

ARTS ED NJ

DATE: November 17, 2020

TO: All New Jersey Arts Educators, Administrators, Principals, Superintendents, Executive County Superintendents, School Board Members, Health Officers

FROM: Robert B. Morrison, Arts Ed NJ

SUBJECT: University of Colorado Aerosol Dispersion in Music Study Third Preliminary Findings - September Ready Arts Education Guidance Update Number 3

CC: Governor Phil Murphy, Commissioner of Health Judith M. Persichilli, Acting Commissioner of Education Angelica Allen-McMillan, New Jersey State Board of Education President Kathy Goldenberg, LEE Group, NJDOE Reopen Team.

Arts Ed NJ is part of an international coalition of more than 125 organizations supporting the COVID-19 Aerosol Dispersion Study being conducted at the University of Colorado and the University of Maryland led by the distinguished researchers Dr. Shelly Miller and Dr. Jelena Srebric, respectively, and commissioned by the National Federation of State High School Associations (NFHS) and the Collegiate Band Directors National Association. The NFHS is the national governing body for scholastic athletics (including NJSIAA) and the performing arts. Arts Ed NJ has been working closely with the NFHS on this research. We are entering month 5 of a 6-month study, utilizing two independent labs at the University of Colorado – Boulder and the University of Maryland. As the third update to the **September Ready Fall 2020 Arts Education Guidance** released in August, we are providing these updated preliminary results released on November 13, 2020 to help further inform the development of your operating plans for the visual and performing arts. Additional findings will be sent to you as they are released.

Key Finding: Instrumental, Vocal and General Classroom Music, Theatre, Speech, Debate and Dance classes and activities may be held in person following proper mitigation.

- [Link to the Arts Ed NJ Fall 2020 Guidance for Arts Education](#)
- [Link to the Aerosol Study results](#)
- [Link to Researcher Conversation of Results](#)

From the research team: These results are preliminary and will be further defined as the study continues. This study focuses strictly on the distribution of respiratory aerosols that are released while playing wind and brass instruments, singing, acting, speaking, dancing, and during a simulated aerobic activity. This study did not use a live virus and therefore cannot be used to determine specific infection rates. However, this study is based on previous research that shows the virus which causes COVID-19 can travel in respiratory aerosol. This study was designed to (1) identify performing arts activities that generate respiratory aerosols including volume, direction, density, and mitigation strategies. Aerosol is defined as solid or liquid particles suspended in a gas.

The guidance does not purport to replace or contradict the guidelines issued by the Centers for Disease Control (CDC), the State of New Jersey, or local public health departments regarding the timing or protocols for how schools should operate in our new reality of education.

Relevant Context

Going back to school has risks. School administrators and educators are working hard to reduce that risk with approaches including the use of masks, social distancing, proper hygiene and other mitigation strategies to reduce the level of risk.

Arts educators have also worked to reduce risk. The research shows that all singers, actors, and wind instruments (with the exception of the oboe) have comparable aerosol emissions. Without mitigation, these activities produce more aerosol than talking but less than coughing.

Just as our students are able to return to school following proper mitigation strategies, the same is true for the performing arts. The following guidance outlines the mitigation strategies for performing arts to significantly reduce aerosol.

Guidance for Instrumental Music (Wind Instruments)

Indoor instrumental ensembles, small groups, and individual lessons, classes and activities are possible and should be scheduled following proper mitigation techniques outlined below.

- Wind instruments and singing produce aerosol, which vary by instrument as well as intensity. The produced aerosol amount is, on average, similar across all instrument types and singing with the exception of the oboe. Most aerosol is being expelled from the bell of the instruments and from the mouth of the performers.
- Instrumentalists should be wearing well-fitting, multi-layered, washable or disposable surgical style mask with a small slit for mouthpiece access while playing AND using bell covers reduce aerosol emissions between 60-90% (See Appendix)
- Bell covers are highly recommended as “masks” for the instruments.
- Bell covers for woodwinds and brass should be made with a multi-layer cover with the center layer being made of MERV-13 filter material, or a 3-layer surgical style mask using a standard such as GB/T32310. However, any type of covering is better than nothing.
- Flutes and recorders create a minimal amount of aerosol and it is recommended to play flute with the [headjoint between their mouth and mask](#). Recorder should use the slitted mask used with woodwinds. Both the flute and recorder should use a cloth mask at the end of the barrel.
- No talking in a classroom without a mask being worn.
- Do not use instrumentalists mask outside of rehearsal.
- Masks on students and bell cover “masks” on instruments should be used together for maximum mitigation.
- Face shields are only effective at close range to stop large droplets; they do not prevent aerosol from being inhaled or released unless a mask is also worn.

