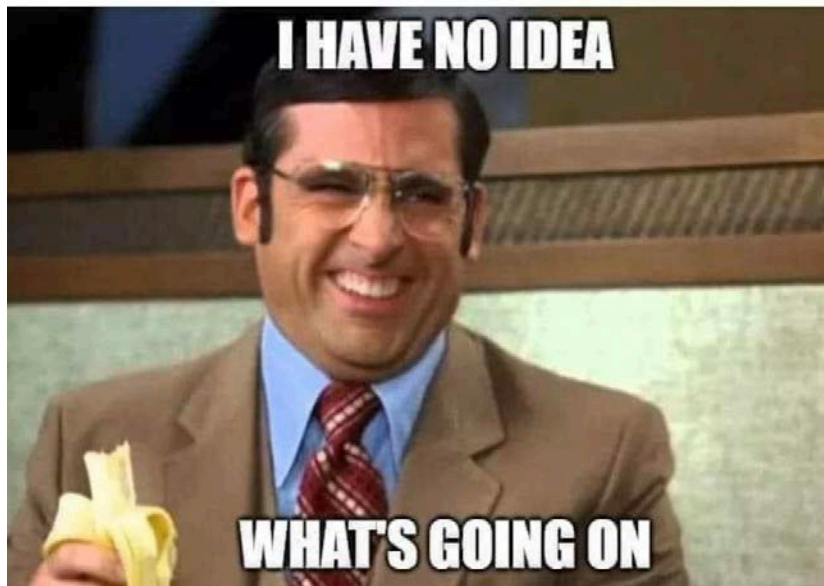


Back-to-school COVID safety: Where science meets in-person learning

PARENTS PREPARING FOR
THE NEW SCHOOL YEAR

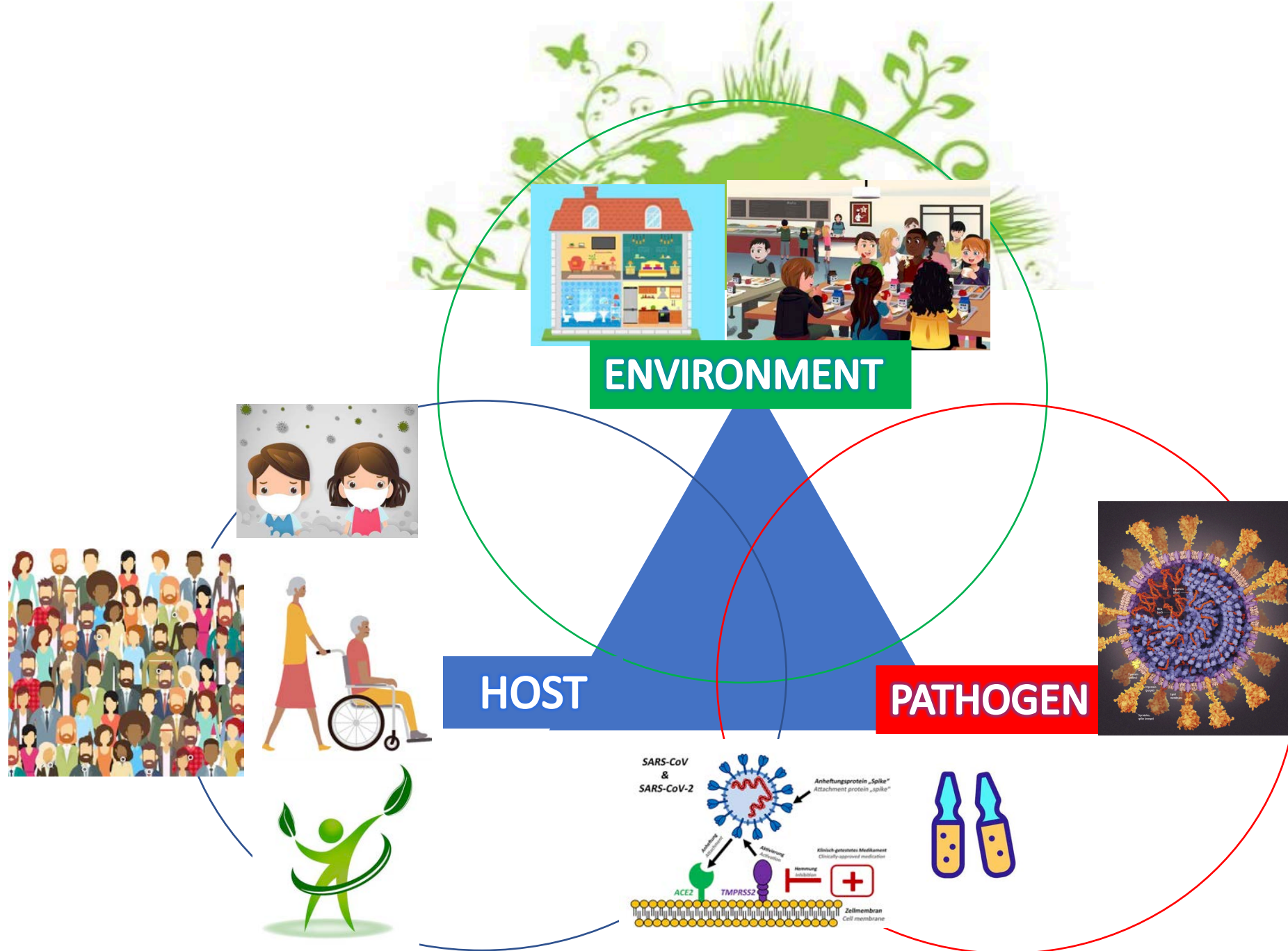


Sanja Ilic, PhD

ASSOCIATE PROFESSOR AND FOOD
SAFETY STATE SPECIALIST

HUMAN NUTRITION, DEPARTMENT OF
HUMAN SCIENCE

COLLEGE OF EDUCATION AND HUMAN
ECOLOGY



SARS-CoV-2

- Fever or chills.
- Cough.
- Shortness of breath or difficulty breathing.
- Fatigue.
- Muscle or body aches.
- Headache.
- Loss of taste or smell.
- Sore throat.
- Congestion or runny nose.
- Nausea or vomiting.
- Diarrhea.
- Repeated shaking with chills.

