WORKING TOGETHER FOR A
SAFE AND HEALTHY U

FACE COVERING GUIDANCE AND AN UPDATE ON SARS-COV-2 VARIANTS

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ENVIRONMENTAL HEALTH & SAFETY
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DOUBLE MASKING RECENT NEWS

- Dr. Anthony Fauci
  - "If you have a physical covering with one layer, you put another layer on, it just makes common sense that it likely would be more effective"

- Presidential inauguration coverage
- General news excitement following

SARS-COV-2 TRANSMISSION MODE

- Centers for Disease Control and Prevention (CDC)
  - Transmission Modes = Contact, droplet, airborne
  - **Principal mode of infection** = exposure to respiratory droplets through close contact
  - Most infections spread through close contact, <u>not</u> airborne transmission

  - Airborne transmission risks include:
    - Enclosed spaces with others
    - Prolonged exposure to respiratory particles
    - Inadequate ventilation or air handling

Coronavirus 0.1-0.5 µm

Respiratory Droplet 5-10 µm

Not to scale

CLOTH FACE COVERING PURPOSE

- SOURCE CONTROL
  - Barrier to capture the wearers respiratory droplets
  - Protect others from your droplets
  - May also filter external droplets, per CDC
    - Efficiency varies
    - Some filter nearly 50% of fine particles (<1 µm)
- Upwards of 80% blockage of personal droplets (CDC)

CDC

CLOTH FACE COVERINGS

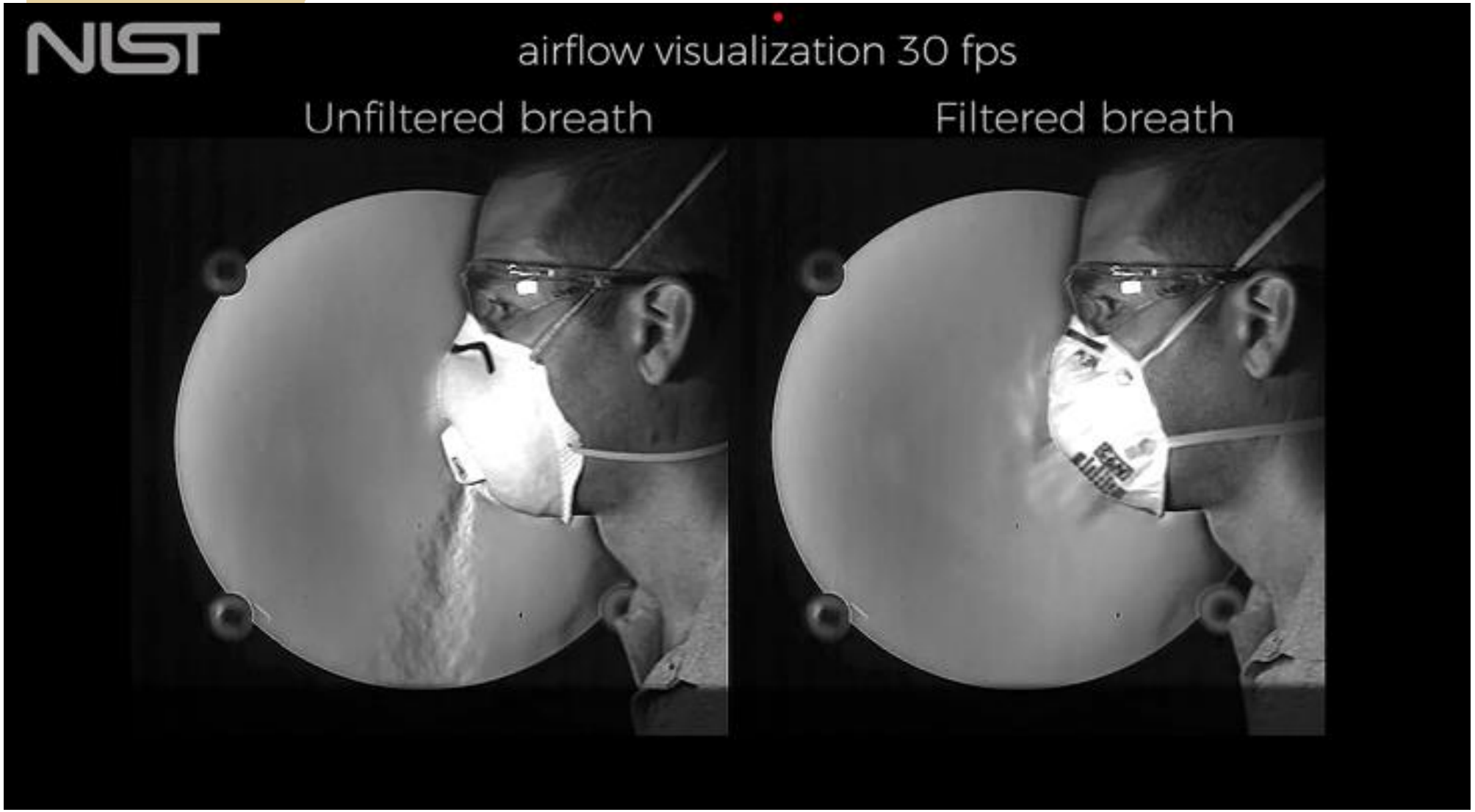
Are <u>not tested</u> and <u>not regulated to meet a certain minimum standard</u>

