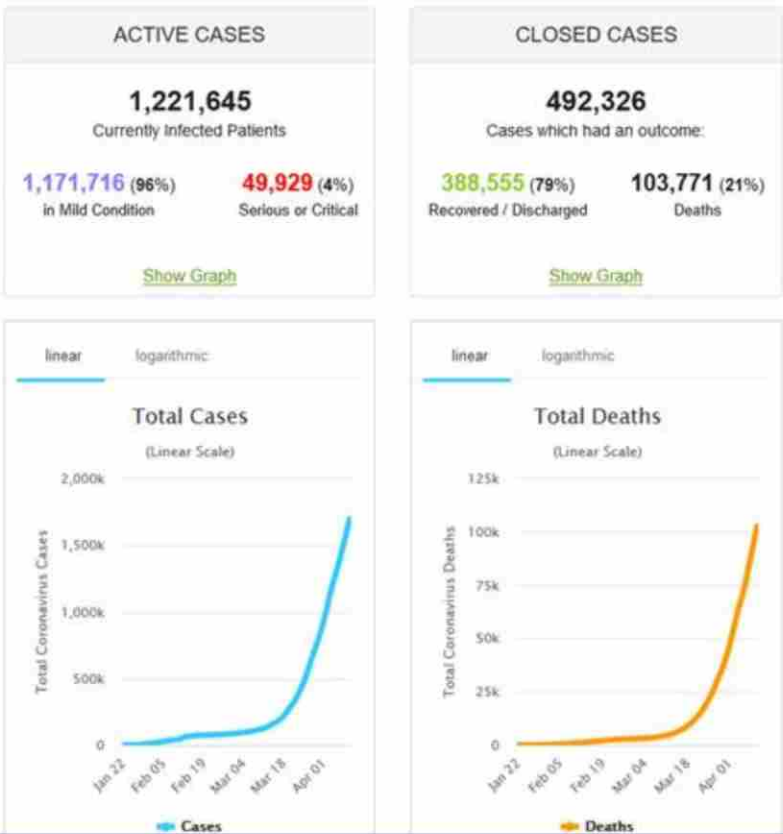
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COVID-19 cases

SOURCE:

<https://www.worldometers.info/coronavirus>



Specification

Coronaviruses are **zoonotic**, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans. Several known coronaviruses are circulating in animals that have not yet infected humans.

Symptoms of COVID -19

Common signs of infection include respiratory symptoms, **fever**, **cough**, **shortness of breath** and breathing difficulties.

In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

SOURCE: WHO

Incubation Period

The "incubation period" means the time between catching the virus and beginning to have symptoms of the disease. Most estimates of the incubation period for COVID-19 range from 1-14 days, most commonly around **five days**. These estimates will be updated as more data become available



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Symptoms of COVID -19

COVID-19 compared to other common conditions

SYMPTOM	COVID-19	COMMON COLD	FLU	ALLERGIES
Fever	Common	Rare	Common	Sometimes
Dry cough	Common	Mild	Common	Sometimes
Shortness of breath	Common	No	No	Common
Headaches	Sometimes	Rare	Common	Sometimes
Aches and pains	Sometimes	Common	Common	No
Sore throat	Sometimes	Common	Common	No
Fatigue	Sometimes	Sometimes	Common	Sometimes
Diarrhea	Rare	No	Sometimes*	No
Runny nose	Rare	Common	Sometimes	Common
Sneezing	No	Common	No	Common

*Sometimes for children

Sources: CDC, WHO, American College of Allergy, Asthma and Immunology

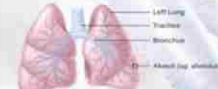
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COVID-19: How does it affect you?

COVID-19

HOW DOES IT AFFECT YOU?

Coronavirus Disease 2019 (COVID-19) is a pandemic caused by Severe Acute Respiratory Syndrome Coronavirus 2, also called SARS-CoV-2. Despite the widespread awareness regarding COVID-19, many are still unaware about how it affects the human body.