CDC symptom checker:

<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

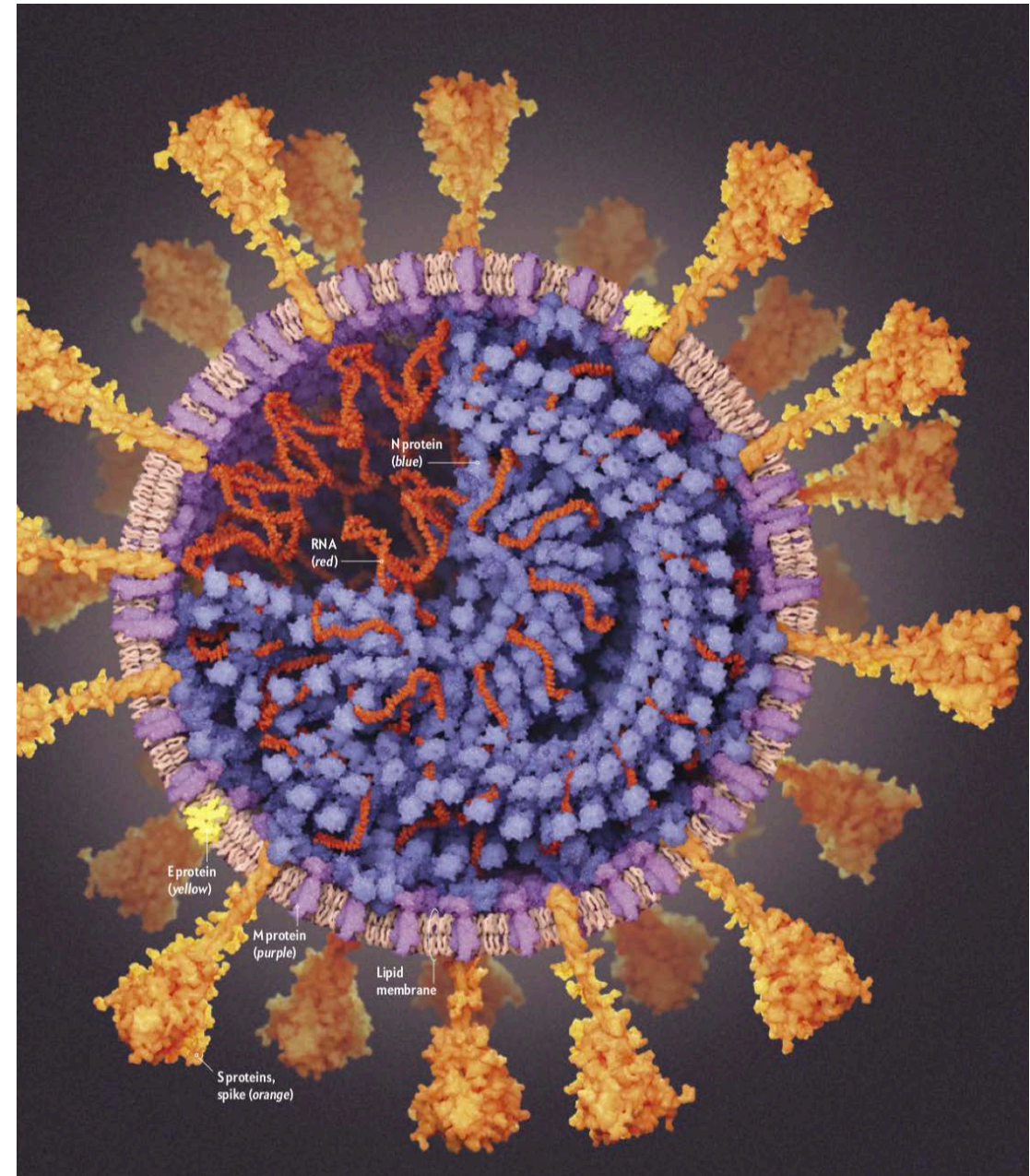


Photo: Scientific American, July 2020

COVID-19 and children

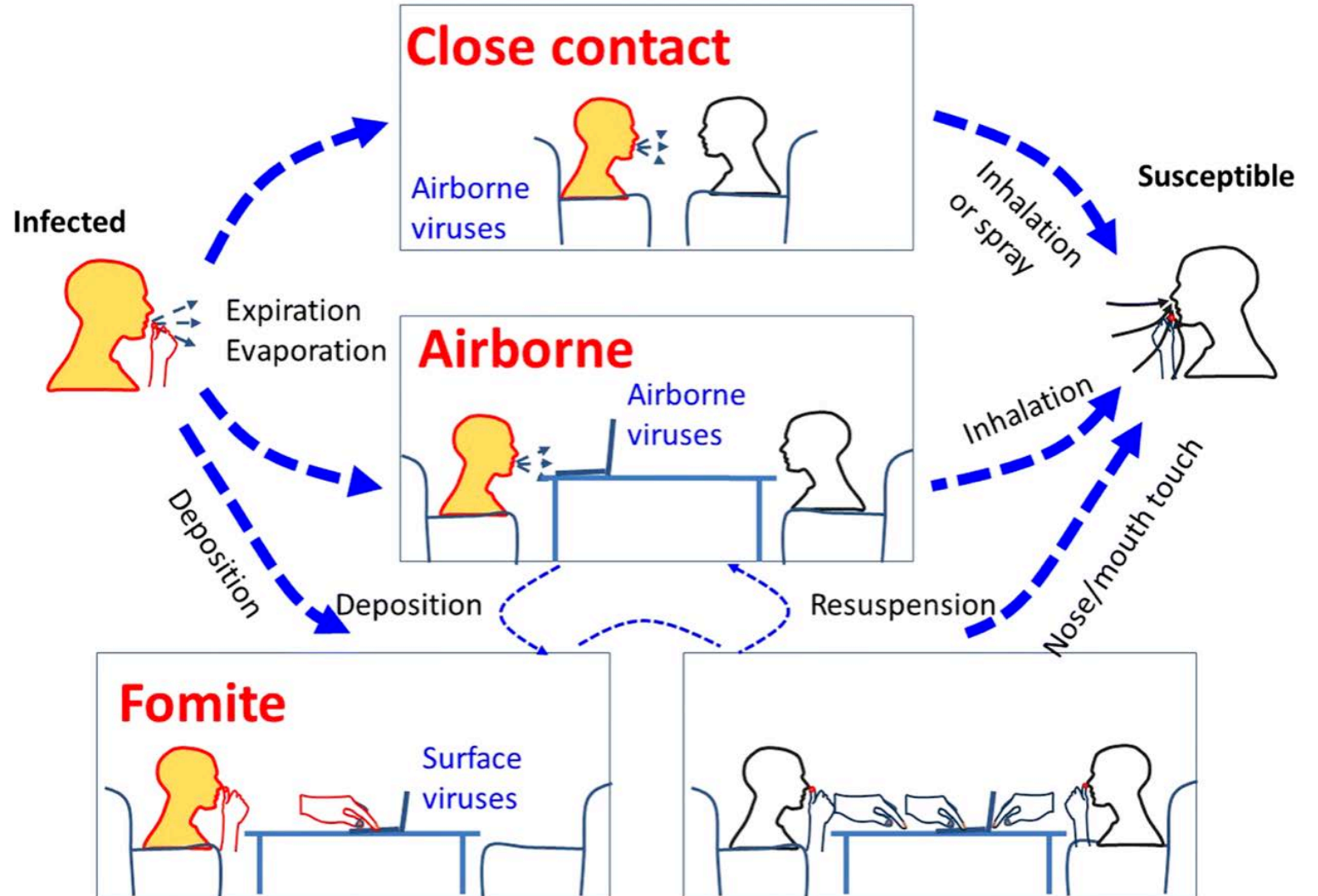


- Lower risk than in adults
- Less severe disease
- Average incubation period 7.7 days (1-14 days)
- Risks different for patients with immune susceptibilities
- More intensive respiratory symptoms, but infectivity of children is 85% that of adults
- Contribute to ~21% symptomatic and asymptomatic transmission

<https://schools.forhealth.org/wp-content/uploads/sites/19/2020/06/Harvard-Healthy-Buildings-Program-Schools-For-Health-Reopening-Covid19-June2020.pdf>

Virus transmission

