

Sharing Musical Instruments Means Sharing Germs

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Germs survive for several days in wind instruments including the clarinet, flute, and saxophone, according to a pilot study published in the *International Journal of Environmental Health Research*. The researchers, led by Stuart Levy, MD, of Tufts University School of Medicine, urge proper cleaning of these instruments. The data suggest a need for additional research to determine the conditions for survival of germs on shared musical instruments, especially those with wooden reeds.

"Thousands of children share musical instruments in elementary and high school each year but there is no established standard for cleaning those instruments. We found that disease-causing germs survive on commonly shared instruments for one to two days," said Stuart Levy, MD, professor of molecular biology and microbiology and director of the Center for Adaptation Genetics and Drug Resistance at Tufts University School of Medicine.

"As early as 1957, research showed that wind instruments could hold germs and anecdotal evidence suggests that people who play wind instruments have recurring sore throats and airway inflammation. There are surprisingly few studies, however, that look at the relationship between germ survival on instruments and illness. We tested to see if microorganisms that can cause sickness could survive in or on parts of a used instrument," said first author Bonnie Marshall, MA, MT (medical technology), research associate in the Levy laboratory at Tufts.

The researchers collected samples from 20 clarinets, flutes and saxophones and found living bacteria as well as mold or yeast on all instruments. Using a pump and an aerosol generator, they simulated playing and applied *E. coli*, *Staphylococcus* and a deactivated strain of tuberculosis bacteria to a clarinet. Culturing bacteria from the clarinet, they found that bacteria survived for hours to a few days. The deactivated strain of tuberculosis bacteria survived for up to 13 days. Although the pilot study was not focused on mold or other fungi, the researchers noted that these potentially disease-causing microorganisms also survived on and inside instruments. Wooden reeds and mouthpieces were found to harbor the greatest quantities of bacteria.

In order to prevent or minimize the transfer and growth of germs on instruments, Levy and Marshall suggest that instrumentalists have their own instruments, mouthpieces, and reeds. If the instrument is shared or obtained from a commercial source, to reduce germs, it should be disassembled and then cleaned using alcohol wipes, soap and water, or a commercial disinfectant. Additionally, swab pull-throughs and other drying cloths can be microwaved after use to minimize growth of germs while stored in instrument cases.

"Although hygienic practices increasingly are being encouraged, in part by the swine flu epidemic and methicillin-resistant *Staphylococcus aureus* (MRSA) outbreaks, our results suggest that cleaning shared wind instruments should also be encouraged, especially in schools," says Levy.

Levy has published more than 300 papers, edited four books and two special journal editions devoted to antibiotic use and resistance, and is author of *The Antibiotic Paradox: How Miracle Drugs Are Destroying the Miracle*. He serves as president of the international Alliance for the Prudent Use of Antibiotics, and is a fellow of the American College of Physicians, the Infectious Disease Society of America, the American Academy of Microbiology and the Association for the Advancement of Science. He is also co-founder and chief scientific officer of Paratek Pharmaceuticals, Inc.

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Reference: Marshall, Bonnie M. and Levy, Stuart B. "Microbial Contamination of Wind Instruments." *International Journal of Environmental Health Research*. Published online May 11, 2011. DOI: 10.1080/09603123.2010.550033