

हमारी ह से हिंदुस्तान हरायेगा कोरोना को

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हमारा शरीर

कोरोना वायरस (सीओवी) मुख्य रूप से पक्षियों और स्तनधारियों में एंज़ूटिक संक्रमण का कारण बनता है लेकिन, पिछले कुछ दशकों में, मनुष्यों को भी संक्रमित करने में सक्षम देखा गया है। 2003 में गंभीर तीव्र श्वसन सिंड्रोम (SARS) का प्रकोप और हाल ही में, मध्य-पूर्व श्वसन सिंड्रोम (MERS) ने कोरोनावायरस की घातकता को प्रदर्शित करता है, जब वे पक्षियों और स्तनधारियों के अवरोध को पार करते हैं और मनुष्यों को संक्रमित करते हैं। तो ऐसे ही वाइरस के रूपान्तरण का नया प्रकोप दुनिया में देखने मिला है

SARS-CoV-2 (COVID-19)।

1. वैज्ञानिकों ने SARS-CoV-2 (COVID-19)के बाहर वायरल स्पाइक प्रोटीन के लिए जेनेटिक टेम्पलेट का एनालिसिस किया, जो वायरस सेल की सरफेस के रिसेप्टर्स को बांधने और मानव सेल में प्रवेश पाने के लिए है।
2. एक ट्रांसमीटर प्रोटीन के रूप में, एंजिओटेन्सिन कन्वर्टिंग एन्जाइम (ACE2) कोरोना वाइरस के लिए मानव सेल में मुख्य प्रवेश बिंदु के रूप में कार्य करता है, जिसमें अधिक विशेष रूप से SARS-CoV2 (COVID-19)के स्पाइक S1 प्रोटीन को सेल की सरफेस पर ACE2 के एंजाइमैटिक डोमेन में बाँधने से एंडोसाइटोसिस और कोशिकाओं के भीतर स्थित एंडोसोम्स दोनों में एंजाइम का CHANGE होता है।
3. COVID-19 से फेफड़े सबसे अधिक प्रभावित होते हैं क्योंकि वाइरस एंजाइम ACE2 के माध्यम से मानव सेल तक पहुँचते हैं, The expanding part of the lungs, [pulmonary alveoli](#), contain two main types of functioning cells. One cell, [type I](#), absorbs from the air, i.e. [gas exchange](#).
4. The other, [type II](#), produces [surfactants](#), which serve to keep the lungs fluid, clean, infection free, etc.
5. COVID-19 finds a way into a surfactant producing type II cell and smothers it by reproducing COVID-19 virus within it. Each type II cell which perishes to the virus causes an extreme Fluids, pus and

dead cell material flood the lung, causing the coronavirus pulmonary disease.

6. वायरस गैस्ट्रोइंटेस्टाइनल अंगों को भी प्रभावित करता है क्योंकि ACE2 गैस्ट्रिक, duodenal, Rectal epithelium के साथ-साथ एंडोथेलियल कोशिकाओं और Small Intestine के एंटरोसाइट्स के ग्रंथि कोशिकाओं में बहुतायत से जाता है।

* उपाय There are 4 type of viral protien in corona virus like s (Spike) protien N (Nucleous) protien, M (Membrane) protien, E (Envelop) protien. so it make very frequently to change their pathology maximum attack on respiratory system some how in gastrointestinal system.

- 1 ACE2 को वैसोडिलेटर एंजियोटेंसिन 1-7 के उत्पादन में वृद्धि करके वायरस-प्रेरित फेफड़ों की चोट के खिलाफ एक सरक्षात्मक प्रभाव दिखाया गया
- 2 एसीई इनहिबिटर और एंजियोटेंसिन रिसेप्टर ब्लॉकर्स (एआरबी) जो उच्च रक्तचाप के इलाज के लिए उपयोग किए जाते हैं, इसलिए यह कोरोनोवायरस संक्रमण की गंभीरता को घटाते हैं
- 3 Studies have demonstrated that initial spike protein priming by transmembrane protease serine 2 ([TMPRSS2](#)) is essential for entry of SARS-CoV-2 via interaction with the [ACE2](#) receptor. These findings suggest that the TMPRSS2 inhibitor [camostat](#) approved for use in Japan for inhibiting fibrosis in liver and kidney disease might constitute an effective off-label treatment.
- 4 Plasma cells therapy study done in Wuhan corona virus patient and blood group found that blood group O is less prone for infection so possibility to take affected o blood group patient who every recover and cure take plasma of this patient and try for treatment of Covid.

हैप्पी केमिकल्स

Hormones are chemicals produced by different glands across your body. They travel through the bloodstream, acting as messengers and playing a part in many bodily processes. These “happy hormones” called: DOSE

- 1 **Dopamine.** Also known as the “feel-good” hormone, dopamine is a hormone and neurotransmitter.
- 2 **Oxytocin.** Often called the “love hormone,” oxytocin is essential for strong parent-child bonding.
- 3 **Serotonin.** This hormone (and neurotransmitter) helps regulate your mood as well as your sleep, appetite, digestion, learning ability, and memory.
- 4 **Endorphins.** Endorphins are your body’s natural pain reliever, which your body produces in response to stress or discomfort.

- Sunlight
- Exercise
- Laughter
- Food
- Supplements
- Music
- Meditation
- Affection
- Pets

Looking to boost your endorphins and serotonin levels? Spending time outdoors, [in sunlight](#)

Make time for exercise

Laugh with a friend

Cook (and enjoy) a favourite meal with a loved one

Listen to music (or make some) Listening to instrumental music, especially music that gives you chills, performing music by dancing, singing, or drumming led to endorphin release.

Meditate

Plan a romantic evening

Get a good night's sleep Setting aside 7 to 9 hours

हमारे प्रयास और होमिओपैथी

Manage stress

- 1. Flavonoids:** Laboratory experiments have been conducted on the beneficiary effect of Flavonoids on the heart and circulatory system.

Flavonoids are also used to mitigate stress, especially environmental stress. Flavonoids are often used for their antioxidant effect against free radicals.

There are also strong indications that they have **antiviral**, anti-inflammatory and anti-hypertensive properties

The main dietary sources of **flavonoids** include tea, citrus fruit, citrus fruit juices, berries, red wine, apples, and legumes. Other methylxanthines **found in tea** are two chemically similar compounds, theobromine and theophylline.

- 2. steroidal saponins: Saponins** have also been used as adjuvants in development of vaccines, such as Quil A, an **extract** from the bark of Quillaja saponaria. This makes them of interest for possible use in subunit vaccines and vaccines directed against intracellular pathogens. Saponins are also present in **Allium species (onion, garlic), asparagus, oats, spinach, sugar beet, tea and yam.**

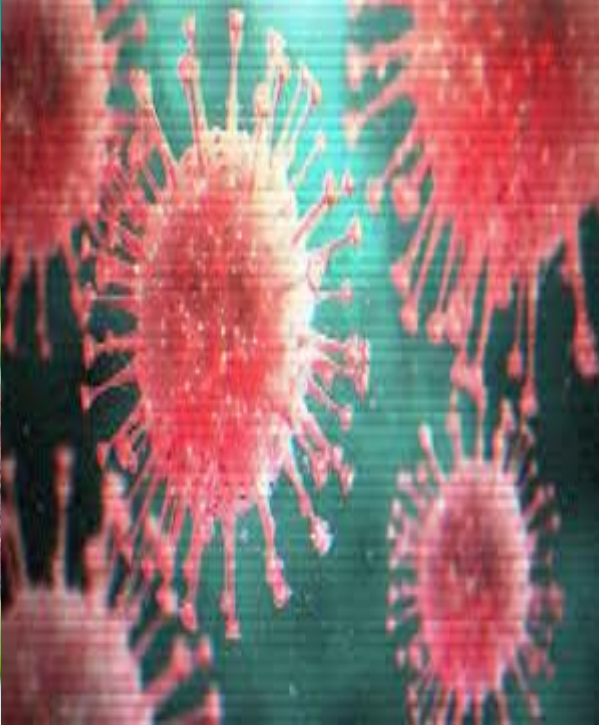
होमिओपैथी

Doctrine of Signature:

प्राचीन काल में, जबकि मनुष्य विभिन्न विकृतियों से पीड़ित थे, उन्होंने पौधे से इलाज के साथ प्रयोग किया। धार्मिक लोगों ने सिखाया कि भगवान ने दृश्य सुराग प्रदान किए, क्योंकि पृथ्वी पर पौधों को मानव जाति की भलाई के लिए रखा गया था। यंहा पर प्रमुखता से दो मैडिसिन। नेफेलियम लेपेसम या रामबुतान और मोमोर्डिका डिओइका जिनकी बनावट तो वादरम से मिलती है साथ ही दम फल और मल्ली में भी एंटी वादरल गण होते हैं। रामबुतान फल को एक औषधीय और चिकित्सीय फलो की क्लास में रखा गया है क्योंकि इसमे फाइटोकेमिकल्स गुण होता है इस कारण से यह एंटी कैंसर, एंटी एलर्जिक एंटी मिक्रोबियल प्रभाव दिखाता है। इस फल की बाहरी पर्त पर बाल जैसे रेशे निकले होते हैं।

