What is COVID-19?

Coronaviruses are named for their appearances under a microscope. And so the viruses look like they are covered with pointed structures around them like a corona, or a crown. There is not a lot of data on this particular corona virus but there is information on similar viruses that can help us better understand this one.

All viruses are bits of genetic code or RNA that are bundled inside lipids and proteins and then it has an exterior fat-based envelope, casing known as a viral envelope. It’s this fatty envelope that makes the corona virus susceptible to soap and water. When we wash the surfaces, when we wash our hands with soap and water, when we wash surfaces with soap and water that fatty envelope is washed away and it causes the virus to fall apart. So, we are fortunate that the Corona Virus does have a fatty envelope, viral envelope because some viruses like the Norovirus have a different kind of envelope and they are much harder to disinfect.

Covid-19 is transmitted from person to person by contact, and from coughing that produces aerosols in the air that can land on you or surfaces and the aerosols carry the virus. That’s why it’s recommended that we stand at least six feet apart from each other and avoid touching surfaces or our face because once we get the virus on our hands and all of us touch our face. I touch my face about 20 times an hour then what we are doing is that transferring that to our mouth, our eyes, our skin and that’s going to make us more susceptible to being infected.

Can the COVID-19 virus be transmitted via collection objects or heritage surfaces?

According to the World Health Organization (WHO), people can catch COVID-19 by touching contaminated surfaces or objects and then touching their eyes, nose or mouth. If an infected person coughs or exhales in the direction of collection objects or handles objects with contaminated hands, the object materials could be contaminated with the virus which could, in theory, be transmitted to those who handle the objects afterwards. Since collection objects tend to be handled infrequently and the virus deactivates naturally outside of the human body, the chance of transmission is probably low. The risk may be higher where people work in heritage interiors and use heritage furnishings.

How long does the virus persist on surfaces?

The Covid-19 virus can live varying lengths of time on different types of materials. The general length of time from various studies can be summarised as follows:
<table>
<thead>
<tr>
<th>Surface</th>
<th>Length of time (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal</td>
<td>5</td>
</tr>
<tr>
<td>Wood</td>
<td>4</td>
</tr>
<tr>
<td>Paper</td>
<td>4-5</td>
</tr>
<tr>
<td>Glass</td>
<td>4-5</td>
</tr>
<tr>
<td>Plastics (Wrappings/Covers)</td>
<td>6-9</td>
</tr>
<tr>
<td>Ceramics</td>
<td>5</td>
</tr>
<tr>
<td>Stone</td>
<td>2-12</td>
</tr>
</tbody>
</table>

The table shows the persistence of Corona Viruses on different materials. So with metals the length of time is about 5 days, with wood the length of time is 4 days, paper can be 4 to 5 days, glass can be 4 to 5 days. Those plastic bags that you zip-lock things into are made of poly propylene, the virus can actually live for 6-9 days on there. So ceramics can be 5 days and stone 2-12 days but there is no research article to back that up.

So, in general the average persistence that we are looking at on surfaces is 6-9 days.

**Does the environment affect the how long the coronavirus persists?**

Environmental conditions affect the duration of infectivity of viruses on a surface. The COVID-19 virus (SARS-CoV-2) has not yet been studied in as many conditions as the previous coronaviruses. These viruses have been studied in two ways: suspension in liquids or dried onto carriers. Advice on the COVID-19 virus is based in large part on the accumulation of knowledge from studying SARS and viruses with similar properties.

**Temperature:** In general, refrigeration temperatures (4ºC, 6ºC) prolong viral persistence. Between room temperature to about 37ºC there is not much change in persistence. There is little data in the region of 37ºC to the mid 50’s where membrane structural degradation shortens viral persistence so that at 60ºC and above sees rapid loss of virulence.

**Relative humidity (% RH):** In general, low RH (20-30%) prolongs virulence. Room tests on influenza indicated that dust raised in dry conditions can be problematic as it re-aerosolizes attached viruses. Median (40-60%) and high RH (80%) shorten viral persistence. Moderate to high RH will also prolong the necessary contact period of wet disinfectants. In tests examining the transfer of bacteria or viruses from materials to skin, median humidity was shown to enhance the transfer while low humidity reduced the transfer, with smooth surfaces allowing higher transfer than porous surfaces (factors were two to ten-fold). Proper personal protective equipment (PPE) in...
handling eliminates the transfer risk. Some work on aerosolized cold virus indicates high and low RH diminishes infectivity of the aerosol.