- Close contact via droplets
- Airborne via droplets
- Fomite via droplets



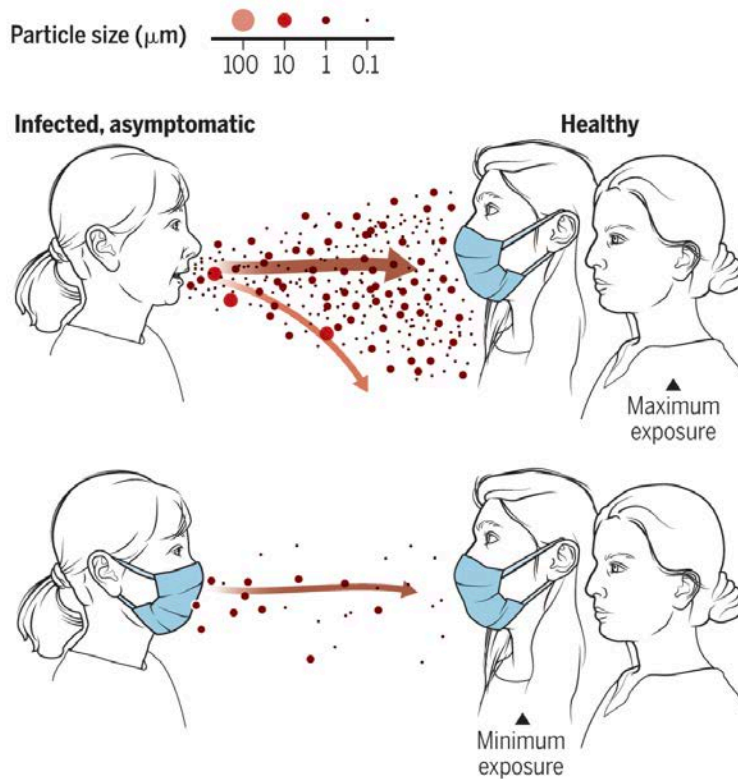
Close contact transmission

To prevent:

- Wear face covers
- Keep 6 feet distance

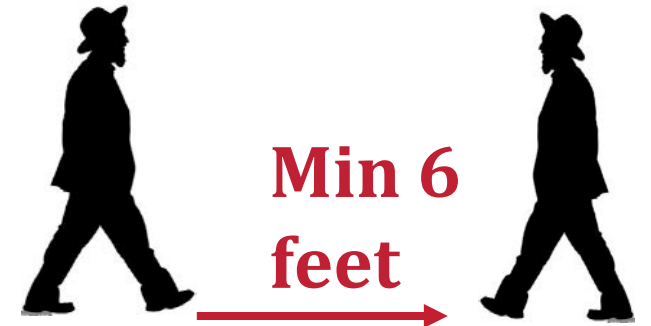
Masks reduce airborne transmission

Infectious aerosol particles can be released during breathing and speaking by asymptomatic infected individuals. No masking maximizes exposure, whereas universal masking results in the least exposure.



Prather, Kimberly A., Chia C. Wang, and Robert T. Schooley. "Reducing transmission of SARS-CoV-2." *Science* (2020).

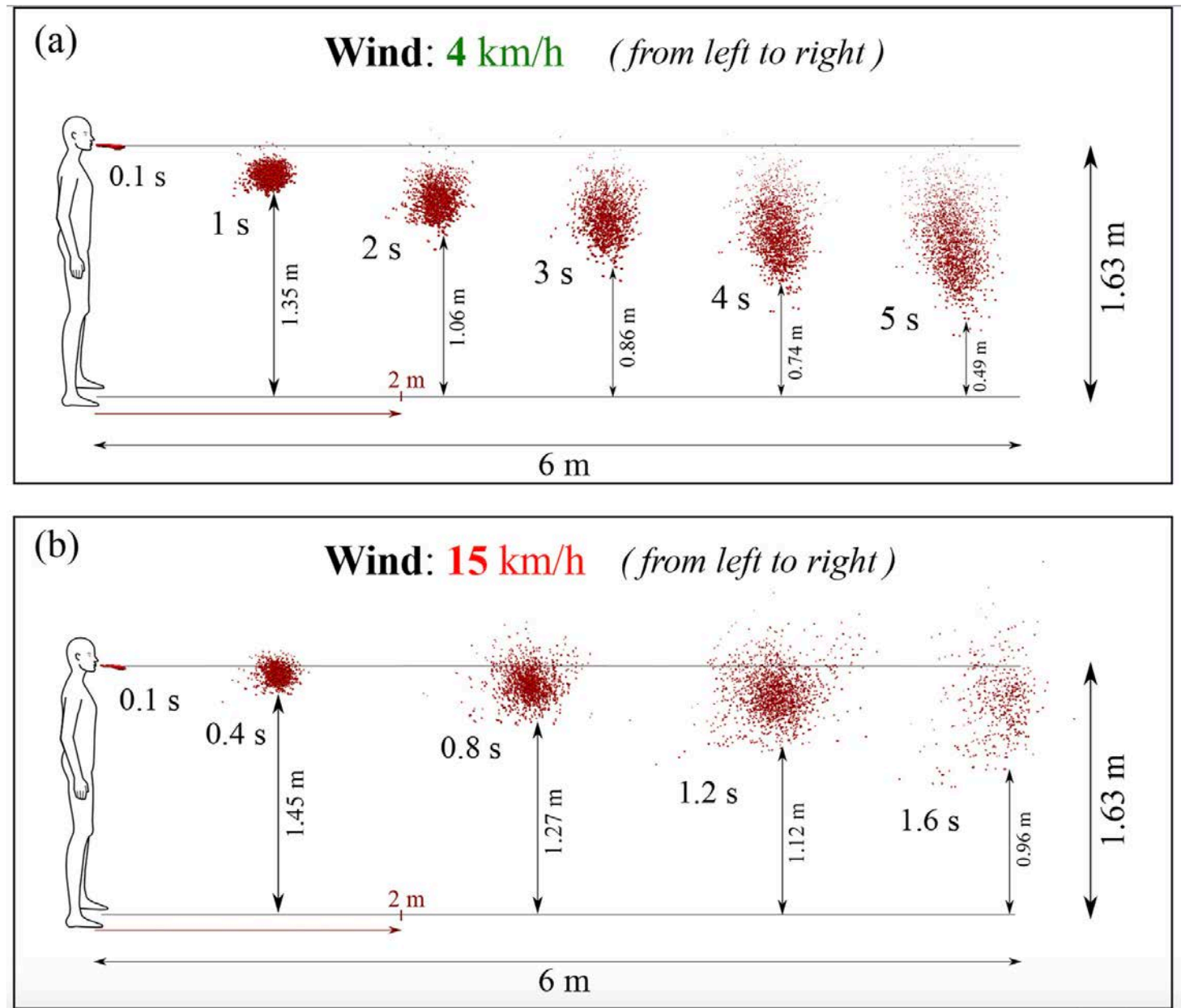
<https://science.sciencemag.org/content/368/6498/1422>



