

# Airborne Contamination Caused by Dental Handpieces

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## INTRODUCTION

A biological tracer (*Streptococcus mutans*) was used to measure the topographical spread of aerosols in dental practice. This was the first such study to use a live biological tracer.

## KEY FINDINGS

- During aerosol generating procedures, the biological tracer was distributed on almost every surface in the dental office, including walls, floor and ceiling. Such an extensive spread was not expected.
- Highest concentrations of tracer were detected close to the operator/dental chair, with a reduced presence in more distant, hard-to-reach locations.
- Distribution depended on the types of droplets and spatter that each instrument diffuses. Diffusion was lower when using counter angle and scaler.

## CONCLUSIONS

- When using a high-speed hand piece in a typical 10x12 ft. closed operatory, the aerosols generated will reach every surface of the operatory.
- Dentists are exposed to a high number of pathogens during aerosol generating procedures.
- Preventative measures against the source and spread of aerosols may be a more necessary course action than the disinfection operatory surfaces etc.
- In surgical settings infection control/PPE measures are typically put in place to protect the patient. In the current dental setting the opposite may be true – there is a need for dentists to protect themselves and other patients from possible sources of infection.

## ADVICE AND RECOMMENDATIONS

- Dentists should not panic. Current PPE has been proven to be effective against other pathogens.
- Avoiding aerosol generating procedures is not a viable solution. Instead, dentists should think about aerosol generation not as a source of spreading disease but

as a way of spreading an effective agent that will combat the disease. For example, by putting a biocidal agent into the water lines of the dental unit, it may be possible to spread the biocidal agent instead of spreading the disease. This theory is now the subject of a further study.

## RESOURCES

- [\*Topographic Aspects of Airborne Contamination Caused by the Use of Dental Handpieces in the Operative Environment\*](#), Journal of American Dental Association.