- Freedom to fabricate/select
- Any number of layers, fabric type and density
- Various styles
- Could be supplied to the person by company or donation
- VALVES! – People may not be aware of the lack of source control
- Fit may not be ideal
- All loose-fitting face coverings leak

Googled “horrible face coverings”

EXHALATION VALVES

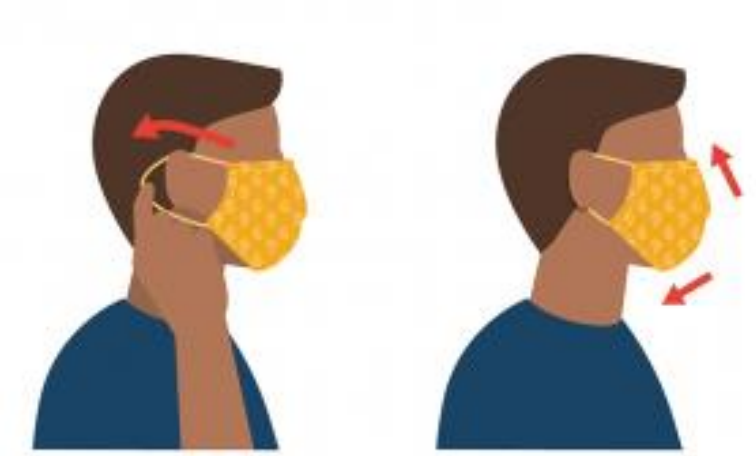
NIST Video



CLOTH FACE COVERINGS

CDC Guidance

- Multiple layers of tightly woven, washable and breathable fabric
- Nose wire
- Block light when held up to bright light source
- Snug fit to face
- Covers mouth and nose
- Secured with ties or loops
- Allows for breathing without restriction