- If we don't practice we can expect transmission from an infected individual

Droplets

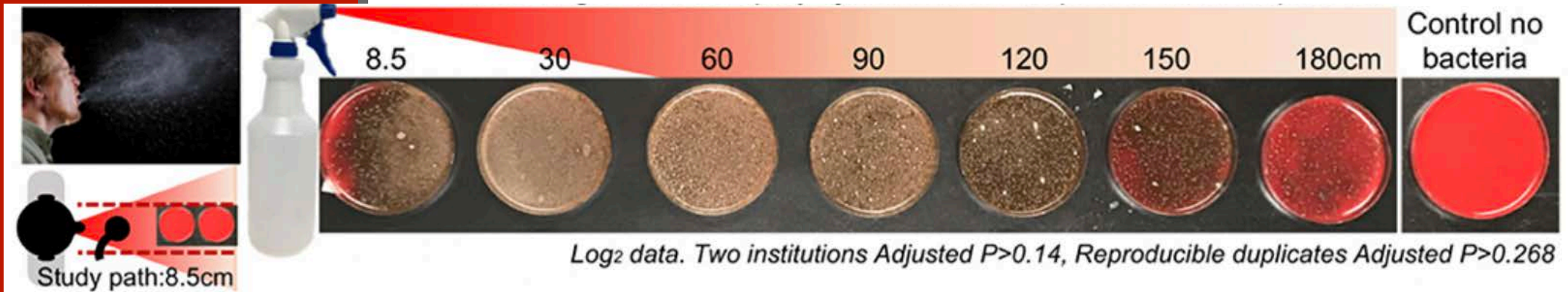
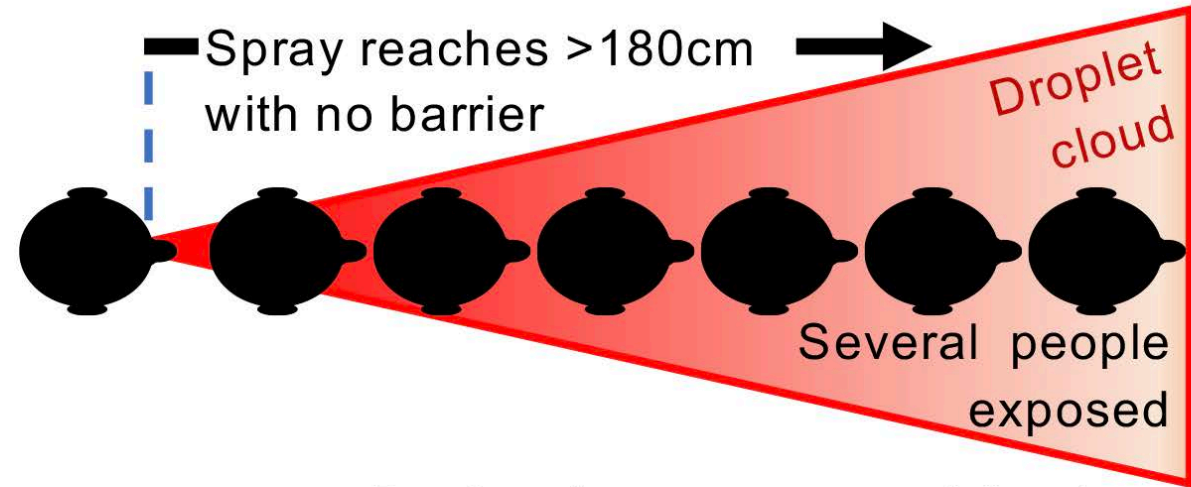
"On coughing and airborne droplet transmission to humans," *Physics of Fluids* (2020). [aip.scitation.org/doi/10.1063/5.0011960](https://doi.org/10.1063/5.0011960)



Droplets

Textile Masks and Surface Covers—A Spray Simulation Method and a “Universal Droplet Reduction Model” Against Respiratory Pandemics.

