

AEROSOL CONTAMINATION- A HAZARD TO DENTISTS.....

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Introduction

- Dental practitioners are exposed to various infective hazards during various treatment procedures because many infections can be transmitted by blood or saliva through direct or indirect contact, droplets, aerosols, or contaminated instruments and equipments.
- Dental Aerosols (Micik and Collegues 1969) was defined as particles smaller than $50\ \mu\text{m}$ in diameter. The particle size are small enough to stay air bone for an extended period of time before they settle on environmental surfaces. Splatter (Micik and collegues) was defined as particle larger than $50\ \mu\text{m}$ in diameter.

Sources of aerosol production



Ultrasonic scalers



Air polishing



Preparation of intracoronal cavities



Crown preparation and trimming new restorations



Endodontic Therapy



Amalgam restorations (Mercury vapours)



Removal of old restorations



Removal of composite following completion of fixed orthodontic appliance treatment



Acid etching followed by rinsing and drying

Pathogens in an aerosol

Mycobacterium tuberculosis,
Hepatitis B virus (HBV),
Hepatitis C virus (HCV),
Cytomegalovirus,
Herpes simplex virus (HSV),
Human immunodeficiency virus (HIV),
SARS virus
H1N1 virus

Allergens found in aerosol

Latex allergens,
Formaldehyde vapours,
Ethylene oxide,
Hexachlorophene
Local anaesthetic spray,
Mercury vapours

Preventive measures

Personal Protection



Gloves



Mouth Masks



Head Cap



Protective eye wear

Reducing Aerosol Production



Rubber dam isolation



Extra oral vacuum aspirator (EOVA)



Preprocedural Antibacterial Mouthwash



High Volume Evacuators



High Vacuum suction



Saliva Ejectors



Laminar air purge



High Energy Particulate Air Filters



Aerosol Management system

Treatment of Dental Unit Water Lines

- Aerosol Management system
 - Control of water storage temperatures
 - Automatic treatment devices
- A chlorhexidine acetate based slow releasing device



Use of Sterile water



Use of Sterile water



Anti-retraction valves



Antibacterial filters

Conclusion

Dental aerosols represent an infection hazard for dental hygienists due to their gross contamination with blood and saliva. The advent of SARS and H1N1 and its predicted reemergence during the upcoming flu season have brought the danger of aerosols to a higher level. Aerosols can be easily controlled with appropriate precautions. They add a layer of protection for the operator and others in the dental office.