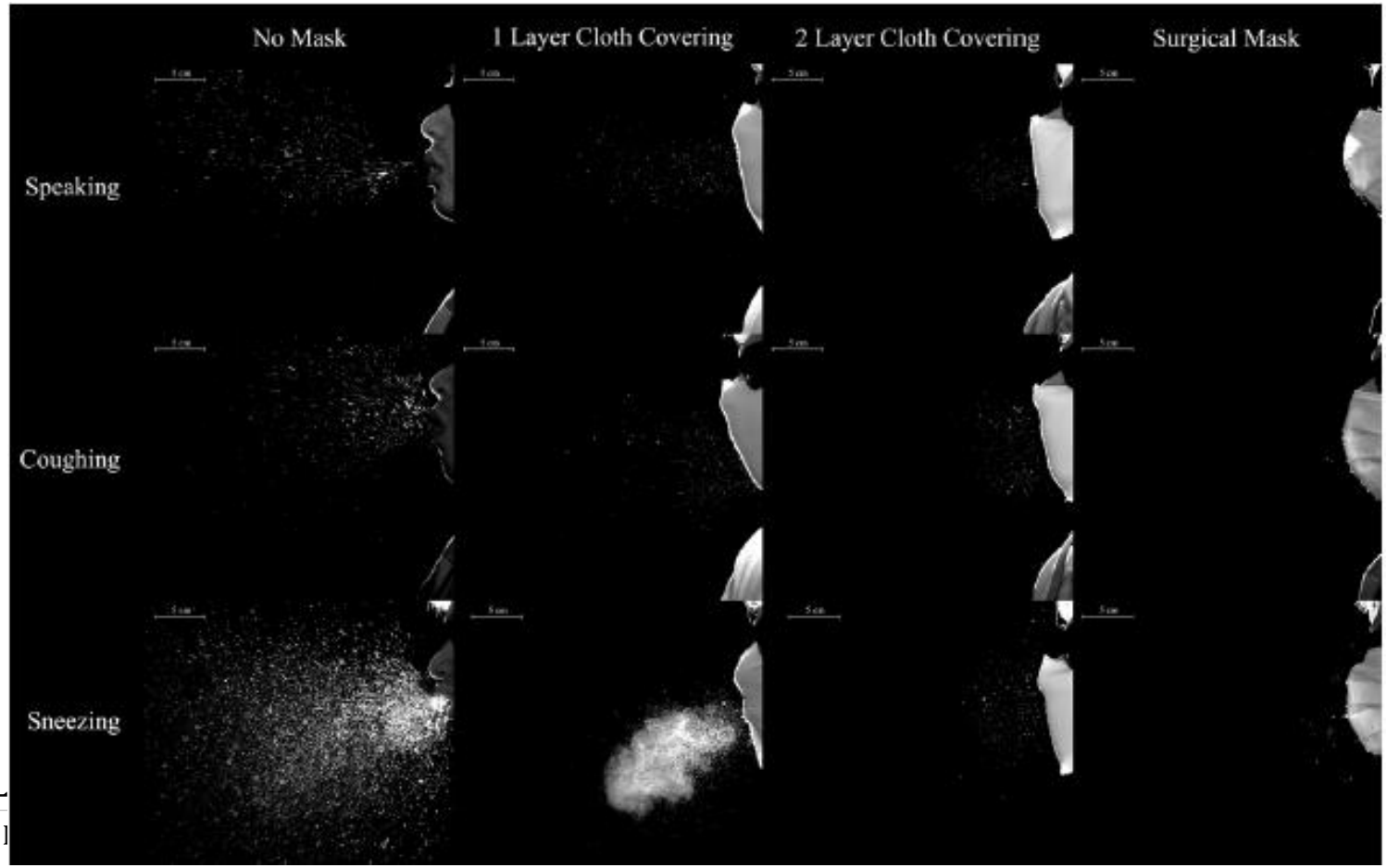


CDC

CLOTH FACE COVERING RESEARCH

Chest Clinic (July 2020)

- Face Coverings and Mask to Minimize Droplet Dispersion and Aerosolization: A Video Case Study