**pH:** In general, neutral pH prolongs, while the acid and basic regions shorten viral persistence. Low temperature requires more extreme pH (acid or base) to achieve similar loss of infectivity as at room temperature.

**UV:** One study assessed ultraviolet disinfection of SARS virus in suspension and demonstrated loss of virulence after one hour exposure at 260 nm and more than 90 mW/cm². When considered for aircraft disinfection, however, complicating factors such as shadow zones from complex shapes or dust layers reduced efficacy.

Application risks seem too high for utility of UV with most cultural material.

**How to deal during closure of labs?**

**While the labs are closed:**

**Secure the building:** Make sure that all doors and windows are properly closed and locked. Check that the intrusion detection and fire protection systems are working properly.

**Secure valuables:** Think beyond the collection to items such as cash boxes, computer screens, laptops, and other electronic equipment are safe.

**Secure the objects:** Consider covering art objects and placing them in storage.

**Maintain a presence:** Check the site and perimeter daily to identify problems and initiate corrective action quickly. Good security is vital during long-term closure.

**Regular inspections:** Conduct regular inspections inside the building if possible, paying particular attention to areas of concern, such as locations prone to leaks.

**Do I need to clean and disinfect the building when we reopen?**

Given public anxieties and the possibility of resurgence of the virus, establishing good cleaning and disinfecting protocol is prudent even if persistence of the virus in the building is unlikely due to closure. Normal cleaning procedures should be sufficient for lab spaces. Follow conscientious hand hygiene protocol or use gloves. Clean and disinfect work space as discussed earlier.

Consider changing out or cleaning the filters in your HVAC system before reopening to the public.

Once the disinfection and cleaning have been carried out, promote the ventilation of the cleaned spaces to avoid the accumulation of volatile organic compounds (VOCs) arising from the evaporation of the disinfecting solutions.

**Should collection objects or heritage materials be disinfected due to COVID-19?**

Disinfecting collection objects or heritage materials is NOT recommended.
Disinfecting solutions contain alcohol, bleach or other chemicals that can damage many of the surfaces and materials in heritage collections. Although certain solutions might be appropriate for some materials (e.g. 70% ethanol on metal surfaces), inappropriate use can cause permanent damage or fail to disinfect properly. Always consult a professional conservator before doing any kind of treatment.

To reduce the risk of transfer of viruses from contaminated objects to people, isolation or object quarantine is recommended. Wait until the virus deactivates naturally on surfaces before handling any objects or resuming operations. The virus will deactivate naturally within six to nine days. Cleaning with mild detergent solutions followed by rinsing could be sufficient for low-touch heritage surfaces only.

How do we disinfect the virus in lab space?

It is possible to safely disinfect non-heritage surfaces – tables, desks and shelves, computers, pens, etc – that are used for work with collection artifacts or archival records. Heavily touched hard surfaces may need regular cleaning and disinfecting. Hard surfaces are the easiest surfaces to disinfect; they are also the surfaces on which the virus can persist the longest and with the highest transfer concentration to skin. Disinfecting compounds (alcohols, oxidizing agents, acids and bases, etc.) and their application methods (wet spraying, wiping, contact times) have to be appropriate for the surface to which they are applied. Test first and consider the effects of overspray or dripping on any nearby collection items.

For surfaces (not of historical importance and not art objects), different types of disinfectants, their concentration and the length of time it took to destroy the virus on the surface. This can be applied for lab space, work stations and other work surfaces other than art objects. Always consult a professional conservator before doing any kind of treatment on art objects and historical buildings.