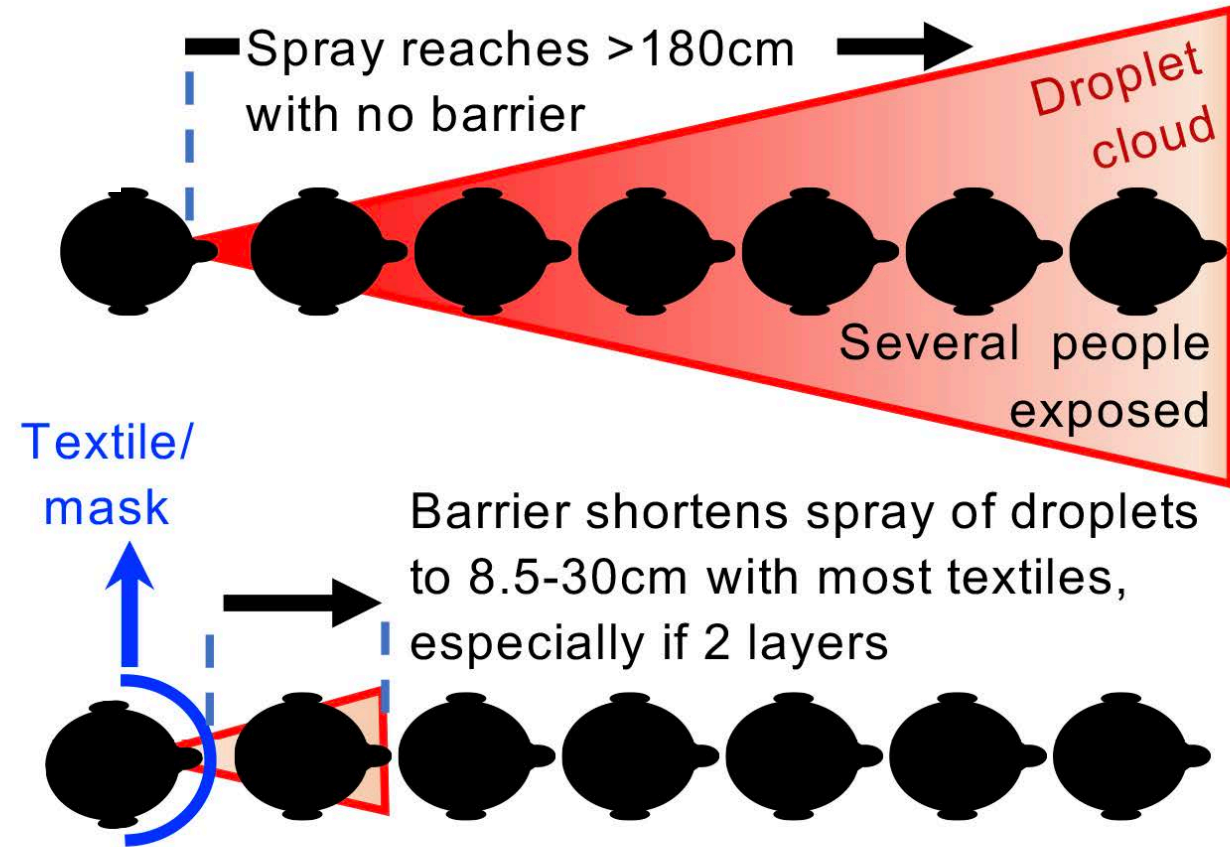
<https://doi.org/10.3389/fmed.2020.00260>




<https://www.nytimes.com/interactive/2020/04/14/science/coronavirus-transmission-cough-6-feet-ar-ul.html>

Masks and face coverings

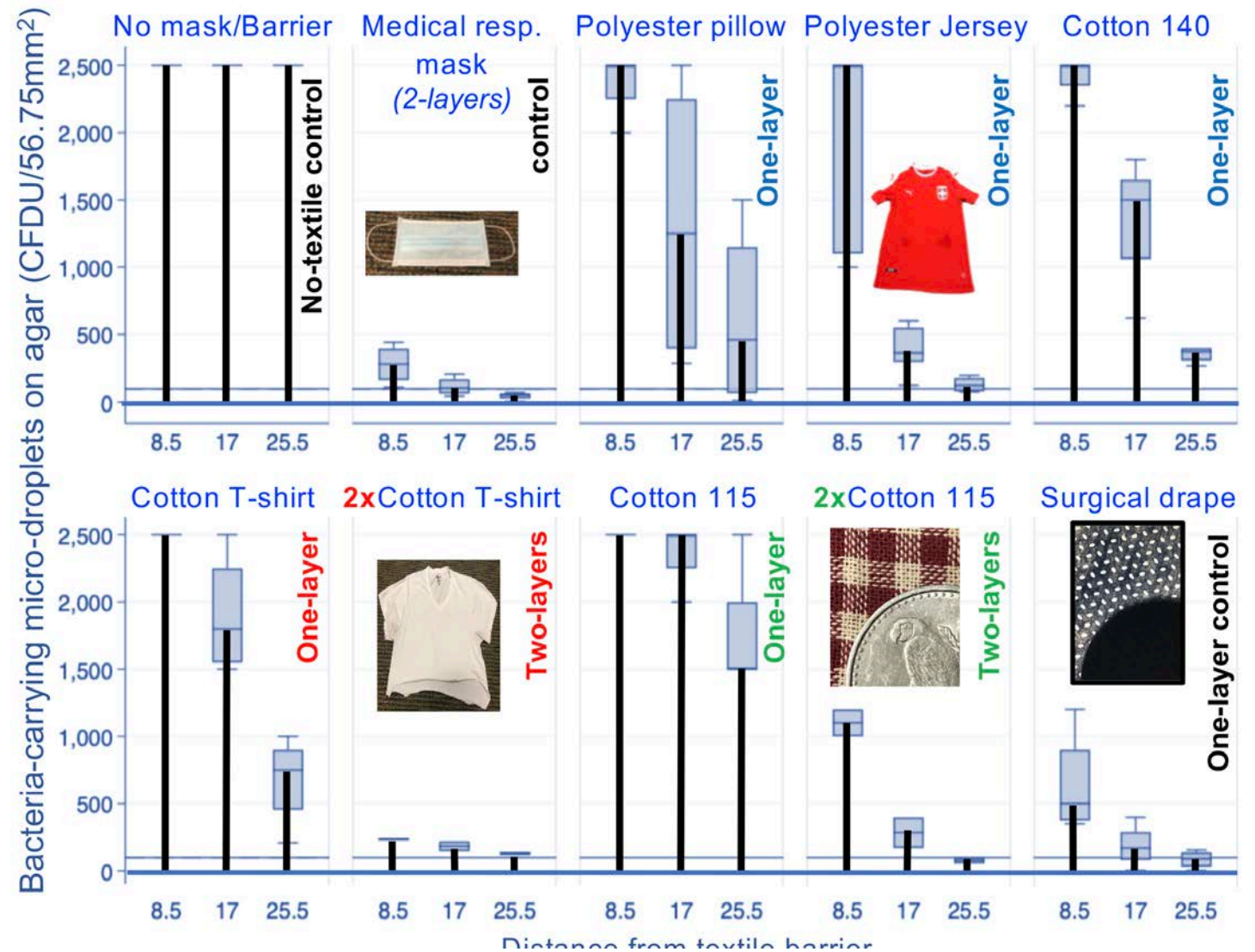
Textile Masks and Surface Covers—A Spray Simulation Method and a “Universal Droplet Reduction Model” Against Respiratory Pandemics.
<https://doi.org/10.3389/fmed.2020.00260>



 No mask 180cm	if mask shortens droplets to:	90	45	30	10 cm	
	Then contamination reduction by (%):	75.1	93.7	97.2	99.7	%