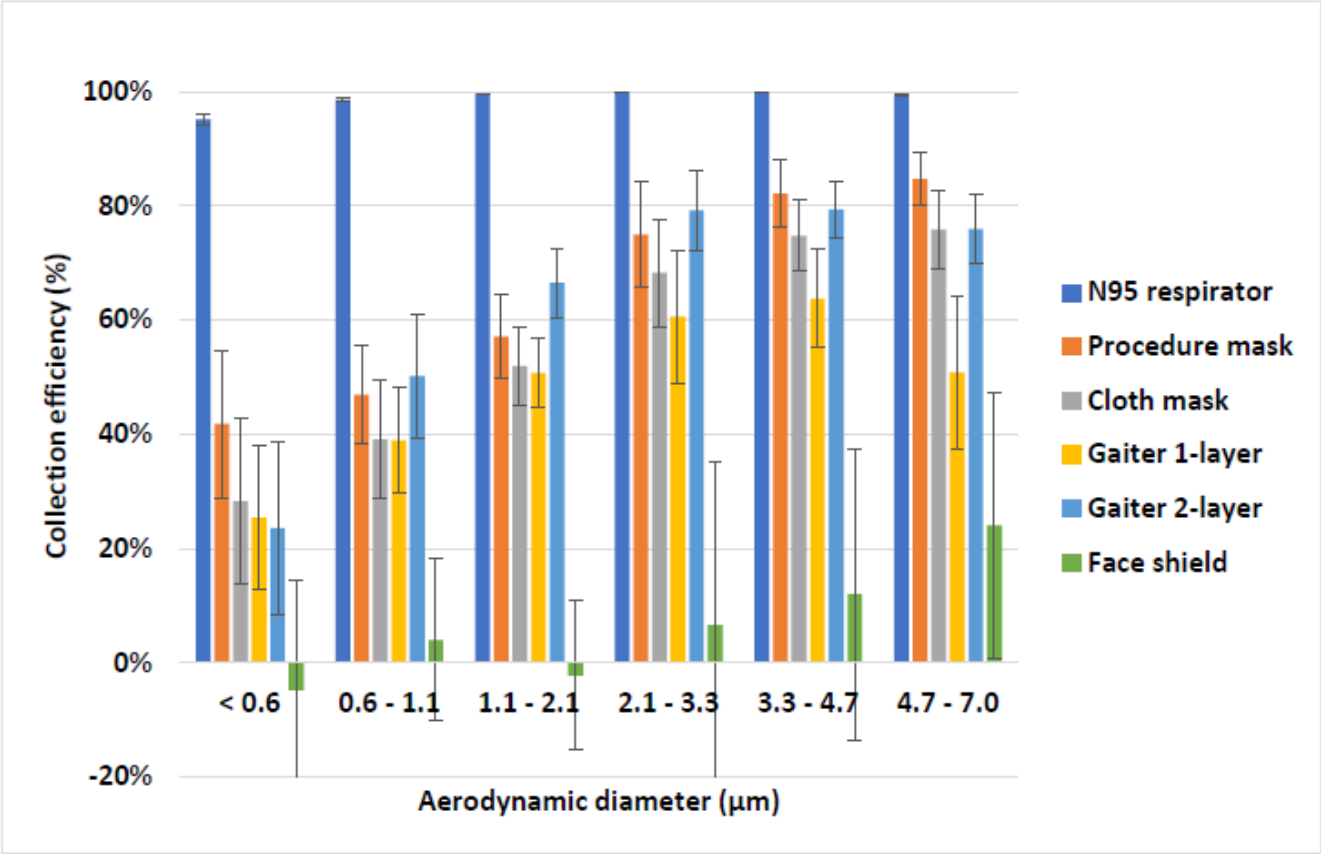


CLOTH FACE COVERING RESEARCH

NIOSH – Health Effects Laboratory Division

- Efficacy of Face Masks, Neck Gaiters and Face Shields for Reducing the Expulsion of Simulated Cough-Generated Aerosols (October 2020)

Hanes cloth mask on head form



3M 1860

KC ASTM Level 3

Hanes Defender-cotton 3 layer

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CLOTH FACE COVERING RESEARCH

JAMA Internal

- Evaluation of Cloth Masks and Modified Procedure Masks as PPE for the Public During the COVID-19 Pandemic

