



National Association
for Music Education

Using the Performing Arts Aerosol Research Study to Keep Music in Our Classrooms

As students across the United States headed back to school in fall 2021, [the International Coalition Performing Arts Aerosol Study](#), of which the National Association for Music Education is a member, released updated guidelines for music education classrooms that had been completed in July 2021. [Current guidance](#) updates mitigation tactics with the understanding that states must consult local and state COVID-19 guidance and transmission rates for appropriate mitigation adoption and adjust accordingly.

Many questions remain about age levels and vaccination rates. The latest information from the National Institutes of Health (NIH) estimates that more than 40% of students ages 12–17 were fully vaccinated by the start of the 2021–22 school year; and vaccinations for students ages 11 and younger have only just begun. Overall vaccination rates in the United States remain nearly 60%, which means there is ample space for the spread of COVID-19. The Delta variant has added an additional challenge to returning to safe in-person instruction, and caution will need to be taken with our unvaccinated populations. Mitigations such as masking, bell covers, social distancing, short rehearsal times, and increased ventilation may need to be used.

What Does the Science Tell Us?

Masks and Bell Covers: Musicians and performers produce prominent jets of aerosol particles. Aerosol production spikes significantly when singing or playing without mitigation methods. When masks and bell covers were used by performers, aerosol particles were comparable with current room levels. Using a bell mask substantially decreases the speed and extent of the jet coming from the bell of an instrument. For singing, using a mask almost completely blocks airflow in the horizontal direction.

Time and Air Flow: In an outdoor environment, ambient wind breaks the musician's expelled airflow and accelerates the dilution of aerosol particles. In an indoor environment, the musician's expelled airflow increases the spread of aerosol far more rapidly due to space confinement. Indoor walls force circular movements of air and the consequent distribution of the particles. To minimize infection risk to musicians and audiences via aerosol particles, the study showed the lowest risk occurring with an exposure duration of less than 60 minutes for indoor singing and instrument playing.

Distance: Computational fluid dynamic simulations show that while an indoor environment causes a more rapid airflow spread of aerosol when making music, social distancing, along with the use of masks and bell covers, decreases the risk of transmission due to dilution of aerosol particles.

Delta Variant: The focus on the Performing Arts Aerosol Study was on the vehicle of transmission of the novel coronavirus, not the virus itself. Notwithstanding this, the mitigation strategies of masking, distancing, timing, hygiene, and air quality through adequate ventilation are highly effective in reducing the spread of the Delta variant. The variant remains the same size as the original strand and moves within aerosol particles in the same fashion. The layered mitigation strategies in the aerosol research remain effective in reducing aerosol spread by around 90 percent.

Performing Arts Aerosol Study Guidelines

Performing Music Outdoors:

- No mitigation is needed for outdoor performances depending on the level of local and state transmission rates. Playing and singing outdoors remain the safest situation for performances. The high air-exchange rate and ultraviolet rays help diffuse the viruses' ability to transmit effectively.

Performing Music Indoors:

- Masking with a well-fitted 3-layer surgical-style mask remains the best way of reducing potential infected aerosol particles from circulating in an indoor space. Masks are recommended to be worn while singing and speaking. When performing with brass and woodwind instruments, the performer should wear a surgical-style mask with a slit for the mouthpiece.
- Depending on your comfort level and transmission rates in your area, instrumentalists may be able to perform without masks, only wearing them when speaking, and slitted performance masks are optional. Please consult your state, local, and school rules and recommendations for further guidance.
- Bell covers made with a MERV-13 filter material, or a 3-layer surgical mask, remain the best way of reducing potentially infected aerosol from circulating in an indoor space. Masks should meet the ASTM F2100 or GB/T32610 standard.
- In spaces with good ventilation rates and High Efficiency Particulate Air (HEPA) filtration, increased indoor rehearsal times of 50 minutes may be considered. A minimum of 3 air exchanges per hour should be used. If there are spaces with higher air-exchange rates, you may consider longer rehearsal times. When performing indoors, it is important to aim for an elevated outdoor air exchange rate from heat, ventilation, and air conditioning (HVAC). If that is not possible, aim for typical outdoor air exchange rate from HVAC along with recirculation of air through MERV 13 filters or the addition of appropriate-size HEPA air cleaners.
- Social distancing should be at no less than 3 feet, adjusting farther or closer depending on local conditions.
- Practice good hygiene by washing hands, using sanitizers, and preventing uncontrolled spit-valve release.
- Plastic face shields are largely ineffective because they only stop large droplets, not smaller aerosol particles. Room dividers inhibit the function of the HVAC system and are not recommended.

General Education:

- For non-aerosolization activities, such as dancing or use of non-aerosol producing instruments such as pitched and non-pitched percussion instruments, follow the procedures and protocols your school has created for general education classes.
- Recorders should have the bottom covered with a cloth material to catch aerosol droplets. Bell covers made with a MERV-13 filter material or a 3-layer surgical mask may not be necessary because it is generating minimal aerosol. The bell cover is just catching condensation and droplets.
- 3-layer surgical style masks are recommended to be worn while singing and speaking. Consider purchasing disposable masks that children can dispose of when they have completed their lesson.

References

- Stockman, Teyha, et al. "Measurements and Simulations of Aerosol Released while Singing and Playing Wind Instruments." <https://pubs.acs.org/doi/full/10.1021/acsenvironau.1c00007>
- Spede, Mark, and James Weaver. (2021, November 8) *Unprecedented International Coalition led by Performing Arts Organizations to Commission COVID-19 Study*. <https://www.nfhs.org/articles/unprecedented-international-coalition-led-by-performing-arts-organizations-to-commission-covid-19-study/>

The resources contained here are for informational purposes only. All information is provided solely for your convenience. Posting of these resources by NafME is not a warranty of the information and NafME disclaims any responsibility for the content provided.