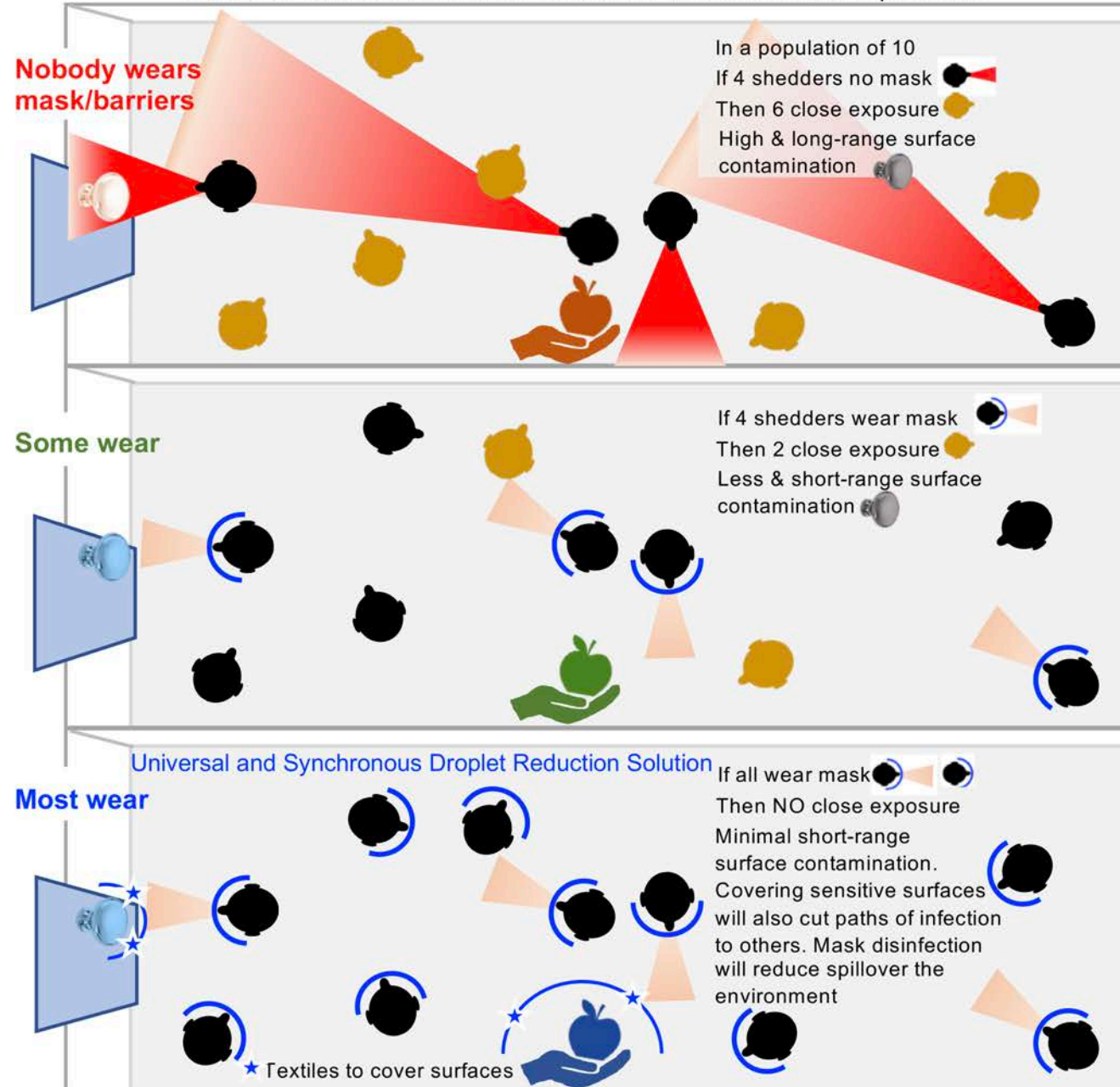
Homemade
masks are
effective

N of bacterial-droplets that cross a textile barrier simulating a mask and that land on a surface of culture media (combined data, 30 simulations, 1 & 3-sprays)



Use of face masks to prevent spread of droplets

The synchronous & universal use of textile droplet barriers will prevent spread/contamination of humans & environment and aid in the control of the current pandemic



Real life settings

ARTICLES | VOLUME 395, ISSUE 10242, P1973-1987, JUNE 27, 2020



PDF [1022 KB]





Figures



Save

Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis

Derek K Chu, MD • Prof Elie A Akl, MD • Stephanie Duda, MSc • Karla Solo, MSc • Sally Yaacoub, MPH

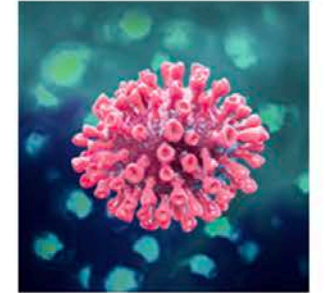
Prof Holger J Schünemann, MD   • et al. [Show all authors](#) • [Show footnotes](#)

[Open Access](#) • Published: June 01, 2020 • DOI: [https://doi.org/10.1016/S0140-6736\(20\)31142-9](https://doi.org/10.1016/S0140-6736(20)31142-9)



Check for updates

COVID-19 Resource Centre



Access free content from across The Lancet Journals

[Access content](#)

- Physical distancing of 1 m or more
- Use of face masks and eye protection
- 172 observational studies in health-care and non-health-care settings across 16 countries and six continents
- 44 comparative studies were included in a analysis,
- 25 697 patients with COVID-19, SARS, or MERS.

Learn the science behind the recommendations

<https://www.frontiersin.org/articles/10.3389/fmed.2020.00486/full>

frontiers
in Medicine

Infectious Diseases – Surveillance, Prevention and Treatment

SECTION ABOUT ARTICLES RESEARCH TOPICS FOR AUTHORS EDITORIAL BOARD ARTICLE ALERTS

Articles

THIS ARTICLE IS PART OF THE RESEARCH TOPIC
Coronavirus Disease (COVID-19): Pathophysiology, Epidemiology, Clinical
View all 308 Articles >

OPINION ARTICLE
Front. Med. | doi: 10.3389/fmed.2020.00486

Citizen science: A Facemask Experiment to Improve COVID-19 Community Resilience **Provisionally accepted** The final, formatted version of the article will be published soon.