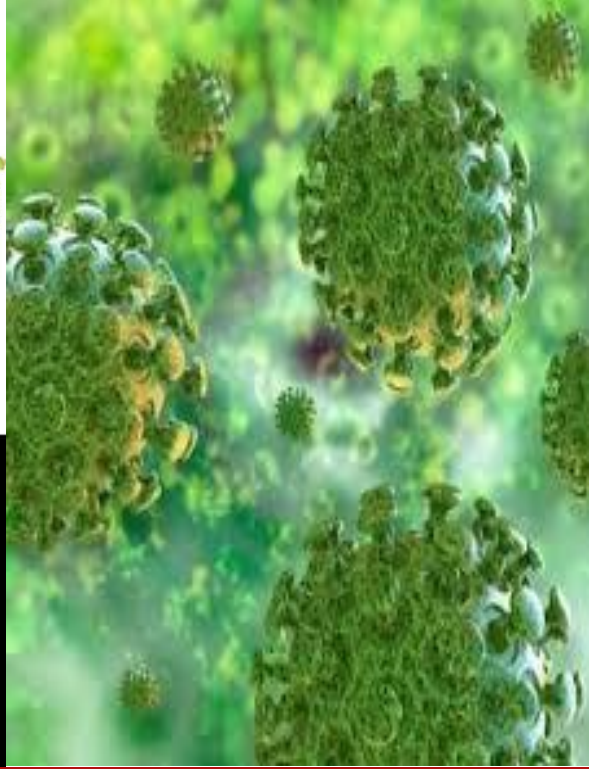


रामबुतान



कोरोना वाइरस

Momordica dioica



यह सब्जी स्वादिष्ट होने के साथ-साथ प्रोटीन से भरपूर होती है. इसे रोज खाने से आपका शरीर ताकतवर बनता है. इसके लिए कहा जाता है कि इसमें मीट से 50 गुना ज्यादा ताकत और प्रोटीन होता है. टोल में मौजूद फाइटोकेमिकल्स स्वास्थ्य को बढ़ावा देने में काफी मदद करती हैं. एंटीऑक्सीडेंट से भरपूर सब्जी है. यह शरीर को साफ रखने में काफी सहायक है.



पाचन क्रिया होगी दुरुस्त : अगर आप इसकी सब्जी नहीं खाना चाहते तो अचार बनाकर भी सेवन कर सकते हैं. आयुर्वेद में कई रोगों के इलाज के लिए इसे औषधि के रूप में प्रयोग करते हैं. यह पाचन क्रिया को दुरुस्त करने में महत्वपूर्ण भूमिका निभाता है.

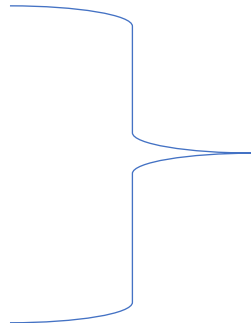
Arsenic alb 30 as per Ministry of AYUSH advice 4 to 5 pills every morning for 3 days act as preventive for corona virus like disease.

Chireta swerita Q

Ginseng Q

Quillaya Saponaria Q

Ashwgandha Q



Previous research demonstrates that the *all these above mother tincture or* extracts exhibit a wide range of biological activities, such as antibacterial, antifungal, antiviral, anticancer, anti-inflammatory, and others like antidiabetic and antioxidant activities. **Ginsenosides** or **panaxosides** are a class of natural product steroid glycosides and triterpene saponins.



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संगीत थेरेपी यानि मनपसंद संगीत सुने या गाये/देखे या खुले मन से नाचे।

1. घर पर रोजाना हवन धुआँ शंखनाद आजान किसी भी रूप में ध्वनि तरंगों का संचार करें।
2. भ्रम होने पर लंगस टेस्टिंग और फीवर टेस्टिंग तकनीकियों का सहारा ले जैसे मोबाइल में टाइमर चालू करके प्रीतिदिन लंबी सांस लेकर रोककर देखिये आप अपनी साँसों को कितने सेकंड के लीये रोक पाते हैं नॉर्मल स्वस्थ मनुष्य कम से कम 40 सेकंड तक रोक सकता और संक्रमित व्यक्ति 40 सेकंड के अंदर सांस छोड़ देता है। रोजाना कोर तापमान को चेक करते रहे।

हल्के से भी संदेह पर अपने आप को सेल्फ कुरेंटीयन प्रोसेस में ढाल ले मतलब संपर्क में ना आए। Apollo Hospital is offering a quick self-assessment test, driven by #AI to know your current risk level.

<https://t.co/2DLx9NQEtW> BreakTheChain

1. प्रथम तीन दिन LFS थेरेपी मतलब प्रथम दिन liquid only Citrus Fruit Juice और नारियल पानी ही देना है।
2. दूसरे दिन Fluid diet यानि Citrus फ्रूट+ नारियल पानी+ खीरा टमाटर ही देना है।
3. तीसरे दिन दिनभर उपरोक्त खुराक के साथ लंच और डिनर में सादा खाना जिसमें लहसुन और मूँगफली युक्त भोजन हो देना है।
4. साथ ही पहले दिन से होमिओपैथिक दवा कलमेघ(चिरेता)+ जिन्सेंग +अश्वगंधा +सपोनेरिया का मदर टिंचर की 20 बूँदे तथा आर्सेनिक एल्बम 30 की 8 बूँदे दिन में तीन बार तीन दिन तक देते रहे।

5. Some credible experts are even likening the COVID-19 outbreak to the 1918 Spanish flu pandemic. [The truth is, we probably haven't seen a virus like this one since 1918, with the Spanish flu.](#) Spanish influenza and COVID-19 are both infectious respiratory illnesses, and they share some symptoms.

6. Both can cause fever, coughing and aches, and both can lead to pneumonia. Both vary from mild to fatal.

7. Biologically, the two diseases are very different — but the comparison persists because "novel" — or new — viruses are rare.

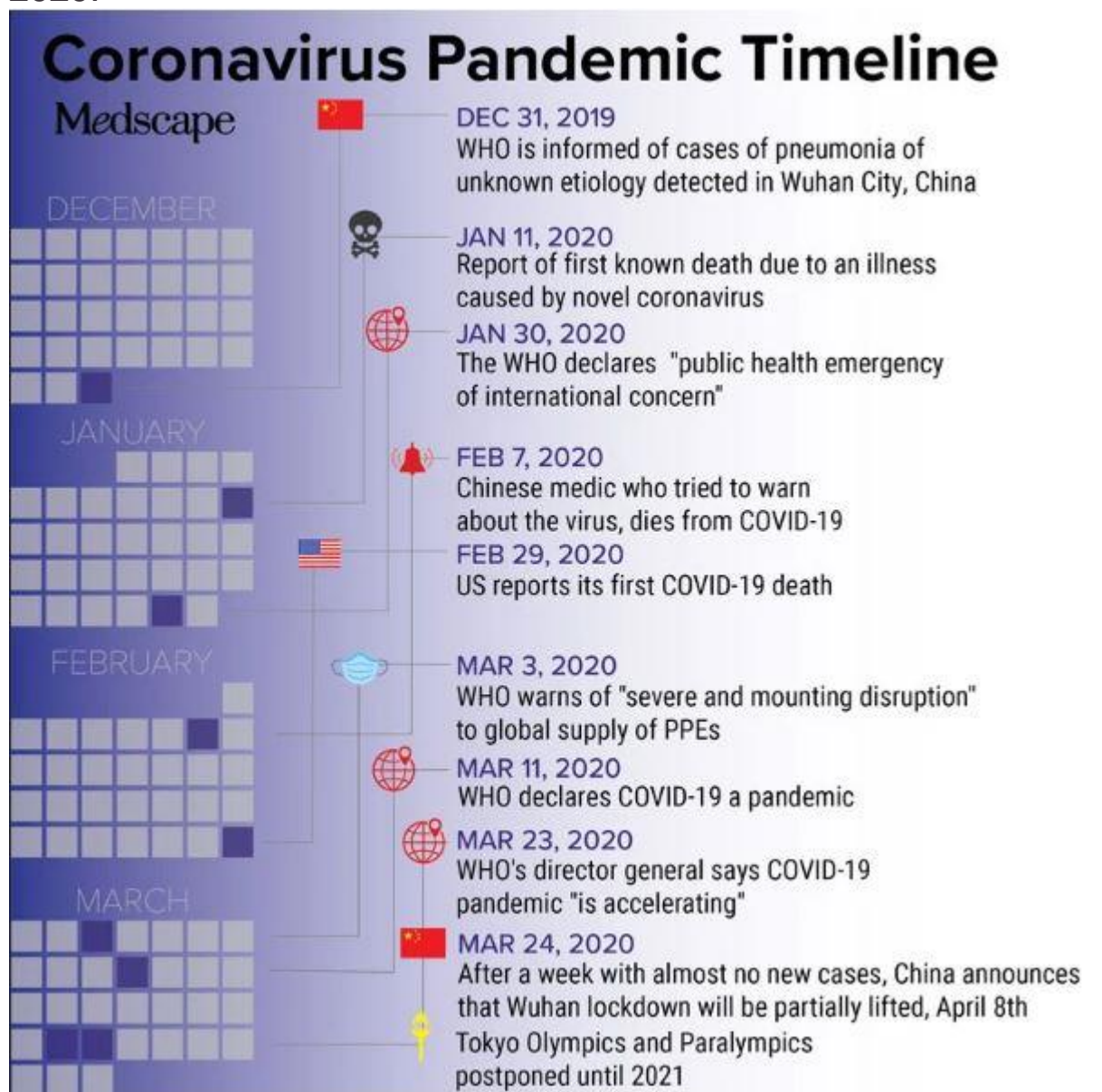
8. Novel viruses can be particularly dangerous because immunity in human populations is low, and it takes time to understand new viruses and develop vaccines and treatments.

