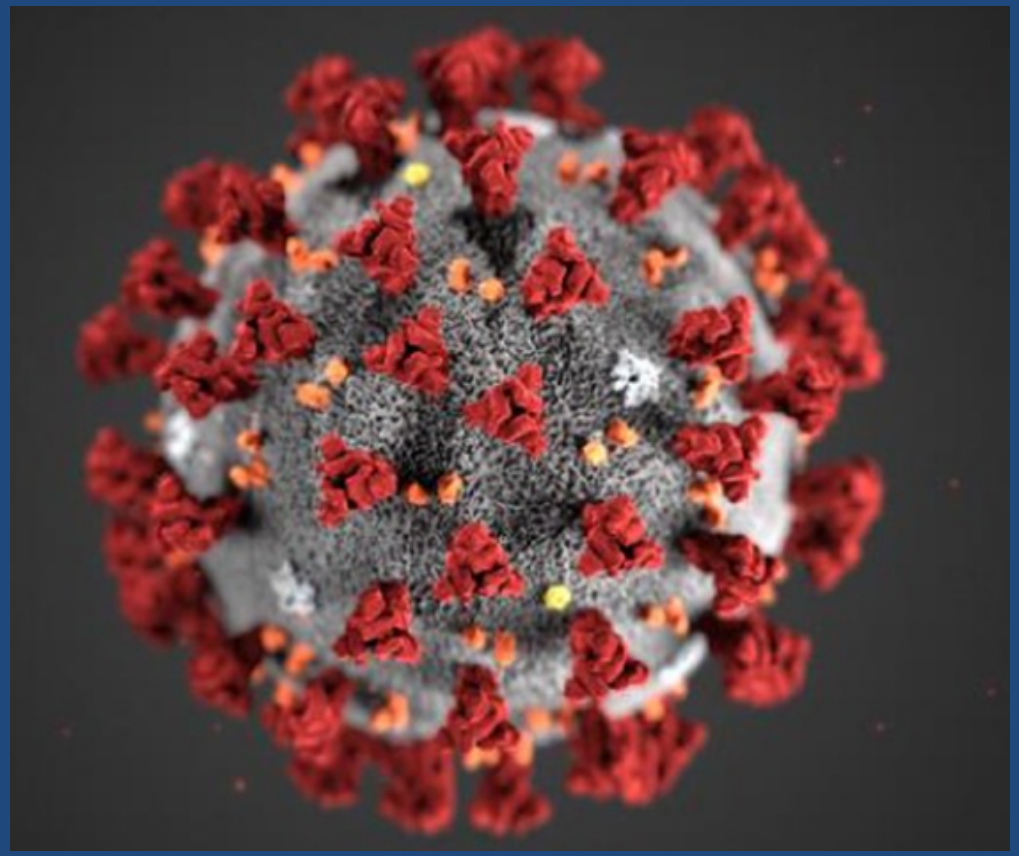
SARS-CoV-2 and the Workplace



John Howard. M.D.
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

Nomenclature

- ***COVID-19*** is an abbreviation. ‘CO’ stands for “corona,” ‘VI’ stands for ‘virus,’ ‘D’ stands for ‘disease,’‘ and 19’ refers to 2019 when the viral disease was first identified in December.

- The virus that causes COVID-19 is referred to as ***SARS-CoV-2*** which stands for “severe acute respiratory syndrome—coronavirus—two.”

Coronavirus Family

- The family of coronaviruses has seven members that cause disease in humans:
  - SARS-CoV-1
  - SARS-CoV-2
  - MERS (Middle Eastern Respiratory Syndrome)
  - Coronaviruses causing common cold (i.e., 229E; H15U1; NL63; OC43)

What is a Pandemic?

