



Considerations on fifeing and the spread of infectious diseases

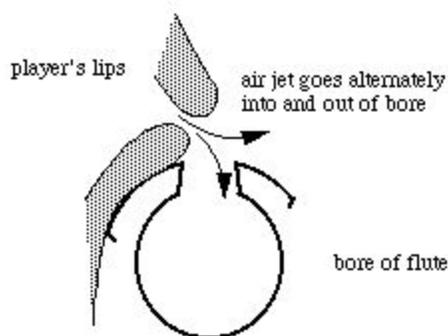
The COVID-19 Pandemic has seen the cancellation and/or postponement of many events both large and small scale. As state and local governments begin reopening and easing restrictions on the size of groups that can gather, musicians need to consider how their activities fit into these new guidelines and whether a different approach is needed when playing music.

The following is for informational purposes only and it doesn't cover state/local ordinances. The point is not to tell you what to do, but to make additional resources available as you make decisions for your organization and yourself.

Three main points to consider

The air going across the fife is as strong as cough (or stronger) and it will travel more than 6 feet

Generally recommended guidelines for social distancing suggest that people stay 6 feet apart, but this assumes that people are talking and breathing normally. That isn't the case when playing the fife. With the fife, a significant portion of the air used when playing doesn't go inside the instrument, but rather is forcefully blown out across the instrument in front of the musician.



<http://newt.phys.unsw.edu.au/jw/fluteacoustics.html>

Since the air needed for fifeing is a powerful stream of air travelling at a speed much greater than regular breathing and uses the same muscles used during coughing it may be worth considering fifeing similar to coughing. Depending on the musician, it may be even stronger!

With this in mind, the following diagram shows how far the droplets and aerosols we exhale travel when exhaling normally, coughing, and sneezing. Without being disturbed by a breeze/wind, regular breathing travels less than 2 meters (6.5 feet), a cough travels 3-4 meters (10-13 feet), and a sneeze can travel 7-8 meters (23-27 feet).¹