Table. Face Mask FFE Against Submicron Particle Penetration

Consumer-grade face masks	Condition	% FFE (SD)[a]
2-Layer woven nylon mask with ear loops		
Without aluminum nose bridge	New	44.7 (6.4)
With aluminum nose bridge	New	56.3 (6.5)
With aluminum nose bridge and 1 nonwoven insert	New	74.4 (4.8)
With aluminum nose bridge, washed (no insert)	Washed 1 time	79.0 (4.3)
Cotton bandana		
Folded surgeon general style	New	49.9 (5.8)
Folded "bandit" style	New	49.0 (6.2)
Single-layer woven polyester gaiter/ neck cover (balaclava bandana)	New	37.8 (5.2)
Single-layer woven polyester/nylon mask with ties	New	39.3 (7.2)
Nonwoven polypropylene mask with fixed ear loops	New	28.6 (13.9)
3-Layer woven cotton mask with ear loops	New	26.5 (10.5)
Medical face masks and modifications		
3M 9210 NIOSH-approved N95 respirator	New	98.4 (0.5)
Surgical mask with ties	New	71.5 (5.5)
Procedure mask with ear loops	New	38.5 (11.2)
Procedure mask with ear loops		
Loops tied and corners tucked in	New	60.3 (11.1)
Ear guard	New	61.7 (6.5)
23-mm Claw hair clip	New	64.8 (5.1)
Fix-the-mask (3 rubber bands)	New	78.2 (3.3)
Nylon hosiery sleeve	New	80.2 (3.1)

Abbreviations: FFE, fitted filtration efficiency; NIOSH, National Institute for Occupational Safety and Health.

[a] The percentage of FFE corresponds to 100 × (1 − behind the mask particle concentration / ambient particle concentration). Overall FFE percentage and SD were calculated across the length of the test.

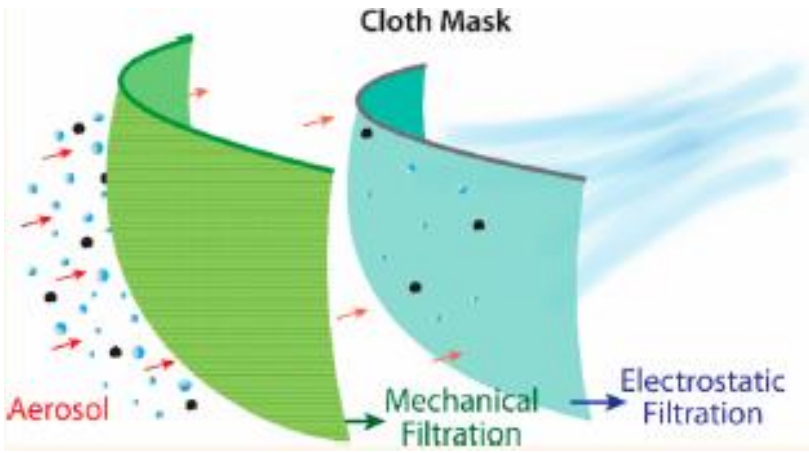
CLOTH FACE COVERING RESEARCH

ACS Nano

– Aerosol Filtration Efficiency of Common Fabrics Used in Respiratory Cloth Masks (4/20/20)

