

2019 Novel Coronavirus and COVID-19 Disease Outbreak

Description

The World Health Organization (WHO) has declared COVID-19 a pandemic – the first pandemic caused by a coronavirus. The virus that caused the COVID-19 disease has been named SARS-CoV-2. The initial cases of this disease were associated with a specific seafood and animal market in Wuhan City, Hubei Province, China. However, widespread transmission has occurred, and as of when the [WHO declared the outbreak a pandemic on March 11, 2020](#), there were more than 118,000 cases in 114 countries.

Virus

Illness is being caused by a newly identified coronavirus. The virus itself has been named SARS-CoV-2, and the disease it causes is called COVID-19. Coronaviruses are common and typically cause mild to moderate respiratory and cold type symptoms, though certain strains of coronaviruses have caused more severe illness. This newly identified virus is in the same family as the viruses that cause Severe Acute Respiratory Syndrome (SARS), which was first identified in Asia in 2003, and Middle East Respiratory Syndrome (MERS), which was identified in 2012 with cases still occurring today. A main animal reservoir for the virus that causes SARS is believed to be civet cats, while a main animal reservoir for the virus that causes MERS is believed to be dromedaries (e.g. camels). The reservoir for SARS-CoV-2 is not known at this time.

Early evidence indicates that the transmission rate of COVID-19 is higher than the transmission rates of SARS and MERS. People infected with COVID-19 appear to infect many more people than those infected with SARS or MERS. This could be due to several factors – including a lower mortality rate for COVID-19 than SARS and MERS and perhaps different transmission modes.

Health Effects

The symptoms of the illness associated with this novel coronavirus are similar to those caused by influenza and other respiratory illnesses and include coughing, shortness of breath, fever, and difficulty breathing. Certain portions of the population are more likely to develop severe cases requiring hospitalization: the elderly and those with underlying conditions of the lungs, heart, or immune system. A portion of people infected with this novel coronavirus have died.

Transmission

This novel coronavirus was originally transmitted to humans via an animal reservoir (source), believed to be an animal that the initial cases encountered at the seafood and animal market in Wuhan. Human-to-human transmission has also occurred, resulting in over 100,000 cases within months of the disease first being reported. Secondary cases (contracted from humans rather than a reservoir) have included both members of the public and also healthcare workers who have had contact with other infected people. Efforts to contain the disease within a specific region or country have been largely unsuccessful.

Recommendations

Members of the Public

WHO recommends that everyone wash their hands regularly, avoid touching their eyes, mouth and nose, cover their nose and mouth with a tissue or their elbow (not their hand) when sneezing and coughing, and avoid close contact with anyone who is coughing or sneezing or showing signs of respiratory illness. At this time WHO has not made any recommendations for personal protective equipment (PPE) use by the general public, including respirators.

[Coronavirus disease \(COVID-19\) advice for the public](#) (WHO)

Healthcare Workers

The WHO has confirmed that aerosol transmission is a possible transmission pathway of SARS-CoV-2. WHO has published guidance intended for healthcare workers (HCWs), healthcare managers, and teams working in infection prevention and control. WHO recommends that eye protection (goggles or a face shield) be used during patient contact along with gloves, a medical mask, and a fluid-resistant gown. Airborne precautions, including an N95, FFP2, or equivalent respirator, should be used during aerosol-generating procedures.

[Infection prevention and control during health care when novel coronavirus \(nCoV\) infection is suspected \(WHO\)](#)

The U.S. Centers for Disease Control and Prevention (CDC) has recommended that healthcare workers entering the hospital or clinic room (in a healthcare facility) of a suspected novel coronavirus case use standard precautions, contact precautions, and airborne precautions. This includes non-sterile gloves, a disposable gown, respiratory protection that is at least as protective as a fit-tested NIOSH-approved disposable N95 filtering facepiece respirator, and eye protection (e.g., goggles, a disposable face shield that covers the front and sides of the face).

[Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 \(COVID-19\) in Healthcare Settings](#)

These organizations have also offered guidance for organizations facing a shortage of respirators during this pandemic:

- [Strategies for Optimizing the Supply of N95 Respirators \(U.S. CDC\)](#)
- [Rational use of personal protective equipment for coronavirus disease 2019 \(COVID-19\) \(WHO\)](#)

Those potentially in contact with suspected or confirmed cases of this novel coronavirus should review all recommendations by the WHO, CDC, and other health authorities.

Denmark

Guidelines are published and updated on a regular basis by Danish authorities. Please note respiratory protection mask (FFP3/FFP2) is only required at aerosol generating procedures. For all other (suspected or confirmed) cases Type II/IIR mask should be worn by Health Care Workers (Type I for patients being transported).

Please refer to the links below:

Sundhedsstyrelsen (SST): Retningslinjer for håndtering af COVID-19 i sundhedsvæsenet; <https://www.sst.dk/da/Udgivelser/2020/Retningslinjer-for-haandtering-af-COVID-19>

Statens Serum Institut (SSI): Infektionshygiejniske retningslinjer for COVID-19; <https://hygiejne.ssi.dk/retningslinjer/infektionshygiejniske-retningslinjer-for-covid-19>

On PPE: Midlertidige anbefalinger for prioriteret brug af ansigtsmasker samt andre værnemidler; <https://hygiejne.ssi.dk/-/media/arkiv/subsites/infektionshygiejne/retningslinjer/covid19/prioriteret-brug-af-vnemidler-ifm-covid19-240320.pdf?la=da>

Finland

The Finnish Institute for Health and Welfare (THL) has advised healthcare professionals wear infection prevention equipment in the form of gloves, a long-sleeved coat, an FFP2 or FFP3 respirator and eye protection in line with WHO guidance.

Please refer to the links below:

Coronavirus COVID-19 – Latest Updates

<https://thl.fi/en/web/infectious-diseases/what-s-new/coronavirus-covid-19-latest-updates>

Precautions and protection against aerosol-producing measures
<https://thl.fi/fi/web/infektioaudit-ja-rokotukset/taudit-ja-torjunta/taudit-ja-taudinaiheuttajat-a-o/koronavirus-covid-19/toimenpideohje-epailtaessa-koronaviruksen-covid-19-aiheuttamaa-infektioita>

Norway

The Norwegian Institute for Public Health (Folkehelseinstituttet) has advised healthcare professionals to use surgical mask and eye protection when handling and treating suspected COVID-19 patients. Please note respiratory protection mask (FFP3 (FFP2/N95) is only required by aerosol generating procedures.

<https://www.fhi.no/nettpub/coronavirus/helsepersonell/personlig-beskyttelsesutstyr/?term=&h=1>

Sweden

The Public Health Agency of Sweden (Folkhälsomyndigheten) has advised healthcare professionals, in contact with a patient with suspected or confirmed COVID-19, to use risk- based and adequate personal protective equipment. In all health and care-related contact, a risk-based and adequate use of personal protective equipment must be used in addition to the basic hygiene routines. It is the employer's responsibility to provide adequate protective equipment and to ensure that personnel are well-versed in handling.

This should provide protection against splash drip and contact infection, including safety eyewear or visors, a surgical face mask, apron and gloves. For protection against risk of infection through aerosols, fit tested respiratory protection FFP2, FFP3, PAPR or corresponding should be used.

<https://www.folkhalsomyndigheten.se/publicerat-material/publikationsarkiv/r/rekommendationer-for-handlaggning/?pub=70196>

United Kingdom *(Information correct as of 1st May 2020).*

The UK Health & Safety Executive (HSE) offers some guidance on suitable respiratory protection for biological hazards in its guidance document, HSG53. "When in an airborne state, micro-organisms can be classed as particles, so they can usually be removed by filter-type RPE. You should always use equipment fitted with the highest efficiency filter possible (protection factor of at least 20) to control exposure down to the lowest levels." An FFP3 respirator, or reusable half mask fitted with P3 filters can offer an Assigned Protection Factor of 20.