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Concentration</th>
<th>Effective Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>95%</td>
<td>30 sec</td>
</tr>
<tr>
<td>Ethanol</td>
<td>70%</td>
<td>10 min</td>
</tr>
<tr>
<td>2-Propanol (Isopropyl Alcohol)</td>
<td>95%</td>
<td>30 sec</td>
</tr>
<tr>
<td>2-Propanol (Isopropyl Alcohol)</td>
<td>70%</td>
<td>30 sec</td>
</tr>
<tr>
<td>Bleach</td>
<td>0.21%</td>
<td>30 sec</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>0.5%</td>
<td>1 min</td>
</tr>
</tbody>
</table>

- Disinfectants are most effective when surface dirt is removed by cleaning prior to disinfection. Personal protective equipment should be worn to reduce contact hazards from contaminated surfaces and from the disinfectant solutions.
• Cleaning and disinfecting should leave no potentially harmful residues on surfaces that will come into direct contact with art objects. The easiest way to avoid residues is to use simple solutions: diluted household bleach (solutions that are too concentrated will leave sodium chloride residues or alcohol/water solutions that are above 70% (v/v) alcohol in concentration. Although commercial products can also be used, the effects of additives (colorants, scents, foaming agents, etc.) may be problematic. After the required contact time or drying time, make sure to follow any rinsing instructions (usually a clean water wipe-down).

• Do not undertake large scale disinfecting actions of the entire collections, or entire lab spaces without knowing the potential impacts to objects. For example, it has been suggested that one could use a wet fog of a biocidal solution which is based on a quaternary ammonium compound. This is not way to go with a collection. Many of those materials and they will interact differently with the biocidal solution. And you do not know how much you are applying with a fog. So, don't try that.

• Do not use bleach on lab surfaces. Many cultural materials are sensitive to bleach. Bleach is a sodium hydrochlorite it oxidizes to a sodium salt materials like stone, porous materials – brick, ceramics are all going to be damaged by bleach and bleached surfaces. Delicate finishes on wood would be affected long term by bleach and bleached surfaces.

• Disinfect of work surfaces, tables, sinks, door knobs, and hand rails is possible. Care needs to be taken if they are metal or wood and if they have any unique finish. Soap and water solution from a mild or gentle soap can be used. Once you have mixed up the solution, you place it in a spray bottle. You take a paper towel, wet the paper towel with your solution and then wipe the surface or the railing. Once you have wiped the surface, dispose of that paper towel. You want to limit the amount of water or wet cleaning that you use. Brick surfaces and ceramics can be wiped down with soap and water and then disinfected with an Isopropyl alcohol or rubbing alcohol solution that is at least 70% rubbing alcohol. Rubbing alcohol can be used on some surfaces like marble, limestone, or terrazzo countertops or floors and this might be good use in government buildings.

• Do not use rubbing alcohol on wood, since it can damage the finishes.

• Electrostatic spray technology is one method of applying approved disinfectant solutions. Since heritage objects and surfaces could be sprayed inadvertently with disinfectant, the use of this application technique in collection spaces or heritage interiors is not recommended.

• Instruct cleaners to take care when working around art objects.
How to disinfect historical buildings/spaces and immovable cultural property?

Regarding historical spaces that contain cultural assets and immovable heritage property, it advises against fumigations or widespread spraying, since after its closure to the public, the existence of the virus in the environment of these places is unlikely.

In the event of any doubt regarding the cleaning and disinfection processes, it is advised to not to apply any treatment, since irreversible damage may be caused to the cultural heritage. Professionals in the field of conservation-restoration should be consulted.

In the case of cultural assets located in public spaces (historic quarters, public squares, parks or streets), direct spraying of objects or buildings of historical-artistic value should be avoided.

For nearby sidewalks or baseboards and other objects near the heritage property, the use of a 70% solution of ethanol dissolved in low-pressure sprayed water is preferably recommended. This disinfecting solution is effective against the virus and, in turn, its spraying is less harmful than that of sodium hypochlorite (bleach) on materials such as stone, brick, wood and metal.

Disinfecting treatments should also be avoided in the vicinity of polychromed cultural assets (church or altar portals).

What precautions need to be taken when cleaning surfaces and disinfecting surfaces?

First and foremost wear disposable gloves when cleaning and disinfecting surfaces. The best gloves are Nitrile gloves. Gloves should be discarded after each cleaning. Other personal protective equipment to consider would be goggles or safety glasses.

Also, it is advised that the work spaces for conservators are personalised and well-defined and there is no crowding and moving around.

What is an appropriate protocol for receiving incoming collections or material in labs after labs open?

