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Medtalks with Dr KK Aggarwal

CMAAO Coronavirus Facts and Myth Busters

CDC Recommends People Wear Cloth Masks to Block the Spread of COVID-19

Fact: Yes. Surgical masks and N95 respirators should be set aside for healthcare workers.

The Centers for Disease Control and Prevention (CDC) has released guidelines to recommend that US people should wear homemade face coverings to prevent the spread of the novel coronavirus.

The CDC has also advised simple cloth coverings to prevent people who may have the virus and are unaware, from transmitting it to others.

The White House Task Force and the CDC were re-evaluating the mask recommendations over the past few days. Research has suggested that people who do not have symptoms can infect others, and the virus may spread when people speak or breathe. It is not merely by coughing or sneezing. Considering the new evidence, the CDC and the task force recommend that people wear cloth face coverings in public settings where it might be difficult to maintain other distancing measures. If people cover their faces with a cloth mask or another such barrier, it may decrease the amount of virus-laden particles they release.

While there is limited evidence to suggest that these substitute masks prevent the spread of disease, some research suggests that they limit the amount of particles a person wearing them spreads. Some experts say that it is better to use these makeshift masks than nothing. The CDC further states that people should remain 6 feet apart when in public as much as possible, even if they're wearing masks.

Some cities and states, like Colorado and New York City, had already advised people to cover their faces when out in public. (*Source: The Verge*)

There are Groups at Higher Risk for Severe Illness

Fact: According to what is known, those at high-risk for severe illness from coronavirus disease (COVID-19) include:

- People ≥65 years of age
- People residing in a nursing home or long-term care facility.

People of all ages with underlying medical conditions have increased risk of severe illness, more so, if the underlying medical conditions are not well controlled. This includes individuals with:

- Chronic lung disease or moderate-to-severe asthma
- Serious heart conditions
- Conditions that can predispose a person to be immunocompromised, including cancer treatment, smoking, bone marrow or organ transplantation, immune deficiencies, poorly controlled human immunodeficiency virus (HIV) or acquired immune deficiency syndrome (AIDS), and prolonged use of corticosteroids and other immune weakening medications.
- Severe obesity (body mass index [BMI] ≥40)
- Diabetes
- Chronic kidney disease and those who are undergoing dialysis
- Liver disease.

(*Source: CDC*)

Younger People can be Serious

Fact: Yes. In Italy, with one of the largest outbreaks of COVID-19 in the world, 10-15% of all people in intensive care are under 50.

In Korea, one in six deaths have been reported in people below the age of 60.

World health officials highlighted a study in China that assessed 2,143 cases of children with confirmed or suspected COVID-19 that were reported to the Chinese Centers for Disease Control and Prevention from January 16 to February 8. Over 90% of the cases were asymptomatic, mild or moderate cases. Around 6% of the children's cases were severe or critical, compared with 18.5% for adults. (*Source: CNBC*)

Stability of SARS-CoV-2 in Different Environmental Conditions

Fact: According to a study published in *The Lancet Microbe*, severe acute respiratory syndrome-coronavirus

2 (SARS-CoV-2) can be highly stable in a favorable environment, but it is also susceptible to standard disinfection methods.

Alex WH Chin, University of Hong Kong, Hong Kong, China, and colleagues conducted various experiments to test the stability of SARS-CoV-2 at different temperatures, on various surfaces and its susceptibility to disinfection methods.

SARS-CoV-2 in virus transport medium (final concentration ~6.8 log unit of 50% tissue culture infectious dose [$TCID_{50}$] per mL) was incubated for up to 14 days and was then tested for its infectivity.

Results showed that SARS-CoV-2 is highly stable at 4°C, but has sensitivity to heat. At 4°C, only around 0.7 log-unit reduction of infectious titer was noted on Day 14. As the incubation temperature increased to 70°C, the time for virus inactivation decreased to 5 minutes.

Researchers then assessed the stability of the virus on varying surfaces, including paper, tissue paper, wood, cloth, glass, banknotes, stainless steel, plastic and surgical masks. A 5 μL droplet of virus culture (~7.8 log unit of $TCID_{50}$ per mL) was pipetted on a surface and left at room temperature (22°C) with a relative humidity of around 65%. The inoculated objects retrieved at desired time-points were soaked with 200 μL of virus transport medium for a span of 30 minutes to elute the virus.

No infectious virus was recovered from printing and tissue papers after a 3-hour incubation, while no infectious virus could be detected from treated wood and cloth on Day 2. On the contrary, the virus was more stable on smooth surfaces. No infectious virus could be detected from treated smooth surfaces on Day 4 (glass and banknote) or Day 7 (stainless steel and plastic).

Of note, a detectable level of infectious virus was still present on the outer layer of a surgical mask on Day 7 (~0.1% of the original inoculum).

[Source: https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(20)30003-3/fulltext]

Can Povidone-iodine Kill the Virus

Yes; in a study published in *The Lancet Microbe*, researchers assessed the virucidal effects of disinfectants by adding 15 μL of the virus culture (~7.8 log unit of $TCID_{50}$ per mL) to 135 μL of various disinfectants at working concentration.