<https://www.hse.gov.uk/pubns/priced/hsg53.pdf>

Public Health England (PHE) have additionally issued guidance with respect to COVID-19, 'COVID-19: infection prevention and control guidance'. Please read the relevant information included within this document. The document recommends that in a healthcare context where aerosol generating procedures are being completed: *"A long-sleeved disposable fluid repellent gown (covering the arms and body) or disposable fluid repellent coveralls, a filtering face piece class 3 (FFP3) respirator, a full-face shield or visor and gloves are recommended during AGPs on possible and confirmed cases, regardless of the clinical setting. Subject to local risk assessment, the same precautions apply for all patients regardless of case status in contexts of sustained COVID-19 transmission. Where an AGP is a single procedure, PPE is subject to single use with disposal after each patient contact or procedure as appropriate"*.

The link below also provides further information from PHE with regards to PPE considerations and best practice.

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control>

On the 28th March 2020 the NHS, PHE and the Academy of Medical Royal College also outlined the following information: *"The UK recommends FFP3 respirators when caring for patients in areas where high risk aerosol generating procedures (AGPs) are being performed. These should be fit tested for all staff and not just fit-checked. The WHO recommends FFP2 respirators for AGPs. If for any reason FFP3 masks are not available, we recommend using the FFP2 masks as a safe alternative but please note these should also be fit-tested"*.

<https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/personal-protection-equipment-letter-28-march-2020.pdf>

Ireland

The Health Protection Surveillance Centre in Ireland recommend the following personal protective equipment as a standard precaution when handling or treating patients with confirmed or suspected COVID-19, gloves, long sleeved-gown, eye protection and respiratory protection of at least FFP2.

<https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/algorithms/>

Summary

A novel coronavirus has caused a pandemic-scale disease outbreak with confirmed airborne human-to-human transmission. The situation is evolving, and it is recommended that all concerned consult the WHO and their local health authority websites frequently for the most updated information regarding this situation.

3M Resources

Documents

General Respiratory Protection Information

- [3M Technical Bulletin - Respiratory Protection for Airborne Exposures to Biohazards](#)
- [3M Technical Bulletin - Comparison of FFP2, KN95, and N95 Filtering Facepiece Respirator Classes](#)
- [3M Frequently Asked Questions - Respiratory Protection: General Public](#)
- [3M Frequently Asked Questions - Respiratory Protection: Workplace](#)
- [3M Frequently Asked Questions - Respiratory Protection: Healthcare](#)
- [3M Technical Bulletin - Using a 3M™ Versaflo™ PAPR Under a Protective Garment](#)

Respirator Selection and Use Considerations

- [3M Technical Bulletin - Respirators and Surgical Masks: A Comparison](#)
- [3M Technical Bulletin - Surgical N95 vs. Standard N95 – Which to Consider?](#)
- [3M Technical Bulletin - Possible Alternatives to Surgical N95 Respirators: Healthcare](#)
- [3M Technical Bulletin - Filtering Facepiece Respirators - Tips for Use](#)

Respirator Shelf Life Conditions

- [3M Technical Bulletin - Respirators Beyond Their Shelf Life - Considerations](#)

Other PPE

- [3M Technical Bulletin - Eye Protection for Infection Control](#)

Cleaning and Disinfecting Respirators

- [3M Technical Bulletin - Cleaning and Disinfecting 3M Reusable Elastomeric Half and Full Facepiece Respirators following Potential Exposure to Coronaviruses](#)
- [3M Technical Bulletin - Cleaning and Disinfecting 3M Powered Air Purifying Respirators following Potential Exposure to Coronaviruses](#)
- [3M Technical Bulletin - Cleaning and Disinfecting 3M™ Scott™ Reusable Full Facepiece Respirators Following Potential Exposure to Coronaviruses](#)
- [3M Tech Talk- 3M Disinfectants and General Information on Coronavirus](#)
- [3M Technical Bulletin - Decontamination Methods for 3M N95 Respirators](#)
- [3M Technical Bulletin - Cleaning and Disinfecting 3M™ Powered Air Purifying Respirators following Potential Exposure to Coronaviruses - 3M™ Jupiter, 3M™ Adflo™ PAPR Assemblies and 3M™ Scott™ Duraflow, Proflow and Tornado PAPR Assemblies](#)

