COVID-19 & the Classroom Webinar Series
Air & Surfaces
August 31, 2020
The information presented here is the most up-to-date, data-driven and evidence-based science to help school districts make important decisions regarding face-to-face instruction.

Duke University and its partners will not make decisions nor will they advise specific action.
Format

- We will take questions using the Q & A function and work in as many questions as possible.
- Questions that are not answered during the webinar will be collated and may be combined with other questions addressed in a “Frequently Asked Questions” document or future webinars.
- In the coming weeks the recording will be available if you are unable to join live. We are developing a website that will contain these materials.
Question 1 – Wake County

Is the virus (SARS-COV-2) transmitted through the air?
Experiment to assess SARS-CoV-2 in air

- **Methods**: Aerosols containing SARS-CoV-2 were generated and fed into a Goldberg drum.

- **Results**: SARS-CoV-2 RNA survived 3 hours in the air.

- **BUT**: Survival of SARS-CoV-2 in a drum is consistent with aerosol transmission but does NOT demonstrate airborne (long-distance) transmission.

Van Doremalen N, et al. NEJM 2020;382:16 April 2020
Kormuth KA. et al. JID 2018;XX00:1–9
What happened in the real world?

- Outbreak in a poorly ventilated restaurant

- Outbreak investigation
  - Involved 3 families, 10 members became infected who sat at 3 neighboring tables; 3 members of family B and 2 members of family A infected
  - None of the waiters or 68 patrons of the remaining 15 tables became infected

- Reported conclusion = “Aerosol transmission of SARS-CoV-2 due to poor ventilation” to nearby people

Y Li et al., medRxiv 2020.04.16.20067728
Key Points from Real World Settings

- All infected persons were sitting within a short distance of each other
- Despite poor ventilation in the restaurant, no infections among those seated further away
- No infections among wait-staff
Question 2 – Durham County

Recently, the CDC provided recommendations for *considering* HEPA filters (especially in nurses’ station) and opening doors/windows in schools.

Can you tell us more about the evidence supporting this recommendation?
Factors to consider with open windows

- Noise and allergens
- Possible issues with maintaining heating and cooling (e.g. cars, houses)
- No data to support its use as a COVID-19 prevention strategy
- Unclear how the use of fans will help here
Experiment to assess SARS-CoV-2 in the air

- **Methods**: Samples from patient rooms; detect virus using RT-PCR

- **Results**: 63% air samples were positive; Virus detected in air (>2m from patient) and hallway

- **BUT**: SARS-CoV-2 RNA outside rooms does **NOT** mean that live virus was present or that there was an infectious dose of virus in the air of that it can infect others

Zhou J et al., Clin Infect Dis. 2020
Filtration for Ventilation Systems

There is no filter or building system feature that is proven to remove COVID-19 or any other airborne infectious disease from the air other than in specially constructed hospital units.
Many of the school buildings are older with poor ventilation; some of these classrooms don’t have windows that support air flow.

- What does this mean for risk of children and staff in these circumstances?
- What can be done to decrease risk in these circumstances?
For clarity, this study does not address the question

- Used data from a 2018 survey to assess risk factors for severe COVID-19 illness:
  - Among the ~70 million (M) US adults living with school-aged children, 41% had definite and 54% had definite or possible risk factors
    - 2.5M > 64 years
    - 5M million with heart disease
    - 5M with type 2 diabetes
  - Among ~3M teachers, 40% had definite and 51% had definite or possible risk factor for severe COVID-19 illness
    - 32% had a body mass index (BMI) of 30 kg/m² or greater
    - 8% had a cardiac condition

SARS-CoV2 transmission in schools may be less important in community transmission than initially feared

China: 68 kids, Jan 20 – Feb 27, 65 (96%) had prior adult contact

France: 9 yo M with COVID, Flu and picoRNA. >80 contacts at 3 schools. No secondary contacts with COVID-19 despite +ve flu

Australia: 9 students and 9 staff in 15 schools contacts with 735 students and 128 staff. Only 2 secondary infections (staff & student)
Key Points

- Other COVID-19 prevention tips (cleaning and distancing) are more effective than a focus on HVAC systems or filters.
- Opening windows might have unintended consequences but could be used in the right setting.
- Surfaces are not the most likely way to spread COVID-19 but should be kept clean.
- Community prevalence will reflect school prevalence.
- Reduce COVID-19 spread by washing hands, wearing a mask and waiting 6 feet from others.
Question 4 - Orange County

Can UV light air purification devices in the air ducts help?
Air Purification Devices in the Ducts

- The amount of UVC in public locations under current rules would stop ~90% of the virus in ~8 minutes.
  - 95% in ~11 minutes
  - 99% in ~16 minutes
  - 99.9% in ~25 minutes

- **Dose and Time:** Many UVC lamps sold for homes are low dose and may take longer to really stop a bacteria or virus.

- **Direct Exposure:** UVC radiation can only stop a virus if it touches a virus directly. Soil, dust or other pollutants may block the UV radiation.