Notify me

Sarah E. Eichler¹, Austin P. Hopperton², Juan José Alava³, Rukhsana Ahmed⁴, Zisis Kozlakidis⁵, Sanja Ilic⁶ and Alexander Rodriguez-Palacios^{2*}

¹Department of Biological Sciences, Kent State University at Salem, United States
²Division of Gastroenterology and Liver Disease, School of Medicine, Case Western Reserve University, United States
³Institute for Oceans and Fisheries, University of British Columbia, Canada
⁴Department of Communication, University at Albany, United States
⁵International Agency for Research on Cancer, World Health Organization (France), France
⁶Department of Human Sciences, The Ohio State University, United States

With high case-fatality ratios between 4.5–7.5% (Germany/Iran/USA/Brazil/Canada) and 11.9–16.4% (Spain/Italy/UK/France/Belgium)(1), there is a critical need to empower citizens with education strategies to control COVID-19. COVID-19 is a pandemic respiratory disease that disseminates as infectious respiratory or saliva droplets are released into the environment as people talk, sneeze, and cough (2–4). Currently the most publicized methods to prevent local transmission of

<https://sites.google.com/kent.edu/face-mask-challenge/face-mask-challenge-home>

Experiment 2 How well does a cloth cover stop sprayed droplets?



Core Concept: Cloth can stop the spread of sprayed liquid droplets)

Degree of Difficulty: Easy

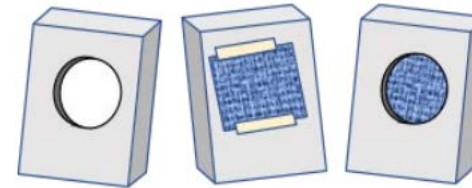
New Discovery: A single layer of household cloth (cotton t-shirt) reduces the distance of droplet travel by >90%.

Learning Objective: The goal of the experiment is to determine how many macroscopic (visible) droplets get past a face cover and reach a surface.

Duration: 30 minutes

Materials

- 1 spray bottle
- Enough dark soda, cold coffee, or sports drink to fill a spray bottle halfway
- 14 pieces of letter-sized white paper
- A large empty space on a table or washable floor
- 1 empty cereal box
- Scrap cloth/textile about 10" x 10"
- Scissors
- Silverware, a soup can, or other objects to be used as weights



Procedure

1. Cut 2 approximately 4" diameter windows on both sides of the box as shown in the pictures above so that the spray bottle nozzle will be at the level of the holes when placed flat on the ground. If this is not possible, cut the windows as high up as you can get them.
2. Tape a single layer of cloth / textile over one of the windows.
3. Secure the box in upright position by placing heavy objects such as utensils, soup can, or other inside
4. Place 7 pieces of paper on the floor or table long end to end, number them 1-7 as in Experiment 1 (1 is nearest the spray bottle).
5. Place the box directly in front of paper 1 with no space in between and set the spray bottle flat with the nozzle pointed to spray through the box and through the cloth. If the bottle is too large just angle the bottle so the stream is as close to horizontal as possible.
6. Give one complete spray. Remember to wait 30 seconds to let droplets fall. Observe the spray pattern and answer the questions below. Save the cereal box for use in Experiment 3.

Use face masks properly



COVID-19 PREVENTATIVE MEASURES HOW TO USE CLOTH FACE COVERINGS

Face coverings can be an effective means of slowing the spread of the infectious agent for many respiratory illnesses and may help slow the spread of COVID-19. Wearing a face covering does NOT provide complete protection and does not replace other ways of slowing virus spread such as:

- Staying away from public places & group gatherings
- Washing hands and using hand sanitizer often
- Practicing physical distancing
- Avoiding touching eyes, nose and mouth

HOW SHOULD FACE COVERINGS BE HANDLED?

- Masks and cloth face coverings should be handled assuming they are contaminated with the virus causing COVID-19.
- Face coverings should be removed without touching the inside. They should be immediately placed with dirty laundry, or stored in a plastic bag until they can be properly cleaned.
- Wash your hands after handling a used face covering or use hand sanitizer if hand washing is not an option. If possible, wash your face after removing a face covering.
- Cloth face coverings should be washed in hot water after each use. Follow CDC guidelines at go.ncsu.edu/cdclaundry.

HOW DO MASKS AND CLOTH FACE COVERINGS WORK?

- Proper use may restrict the spread of virus from an infected person, or prevent a healthy person from becoming infected.
- Facemasks are tested for their ability to trap viruses in respiratory droplets moving at high velocity, such as in a cough or sneeze.

For more info, visit:

www.cdc.gov/coronavirus/2019-ncov

Updated April 13, 2020



HOW SHOULD FACE COVERINGS BE WORN?

- Cloth face coverings can be uncomfortable to wear. A proper fit is tight over the nose, mouth and chin.
 - Shaving is not necessary for cloth face coverings or surgical masks.
- Cloth face coverings can help reduce disease transmission but wearing one does not provide absolute protection.
- According to CDC, wear cloth face coverings whenever interacting with the public or when caring for someone who is sick or may be infected.
- It is not necessary to wear a face covering while at home or outside for exercise.



NC STATE

EXTENSION

Handwashing

- Increase frequency of handwashing
- Use hand sanitizer with more than 60% alcohol

HANDWASHING STEPS

1

Wet your hands with clean, running water



2

Apply soap



3

Lather and scrub your hands for at least 20 seconds



4

Rinse your hands well under clean, running water



5

Dry your hands using a clean towel or air dry them



- Importance
- Washing vs sanitizers
- Visual: Issues in practice
- Pros and cons of gloves
- Do not use surface sanitizers on your hands and skin

<https://www.cdc.gov/coronavirus/2019-ncov/>

Cleaning and Disinfection

- Surface and sanitizer studies
- Clean surfaces prior to disinfection
- Alcohol solutions at least 70% alcohol

List N: EPA-recommended list

https://go.osu.edu/covid-19_sanitizers

Most not been tested with COVID

How does EPA know that the products on List N work on SARS-CoV-2?

EPA expects the products on List N to kill SARS-CoV-2 (COVID-19) because they:

- Demonstrate efficacy against SARS-CoV-2 (COVID-19);
- Demonstrate efficacy against a virus that is harder to kill than SARS-CoV-2 (COVID-19); or
- Demonstrate efficacy against another type of human coronavirus similar to SARS-CoV-2 (COVID-19).

How long can the virus survive in air and on contaminated surfaces?