Powered Air-Purifying Respirators (PAPRs)

- [3M™ Jupiter Powered Air Turbo Unit – Assembly and Operation Video](#)
- [3M™ Versaflo TR-300 Powered Air Turbo Unit – Assembly and Operation](#)
- [3M™ Versaflo™ TR-300+ Powered Air Turbo Unit – Cleaning and Disinfection](#)
- [3M™ Versaflo TR-600 Powered Air Turbo Unit – Assembling, Donning and Doffing](#)
- [3M™ Versaflo™ TR-600 Powered Air Turbo Unit – Cleaning and Disinfection](#)

Fit Testing Resources

- [3M Quick Reference Guide to Qualitative Fit Testing \(UK\)](#)
- [3M Technical Bulletin - Fit Test Hygiene During COVID-19 Pandemic](#)
- [Video: 3M™ FT-10 and 3M™ FT-30 Qualitative Fit Testing Kits](#)

References

General:

- WHO [Coronavirus disease \(COVID-19\) advice for the public](#)
- CDC 2020: <https://www.cdc.gov/coronavirus/2019-nCoV/summary.html>

Denmark

- Sundhedsstyrelsen (SST): Retningslinjer for håndtering af COVID-19 i sundhedsvæsenet: <https://www.sst.dk/da/Udgivelser/2020/Retningslinjer-for-haandtering-af-COVID-19>
- Statens Serum Institut (SSI): Infektionshygiejniske retningslinjer for COVID-19; <https://hygiejne.ssi.dk/retningslinjer/infektionshygiejniske-retningslinjer-for-covid-19>
- On PPE: Midlertidige anbefalinger for prioriteret brug af ansigtsmasker samt andre værnemidler; <https://hygiejne.ssi.dk/-/media/arkiv/subsites/infektionshygiejne/retningslinjer/covid19/prioriteret-brug-af-vrnemidler-ifm-covid19-240320.pdf?la=da>

Finland

- FHI: <https://www.fhi.no/nettpub/coronavirus/helsepersonell/personlig-beskyttelsesutstyr/?term=&h=1#tabeller>
- Finnish institute for health and welfare: <https://thl.fi/en/web/infectious-diseases/what-s-new/coronavirus-covid-19-latest-updates>
- Folkhälsomyndigheten: <https://www.folkhalsomyndigheten.se/publicerat-material/publikationsarkiv/r/rekommendationer-for-handlaggning/?pub=70196>
- National Institute for Health & Welfare (THL), Finland: <https://thl.fi/en/web/infectious-diseases/what-s-new/wuhan-coronavirus-latest-updates>

Norway

- Norwegian Institute for Public Health: <https://www.fhi.no/sv/smittsomme-sykdommer/corona/2019-ncov/rad-til-helsepersonell/>

Sweden

- Public Health Agency of Sweden: <https://www.folkhalsomyndigheten.se/contentassets/55e68d5f330c40f3817d98b1f41d33f3/handlaggningsrekommendationer-2019.pdf>

UK

- Public Health England: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control>
- Health & Safety Executive, Respiratory protective equipment at work, a practical guide, HSG53. Appendix 6: Selecting RPE for radioactive or biological hazards'. <https://www.hse.gov.uk/pubns/priced/hsg53.pdf>
- Health Protection Surveillance Centre, Ireland: <https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/algorithms/>
- <https://www.cdc.gov/coronavirus/index.html>
- NHS: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/personal-protection-equipment-letter-28-march-2020.pdf>

Additional Resources

- World Health Organisation <https://www.who.int/health-topics/coronavirus>
- Centers for Disease Control and Prevention: <https://www.cdc.gov/coronavirus/index.html>
- ECDC: <https://www.ecdc.europa.eu/sites/default/files/documents/Risk-assessment-pneumonia-Wuhan-China-22-Jan-2020.pdf>



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