SARS-CoV-2 starts its journey in the nose, mouth, or eyes and travels down to the alveoli in the lungs. Alveoli are tiny sacs of air where gas exchange occurs.



Healthy

Infected

Moderate

Severe

Impaired Gas Exchange

Immune Response

How does COVID -19 Spread?

- People can catch COVID-19 from others who have the virus.
- The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. These droplets land on objects and surfaces around the person. Other people then catch COVID-19 by touching these objects or surfaces, then touching their eyes, nose or mouth.
- People can also catch COVID-19 if they breathe in droplets from a person with COVID-19 who coughs out or exhales droplets.

R&D's Role in Pandemic?

Developing new tools in response to COVID-19

Cure?

There is no cure yet.

Scientists across the world are working to find out the cure and create vaccine & drugs

TEST



FOCUS ON THE DEVELOPMENT OF DIAGNOSTICS:

SHORT-TERM:

Develop public health surveillance tools, using molecular diagnostics to detect cases for treatment and isolation.

LONG-TERM:

Develop point-of-care diagnostics for use by health workers.

TREAT



IDENTIFY AND DEVELOP THERAPIES THAT ARE:

- Safe in humans
- Active against COVID-19
- Quickly manufactured in hundreds of millions of doses
- Deliverable in low-resource settings

PREVENT



IDENTIFY POTENTIAL VACCINES AND MONOCLONAL ANTIBODIES THAT ARE:

- High efficacy for community protection
- Safe in humans
- Active against COVID-19
- Quickly manufactured in hundreds of millions, if not billion(s), of doses
- Deliverable in low-resource settings



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FIGHTING THE PANDEMIC

Yvesley Bailey, PhD @yvesleybailey
Zoe Guttenberg @zoegettendorf

Healthcare innovations to combat Covid-19

Technological and scientific innovations in **diagnostics** to help identify positive cases, **treatments** to alleviate or cure, and **vaccines** to prevent potential future infections.



DIAGNOSTICS

Diagnostic Test Type

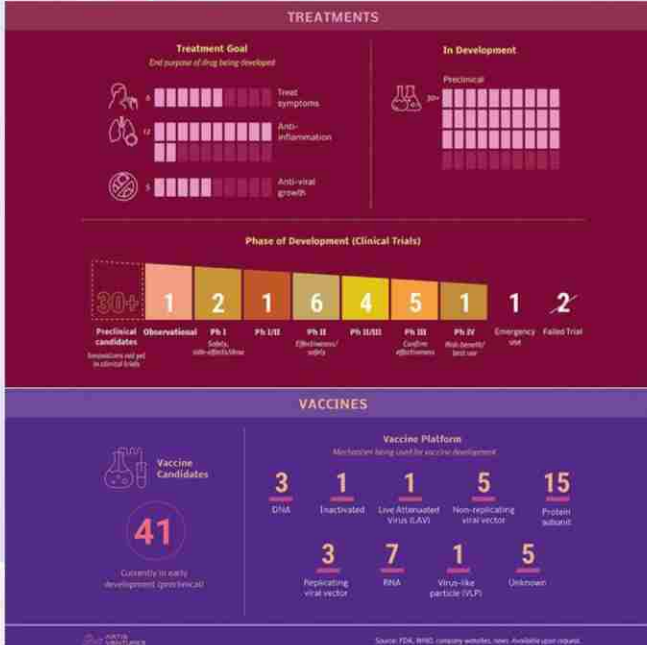
Scientific assay/technology used for detection



Diagnostics Approval Status



R&D's Role in Pandemic:
Developing new tools in response to COVID-19



Investigational Treatments?

There is no cure yet.