9. COVID19 लोम्बार्डिया अपने पौरुष और / या अंत-कोशिकीय जीवविज्ञान लक्षणों का एक मूल परिवर्तन (2-3X और मूल COVID19 सेंशु वुहान-हूबेई से अधिक आक्रामक) दिखाता है

10. Dipeptidyl peptidase-4 (*DPP4*), also known as adenosine deaminase complexing protein 2
11. The cause of most pandemics is a zoonosis virus from an animal that leapt over to people. HIV was transmitted from a chimpanzee. All coronaviruses — SARS, MERS and COVID-19 — are transmitted from bats with a secondary host. In SARS it was a cat, in MERS it was a camel, and COVID-19 is a pangolin, which is prized for its meat and used for traditional medicine in China. H1N1 was a hybrid from birds and cows. What's different, I think, is that COVID-19 is going to turn out to be an equal-opportunity virus with a high risk for bad outcomes for the elderly, newborns, babies and people who are immunosuppressed. Like H1N1 and seasonal flu, COVID-19 is highly communicable. What's different is it has 10 times greater mortality rates than the seasonal flu.
12. Camostat mesylate has been used to determine the effect of transmembrane protease, serine (TMPRSS) family proteases on cell-cell fusion.^[2]
13. Camostat mesylate may be used in cell signaling studies.
14. <https://www.homeobook.com/homeopathic-inhalers-in-day-to-day-practice/>
15. The COVID-19 pandemic was first brought to the attention of the World Health Organization (WHO) by China when cases of pneumonia of unknown etiology were reported in the city of Wuhan, Hubei Province, on 31 December 2019. It soon became apparent that this illness was highly transmissible and that hospitals in Wuhan were overwhelmed with cases of severe illness, some leading to death.
16. On 5 January 2020, scientists in China identified the cause of this illness as a novel coronavirus. Coronaviruses are a large family of viruses that can cause diseases in humans, including the common cold and severe acute respiratory syndrome (SARS). The genome sequence of the novel coronavirus shows that it is distinct from the coronaviruses that caused the SARS outbreak in 2003–2004 and the Middle East respiratory syndrome (MERS) outbreak which began in 2012.
17. On 11 February 2020, the new coronavirus was given the official name **Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)** and the disease caused by the virus was named **COVID-19**. As the epidemic spread rapidly

around the world, mainly because of global travel, WHO declared the epidemic to be a Public Health Emergency of International Concern on 30 January 2020.

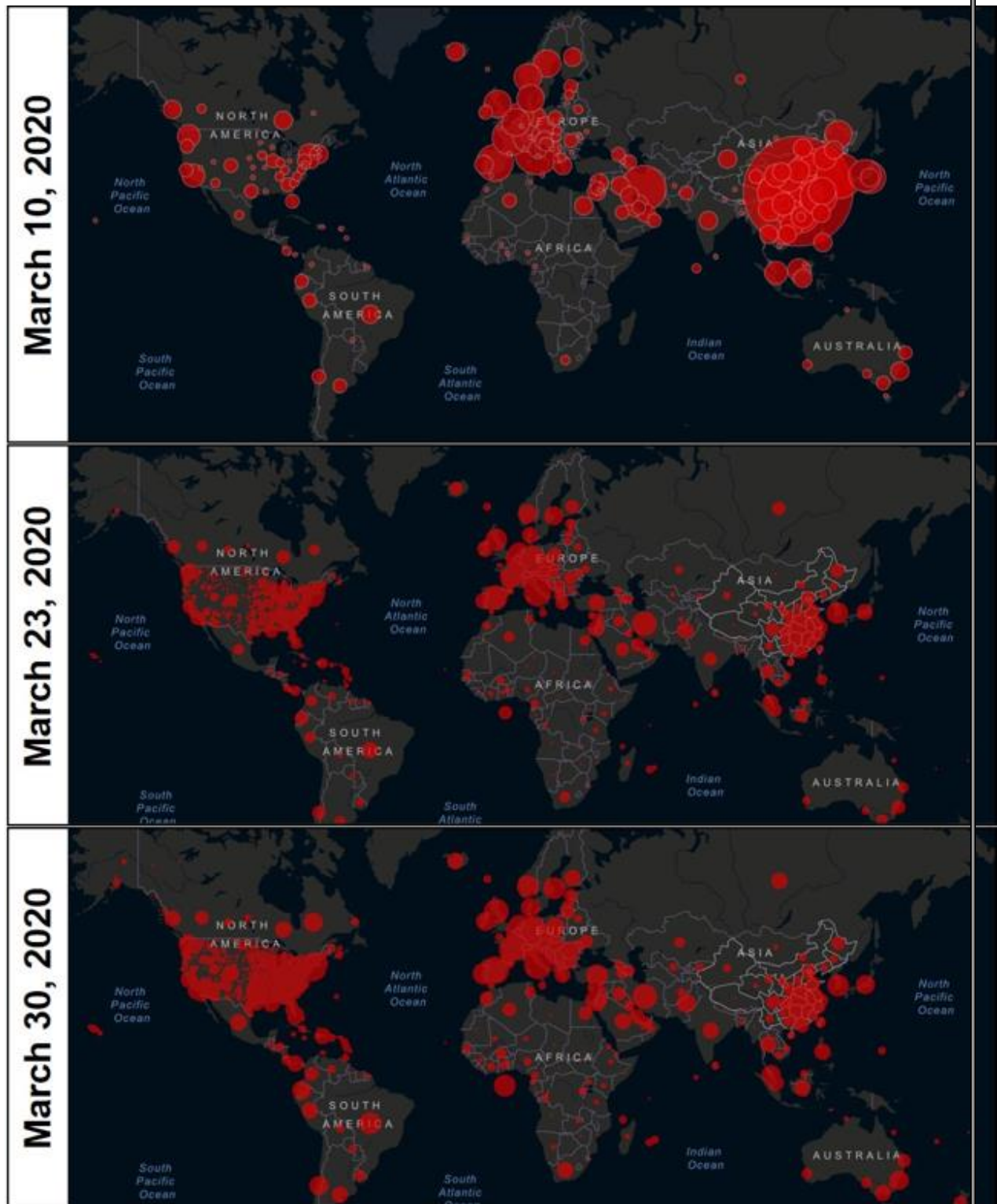
18. WHO subsequently declared the situation a pandemic on 11 March 2020 when most countries reported sustained community transmission of SARS-CoV-2.
19. **Figure 1.** provides an overview of the first few months of the COVID-19 pandemic timeline.
20. **Figure 1. COVID-19 pandemic timeline from 31 December 2019 to 24 March 2020.**



21. **The rapid global spread of COVID-19**
22. As of 12 April 2020, close to two million cases of COVID-19 have been reported from 180 countries with 50,000 deaths, in just three months since the start of the outbreak.