- **Plexiglass partitions or barriers between musicians are not recommended due to room HVAC system design limitations. "Dead zones" or areas where aerosol can build-up are a concern if plexiglass partitions are used.**
- Social distancing should occur as suggested by the CDC. Currently, that distance is a 6x6 foot space around each student with the student sitting in the center with additional space (9 feet by 6 feet) allocated to accommodate trombone players. Straight lines should be used as curved setups can affect the aerosol movement in a room.
- Students should sit all facing the same direction back to front to minimize potential exposure.
- The player should be seated three feet in front of the backline, leaving an additional six feet in front of them due to the extended nature of the instrument and slide that can be in the extended position.
- Outdoor rehearsal times should be reduced to 30-minute blocks followed by 5 minutes where no playing is occurring before playing resumes to allow for aerosol dispersal. Mask are optional for players but required for instruments when outdoors.
- For programs looking to use tents as a means of sheltering performers outdoors due to adverse weather, open-air tents – those without walls and high rooftops – should be employed.
- Indoor rehearsal times should be reduced to 30 minutes or less followed by clearing the room for a minimum of one air change.
- Instruments spit valves should be emptied onto absorbent disposable material such as puppy pads rather than directly onto the floor.
- Storage areas should be managed to limit the number of students at a time in the room. Anyone who enters the room should bring a 70% alcohol wipe to wipe all surfaces before and after touching. The wipe should be discarded properly upon leaving the storage area.
- Teachers should consider using a portable amplifier to keep their voices at a low conversational volume. Students should also ask questions in a low conversational volume with a mask.
- Teachers are assumed to talk the most and as a result, should wear the most efficient mask possible that is readily available, which are surgical masks. (N95s are not recommended at this time due to supply chain issues.)

Guidance for Vocal and General Music with Singing, Theatre, Speech and Debate, and Dance

Indoor general music, individual and group or ensemble singing, theatre, speech and debate, and dance classes and activities are possible and should be scheduled following proper mitigation techniques outlined below.

- Singers produce aerosol at similar rates as woodwinds and brass. The amount of aerosol varies depending on consonants, vowels, intensity, and pitch. Singers wearing a well-fitting 3-layer surgical style mask reduces aerosol emission. (See Appendix)
- Singers, actors, speakers, dancers should wear a well-fitting, multi-layered, washable or disposable, and surgical style mask.
- Outdoor rehearsal times should be reduced to 30-minute blocks followed by 5 minutes of no singing before singing/acting/speaking/dancing resumes to allow for aerosol dispersal. Mask are optional for outdoor rehearsal.
- For programs looking to use tents as a means of sheltering performers outdoors due to adverse weather, open-air tents – those without walls and high rooftops – should be employed.
- Indoor rehearsal times should be reduced to 30 minutes or less followed by clearing the room for the time needed for a minimum of one air change, preferably three air changes.
- Teachers should consider using a portable amplifier to keep their voices at a low conversational volume. Students should also ask questions in a low conversational volume with a mask.
- Teachers are assumed to talk the most and as a result, should wear the most efficient mask possible that is readily available, which are surgical masks. (N95s are not recommended at this time due to supply chain issues.)

Rehearsal Space Recommendations in Order of Preference:

- Outdoor rehearsals, using individual mitigation techniques described above.
- Indoors with elevated outdoor air exchange rate from HVAC.
- Indoors with typical outdoor air exchange rate from HVAC plus recirculation air through MERV 13 filters or addition of appropriately sized HEPA air cleaners.
- Indoors with outdoor air exchange rate from open windows supplemented with appropriately sized HEPA air cleaners when airflow is reduced under certain outdoor wind conditions.

General Procedures

- Masks must be worn at all times. Multi-layered bell covers must be used by all wind instruments.
- CDC guidelines for social distancing of 6x6 feet, with 9x6 for trombone players.
- Indoors limited to 30 minutes followed by a minimum of one air exchange rate (ACH), preferably 3 ACH, to change the air indoors with outside air.
- Increase ACH to HVAC maximum, add HEPA Filtration designed for the size of the room.
- Practice good hygiene by washing hands, using sanitizers, and preventing uncontrolled spit valve release.

Guidance Regarding HVAC for All Spaces

- Existing HVAC systems should be fitted with HEPA filters if possible.
- The more HEPA filtration the better, and the higher the air exchange rate (ACH) the better.
- There are HEPA air purifiers on the market to provide additional filtration appropriate to the size of the rehearsal space which will increase the air change rate from standard HVAC systems.
- Air change rate accounts for the volume of the room. A minimum of 3 times per hour should be the goal. The more frequent the ACH the faster the room air will be cleaned.
 - Air refresh rate per room to “clean” the room:
- Air changes per hour (ACH)
 - $(1/\text{ACH}) \times 60 \text{ min/h} \times 3$
 - $3 \text{ ACH} = (1/3) \times 60 \times 3 = 60 \text{ minutes}$ to “clean” the room.
 - If volumetric flow rate (L/min) is available divide by room volume to find the air change rate

Please refer to the Association for Heating, Ventilating and Air-Conditioning Engineers (ASHRAE) guidance on ventilation during COVID-19: <https://www.ashrae.org/technical-resources/resources>

For a complete listing of Arts Ed NJ COVID-19 resources visit:
<https://www.artsednj.org/covid19/>