Even after reopening, isolating incoming objects in order to give time for any possible viral contamination to naturally degrade is a prudent protective measure. Application of any chemical disinfectant or sanitizer on collection material is not recommended. To date, conservative isolation periods of a week to nine days have been recommended. Depending on the amount of space available, managing the incoming material could involve setting up a temporary isolation room, or at least a sectioned off space. Receive the incoming materials while wearing PPE (minimally gloves and masks is recommended. Depending on space constraints and receiving requirements, materials may be unpacked before isolation or left as received. Bear in mind that less unpacking (and therefore less handling) minimizes staff exposure. Either safely discard unwanted packing materials (remembering to care for human health at each stage of disposal), or store packing materials for their own isolation period before reuse.
What is an appropriate protocol for receiving visitors/clients in labs after labs open?

The spread of coronavirus (COVID-19) has understandably escalated concerns when it comes to how businesses manage visitors. The virus has made it crucial for workplaces to limit unnecessary person-to-person contact and potential transmission incidents. There is a need to check-in, track, and collect information in order to protect visitors and employees from potential exposure to coronavirus.

It is recommended to reduce visitor traffic and meetings as far as possible.

However if visitor/meeting has to be allowed, there are various key considerations to prevent and reduce risk before, during, and after the meeting or event.

**Before the meeting:**
- Pre-screen visitors and know where they’re visiting from and their current health status regarding symptoms
- Be aware of the advice given by local authorities in your community
- Pre-order supplies such as tissues, hand sanitizer, and surgical masks
- Ask yourself if the meeting could be held online or over the phone?
- Have a response plan in place in case someone becomes ill with symptoms such as dry cough, fever, or malaise

**During the meeting:**
- Say hello without shaking hands, wear masks and gloves.
- Sit at least one meter apart
- Display hand sanitizer around the property or meeting space
- If a visitor starts to feel ill, follow your preparedness plan

**After the meeting:**
- Encourage hand washing and use of hand sanitizer
- If a visitor is a suspected COVID-19 case, your company should let all employees know this and advise them to monitor themselves for the next fourteen days

What is the Arogya setu app and should I be using it?

Due to the increasing infection of the corona virus, the Indian government has launched an app called Arogya Setu, a tool that aims to help people to self-assess their risk of being infected with Covid-19. The app uses Bluetooth technology and GPS generated information to alert citizens about their proximity to Covid-19 infected persons. Released by the National Informatics Centre, under the Ministry of Electronics and Information Technology, this recommended app informs the public how much danger they are under in the environment of corona virus and what action they should take. Through 'Arogya Setu App' you can know many things including the risk, spread, treatment of corona virus. This app can be used by Bluetooth and GPS. The Indian government has appealed to all citizens to download this app so that they can contribute in this battle against the virus.

The app may be useful in staff and visitor management.
Method of app download You can download this app on both iOS and Android. For this, you go to Android's Play Store and iOS App Store and type Arogya Setu.

The app starts off with asking for the person's mobile number to authenticate the sign up, which can be done in English and ten other Indian languages. This is followed by a security and privacy notice that details all the information that the app will collect and use.

The app will then request for access to the device location, followed by the switching on of Bluetooth connectivity for 120 seconds. Note, the app needs Bluetooth and GPS to be switched on continuously for it to work.

The self-assessment begins with a request for information such as gender, full name, age, countries travelled to in the last 30 days and professional details. The self assessment questions are fairly basic:

- Gender and age
- Symptom checklist for cough, fever or difficulty in breathing
- Symptom checker for whether you have had diabetes, hypertension, lung disease or heart disease
- A question on overseas travel over the last 14 days.
- Questions on whether the user had recent interactions with people infected with Covid-19 or if you are a healthcare worker who examined a Covid-19 positive case without protective gear.

The application's dashboard features a risk level box which will either put the person under low risk or the high risk category. It comes with information about Covid-19 help centres and their contact numbers from various states. There is also additional information about Covid 19 with do's and don'ts and safety measures to be taken.

Privacy: The app requires the device location and Bluetooth to be switched on. In fact, it's recommended to be set to 'always'. “Your data will be shared only with the Government of India. This app does not allow your name and number to be disclosed to the public at large at any time,” is the message that shows up under Terms of Service and privacy. “The app continuously collects your location data and maintains a record of the places where you have come in contact with other registered users,” the privacy policy states under the information collected column.
PERSONAL CARE DURING COVID 19

A person infected with COVID-19 has been working in lab space. What should we do?