Scientists across the world are working to find out the cure and create vaccine & drugs

TREATMENTS

Drug	Company	Target	Stage	Treatment Goal	Location
1. Kaletra (Bictegravir-emtricitabine)	AbbVie	HIV protease inhibitor	Phase III	Anti-viral growth	USA
2. Arbidol	Pharmstandard	broad-spectrum antiviral	Phase III	Anti-viral growth	India
3. Galvivo + Ribociclovir	Asciety	Hep C/HIV protease inhibitors	Phase III	Treat pneumonia	USA
4. Actemra	Roche	IL-6 inhibitor	Phase III	Anti-inflammatory	USA
5. Lemolimumab	Humangen	anti-GM-CSF	Phase III	Anti-inflammatory	USA
6. CD147c	Oncobehance	IL-6 inhibitor	Phase III	Anti-inflammatory	USA
7. Precoctix	Shanghai Public Health Clinical Center*	HEV-1 protease inhibitor + CYP3A inhibitor	Phase III	Treat pneumonia	China
8. Colchicine	Montréal Heart Institute†	tubulin disruption	Phase III	Anti-inflammatory	Canada
9. Kevzara	Regeneron, Sanofi	IL-6 inhibitor	Phase III	Anti-inflammatory	USA
10. Chloroquine/ Hydroxychloroquine	Univ of Minnesota*	ACE-2 inhibitor	Phase III	Anti-viral growth	USA
11. Avigan	Fujifilm	RNA polymerase inhibitor	Phase III	Anti-viral growth	USA
12. Anakinra	Roche	VEGF inhibitor	Phase III	Treat pneumonia	USA
13. Remdesivir	Gilead	adenosine analog	Phase III	Anti-viral growth	USA
14. Interferon (IFN) la1	Cytodyn	CD47 antagonist	Phase III	Anti-inflammatory	USA
15. Anigitral	Neuracle	IFN-1 inhibitor	Phase III	Anti-inflammatory	USA
16. SH-6001	SynGene	IFN-1 inhibitor	Phase III	Treat respiratory distress	USA
17. Gimsine	Novartis	angiogenesis/sphingosine receptor modulator	Phase III	Anti-inflammatory	USA
18. Adhika	Southwest Univ, China*	PD-1 inhibitor	Phase III	Treat pneumonia/hypoxia	China
19. Mesenchymal Stem Cells	VRANDIO Cell & Gene Engineering	Tissue regeneration	Phase III	Anti-inflammatory, Tissue regeneration	USA
20. Lotilaner	Univ of Minnesota*	ATF1 inhibitor	Phase III	Reduce organ failure	USA
21. Gemtuzumab	Revvant	anti-GM-CSF	Phase III	Anti-inflammatory	USA
22. Spivard	USA Pharma	IL-6 inhibitor	Phase III	Anti-inflammatory	USA
23. Phenolphthalein	Mount Sinai	antibodies from recovered patients	Emergency use	Anti-viral growth, anti-inflammatory	USA

Precautions

- Regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water
- Maintain at least 1 meter (3 feet) distance between yourself and anyone who is coughing or sneezing.
- Avoid touching eyes, nose and mouth.
- 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.
- Stay informed on the latest developments about COVID-19.
- Keep up to date on the latest COVID-19 hotspots (cities or local areas where COVID-19 is spreading widely). If possible, avoid traveling to places

WHAT CAN YOU DO?

- Social Distancing**
Avoid close contact with people who have COVID-19. Avoid crowded places. Avoid public transport.
- Stay Healthy**
Wash your hands frequently with soap and water. Avoid touching your face. Avoid close contact with people who have COVID-19. Avoid public transport.
- Stay Informed**
Follow the directions of your local health authority. Stay informed on the latest developments about COVID-19.
- Donate**
If you are a healthcare worker, consider donating your time to help with COVID-19. If you are a scientist, consider donating your expertise to help with COVID-19.

Precautions

WASH YOUR HANDS



Suggested Reading

- <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
- <https://mygov.in/covid-19/>
- <https://www.mohfw.gov.in/>



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