- World Health Organization declared COVID-19 to be a pandemic on March 11, 2020.
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- There are three elements that must exist for a pandemic to be declared:
  - Novel virus
    - Virus that has not previously circulated in the population—no one in the population has any immunity to the virus.
  - Sustained community spread
    - Virus spreads from person to person
    - Not associated with travelers entering from a source country
  - Worldwide distribution

COVID-19 Basics

- COVID-19 is a respiratory disease.
- Major symptoms
  - Fever, cough, and trouble breathing
- Average incubation period = is 5.2 days
  - 99% of individuals exhibiting symptoms within 12.5 days to 14 days
- There are people who get COVID-19, but do not require hospitalization for respiratory distress.
  - Even those people who do not require hospitalization report being very sick.
- Person may become infected with SARS-CoV-2, yet not feel sick.
  - Pre-symptomatic or asymptomatic

Medications

- Currently, there are no proven medications to treat COVID-19.
  - However, several medications are undergoing trials to see if they are safe to use and if they work to kill SARS-CoV-2.

- For example:
  - Studies to evaluate the safety and efficacy of ***Remdesivir*** in adults diagnosed with COVID-19 are ongoing.
  - Existing medications like *chloroquine* are also being studied, but there is no evidence as yet that the drug works to treat COVID-19.
  - Monoclonal antibodies against Interluekin-6 (IL-6)

Vaccine

- Vaccine candidates are currently in development

- 3 phases to any vaccine trial:
  - Safety
  - Efficacy
  - Large population trial

- Timeline—12 to 18 months
  - No guarantee initial vaccine candidates will be effective

Transmission

- *Droplets*
  - Transmission from person to person occurs primarily between people in close contact with each other (about 6 feet).
  - Respiratory droplets carrying the virus transmit infection when they travel directly *from* the respiratory tract of the infected individual *to* the mucosal surfaces—the eyes, nose and mouth of the uninfected person.
  - Droplets are produced when infected person coughs, sneezes or speaks forcibly.
- *Contact*
  - Contact between an uninfected person and surface or object, which has been recently (within hours) contaminated with SARS-CoV-2, can occur.
  - When a person touches a contaminated surface or object with their hands, and then touches their hands to their mouth, nose, or eyes, contact transmission occurs.

Contact Transmission:

Environmental Persistence of SARS-CoV-2

- Limited studies have led to concerns about the persistence of SARS-CoV-2 on environmental surfaces. For example, viral RNA could be detected:
  - Up to 3 hours in aerosols
  - Up to 4 hours on copper
  - Up to 24 hours on cardboard
  - Up to 2-3 days on plastic
  - Up to 2-3 days on stainless steel

- CAUTION:
  - While detection of viral RNA *may* indicate that viral shedding occurred at some point in the past, equating detection of viral RNA with *viable* virus—virus which can cause infection—can be misleading.
  - Primary concern NIOSH has with most of the environmental studies being published to date.

Decontamination of Surfaces & Objects

- The good news is that exposures can be minimized without the use of any environmental sampling.
- Environmental contamination can be minimized with routine cleaning and disinfection practices with readily available and affordable products.
- There are currently 287 available products registered with the EPA that can be used for COVID-19 as of 03/19/2020.
- For example, contaminated surfaces and objects can be disinfected using:
  - 70% ethanol-containing products;
  - 50% isopropanol-containing products; or
  - 0.5% sodium hypochlorite-containing products.
  - Contact time with the surface or object should not be brief!

Decontamination of N95 Respirators: Healthcare

- *"Decontamination and Reuse of Filtering Facepiece Respirators using Contingency and Crisis Capacity Strategies"*
  - *https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html*
  - Methods:
    - Vaporous Hydrogen Peroxide
    - Ultraviolet Germicidal Irradiation (UVGI)
    - Heat & Humidity

- American College of Occupational and Environmental Medicine
  - https://www.n95decon.org/publications

Transmission by Aerosols

- Transmission by small particles—called aerosols—which remain airborne for a longer time and over a longer distance than droplets—may occur.

- Close Contact Aerosols
  - Airborne spread can occur especially in a relatively closed environment, involving high concentrations of aerosols over a prolonged period, and where the uninfected person is ***close*** to the source. This is especially true in healthcare settings.