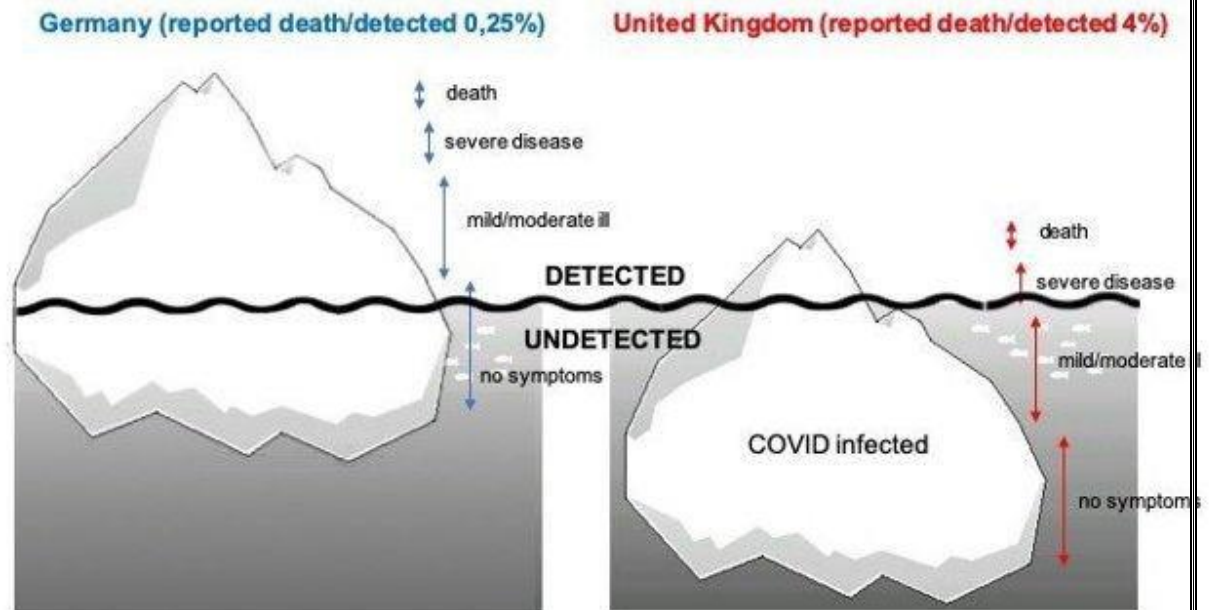
23. **Figure 2.** shows the rapid spread of the pandemic in just three weeks from 10 March to 30 March 2020. Notice the rapid increase in reported cases in some areas in North America and Africa and a reduction in cases reported in China.

24. **Figure 2: Spread of the COVID-19 pandemic from 10 March 10 to 30 March 30, 2020**



25. **Figure 3. Iceberg Analogy COVID-19 Reporting**

ICEBERG ANALOGY COVID19 REPORTING



Antibody-based rapid diagnostic tests (RDTs) can be used to monitor active SARS-CoV-2 infection

False Antibody-based tests detect the immune response in humans and not the virus itself.

Which of the following specimen types can be used for COVID-19 molecular testing? (Mark all that apply)

Select all the answers you think are correct.



Nasopharyngeal swab



Bronchoalveolar lavage



Sputum



Endotracheal aspirate

The World Health Organization (WHO) and U.S. Centers for Disease Control and Prevention (CDC) recommend specimens from the lower respiratory tract, including **sputum, bronchoalveolar lavage** and **tracheal aspirate** for the diagnosis of COVID-19 using the approved molecular test methods. If it's not feasible to collect a lower respiratory tract specimen, you can collect one of the following:

- nasopharyngeal swab, (preferred)
- oropharyngeal swab,
- nasal mid-turbinate (NMT) swab,
- Anterior nares specimen

In countries experiencing clusters of COVID-19 cases, the World Health Organization recommends testing of all individuals meeting the suspected case definition.

WHO provides guidance on recommended testing strategies for four defined transmission scenarios:

(1) no cases, (2) sporadic cases, (3) clusters of cases, and (4) community transmission.

This guidance includes testing of all individuals meeting the suspected case definition in countries experiencing clusters of COVID-19 cases.

Which of the following apply to laboratory biosafety practices when handling specimens for COVID-19 testing?

Nucleic acid amplification testing (NAAT) should be

conducted in a biosafety level 2 (BSL-2) facility



Bleach is an appropriate disinfectant with proven activity

against viruses such as SARS-CoV-2.

Testing strategies for different transmission scenarios

The WHO has defined four transmission scenarios as the 4 “Cs”:

- **No cases:** countries with no cases;
- **Sporadic cases:** countries with one or more cases, imported or locally detected;
- **Clusters of cases:** countries experiencing clusters of cases related in time, geographic location, or common exposure;
- **Community transmission:** countries experiencing larger outbreaks or sustained and pervasive local transmission.

WHO has recommended testing strategies for each transmission scenario (see the Laboratory testing strategy recommendations for COVID-19 in the **Downloads** section for further information). WHO recommends that all suspect cases be tested according to WHO case definitions (see Global Surveillance for human infection with coronavirus disease (COVID-19) in the **Downloads** section). Countries will need to consider how to best implement recommended testing strategies based on needs, resources and available infrastructure. A summary of the WHO-recommended testing strategies for the four transmission scenarios is given below:

1. No cases

- An assessment of possible risk areas and populations (e.g. related to travel to high-risk countries) may require a more intensified testing strategy.
- A surge in severe acute respiratory infections (SARI) or influenza-like illness (ILI) observed through clinical surveillance can be a sign of unrecognized COVID-19 circulation in the general population and should prompt specific testing for COVID-19.

Aim: To provide early alerts of COVID-19 circulating in the community.

How: *If a country has a SARI and/or ILI surveillance system, then specimens collected from these sentinel surveillance sites should be tested for evidence of COVID-19 circulating in the community*

- *Serum or dried blood spots: use tests that detect anti-SARS-CoV-2 IgM/IgG antibodies.*
- *Nasal or throat swabs: use tests that detect viral RNA or antigen.*

Action on results:

- *Nasal or throat swabs positive for SARS-CoV-2: indicates COVID-19 currently circulating in the community.*
- *IgM positive: suggestive of recent infection. Follow up with more intensive sample collection to confirm COVID-19 cases by IgM, molecular and/or antigen detection tests.*
- *IgG positive only: suggestive of previous infection. Check specificity of test against common coronaviruses that may be circulating in the community.*

The proportion of COVID-19 cases in these surveillance samples can be used to inform public health measures and control strategies, monitor trends and the effectiveness of interventions.

2. Sporadic cases

- *When the first sporadic cases of COVID-19 are detected in a country, investigations should be carried out to determine the source of the infection.*
- *Each sporadic case requires aggressive and active case finding, isolation and care, and comprehensive contact tracing and quarantine.*

Aim: *To identify early sporadic cases of COVID-19 and prevent their spread in the community.*

How:

- *Confirm cases presenting for care by detecting SARS-CoV-2 RNA or antigen in nasal or oropharyngeal swabs.*

- *Contact tracing: use tests that detect anti-SARS-CoV-2 IgM/IgG antibodies in whole blood from asymptomatic contacts of confirmed cases.*
- *Continue testing of samples collected through the SARI and/or ILI surveillance to assess extent of COVID-19 infection in the community.*

Action on results:

- *Nasal or oropharyngeal swab positive for SARS-CoV-2 RNA or antigen: confirms COVID-19 case.*
- *IgM positive: suggestive of recent infection. Follow up with more intensive sample collection to confirm COVID-19 cases by IgM, molecular and/or antigen detection tests.*
- *IgG positive only: suggestive of previous infection. Check specificity of test against common coronaviruses that may be circulating in the community.*

At this stage, control programs should undertake very aggressive contact tracing to ensure all possible contacts linked to a confirmed case have been tracked down and tested to enable public health measures such as isolation or quarantine to be put into place.

3. Clusters of cases

- As clusters are found, plans should be adopted to improve national testing capacity, as needed, and assess the effectiveness of the laboratory network.
- Investigation of clusters and SARI/ILI surveillance should be intensified.
- It is critical that testing continues so clusters can be monitored, cases can be isolated, contacts can be quarantined, and chains of transmission can be broken.

Aim: *To identify clusters of COVID-19 and intensify investigations to break chains of transmission.*

How:

- *Continue testing cases and contact tracing.*
- *Continue testing of samples collected through the SARI and/or ILI surveillance to assess extent of COVID-19 infection in the community.*
- *Monitor clusters of cases.*

Action on results:

- *Nasal or oropharyngeal swab positive for SARS-CoV-2 RNA or antigen: confirms COVID-19 case.*
- *IgM positive: suggestive of recent infection. Follow up with more intensive sample collection to confirm COVID-19 cases by IgM, molecular and/or antigen detection tests.*
- *IgG positive only: suggestive of previous infection. Check specificity of test against common coronaviruses that may be circulating in the community.*

Control programs should continue with very aggressive testing, and investigation/testing of clusters to enable public health measures and break chains of transmission.

4. Community transmission

- Testing constraints should be anticipated at this stage. Prioritization will be required to maximize testing using available resources and ensure the highest public health impact of interventions in terms of reducing transmission.
- Prioritized testing should be undertaken in areas with community transmission and in settings where testing capacity cannot meet needs.
- Early identification and protection of vulnerable patients and healthcare workers is also required. Focused testing should be undertaken in healthcare facilities to ensure infection prevention and control measures, in addition to testing among vulnerable populations and risk groups.
- Testing results from specific populations (e.g. patients requiring hospitalization for respiratory disease) can provide a rough

estimate of the size of the outbreak in the area and can be used to monitor trends.

Critical or essential worker surveillance

- *In a pandemic, countries must strive to maintain a robust critical infrastructure workforce, including healthcare workers.*
- *Critical workers who develop symptoms must be prioritized for molecular testing and receive care if infected.*
- *On recovery, a positive serology test result suggests development of immunity, and can be used to allow critical workers to return to work.*

Ongoing surveillance to monitor trends and effectiveness of interventions

- *Ongoing testing of samples collected through SARI and ILI surveillance systems provides a rapid situation assessment of the COVID-19 response to inform public health measures and control strategies, monitor trends and the effectiveness of interventions.*

Example of a regional testing strategy: The Africa Centres for Disease Control and Prevention (CDC) testing strategy

In early outbreak, test:

- anyone with fever and acute respiratory symptoms who has been in a place with COVID-19 transmission in the last 14 days;
- all symptomatic contacts of a confirmed/probable cases of COVID-19;
- all cases of SARI surveillance systems and selected ILI samples reported through the national influenza sentinel surveillance system; and
- healthcare workers with symptoms consistent with COVID-19 disease regardless of exposure.