Disinfectants included household bleach, hand soap, ethanol, povidone-iodine, chlorhexidine and benzalkonium chloride. With the exception of a 5-minute incubation with hand soap, no infectious virus was detectable after a 5-minute incubation at room temperature.

[Source: https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(20)30003-3/fulltext]

Can the Virus Survive in Waste Water

In an article, published in *The Lancet Gastroenterology & Hepatology*, researchers have reported the detection of SARS-CoV-2 in wastewater.

From February 17, 2020, onwards, Willemijn Lodder and Ana Maria de Roda Husman, of Centre for Infectious Disease Control, Bilthoven, the Netherlands, took samples once a week from human wastewater collected at Amsterdam Airport Schiphol, Haarlemmermeer, the Netherlands. Samples tested positive for virus RNA as per quantitative reverse transcriptase-polymerase chain reaction (RT-PCR) methodology 4 days after the first cases of COVID-19 were identified in the Netherlands.

This could be attributed to virus excretion from potentially symptomatic, asymptomatic or pre-symptomatic individuals passing through the airport.

Human wastewater sampled near the first Dutch cases in Tilburg, Netherlands, had also tested positive for the presence of viral RNA within a week of the first day of disease onset.

This suggests that wastewater could serve as a sensitive surveillance system and early warning tool, as was previously shown for poliovirus.

[Source: https://www.thelancet.com/journals/langas/article/PIIS24681253(20)30087-X/fulltext]

Feco-oral Transmission

Fact: It is not yet clear if the SARS-CoV-2 is viable under environmental conditions that could promote fecal-oral transmission. However, the possibility of fecal-oral transmission has implications, particularly in areas with poor sanitation where diagnostic capacity might be limited, such as Africa. Wastewater surveillance, particularly in areas with limited data, might provide information, as has been previously shown in monitoring antibiotic resistance on a global scale.

[Source: https://www.thelancet.com/journals/langas/article/PIIS24681253(20)30087-X/fulltext]

Can you Convert Anesthesia Machines into Ventilators

American Society of Anesthesiologists (ASA) has published guidance on how to safely and effectively convert anesthesia into life-sustaining mechanical

ventilation for patients during the COVID-19 pandemic, when there is scarcity of ICU ventilators.

Although guidance is available from the manufacturers, the guidance may not convey all of the clinical considerations. Anesthesia professionals will be needed to put these machines into service and to manage them while in use. Safe and effective use requires an understanding of the capabilities of the machines available, the differences between anesthesia machines and ICU ventilators, and how to set anesthesia machine controls to mimic ICU-type ventilation strategies. [*American Society of Anesthesiologists*]

You cannot Transmit the Disease Before the Symptoms

Myth: A study published by the US CDC has stated that people infected with COVID-19 can transmit the infection one-to-three days before symptoms start appearing.

The study emphasized on the importance of social distancing to fight the COVID-19 pandemic. Overall, 243 cases of COVID-19 reported in Singapore from January 23 to March 16 were assessed. Seven clusters were identified where presymptomatic transmission was likely. In four such groups, where the date of exposure could be determined, presymptomatic transmission was found to occur one-to-three days before symptoms appeared in the source patient.

Of the cases in Singapore, 157 were locally acquired and 10 of these were likely transmitted before symptoms started appearing. The findings thus point that it might not be enough for people having symptoms to limit contact to control the pandemic, noted the investigators in the CDC's *Morbidity and Mortality Weekly Report*.

Public health officials carrying out contact tracing need to consider including a period before symptom onset to account for the possibility of this type of transmission. Transmissions might take place through respiratory droplets or even speech and other vocal activities like singing. The rate of emission corresponds to voice loudness. (*Excerpts from Reuters*)

You cannot Die If Your Age is Less Than One

Myth: A baby in Connecticut died from COVID-19. An infant who passed away in Connecticut tested positive for COVID-19. The 7-week-old girl hailed from Hartford. The first infant death in the United States from COVID-19 was in Chicago, the Illinois Dept. of Public Health reported on March 28. The infant was less than a year old.

Children constitute a small number of coronavirus-related cases. A study published in the *New England Journal of Medicine* had reported that children accounted for fewer than 1% of COVID-19 cases in China. As of March 8, there was one death, that of a 10-month-old baby. The child had bowel blockage and multi-organ failure and succumbed 4 weeks following hospital admission.

NYC Ambulances Won't Take Cardiac Arrest Patients to Hospitals

Fact: Medical first responders in New York City have been told not to take patients in cardiac arrest to a hospital if they fail to restart the patient's heart in the field, according to the *New York Post*.

Differentiate the Population into Five Groups and Treat Accordingly

Fact:

1. We need to know who is infected
2. Identify who is presumed to be infected, i.e., those with signs and symptoms consistent with infection who initially test negative
3. Who has been exposed?
4. Who is not known to have been exposed or infected?
5. Who has recovered from infection and has adequate immunity.