Mitigation Measures

- Interrupting the spread of COVID-19 is based on a simple principle
  - Keep infected individuals separated from uninfected individuals!
- Everything we are doing now is based on this simple principle.
- Right now this principle is all we have to slow the spread.

Mitigation—Physical Distancing

- The best way to keep people separated is to practice “physical distancing.”
- After completing our first U.S. national 15-day stay-at-home period of physical distancing, we are now in additional 30-day period of physical distancing.
- Canadian provinces and municipalities are gradually implementing stricter stay-at-home measures to limit the spread of the virus.
- The U.S. national physical distancing requires us to maintain a *minimum* 6-foot separation between people while conducting our daily lives—when working, food shopping and other essential activities.
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  - All but 11 states in the U.S. have stay-at-home orders in effect. Many categorize construction as “essential service” and exempt from the stay-at-home order.

Diagnostic Testing

- Diagnostic testing has gotten more complicated lately.

- There are now two types of tests:
  - The more common test you hear about is a **nucleic acid amplification test** for SARS-CoV-2 RNA.
  - The viral RNA test measures current infection with SARS-CoV-2; and

  - The other test which you are beginning to hear more about is called the **antibody detection test.**

Tests for SARS-CoV-2/COVID-19 and Potential Uses

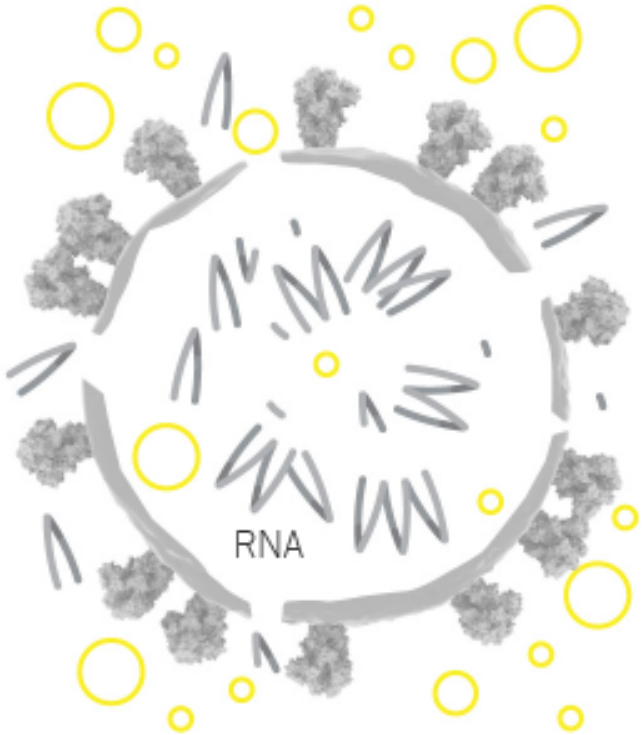
Type of Test	Measure	Value	Beneficiary
 **Nucleic acid amplification test for viral RNA** *(nasopharyngeal swab, oropharyngeal swab, sputum, bronchoalveolar lavage fluid, others)*	Current infection with SARS-CoV-2	• Inform individual of infection status so they can anticipate course of illness and take action to prevent transmission • Inform patient management and actions needed to prevent transmission • Inform actions needed to prevent transmission	• Individual • Healthcare or long-term care facility • Public health
 **Antibody detection**	Past exposure to SARS-CoV-2	• Detect susceptible individuals (antibody negative) and those previously infected • Identify individuals with neutralizing antibodies • Facilitate contact tracing and surveillance	• Identify those potentially immune to SARS-CoV-2 (if tests can detect protective immunity, individuals could be returned to work) • Healthcare facilities: Experimental therapy • Public health