When community transmission is established, prioritize testing of:

- all cases of SARI and ILI reported through the influenza sentinel surveillance system to identify undetected transmission areas;
- severe acute respiratory infections presenting to hospitals; and
- healthcare workers with symptoms consistent with COVID-19 disease regardless of exposure.

Frequently asked questions around COVID-19 testing

133 comments

In this section, you will hear responses from Dr. Mark Perkins, Team Lead, Laboratory Networks, WHO to frequently asked questions (FAQs) around COVID-19 testing which include:

1. Why are diagnostics important to control the COVID-19 pandemic?
2. Why are different types of tests needed?
3. What are the main differences between molecular (or PCR) assays and immunoassays, and what are the advantages of each technology?
4. Why do some countries lack diagnostics capacity to face the pandemic, and how is this affecting our response to the outbreak?
5. What is limiting the wide-scale deployment of tests that have already been commercialized?
6. What difference could the introduction of a rapid diagnostic test make, and what does the rapid testing development space for COVID-19 look like right now?
7. Tests for COVID-19 have been developed very rapidly – can we be sure that they really perform as well as claimed? If not, what is needed to assess their performance
8. What are some of the main challenges of developing diagnostics for outbreaks and what potential solutions are there for these issues?

9. How important are Emergency Use Authorizations for diagnostics during pandemics? Are there any downsides associated with their use?

Specimens for COVID-19 testing and their collection and transportation

103 comments

In this step Dr. André Trollip, Senior Technical Officer at FIND South Africa, reviews the latest global guidelines on specimen collection for COVID-19. We describe recommendations for safe specimen collection and requirements for specimen storage and transport to the laboratory.

What specimens are recommended for COVID-19 diagnosis?

The World Health Organisation (WHO)¹ and Centers for Disease Control and Prevention (CDC)² recommend specimens from the lower respiratory tract, including sputum, bronchoalveolar lavage and tracheal aspirate, for the diagnosis of COVID-19 using the approved molecular testing methods.

If it's not feasible to collect a lower respiratory tract specimen, you can collect one of the following:

- nasopharyngeal swab (preferred)
- oropharyngeal swab
- nasal mid-turbinate (NMT) swab
- anterior nares specimen

The collection of combined nasopharyngeal and oropharyngeal swabs can improve test sensitivity. If you collect both nasopharyngeal and oropharyngeal swabs, place them in the same tube. Swabs should be transported in universal, viral or Amies transport medium. If transport medium is not available, use sterile saline. For making your own transport medium, download the instructions in the Downloads section. Also refer to the Frequently asked questions on diagnostic testing link in the See also section of this step for additional information on specimen collection.

Watch the video demonstrating the collection of nasopharyngeal or oropharyngeal swabs in the See also section of this step to learn how to collect quality specimens in a safe manner. Specimens should be collected by trained healthcare workers (HCWs) who are following biosafety guidelines that include the use of personal protective equipment (PPE) appropriate to respiratory viruses. Read What healthcare workers should know for the 2019 novel coronavirus disease outbreak in the Downloads section for detailed information.

What PPE is recommended during specimen collection?

If you are a HCW collecting specimens, you should wear appropriate PPE including:

1. long-sleeved isolation gown, scrub suits, or coveralls with sleeves that fully covers your torso and extends from your neck to your knees and covers your arms to the end of your wrists. These should close on the backside;
2. head coverings, shoe covers or dedicated shoes;
3. N95 respirator that is secured properly and fits your face;
4. eye protection (e.g. goggles or disposable full-face shield) that can be adjusted to fit your face; and
5. clean non-sterile disposable gloves that cover the wrist area of your isolation gown.

What are some general guidelines for specimen collection?

We will provide more information on appropriate biosafety measures for testing in 2.6 Laboratory biosafety for COVID-19 testing.

- Collect the specimen(s) as soon as possible once a decision has been made to pursue COVID-19 testing, regardless of the time of symptom onset.
- Limit the number of HCWs present during the procedure to only those essential for patient care and procedure support. Visitors should not be present for specimen collection.
- Collect the specimen in a normal procedure room with the door closed.
- Clean and disinfect the procedure room surfaces promptly after specimen collection using appropriate disinfectants and recommended contact time for the specific disinfectant.

- Label each specimen container with the patient's unique identification (ID) number (e.g. medical record number), unique specimen ID (e.g. laboratory requisition number), specimen type, and the date and time the specimen was collected.
- Complete a specimen submission form and person under investigation (PUI) form for each specimen. Refer to example forms in the Downloads section of this step.
- Follow your facility's guidelines to identify the specimen as a priority.
- Strictly adhere to recommended hand hygiene measures.

Immunoassays require either venous or peripheral (fingerpick) blood collection depending on the kind of test performed. In Week 3 we will provide more information on use of immunoassays and discuss approaches to specimen collection outside the healthcare setting.

Specimen storage and transport

Review the summary of the recommendations for specimen collection and transport requirements in the table below. If there will be a delay in getting the specimen to the laboratory, it should be stored as recommended.

| Specimen type | Collection materials | Storage & transport |
|------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|
| Sputum (deep cough) | Sterile leak-proof container | Refrigerate and ship at 2–8°C up to 48 hours, if >48 hours freeze at –70°C and ship on dry ice |
| Bronchoalveolar lavage | 2–3 ml in sterile leak-proof container | Refrigerate and ship at 2–8°C up to 48 hours, if |

Specimen type**Collection materials****Storage & transport**Endotracheal or
nasopharyngeal aspirate2–3 ml in sterile leak-
proof containerRefrigerate and ship at
2–8°C up to 48 hours, if
>48 hours freeze at –70°C
and ship on dry iceNasopharyngeal and
oropharyngeal swabDacron or polyester
flocked swab in viral
transport medium in a
sterile leak proof
containerRefrigerate at 2–8°C up to
5 days, if >5 days freeze at
–70°C and ship on dry ice^a

Venous blood

Serum separator tube^bStore upright for at least
30 minutes after
collection. Refrigerate and
ship at 2-8 °C within 5 days

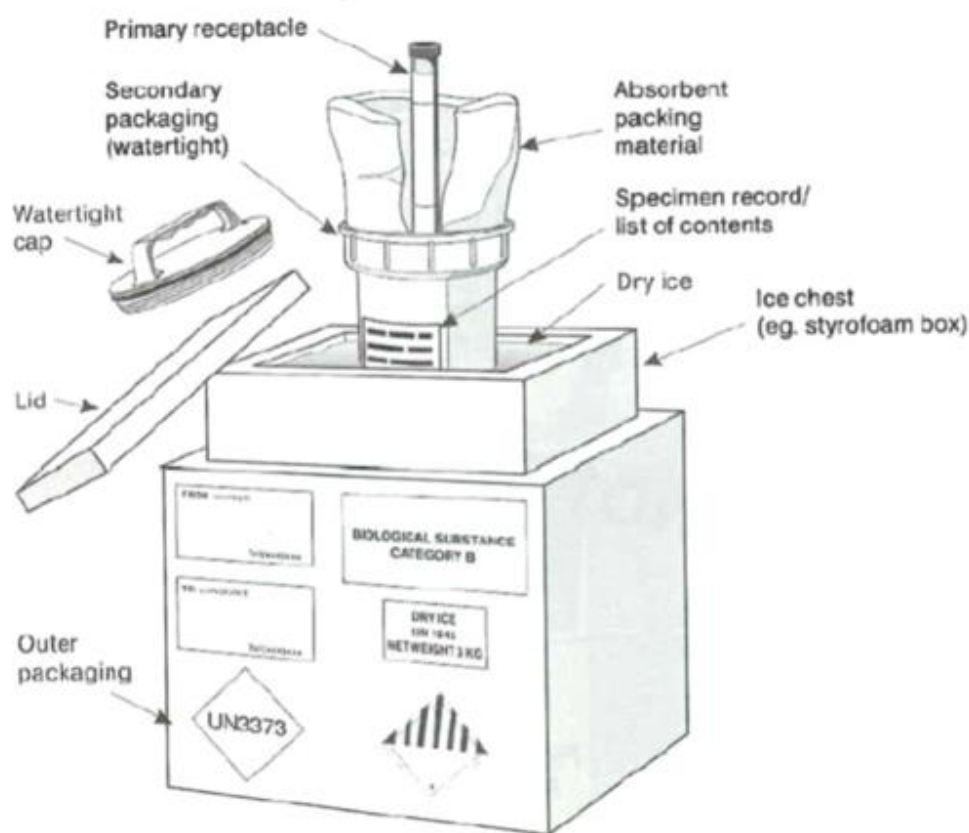
^a For transport of samples for viral detection, use viral transport medium containing antifungal and antibiotic supplements. Avoid repeated freezing and thawing of specimens. If VTM is not available sterile saline may be used in place of VTM (in such case, duration of sample storage at 2-8 °C may be different from what is indicated above)

^b Children and adults: collect 1 tube (5–10 ml) of whole blood in a serum separator tube. Infant: a minimum of 1 ml in a serum separator tube

Packaging specimens for transport

If you transport specimens that may contain COVID-19, they must be triple packaged as recommended for biological substances (Category B). Triple packaging protects the specimen from breaking or leaking in transit and prevents contamination of the courier and the environment if breakage/leakage does occur.