- *Cleaning is still MOST important*
Key Points

- Ultraviolet light in the air duct does not prevent short range transmission
  - Too far away from the surfaces that could contain droplets
  - Not part of CDC guidance
  - Not a short term solution
- No clinical evidence this decreases the risk of COVID-19 spread in classrooms
- Cleaning is still the best means for preventing transmission
Question 5

Many schools are not air-conditioned and scientists have brought up concerns about heat exhaustion brought on by masks. What can be done to mitigate this risk?
Key Points

- No existing scientific evidence that wearing a mask can cause heat exhaustion
- Wearing a mask is safe even while exercising
Question 6

- Can COVID-19 be transferred through pens, surfaces, and other shared materials?
Key Points

- The best ways to prevent spread on shared materials is to limit the amount of virus on shared materials:
  - Limit sharing
  - Wear a mask
  - Wash your hands
Question 7

How long is the virus viable on surfaces - cotton mask, metals (doorknobs, etc.), glass, desks, wood, plastics, etc.?

Can COVID-19 be transferred through pens, surfaces, and other shared materials?
Decreased virus on different surfaces over time

Amount of virus in these experiments was really high: MUCH higher than what happens with droplet transmission, especially if masks are used.

Real life experience
Question 8

- How often are cleaning and disinfection needed to clear viruses on surfaces?
- What are the appropriate precautions for performing these tasks?
Surfaces - Cleaning & Disinfection

Cleaning

- physically removes germs, dirt, and impurities from surfaces or objects by using soap (or detergent) and water
  - Wear reusable or disposable gloves
  - Clean surfaces using soap and water, then use disinfectant
  - Cleaning with soap and water reduces number of germs, dirt and impurities on the surface. Disinfecting kills germs on surfaces
  - Practice routine cleaning of frequently touched surfaces.
Surfaces Cleaning & Disinfection

- **Disinfecting**
  - Using chemicals to kill germs on surfaces or objects
  - Keeping surface wet for a period of time
  - Precautions such as wearing gloves and making sure you have good ventilation during use of the product
  - **Always read and follow the directions on the label** to ensure safe and effective use
    - Sealed bleach solutions will be effective for disinfection up to 24 hours.
    - Alcohol solutions with at least 70% alcohol may also be used.
  - Remember safety first
Key Points

- Clean high-touch surfaces frequently
- Limit shared equipment
- Designate people to clean spaces before, during and after use
- Place cleaning products in key locations
- Use approved cleaning products

EPA.GOV; List of Disinfectants
Key Points for Cleaning & Disinfecting Surfaces

- Clean and disinfect frequently touched surfaces
- Limit the use of shared objects
- Discourage sharing of items that are difficult to clean or disinfect
- Keep each student’s belongings separated from others’
- Ensure adequate supplies to minimize sharing
Question

Have any studies determined the degree to which active coronaviruses on a surface can become airborne again after a surface is disturbed and how this might contribute to viral load overtime?
Can COVID-19 last on surfaces and in the air?
Stay tuned for more webinars

Upcoming Webinars and Topics *(All topics and dates are subject to change)*

- **8/24**
  - **Masks**: Review evidence to support the use of masks to prevent COVID-19.

- **8/31**
  - **Air & Spaces**: Discuss how COVID-19 spreads and how to maintain a safe classroom environment.

- **9/16**
  - **Special Needs**: Identify accommodations to provide children or adults with special needs.

- **9/23**

- **10/7**
  - **School Nursing**: Focus on methods to provide safe care and protect health workers during an uncontrolled pandemic.

- **10/14**
  - **Schools & Infection**: Review methods for data collection and surveillance in the school setting.

- **10/28**
  - **Schools & Parents**: Addressing parental concerns with available scientific data.
Questions
Available resources

- North Carolina Public Health resources:
  - https://www.ncdhhs.gov/divisions/public-health/covid19

- CDC resources:

- WHO resources:
- Many schools are not air-conditioned and scientists have brought up concerns about heat exhaustion brought on by masks. What can be done to mitigate this risk? - Orange County (North Central Region / District 3)

- What is the plan to address air quality issues within the building? In addition, some of these classrooms don’t have windows that support air flow? – CHCSS (Chapel Hill-Carrboro, North Central Region / District 3)

- Parents are also asking questions about air quality and facilities. What can we communicate to parents about this aspect of school safety? – CHCSS (Chapel Hill-Carrboro, North Central Region / District 3)

- Please discuss the evidence for airborne transmission of SARS-CoV2? - (24Aug2020 Webinar)

- Have any studies determined the degree to which active coronaviruses on a surface can become airborne again after a surface is disturbed and how this might contribute to viral load overtime? - (24Aug2020 Webinar)


- Importance of hand hygiene and surface disinfection – UNC (Chapel Hill-Carrboro, North Central Region / District 3)

- How long is the virus viable on surfaces- cotton mask, metals (doorknobs, etc.), glass, desks, wood, plastics, etc.? – (24Aug2020 Webinar)