First, follow public health guidelines for people who were in close contact with the infected person or who shared work spaces. Next, follow official public health guidelines for cleaning and disinfecting. Close off areas used by the infected person and increase air circulation.

Cleaning is a general reduction of filth including viral and bacterial loads on surfaces which makes subsequent disinfection more effective.

Disinfection is the application of a solution or method that kills/deactivates any pathogens that remain after cleaning.

Sanitizing more commonly refers to the practice of using antimicrobial solutions or methods to reduce food pathogens on food, surfaces that are in contact with food, or pathogens on human skin. This distinguishes them from disinfectant solutions that are not approved for these sensitive uses and particularly on the human body.

Wait at least 24 hours before cleaning and disinfecting all areas accessed by the infected person. If it has been more than 7 days since the infected person was in the building, further cleaning and disinfecting is not required.

How to Protect Yourself & Others

Know how it spreads

- There is currently no vaccine to prevent coronavirus disease 2019 (COVID-19).
- The best way to prevent illness is to avoid being exposed to this virus.
- The virus is thought to spread mainly from person-to-person.
  - Between people who are in close contact with one another (within about 6 feet).
  - Through respiratory droplets produced when an infected person coughs, sneezes or talks.
  - These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
  - Some recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms.

Wash your hands often

- Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
Avoid close contact

- Avoid close contact with people who are sick
- Stay home as much as possible
- Put distance between yourself and other people.
- Remember that some people without symptoms may be able to spread virus.
- Keeping distance from others is especially important for people who are at higher risk of getting very sick.

Cover your mouth and nose with a cloth face cover when around others

- You could spread COVID-19 to others even if you do not feel sick.
- Everyone should wear a cloth face cover
- The cloth face cover is meant to protect other people in case you are infected.
- Do NOT use a facemask meant for a healthcare worker.
- Continue to keep about 6 feet between yourself and others. The cloth face cover is not a substitute for social distancing.

Guidelines for use of mask

The correct procedure of wearing triple layer surgical mask

1. Perform hand hygiene
2. Unfold the pleats; make sure that they are facing down.
3. Place over nose, mouth and chin.
4. Fit flexible nose piece over nose bridge.
5. Secure with tie strings (upper string to be tied on top of head above the ears – lower string at the back of the neck.)
6. Ensure there are no gaps on either side of the mask, adjust to fit.
7. Do not let the mask hanging from the neck.
8. Change the mask after six hours or as soon as they become wet.
9. Disposable masks are never to be reused and should be disposed off.
10. While removing the mask great care must be taken not to touch the potentially infected outer surface of the mask
11. To remove mask first untie the string below and then the string above and handle the mask using the upper strings.
12. Disposal of used masks: Used mask should be considered as potentially infected medical waste. Discard the mask in a closed bin immediately after use.

Cover coughs and sneezes

- If you are in a private setting and do not have on your cloth face covering, remember to always cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow.
- Throw used tissues in the trash.
- Immediately wash your hands with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol.
Clean and disinfect your workspaces

- Clean AND disinfect frequently touched surfaces daily. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.
- If surfaces are dirty, clean them. Use detergent or soap and water prior to disinfection.
- Then, use a household disinfectant. Most common household disinfectants will work.

Personal hygiene/care

- Washing your hands often, with soap, for 20 seconds
- Using alcohol-based hand sanitizer
- Not touching your face—especially your eyes, nose, or mouth—with unwashed hands
- Monitoring your health
- Avoiding close contact with anyone who is sick
- Staying home when you are sick, except to get medical care
- Avoid traveling to highly trafficked spaces.

If you feel unwell

- 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.
- 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—especially if you are an older person or have diabetes, heart or lung disease.

Staff & faculty should also be advised not to spit in the public, travel unnecessarily, participate in the large gathering, spending time in the canteens unnecessarily, visit gyms, clubs and crowded places.

The Health Advisories issued by the Ministry of Health and Family Welfare should be referred to and followed scrupulously.

In case of signs/symptoms please call State helpline number or Ministry of Health & Family Welfare’s 24X7 helpline at 011-23978046

Download the Arogya Setu app and use it for monitoring the situation.