Figure 1. in the diagram below shows the three layers that constitute triple packaging (i.e. primary receptacle, secondary and outer packaging).



If you don't have commercial triple packages available, you can improvise from common items found at your facility as long as they adhere to the triple packaging principles. You can use the Interim laboratory biosafety guidelines for the handling and transport of samples associated with the novel coronavirus 2019 (2019-nCoV) resource in the Downloads section to train HCWs and laboratory staff in this procedure.

If you ship specimens to WHO reference laboratories or collaborating centres outside the country or ship specimens by air, you must ensure compliance with all international standards (IATA) for Biological Substances (Category B).

Use the additional resources provided in the References and Downloads section of this step for developing local procedures and training staff on the safe collection and transport of specimens.

What biosafety level and personal protective equipment is recommended for COVID-19 testing?

| Procedure | Recommendation | BSL |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------|------------|
| Specimen collection ^a | - Non-sterile gloves; single use only, - Gown ^b , - Eye protection, - N95 respirator | NA |
| Specimen receipt and accession | - Non-sterile gloves; single use only, - Gown | NA |
| Specimen testing (non-propagative ^c) | - Non-sterile gloves; single use only, - Gown, - N95 ^d respirator mask | 2 |

| Procedure | Recommendation | BSL |
|----------------------------------------------|-----------------------------------------------------------------|-----|
| Specimen testing (propagative ^d) | - Non-sterile gloves; single use only, - Gown, - N95 respirator | 3 |

BSL = Biosafety Level

Disinfectants for SARS-CoV-2

Based on the similarity of SARS-CoV-2 to other enveloped viruses, it is recommended to select disinfectants with proven activity against such viruses when disinfecting surfaces potentially contaminated with the virus. These include 62–71% ethanol or sodium hypochlorite (bleach) at 1 000 ppm (0.1%) for general surface disinfection and 10 000 ppm (1%) for disinfection of blood spills.

Who is eligible for testing for COVID-19?

The criteria for a person under investigation (PUI) will vary by country and will change over time within a given country based on the progression of the outbreak. Only PUI should be tested for COVID-19.

An example of a case definition is given below (South Africa, 25 March 2020).¹

A hospitalized patient with severe acute respiratory illness (fever and at least one of the following: cough, shortness of breath) AND the absence of an alternative diagnosis that fully explains the clinical presentation.

OR

Any person with acute respiratory illness with sudden onset of at least one of the following: cough, sore throat, shortness of breath or fever ($\geq 38^{\circ}\text{C}$ [measured] or history of fever [subjective] irrespective of admission status AND in the 14 days prior to onset of symptoms, meeting at least one of the following epidemiological criteria:

- *were in close contact with a confirmed or probable case of SARS-CoV-2 infection;*

OR

- *had a history of travel to areas with local transmission of SARS-CoV-2 (the list of countries will change with time);*

OR

- *worked in or attended a healthcare facility where patients with SARS-CoV-2 infections were being treated.*

In the early stages of an outbreak it may be feasible to follow the ideal case definition as described above. However in practice, particularly in the later stages of a country's outbreak, testing may need to be restricted to those most in need given very high patient loads and limited supplies of diagnostics and laboratory capacity.

What other diagnostic testing is needed in the differential diagnosis of PUI for COVID-19 infection?

The differential diagnosis for COVID-19 is broad, and varies depending on the setting and patient population. Appropriate testing for alternate diagnoses should be conducted as indicated by local management guidelines for community-acquired pneumonia to detect the causative organisms. PCR for influenza and other respiratory viruses, such as respiratory syncytial virus, may be performed. Blood cultures should be requested as per usual indications in the local guidelines.

My patient is positive for coronavirus on a PCR-based respiratory virus panel, does this mean my patient has COVID-19 infection?

No. The coronaviruses detected by commercial respiratory viral panels are common circulating strains that generally cause self-limited disease; these tests do not cross-react with SARS-CoV-2.

Most multiplex PCR-based respiratory viral panels test for influenza, respiratory syncytial virus, adenovirus, parainfluenza virus, as well as coronavirus, among others. Identification of a conventional respiratory pathogen, such as *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Mycoplasma pneumoniae*, *Legionella pneumophila*, *Mycobacterium tuberculosis* and respiratory viruses including influenza, do not necessarily rule out SARS-CoV-2 infection,

although it may significantly reduce the index of suspicion for COVID-19.

What is the role of X-ray and computed tomography (CT) in the diagnosis of COVID-19? Chest X-ray or CT should not be used to screen for or as a first-line test to diagnose COVID-19. Their use should be restricted to hospitalized, symptomatic patients with specific clinical indications for imaging where it will change patient management. A normal chest X-ray/CT does not mean a person does not have COVID-19 infection, and an abnormal X-ray/CT is not specific for COVID-19 diagnosis. Appropriate infection control procedures should be followed between scanning of patients.²

What are the key purposes of COVID-19 testing?

In hospitalized patients, testing ensures they receive adequate and appropriate management and enables isolation of COVID-19 patients in designated areas to reduce the risk of nosocomial transmission, protecting staff and other patients. At the community level, testing enables self-isolation of confirmed COVID-19 patients, and monitoring patients allows for referral to health facilities in case of clinical deterioration. Isolation reduces the community spread of the disease, contributing to “flattening the curve” and reducing the peak burden on the healthcare system.

What to do while waiting for COVID-19 test results?

Suspected cases who are asymptomatic or have mild symptoms may be managed at home in self-isolation while awaiting COVID-19 test results. Patients should be advised to follow local guidelines for self-isolation until the test result is available and should stay in contact with their clinician and report any symptom worsening in case of the need for referral. Once test results are available, healthcare workers will inform the patient on cessation of isolation (in the case of negative result) or additional self-isolation or referral in case of a positive result.

Can PCR detect COVID-19 infection in asymptomatic patients?

Yes. SARS-CoV-2 RNA may be present in asymptomatic people in early infection and may persist in the respiratory tract for over 10 days after becoming symptomatic.¹ This can result in positive PCR test results in these asymptomatic patients.

Does a negative PCR result rule out COVID-19 infection?

No. A single negative PCR result, especially from an upper respiratory tract specimen, does not exclude SARS-CoV-2 infection. Various factors could lead to a false negative result, including the following:

- poor specimen quality
- timing of specimen collection – either very early or late in the illness
- delayed or inappropriate storage of specimen prior to testing.

Repeat sampling and/or testing of lower respiratory tract specimens is recommended if the patient has severe disease or where COVID-19 is strongly suspected.

What are common reasons for discrepancies between test results from the same patient?

- **Different specimen types:** Lower respiratory tract specimens are the preferred specimen type since the lower respiratory tract is the primary site of infection and therefore likely to have the highest viral load and thus the best diagnostic yield. Combined nasopharyngeal and oropharyngeal swabs (upper respiratory tract specimens) should be submitted for PCR testing in all suspected cases of COVID-19. Lower respiratory tract specimens, e.g. sputum, can also be sent where available. Patients may have a negative PCR result on upper respiratory tract specimens but a positive result on a lower respiratory tract specimen.¹
- **Viral load close to the cut-off for PCR detection:** Some specimens, especially those with viral load close to the cut-off value, will be positive in one test PCR but negative in another, giving discordant results between the screening and the confirmation assay.

Can PCR be used to monitor recovery of COVID-19 patients?

PCR can be used to monitor disease progression and recovery of COVID-19 patients. Researchers found that viral loads in respiratory samples peaked soon after onset of symptoms. As COVID-19 patients recover, you may see weak positive PCR results with high threshold

cycle Ct values.¹ Countries and hospitals vary in their use of PCR results in discharging patients.

In hospitalized patients, confirmed COVID-19 patients may have repeat upper and lower respiratory tract samples collected to demonstrate viral clearance. Hospitalized patients may also be required to test PCR negative in their respiratory samples on at least two consecutive occasions at least 24 hours apart after clinical recovery, before being discharged. However, in practice, and particularly in the later stages of the outbreak in a country, discharge is usually based on clinical recovery only and takes into account the hospital capacity as well as the number and severity of patients awaiting admission. Shortage of tests is another key reason for not re-testing patients prior to discharge.

Depending on the risk of nosocomial virus transmission, some hospitals may decide to release a recovering COVID-19 patient with a weakly positive PCR result from a negative-pressure isolation room to his/her domicile with strict home isolation rules. Some hospitals only repeat such a test if the patient is immunocompromised, particularly if there are constraints on test supplies and if community transmission is already underway.