The following diagram shows distance in meters. 1 meter = 3.3 feet

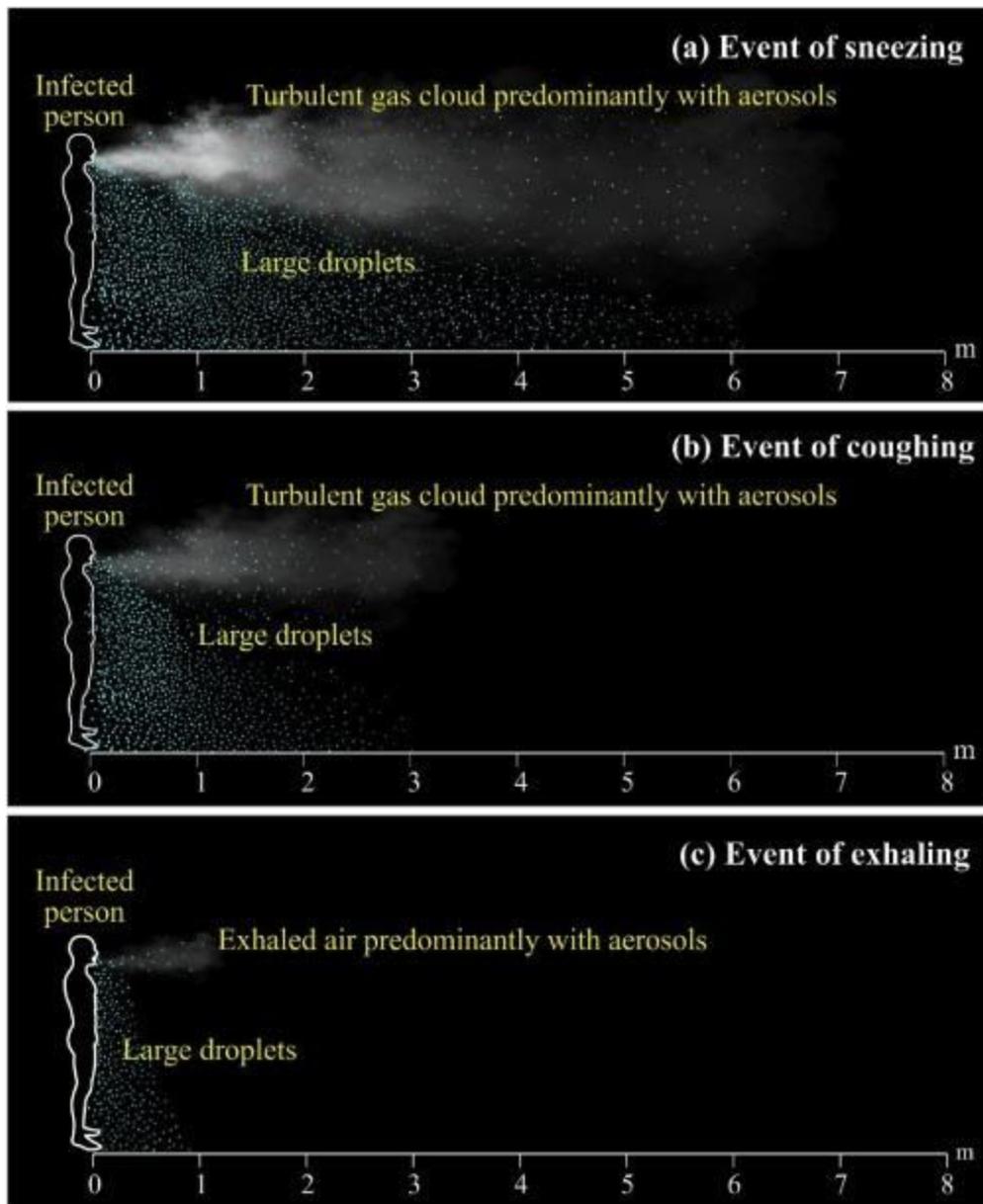


Image from: *Transmission of COVID-19 virus droplets by aerosols*

Aerosols and Saliva can linger in the air

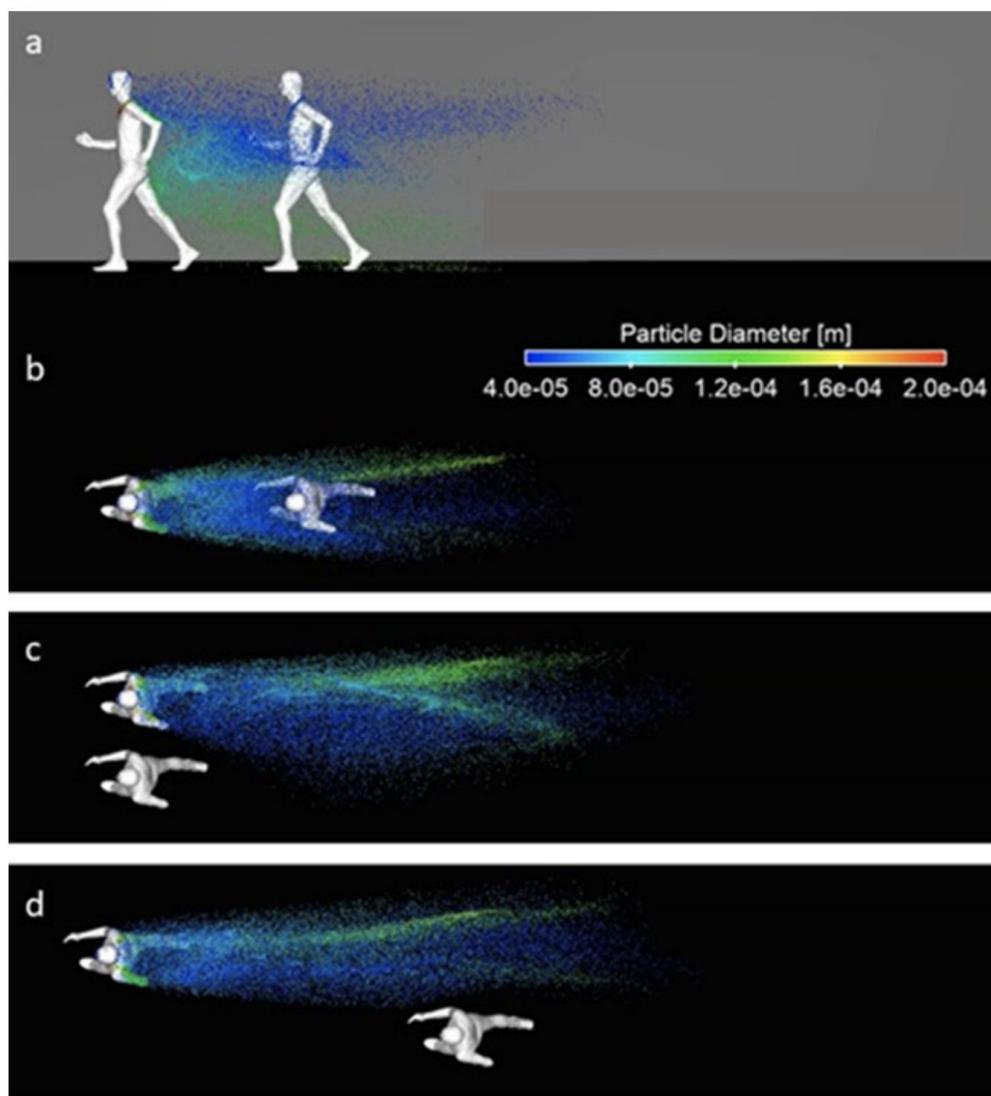
Once exhaled, saliva and aerosols will either fall to the ground or evaporate. Larger droplets will fall quicker, smaller ones/aerosols will linger in the air. As temperature and humidity increase, the time for the aerosols to evaporate increases. Where a droplet might have evaporated in a matter of seconds, it could increase to minutes for it to evaporate and be lingering in the air during that time. ^{2,3}