	flow rate: 1.2 CFM		
	filter efficiency (%)		pressure differential
sample/fabric	<300 nm average ± error	>300 nm average ± error	ΔP (Pa)
N95 (no gap)	85 ± 15	99.9 ± 0.1	2.2
N95 (with gap)	34 ± 15	12 ± 3	2.2
surgical mask (no gap)	76 ± 22	99.6 ± 0.1	2.5
surgical mask (with gap)	50 ± 7	44 ± 3	2.5
cotton quilt	96 ± 2	96.1 ± 0.3	2.7
quilter's cotton (80 TPI), 1 layer	9 ± 13	14 ± 1	2.2
quilter's cotton (80 TPI), 2 layers	38 ± 11	49 ± 3	2.5
flannel	57 ± 8	44 ± 2	2.2
cotton (600 TPI), 1 layer	79 ± 23	98.4 ± 0.2	2.5
cotton (600 TPI), 2 layers	82 ± 19	99.5 ± 0.1	2.5
chiffon, 1 layer	67 ± 16	73 ± 2	2.7
chiffon, 2 layers	83 ± 9	90 ± 1	3.0
natural silk, 1 layer	54 ± 8	56 ± 2	2.5
natural silk, 2 layers	65 ± 10	65 ± 2	2.7
natural silk, 4 layers	86 ± 5	88 ± 1	2.7
hybrid 1: cotton/chiffon	97 ± 2	99.2 ± 0.2	3.0
hybrid 2: cotton/silk (no gap)	94 ± 2	98.5 ± 0.2	3.0
hybrid 2: cotton/silk (gap)	37 ± 7	32 ± 3	3.0
hybrid 3: cotton/flannel	95 ± 2	96 ± 1	3.0

[a]The filtration efficiencies are the weighted averages for each size range—less than 300 nm and more than 300 nm.



CLOTH FACE COVERINGS

Effective!

- If constructed per minimum guidance
- Worn, and worn properly

"Real-world" effectiveness examples (CDC)

- 2 symptomatically ill hairstylists – 139 clients – 15 minutes each – 67 clients consenting to interviews not infected
- Retrospective Thailand study – 1,000 persons contact traced – 70% reduced risk for mask wearers versus individuals not wearing masks
- USS Theodore Roosevelt – Close working environments – use of face coverings resulted in 70% reduced risk

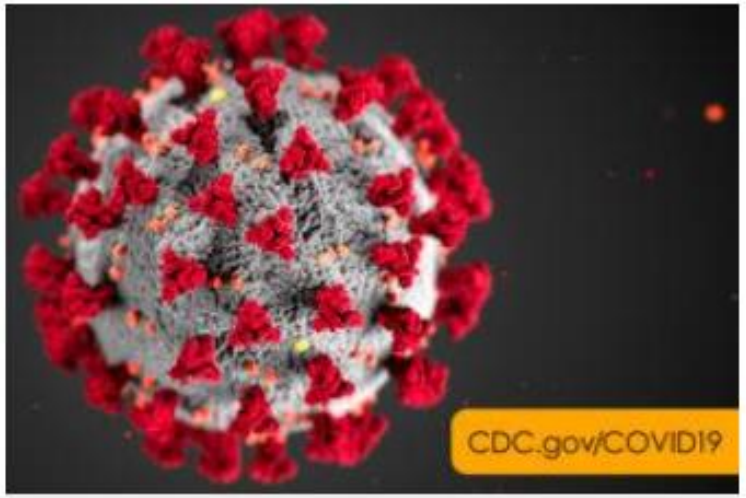
DOUBLE MASKING SUMMARY

- Not necessary if you have a proper mask, but double masking optional as long as following CDC guidelines (Types of Masks)
- Wear a proper, good fitting mask with at least two layers
  - Fitter or brace may be used for a snug fit
- Reserve N95s for healthcare and required tasks based on risk/regulation
- Soon, maybe February – ASTM Standard for barrier face coverings

DOUBLE MASKING SUMMARY

Remember that we have many other prevention controls

- COVID-19 Prevention Plans
- Hand hygiene
- Physical/social distancing
- Ventilation
- Self-attestation
- Working remotely / virtual meetings
- Scheduling
- Occupant density
- Work area layout and pedestrian routing
- Risk ranking with controls and PPE
- Other alternative strategies (barriers)



NOVEL CORONAVIRUS

COVID-19 Health and Safety Resources

Access resources for maintaining the health and safety of personnel working on site to support critical operations.