Is PCR testing recommended at the end of isolation for confirmed COVID-19 patients who are being managed at home?

No. Self-isolation for mild disease is recommended for 14 days following symptom onset, while patients with severe disease are recommended to be isolated for 14 days following clinical stabilization. Some patients may remain asymptomatic after a positive PCR test result. Such patients should be isolated for 14 days following the test result, given the uncertainty about their level of infectiousness compared to patients with symptoms. Patients may be allowed to leave isolation without the need for repeat PCR testing.

Potential COVID-19 specimens must be triple packaged and are considered Category B infectious substances

Homoeopathic Management of COVID 19

Two approaches.

Treatment plan for Non-Hospitalized/ Isolated/ Quarantine Person

Treatment plan for Hospitalized Patient

Treatment plan for Non-Hospitalized/ Isolated/ Quarantine Person: These are the group or individual person of high index of suspicious. it is not a patient but affected with close contact or outbreak place visit, and for suspected ground of virus incubation period mostly 5-7 days but we observe such person till 14 days.

Physical Basis

1st stage

Nebulization with Homoeopathic drugs

Aspidosperma

Blatta Orientalis

Grindelia robusta

Justicia Adhorata

Orally:- Dilution

Bryonia

Arsenic album

Gelsemium

Lycopodium

Phosphorus

Sanguinaria

Chelidonium

Iodum

Fever
Sore Throat
Cough
Running Nose
Difficulty in Breathing
Tightness in chest
Headache
Pneumonia

Check SpO2 More than 96 in
Room

Early Oxygen identification

Early sponging to reduce
Hyperpyrexia

Early rehydration due to fever

Early Monitoring

Mother tincture

Chireta

Ginsang

Ashwgandha

Quillaya saponaria

प्रथम तीन दिन LFS थेरेपी मतलब प्रथम दिन liquid only Citrus Fruit Juice और नारियल पानी ही देना है।

दूसरे दिन Fluid diet यानि Citrus फ्रूट+ नारियल पानी+ खीरा टमाटर ही देना है।

तीसरे दिन दिनभर उपरोक्त खुराक के साथ लंच और डिनर मे सादा खाना जिसमे लहसुन और मूँगफली युक्त भोजन हो देना है।

Psychiatry Basis :

Here we again divid in to two basic group

Physical symptom

Anxiety and Stress

Dry Mouth

Difficulty in Breathing

Upset stomach

Uncomfort sensation

Palpitation

Difficulty in Sleep

Change in Eating Pattern

Increase Heart Rate

Tremer in Hands

Worse Chronic Problem

Ignitia Amara

Natrum Mur

Aurum Met

Sepia

Kali Phos

Arsenic album

Aconite

anacardium

Lillium tig

Rhus tox

Mental Symptoms

Worry

Frustration

Irritability

Fear from Dark

Inability to concentration

Inability to focus on one thing

Sadness of Mood

Feeling of worthlessness.

<https://www.homeopathy360.com/2017/01/18/depression-treatment-by-homeopathy/>

Early Detection

Acceptance

Seek Professional Help

Encourage Sharing

Resolve Conflicts

Suspend decisions

Don't Blame

Seek Counseling

Don't Push

Ensure Confidentiality

Avoid Criticism

Close Monitoring

Be Informed

Facilitate Re-entry

Guard The depressed

Feelings are much worse after listening to music , a fear of going out , of crowds , of crossing the road , in fact , life becomes intolerable because of these fears , anxious , restless and hurried ——Aconitum

Extremely miserable , imaging all sorts of illnesses , a great tendency and desire to swear , impaired memory , very easily offended , almost total loss of confidence ——Anacardium

Mentally very restless with great anguish and fear , especially of dying , may feel no treatment can help , the worst time is midnight to 3 am ——Arsenicum album

Sad and hopeless , the slightest thing causes tears , can help women with dark hair and eyes who are delicate , sensitive people , depression follows grief , loss of sleep and sudden emotional situations —
Causticum

Nervous and sensitive , apt to be easily excited and easily offended , feelings of mental exhaustion , full of contradictions such as laughing at sad news , tearful with very rapidly changing moods —Ignatia

The worst time is immediately after sleep , no desire for company , depressed , but also excitable , engaging non stop talking , averse to being touched or wearing tight clothes —Lachesis

Extreme depression , convinced is suffering from an incurable disease , timid and tearful , also indifferent to what is being done for them , may feel hurried and that life is aimless —Lilium tigrinum

Extreme sadness in the morning on waking , loss of self confidence , a fear of being alone , extreme apprehension , the worst time is 4-8 pm , physical weakness —Lycopodium

Great sadness , depression occurs because of a chronic illness , any consolation make things worse , feelings of irritability and cries easily , dreams of being burgled —Natrum muriaticum

Mentally restless and depressed as well as physically restless becomes frightened during the night frequent suicidal thoughts —Rhus tox

Indifference to family , but a dread of being alone , cries while talking about the illness , easily offended , exhausted feelings , both physically and mentally .—Sepia

Needs of Approach from different section

1. Practice of Medicine:

About Corona Covid-19

Genomic Structure

What is the theory work behind corona wheather Mutent or recombient

Variet

Pathophysiology

Combination theory of SARS,MERS,H1N1

Morden medicine solution for covid-19 treatment.

2 Pharmacy:

Pharmacology of Mother Tincture

Action of combination of mother tincture

highly Helpful Potency or crude

Action of Inhalation and Ingestion mode

Doctrine of Signature

Detail about saponin and flavonoids.

3 Materia Medica:

Drug action detail

Complimentary

Drug relationship

Repetition

Non hospitalized and Hospitalized treatment plan

Symptomatic Treatment

4Psychiatric:

Psychologically assesment of Isolated and Hospitalized person

Quick reference questionaier for field visit people

Other way to reduce complaint of pre and post hospitalized person.

1. ACE inhibitor and Angiotensin Receptor Blocker therapy
 2. To Breack TMRSS2 Transmembrane protien serin 2 inhibitor use Camostat mesilyte drug
 3. Plasma therapy of blood group o or having cured by 2 pandemic viral disorder person blood.
 4. Used of Saponin and Flavonoids to improve Imunity.
 5. Homoeopathic Medicine and Approach
- Corona Virus produced secondary affect to vitals organs and cause acute injury like acute lungs injury, acute liver injury, acute heart injury, acute

renal injury, acute RBC breakdown, acute metabolic complaint like Hyperpyrexia and acidosis.

- test for detect secondary infection
- ECG
- ECHO
- Troponin T
- S. Bilirubin
- SGOT
- SGPT
- PTI
- Urea
- Creatinin
- Electrolyte
- Chest Xray
- CT scan of chest
- ABG
- CBC
- Hematocrit
- S. Ferritin
- LDH
- Glycosylate HB
- CRP
- Ionising Ca

Are You at Risk for COVID-19

Please complete the questions below.

1. Have you come into close contact (within 6 feet) with someone who has a laboratory confirmed COVID – 19 diagnosis in the past 14 days?

Yes No

2. Do you have any of the following: fever or chills, cough, shortness of breath or difficulty breathing, body aches, headache, new loss of taste or smell, sore throat?

Yes No

Over the last two weeks, how often have you been bothered by any of the following problems?

| | | | | |
|--|------------|--------------|-------------------------|------------------|
| | Not at all | Several days | More than half the days | Nearly every day |
|--|------------|--------------|-------------------------|------------------|

| | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. Little interest or pleasure in doing things | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. Feeling down, depressed, or hopeless | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Trouble falling or staying asleep, or sleeping too much | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. Feeling tired or having little energy | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Poor appetite or overeating | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. Trouble concentrating on things such as reading the newspaper or watching television | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. Thoughts that you would be better off dead or of hurting yourself in some way | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

If you clicked on any problems above, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all Somewhat difficult Very difficult Extremely difficult

Novel Coronavirus 2019 (COVID-19) Case Questionnaire

Important subject areas of this Research Topic include:

- Individual, family, and interpersonal coping with the COVID-19 emergency;
- Risk factors of psychological distress at the individual, family, interpersonal and cultural level (e.g., activity restriction and reduction of pleasant events; personality traits; hypochondria and cyberchondria; mental disorders; family characteristics; social support, etc.);
- Impact of mass media and social media on psychological attitudes and behaviors towards the COVID-19 emergency;
- Coping as a health professional during the epidemic (e.g., emotions, psychological burdens, anxiety, traumatic experiences, PTSD);
- Clinical and health-based psychological interventions for sufferers, high-risk individuals, and those living in the worst-hit communities;
- Clinical emergency protocols to manage mental health problems: evidence-based suggestions and indications to governments and policymakers;
- Behavior-change interventions to improve adherence and compliance with preventive regulations and guidance;
- Internet interventions, remote psychological support, mHealth-eHealth based treatments, psychology-oriented digital tools and apps in the COVID-19 emergency;
- Monitoring changes in psychological, behavioral and interpersonal responses to the COVID-19 emergency over time;
- Cross-cultural comparisons in responding to and coping with the COVID-19 emergency at the individual, family, and interpersonal levels.