It is required to take action on the basis of symptoms, examinations, tests (polymerase-chain-reaction assays to detect viral RNA), and exposures to recognize those who belong to each of the first four groups.

Those with severe disease or at high risk must be hospitalized. Infirmaries need to be established making use of empty convention centers, to care for those with mild or moderate disease and at low risk; an isolation infirmary for all patients will decrease transmission to family members.

Convert hotels that are vacant now into quarantine centers to accommodate those who have had exposure to the novel coronavirus, and separate them from the general population for 2 weeks. This quarantine method will remain practical until and unless the epidemic has exploded in a particular city or region.

Being able to identify the fifth group of people requires development, validation and deployment of antibody-based tests. [*NEJM*]

Facts

Healthcare workers carrying out aerosol-generating procedures on COVID-19 patients in the ICU setting

must use fitted respirator masks such as N95 respirators, FFP2 or equivalent, in comparison with surgical/ medical masks, **besides using other personal protective equipment** (e.g., gloves, gown and eye protection such as a face shield or safety goggles).

Perform aerosol-generating procedures on COVID-19 patients in the ICU in a **negative-pressure room.**

Healthcare personnel involved in providing usual care for nonventilated patients with COVID-19 must use surgical/medical masks, as compared to respirator masks **besides using other personal protective equipment**.

Endotracheal intubation is recommended in patients with COVID-19, to be performed by healthcare workers with experience in airway management, in order to minimize the number of attempts and risk of transmission.

For intubated and mechanically ventilated adults suspected to have COVID-19, it is suggested to obtain **endotracheal aspirates, over bronchial wash** or bronchoalveolar lavage samples.

For adults with COVID-19 and acute hypoxemic respiratory failure, use **high-flow nasal cannula [HFNC]** over noninvasive positive pressure ventilation [NIPPV].

For adults with COVID-19 given NIPPV or HFNC, monitor closely for worsening of respiratory status and perform early intubation in a controlled setting if worsening occurs.

For mechanically ventilated adults with COVID-19 and moderate-to-severe acute respiratory distress syndrome [ARDS], go for **prone ventilation** for 12-16 hours over no prone ventilation.

For mechanically ventilated adults with COVID-19 and respiratory failure (without ARDS), don't **use systemic corticosteroids on a routine basis.**

Healthcare workers carrying out nonaerosol-generating procedures on mechanically ventilated (closed circuit) patients with COVID-19 should use surgical/medical masks, as compared to respirator masks, besides using other personal protective equipment.

Healthcare workers performing endotracheal intubation on patients with COVID-19 should use video-guided laryngoscopy, over direct laryngoscopy, if available.

[Recommendations issued by the European Society of Intensive Care Medicine (ESICM), to be published in *Intensive Care Medicine*.]

Non-shedders cannot Happen

Non-shedder: Both asymptomatic and symptomatic patients, but do not shed the virus

Shedder (normal spreader and silent spreaders): Both asymptomatic and symptomatic patients and shed the virus.

Super spreader: Both asymptomatic and symptomatic patients and shed high volume and high distance of viruses in micro droplets.

WBC Account Provides Accurate Information

No. White blood cell (WBC) count can vary. It does not provide precise information about COVID-19.

[*Clinical Characteristics of Coronavirus Disease 2019 in China. W. Guan, Z. Ni. Yu Hu, W. Liang, C. Ou, J. He, L. Liu*]

Lymphopenia is Seen in 100% Cases

Leukopenia, leukocytosis and lymphopenia have been reported, with lymphopenia being more common, seen in more than 80% of patients.

[*Clinical Characteristics of Coronavirus Disease 2019 in China. W. Guan, Z. Ni. Yu Hu, W. Liang, C. Ou, J. He, L. Liu*]

Thrombocytopenia is Seen in All Cases

Mild thrombocytopenia is common. But thrombocytopenia is a poor prognostic sign.

[*Clinical Characteristics of Coronavirus Disease 2019 in China. W. Guan, Z. Ni, Yu Hu, W. Liang, C. Ou, J. He, L. Liu; Clinical Characteristics of Coronavirus Disease 2019 in China. W. Guan, Z. Ni, Yu Hu, W. Liang, C. Ou, J. He, L. Liu, H. Shan, C. Lei, D.S.C. Hui, B. Du, L. Li, G. Zeng, K.-Y. Yuen, R. Chen*]

Serum Procalcitonin has No Value

No, serum procalcitonin is often normal at the time of admission, but increases in patients who require ICU care.

D-dimer is not Linked to Low Lymphocytes Counts

A study noted that high D-dimer and lymphopenia are associated with poor prognosis.

[*Clinical Characteristics of Coronavirus Disease 2019 in China. W. Guan, Z. Ni. Yu Hu, W. Liang, C. Ou, J. He, L. Liu; Clinical Characteristics of Coronavirus Disease 2019 in China. W. Guan, Z. Ni, Yu Hu, W. Liang, C. Ou, J. He, L. Liu, H. Shan, C. Lei, D.S.C. Hui, B. Du, L. Li, G. Zeng, K.-Y. Yuen, R. Chen*]

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