

# Local exhaust ventilation to control dental aerosols and droplets

November 10 2021

---

Dental procedures produce aerosols which contain oral microbes, creating potential for infectious disease transmission. This study, "Local Exhaust Ventilation to Control Dental Aerosols and Droplets" published in the *Journal of Dental Research (JDR)*, investigated the effect of a Local Exhaust Ventilation (LEV) device on aerosols and droplets produced during dental procedures. These devices are designed to be placed over the patient's mouth to capture aerosols and droplets at the source.

Researchers at Newcastle University, England, conducted experiments on dental mannequins. Ten-minute crown preparations were performed with an air-turbine handpiece in a large open plan clinic, and full mouth ultrasonic scaling was performed for ten minutes in a single dental surgery. Fluorescein was added to instrument irrigation reservoirs as a tracer. In both settings, Optical Particle Counters (OPCs) were used to measure [aerosol](#) particles between 0.3—10.0  $\mu\text{m}$  and liquid cyclone air samplers were used to capture aerosolised fluorescein tracer. An LEV device with High Efficiency Particulate Air (HEPA) filtration and a flow rate of 5,000 L/min was tested during the experiments.

The results show that using LEV reduced the dispersion of aerosols from the air turbine handpiece by 90% within 0.5 m, and this was 99% for the ultrasonic scaler. The settling of larger [droplets](#) was also measured for the air-turbine, and this was reduced by 95% within 0.5 m when LEV was used.

"This study shows that the effect of LEV was substantially greater than suction alone for the air-turbine and was similar to the effect of suction for the ultrasonic scaler," said IADR President Eric Reynolds, The University of Melbourne, Australia. "While no mitigation measure alone will completely eliminate risk, LEV appears to be a useful approach, which in addition to other measures, substantially reduces dispersion of aerosols, and therefore risk of exposure to pathogens."

**More information:** J.R. Allison et al, Local Exhaust Ventilation to Control Dental Aerosols and Droplets, *Journal of Dental Research* (2021). [DOI: 10.1177/00220345211056287](https://doi.org/10.1177/00220345211056287)

Provided by International & American Associations for Dental Research

Citation: Local exhaust ventilation to control dental aerosols and droplets (2021, November 10) retrieved 13 May 2024 from <https://medicalxpress.com/news/2021-11-local-exhaust-ventilation-dental-aerosols.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.