COVID-19 RESOURCES ›

DOUBLE MASKING – UW MEDICINE NEWSROOM

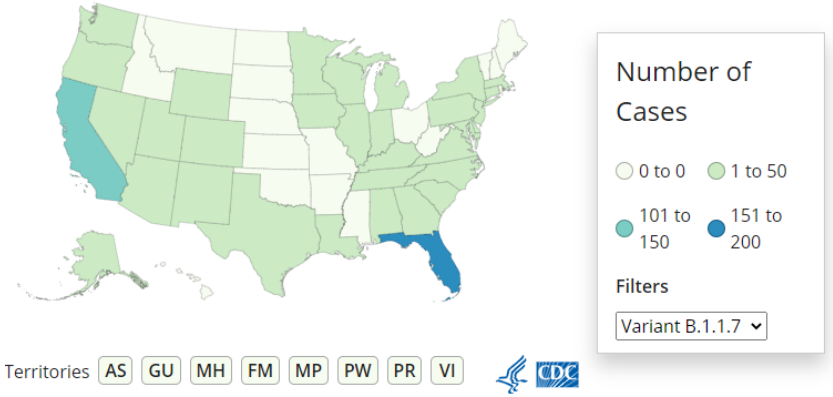
Does Wearing a second mask make a difference? – Dr. Seth Cohen

NEW SARS-COV-2 VARIANTS

CDC – [New Variants of the Virus that Causes COVID-19]

Detected in United States in December-January

- UK – B.1.1.7
  - Spreads more easily and quickly (30-50% more contagious)
  - Mutation in the receptor binding domain
- South Africa – B.1.351
  - Shares some mutations with B.1.1.7
- Brazil – P.1
  - Contains additional mutations that may affect its ability to be recognized by antibodies
- Emerging Nigeria strain – CDC monitoring, but no concerning characteristics so far



NEW SARS-COV-2 VARIANTS

What is unknown

- How widely they have spread
- Differences from the original detected disease
- How they affect existing therapies, vaccines, and tests

Public health officials are studying the new variants

- Spread easier from person to person?
- Milder or more severe disease in people?
- Detected by current available viral tests?
- Respond to medicines?
- Change effectiveness of COVID-19 vaccines?

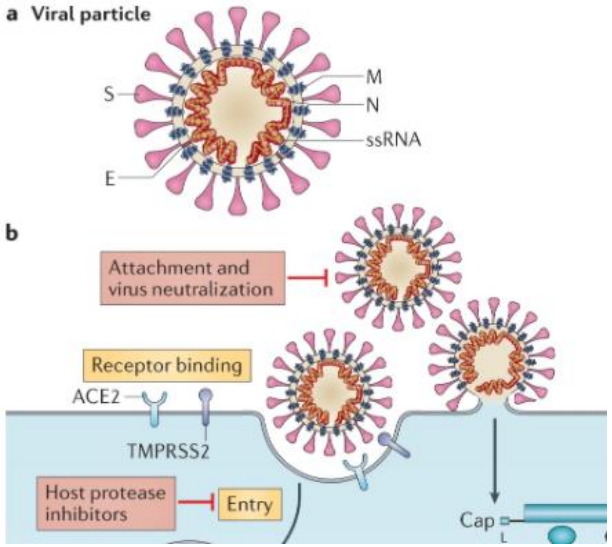
NEW SARS-COV-2 VARIANTS

More research needed about new variants

- Transmission mode outside the body versus coronavirus spike binding to cell receptor and outcomes
- New mutations do not necessarily mean spreads easier outside the body through the air, droplets or via surfaces
- No evidence to suggest a major change in prevention strategy
  - (Wash hands, Wear mask, Watch distance)

Respiratory droplets containing SARS-CoV-2

VS



Coronavirus binding to cell receptor

NEW SARS-COV-2 VARIANTS

Additional information:

- **UW Medicine Vaccines FAQ (https://www.uwmedicine.org/coronavirus/vaccine)**
- **CDC – New variants of the virus that causes COVID-19 (https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant.html)**
- **Seattle King County Public Health (Public Health Insider)**

QUESTIONS / DISCUSSION

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