Spring 5-29-2020

Army Band COVID-19 Risk Mitigation for Large Groups

Jonathan Crane
United States Military Academy, jonathan.crane@westpoint.edu

Denver D. Dill
United States Military Academy, denver.dill@westpoint.edu

Army Band COVID-19 Risk Mitigation for Large Groups

Purpose

To describe the deliberate decision-making process undertaken by the West Point Band in returning to live music rehearsal and performance during elevated risk of airborne viral transmission (specifically the Novel Coronavirus pandemic of 2020). This document is intended to serve as a guidebook for any large gathering of musicians seeking to reduce risk of viral spread while maintaining practical needs of ensemble performance.

Background

In March of 2020, the United States began to see exponential increases coronavirus (COVID-19) cases, a large portion of which were concentrated in the greater New York City area. 50 miles north of the City, the United States Military Academy at West Point recognized the need for swift action to protect the health of its cadets, staff, faculty, and families. The United States Corps of Cadets were told to stay home after being on Leave status for the annual spring break. Simultaneously, the Academy stood up cross-organizational teams to ensure training could continue. Through careful and deliberate medical analysis, it was determined that a graduation ceremony could likely be held responsibly on June 13th, 2020. The graduation required the West Point Band to develop a risk mitigation plan to support the ceremony with live music.

Similar to the days following September 11th, 2001 the Academy sought to utilize its largest body of Non-Commissioned Officers, in a variety of capacities. Members of the West Point Band participated in cleaning, quarantine quarters oversight, contact tracing, and strategic communication teams. The Superintendent of the United States Military Academy, LTG Darryl Williams is a leader whose previous assignment had him managing the Ebola pandemic in Africa. This experience along with the robust staff and faculty expertise helped West Point to provide a unique protective posture while also planning for the ongoing needs of the Army to train, educate, and inspire current and future Corps of Cadets. The knowledge gained from working on these cross organizational teams along with preliminary research studies contributed to the guidelines contained herein.

West Point was already utilizing Microsoft Teams, so it was positioned for remote teaching and collaboration from the onset of COVID-19. This proved invaluable as the various departments and experts were tasked to help define, understand, and predict next steps for decision-makers. The West Point Center for Data Analysis and Statistics started using international, national, and local data to conduct interactive predictive analysis on infection rates.

Dr. Erin Bromage [1] lays out the formula as *Infection = Exposure to Virus x Time.* In order to reduce risk of infection, we must limit any possible exposure through distance and time. It is highly unlikely to become infected when there is a large indoor space and a reduction in time where a group of people are sharing the space. Some evidence suggests that talking could be a significant mode of viral transmission. Stadnytskyi et al. [6] used laser light scattering to visualize tiny saliva droplets expelled during speech. The research did not measure droplets with viable SARS-CoV-2 (COVID-19) virus. But if one assumes the droplets contain 7 million virus particles per milliliter, a minute of loud speech could generate more than 1,000 virus-containing droplets that could hang in the air for eight minutes or more. Concluding- "There is a substantial probability that normal speaking causes airborne virus transmission in confined environments."

There is agreement between all the research collected, that wind instrument playing seems to present about the same risk as normal breathing and talking. The same risk mitigation measures should be applied such as- reducing personnel density, reducing shared-space time, and proper sanitary practices.

Application

After gathering the latest information in a rapidly changing environment. Army Bands can rehearse and perform live music during a viral outbreak, if several measures are put into place. The annexes provided go into more detail about specific potential stage setups and operations procedures (**ANNEX C**).

1. Increase in airspace and time. Outdoor rehearsals and performances are best because they allow for rapid air exchange. When outdoor training is not possible, the largest space in terms of volume should be used to allow for maximum air dispersion. Additionally, time is a factor as it is not fully known how long a virus might stay in the air. Reduction in training time and scheduling longer breaks will allow any possible contaminated air to dissipate. One-hour rehearsal blocks that contain 40 minutes of playing and 20 minutes of rest is recommended.

2. Expand distance between musicians. The Centers for Disease Control (CDC) has recommended a six-foot distance for any gatherings of people. [3] This puts most droplet transmission out of range. Although not fully understood, it is unlikely that wind instruments expand the reach of contaminated droplets beyond the individual. Any droplets coming from normal playing, must be captured while indoors and disposed of properly. Normal cleaning and sanitation procedures for instruments will ensure a healthy environment.

3. Use barriers between players. Plexiglass shielding normally used for acoustical purposes, can be used between musicians to further reduce the possibility of droplet transmission. High touch surfaces, such as music stands, must be disinfected following CDC protocols and every effort should be made to reduce touching surfaces which separate players. Sound from each player is individually captured and mixed by the audio engineer, with both in-ear and speaker monitoring. **See ANNEX A and B.**

4. Audiences. For performances, audiences should be minimized and separated by at least six feet. Outdoor spaces generally allow for this type of spacing, however the total number of people is often out of the control of the Band. Other options include- free tickets to limit audience size, broadcasting live sound over local/streaming radio, 'drive-in' concerts [7] (the audience stays in their vehicles).

Future Recommendations

The studies being done in Austria and Germany have produced preliminary results that indicate playing wind instruments presents about the same amount of viral spread risk as talking and breathing normally. [2, 4] More research is being undertaken at the Mechanical Engineering Department, University of Colorado. This will add further rigor to any possible differences in aerosol transmission between wind instruments and normal breathing. A phased approach to return to traditional ensemble rehearsal and performance is recommended. Begin by removing one mitigation measure as conditions change and expert guidance from public health officials is updated.

Prepared by The West Point Music Research Center

CW2 Jonathan L. Crane

SGM Denver D. Dill

May 29, 2020

Annexes

A. Example Stage Plot
B. Individual Example
C. Army Bands COVID-19 Operations Guidelines

References

[1] https://www.erinbromage.com/post/the-risks-know-them-avoid-them

[2] https://medium.com/@SixtoFMontesinos/wind-instruments-may-not-be-as-contagious-as-we-thought-b821e590b29a

[3] https://www.cdc.gov/coronavirus/2019-ncov/community/colleges-universities/considerations.html

[4] https://medicalxpress.com/news/2020-05-vienna-philharmonic-virus-orchestras.html

[5] https://kurier.at/kultur/wiener-philharmoniker-fast-unmoeglich-sich-am-pult-anzustecken/400843943

[6] https://www.pnas.org/content/early/2020/05/12/2006874117

[7] https://www.usatoday.com/story/entertainment/music/2020/05/20/coronavirus-travis-mccready-eli-young-band-attempt-distant-concerts/5226779002/