- Depends on original load
- Vary in different indoor and outdoor environments

- **Air:** half-life just over 1h, can survive up to 3h

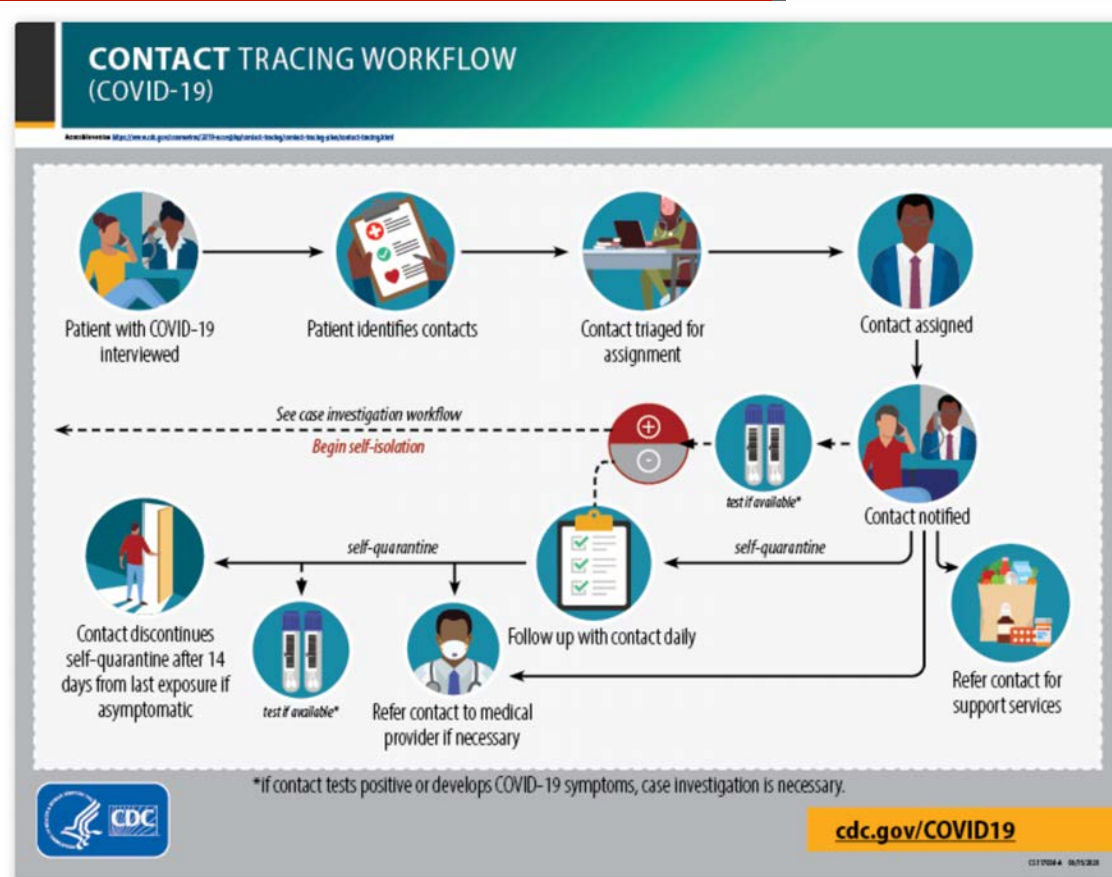


- **Surfaces:** infectious virus could be detected on copper surfaces for up to four hours, on cardboard for up to 24 hours, and on plastic and stainless steel for at least 72 hours

When positive

Isolation criteria

- 10 days since symptoms first appeared **and**
- 24 hours with no fever without the use of fever-reducing medications **and**
- COVID-19 symptoms have improved (for example, cough, shortness of breath)
- People who are severely ill with COVID-19 might need to stay home longer than 10 days and up to 20 days after symptoms first appeared.
- Positive but no symptoms, you can be with others after 10 days have passed since you had a positive viral test for COVID-19.



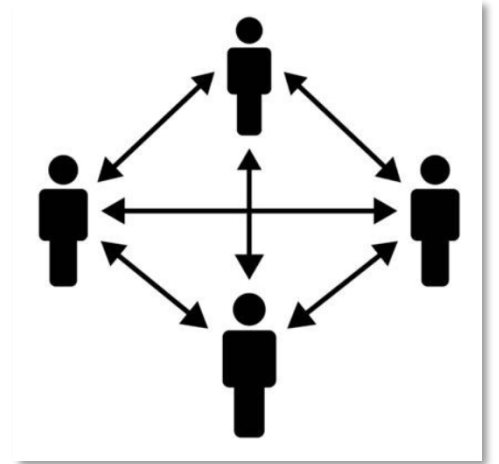
Preventing exposure in schools

Reduce

- Intensity
- Frequency
- Time



- **Intensity**
 - Physical distancing
 - Face covers
 - Handwashing
 - Cleaning and Sanitation
 - Air quality
- **Frequency**
 - Number of contacts
- **Time**
 - Length of contact



OSU Knows

COVID-19 Resources

[Producersafety.osu.edu/COVID-19](https://producersafety.osu.edu/COVID-19)

<http://kx.osu.edu/covid-19/analyze>

Fruit and Vegetable Safety Program
College of Food, Agricultural, and Environmental Sciences
College of Education and Human Ecology

CFAES Home Videos Resources Research The Team FSMA Good Agricultural Practices **COVID-19** Events News

COVID-19

The Coronavirus 2019 (COVID-19) pandemic is a rapidly evolving situation. Science-based information is available and updated as new information becomes available at the [CDC](#) and [Ohio Department of Health](#). The following are resources specific to specialty crop producers, marketers and consumers on COVID-19 and food safety. As the scientific community learns more about COVID-19 information will be updated.

FACTSHEETS
WEBINARS



COVID-19 HUB
Your CFAES COVID-19 Clearinghouse

CFAES **THE OHIO STATE UNIVERSITY** **KNOWLEDGE EXCHANGE**

KX COVID-19 HUB
A CFAES Research & OSU Extension Collaboration

How Do I Know if My News is Accurate?

We are bombarded by information about the coronavirus daily. But how do we determine whether information

<https://coronavirus.ohio.gov/static/responsible/schools/K-12-Schools-Guidance.pdf>

<https://schools.forhealth.org/wp-content/uploads/sites/19/2020/06/Harvard-Healthy-Buildings-Program-Schools-For-Health-Reopening-Covid19-June2020.pdf>

OSU Knows

COVID-19

Resources



OHIO STATE
ALUMNI MAGAZINE

SUMMER 2020



Linda Saif works with Andrea Fodome Mathe on an infectious disease preparedness project in her lab on the Ohio State Wooster campus.

Deep knowledge is the best ally

BY TRACY TURNER ROBINSON '92, '00 MA | PHOTOS BY JO MCCULTY '84, '94 MA

News

AlumNews

Ohio State Alumni magazine

In Memoriam

Linda Saif, PhD

Distinguished University Professor

<https://cfaes.osu.edu/news/videos/feb-20-linda-saif-webinar-about-coronaviruses>

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