Mitigation—Hygiene

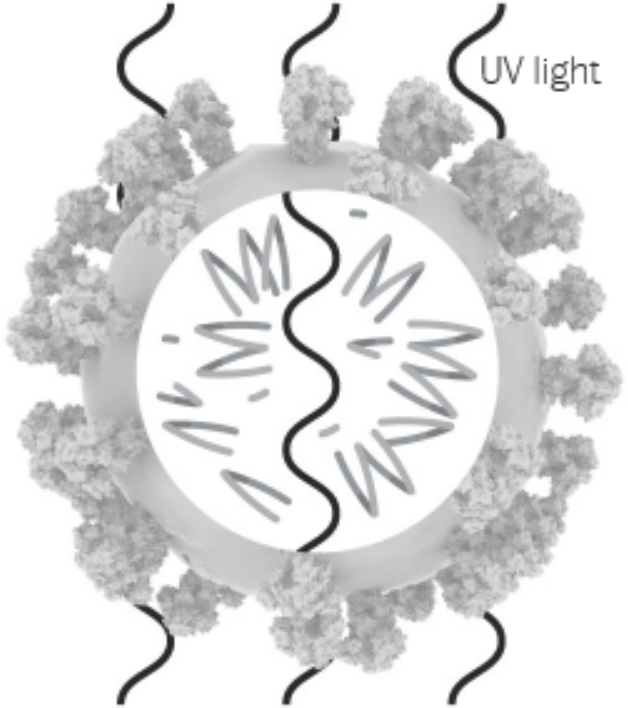
- Physical distancing and testing strategies are augmented also by personal hygiene practices such as:
  - Staying home when sick,
  - Covering your sneezes and coughs,
  - Washing your hands frequently.

Ways to Defeat the Virus—Soap, UV and Heat

Soap and water break the virus membrane.



Ultraviolet light disrupts the genetic material.



Heat breaks the structure of spike.

Construction Workplaces:

Pre-Shift & During Shift

Construction—Pre-Shift

- Stay at home if you are feeling sick!

- Job forepersons:
  - Ask workers to self-identify symptoms of fever, coughing, or shortness of breath each day. Those exhibiting symptoms should be sent home.
  - Ask workers if they have had known close contact with a COVID-19 positive or person sick with COVID-19
  - Ask workers if they have been asked to self-isolate by their doctor.
  - Screen all visitors to the jobsite.

- Temperature Checks
  - Temperature screening when working in close contact (confined space or inside an unventilated, closed building envelope) when physical distancing is not possible. There should be ‘no touch’ or ‘no contact’ thermometers.

- Crew meetings/toolbox talks should be done with 6-foot separation between workers.

- Designate a site-specific COVID-19 officer at every job site.

Construction—During Shift

- Maintain minimum 6-foot separation while working.
- Identify choke points such as hallways, hoists and elevators, break areas, and buses, and control them so physical distancing can be maintained.
- Minimize interactions when picking up or delivering equipment or materials.
- Modify work schedules to stagger work, provide alternating workdays or extra shifts to reduce the total number of employees on a job site at any given time.
- Restrict access to enclosed and confined spaces. Confined and enclosed spaces (e.g., trailers) should be identified and access should be restricted to essential personnel only. Enclosed spaces (e.g., toilets, break areas) are potential transmission areas and treated accordingly. Time spent in these areas should be minimized.

Construction—PPE

- Gloves should always be worn while on-site. The type of glove worn should be appropriate to the task. If gloves are not typically required for the task, then any type of glove is acceptable, including latex gloves. Employees should avoid sharing gloves.

- Eye protection should always be worn while on-site.

- If physical distancing cannot be used, workers in close contact with each other or working confined areas should appropriate PPE and augment ventilation.

Construction—Hygiene

- Avoid touching face—eyes, nose and mouth
- Cover coughs and sneezes with arm or tissue (then throw tissue away and wash hands)
- Do not share water bottles
- Entering a machine on-site, wipe it down with disinfectant

Construction—Decontamination

- Wash hands often during the day and at end of the shift with soap and water for at least 20 seconds
- At sites where access to running water is not available, use hand sanitizers with at least 60-70% alcohol.
- Each job site should develop cleaning and decontamination procedures covering tools, trailers, gates, equipment, vehicles, door handles, handrails, porta-potty stations at least once a day or more often if feasible

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