Motion (walking/marching) Wind/Breeze can cause aerosols to move further or in a different direction

Marching, walking, and breezes/wind can all cause the saliva/aerosols to be stirred up and travel further than when the air and musicians are still.

When walking (or marching) you create a wake of air behind you, and as you exhale the droplets you exhale get caught in that wake. As you increase the speed of your motion, the wake behind you increases, so you need to stay further apart if marching. If walking at 4kph (2.5 mph), the minimum distance someone behind you should be is at least 5 meters (16.4 feet). This doesn't take into account wind/breezes. ⁴



Towards aerodynamically equivalent COVID-19 1.5 m social distancing for walking and running



How far away should you stay?

It depends on what you're doing. Evidence suggests the following:

- If you're standing/sitting still and playing the fife, at least 13 feet, but closer to 20 feet would be a safer distance.
- If you're marching, it's less clear, but staggering (not marching in file, but filling in the space between marchers) with 6 feet between each column, and increasing distance between rows closer to 16 feet would help avoid entering the wake of aerosols behind people/musicians.

Recommended Videos

- [What happens during a human sneeze, exhalation, or cough](#): From a TED Talk on how diseases and epidemics move through a breath of air
- [Turbulent Gas Clouds and Respiratory Pathogen Emissions](#): (video is about halfway down the page) Publication in Journal of the American Medical Association discussing transmission of respiratory infectious diseases - with video of the spread droplets from a sneeze
- [Simulated cough videos](#) from Florida Atlantic University

References

The following publications and articles were referenced in putting this document together.

1. [Transmission of COVID-19 virus droplets by aerosols: A critical review on the unresolved dichotomy](#) published in Environmental Research Journal
2. [Turbulent Gas Clouds and Respiratory Pathogen Emissions](#): Publication in Journal of the American Medical Association discussing transmission of respiratory infectious diseases - with video of the spread droplets from a sneeze
3. [Stay 6 Feet Apart: Simulated Cough Reveals That May Not Be Enough](#) Simulation of cough by Florida Atlantic University and preliminary findings
4. [Towards aerodynamically equivalent COVID-19 1.5 m social distancing for walking and running](#) Discusses what the distance should be for those in motion (walking, running, cycling) in comparison to standing still. Link goes to a page with the article and FAQ.