The cause of most pandemics is a virus that moves from an animal to people. HIV was transmitted from a chimpanzee. All coronaviruses — SARS, MERS and COVID-19 — are transmitted from bats with a secondary host. In SARS it was a cat, in MERS it was a camel, and COVID-19 is a pangolin, which is prized for its meat and used for traditional medicine in China. H1N1 was a hybrid from birds and cows.

H1N1 epidemic, Almost all of the people on respirators were in their 20s and were obese or pregnant, and that is really unusual.

COVID-19 is going to turn out to be an equal-opportunity virus with a high risk for bad outcomes for the elderly, newborns, babies and people who are immunosuppressed.

SARS and MERS had high mortality rates but were less transmissible. H1N1 transmissible MERS might show no symptoms, mild respiratory symptoms or severe acute respiratory disease and death. Fever, cough and shortness of breath are common symptoms.

If it gets severe, it might cause respiratory failure that requires mechanical ventilation.

Symptoms of SARS are flu-like, such as fever, malaise, myalgia, headache, diarrhoea, and shivering.

| | Cases | Estimated Mortality Rate |
|----------------------------------------------------|-----------------------|--------------------------|
| COVID-19 (as of Mar. 6, 2020) | 100,347+ | 3.4% |
| SARS (as of Jul. 2003) | 8,098 | 9.6% |
| MERS (as of Jan. 2020) | 2,519 | 34.3% |
| H1N1 "Swine Flu" (Apr. 2009 - Aug. 2010) | 700M - 1.4B (est.) | 0.02% |

<https://www.businessinsider.in/international/news/how-the-coronavirus-compares-to-sars-swine-flu-zika-and-other-epidemics/articleshow/74560116.cms>

The mortality rate of the virus has fluctuated and since it is a novel virus, it's hard to definitively say where it'll end up. However, with current data, the virus has a mortality rate of just over 4% to date.

SARS (severe acute respiratory syndrome) broke out in a very similar fashion to our current SARS-CoV-2 virus.

coronaviruses are named for the crown-like spikes on the surface,"

case mortality rate character come from MERS structure and reservoir incubation shape similar to SARS and spreading rate any age any sex fallowness of infection come from H1N1 and one more change in genome its charterer of DNA virus having Heat Resistance

The final genome of sequenced SARS-CoV-2 consists of a single, positive-stranded RNA that is 29,811 nucleotides long, broken down as follows: 8,903 (29.86%) adenosines, 5,482 (18.39%) cytosines, 5,852 (19.63%) guanines, and 9,574 (32.12%) thymines.

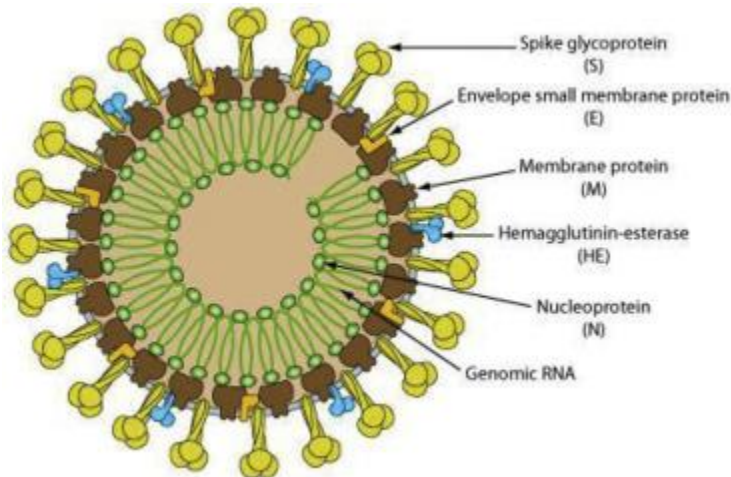
genomic structures the COVID-19 belongs to genera Betacoronavirus. Human Betacoronaviruses (SARS-CoV-2, SARS-CoV, and MERS-CoV) have many similarities, COVID-19 is containing single-stranded (positive-sense) RNA associated with a nucleoprotein within a capsid comprised of matrix protein. A typical CoV contains at least six ORFs in its genome.

the virus uses ACE2 as the entry receptor-like SARS-CoV.² These similarities of the SARS-CoV-2 to the one that

caused the SARS outbreak (SARS-CoVs) the Coronavirus Study Group of the International Committee on Taxonomy of Viruses termed the virus as SARS-CoV-2.

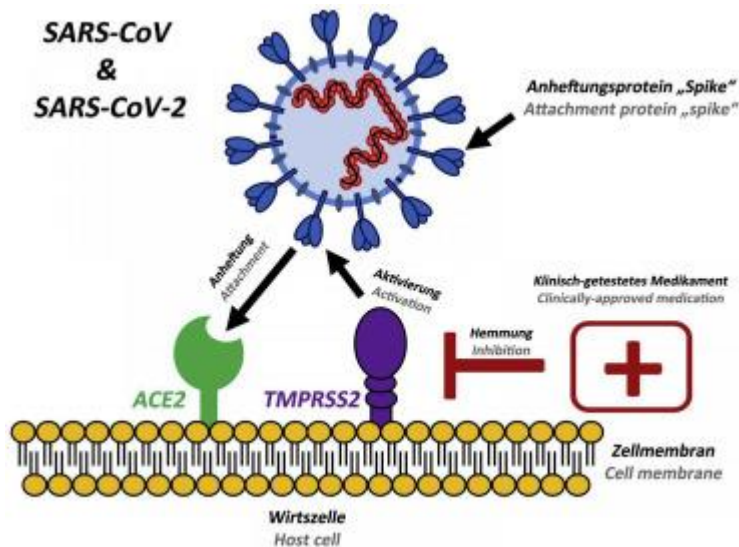
Coronavirus genome structure and life cycle

COVID-19 is a spherical or pleomorphic enveloped particle containing single-stranded (positive-sense) RNA associated with a nucleoprotein within a capsid comprised of matrix protein. The envelope bears club-shaped glycoprotein projections. Some coronaviruses also contain a hemagglutinin-esterase protein (HE)



<https://www.sciencedirect.com/science/article/pii/S1684118220300827>

There are three or four viral proteins in the coronavirus membrane. The most abundant structural protein is the membrane (M) glycoprotein; it spans the membrane bilayer three times, leaving a short NH₂-terminal domain outside the virus and a long COOH terminus (cytoplasmic domain) inside the virion.⁴ The spike protein (S) as a type I membrane glycoprotein constitutes the peplomers. In fact, the main inducer of neutralizing antibodies is S protein. Between the envelope proteins with exist a molecular interaction that probably determines the formation and composition of the coronaviral membrane. M plays a predominant role in the intracellular formation of virus particles without requiring S. In the presence of tunicamycin coronavirus grows and produces spikeless, noninfectious virions that contain M but devoid of S



The role of replication process in pathogenicity

SARS-CoV-2 (COVID-19) binds to ACE2 (the angiotensin-converting enzyme 2) by its Spike and allows COVID-19 to enter and infect cells. In order for the virus to complete entry into the cell following this initial process, the spike protein has to be primed by an enzyme called a protease. Similar to SARS-CoV, SARS-CoV-2 (COVID-19) uses a protease called TMPRSS2 to complete this process.^{10,11} In order to attach virus receptor (spike protein) to its cellular ligand (ACE2), activation by TMPRSS2 as a protease is needed

After the virus enters the host cell and uncoats, the genome is transcribed and then translated. Coronavirus genome replication and transcription takes place at cytoplasmic membranes and involve coordinated processes of both continuous and discontinuous RNA synthesis that are mediated by the viral replicate, a huge protein complex encoded by the 20-kb replicase gene.¹² The replicase complex is believed to be comprised of up to 16 viral subunits and a number of cellular proteins. Besides RNA-dependent RNA polymerase, RNA helicase, and protease activities, which are common to RNA viruses, the coronavirus replicase was recently predicted to employ a variety of RNA processing enzymes that are not (or extremely rarely) found in other RNA viruses and include putative sequence-specific endoribonuclease, 3'-to-5' exoribonuclease, 2'-O-ribose methyltransferase, ADP ribose 1'-phosphatase and, in a subset of group 2 coronaviruses, cyclic phosphodiesterase activities.^{13,14} The proteins are assembled at the cell membrane and genomic RNA is incorporated as the mature particle forms by budding from the internal cell membranes

Based on this information, Gurwitz suggested using available angiotensin receptor 1 (AT1R) blockers, such as losartan, as therapeutics for reducing the severity of COVID-19 infections

To understand the rate of virus spread among people, it is crucial to figure out whether COVID-19 is mutating to improve its binding to human receptors for infection considering its high mutation rate. Any adaptation in the COVID-19 sequence that might make it more efficient at transmitting among people might also boost its virulence. Differences in the length of the spike as it is longer in

COVID-19 are likely to play an important role in the pathogenesis and treatment of this virus.