

Pharmacological Dentistry

It is well established that bacteria in carious dentine, sealed from the oral environment, will gradually lose their viability over a period of time. Furthermore, if a tooth has been restored with glass ionomer cement against the carious lesion, and the seal remains intact, remineralization of the carious dentine will occur.

The predictability of this process can be improved by destroying the bacteria prior to placing a restoration. These techniques include:

- **PAD.** A photo activated dye that releases oxygen into the dentine when stimulated by a low energy laser beam
- **HealOzone.** Uses the principle of diffusing ozone into carious dentine to destroy the bacteria and initiate remineralization.
- **CPP-ACP.** A topical paste containing calcium and phosphate ions that buffers local micro organisms, increases the pH and encourages remineralization of dental enamel
- **Diammine Silver Fluoride.** The high pH and silver content destroys bacteria and fluoride deposited into carious dentine assists with remineralization. The addition of **potassium iodide** after **silver fluoride** application causes white silver iodide to precipitate and prevents the staining associated with silver fluoride treatment.

Traditional treatment of caries involves removing all softened tooth structure prior to placing a restoration. **Pharmacological management** of caries involves treating caries affected dentine in situ prior to sealing the lesion with a restoration.

In order that these two philosophies can co-exist without compromising patient care, dentists should be aware of the alternate treatment modalities and dentists who are treating caries pharmacologically should take the following steps:

1. Identify the restoration and mode of treatment used on the patient's history card.
2. Take a radiograph after placing the restoration so that future levels of remineralization can be confirmed
3. Provide patients in writing with information explaining the medicament used, treatment limitations and information for future practitioners.

Below are examples of information sheets that dentists who are using Ozone or silver fluoride treatment may wish to use as a template to provide an explanation of the remineralization process to their patients.

HealOzone Information Sheet

Advances in dental care enable dentists to treat deep tooth decay with medicaments that will harden the parts of a tooth affected by decay and reduce the probability of exposing the pulp (that part of the nerve with blood vessels). Exposing the pulp may lead to a root canal at some future time.

Your tooth has been treated with HealOzone, a medicament based upon infusion of ozone gas into the decayed tooth structure. This procedure is currently being used to harden decayed teeth throughout Europe, Australia, New Zealand and many other parts of the world.

There are several things that you should be aware of about this procedure.

1. The application of HealOzone to deep decay reduces the possibility of the pulp dying but does not guarantee that you will not require a root canal at some future date.
2. Part of the process of protecting the tooth requires leaving some decay behind over the pulp that will harden after the ozone treatment. If a dentist takes an X ray of the tooth within 12 months of the restoration being placed it may look as though there is decay present. You should inform the dentist that the tooth has been treated with HealOzone and the decay is currently hardening under the restoration.

Silver Fluoride Information Sheet

Advances in dental care enable dentists to treat deep tooth decay with medicaments that will harden the parts of a tooth affected by decay and reduce the probability of exposing the pulp (that part of the nerve with blood vessels). Exposing the pulp may lead to a root canal at some future time.

Your tooth has been treated with silver fluoride, a medicament that has been used to harden decayed teeth in many parts of the world, including Japan, Australia and specifically the West Australian School Dental Service. An unwanted side effect of this treatment is staining that can now be prevented by applying potassium iodide (used in cough medicines and to iodize salt) to the tooth after the silver fluoride application.

There are several things that you should be aware of about this procedure.

1. The application of silver fluoride and potassium iodide to deep decay reduces the possibility of the pulp dying but does not guarantee that you will not require a root canal at some future date.
2. In very few situations a slight stain may occur at the margins (edges) between the tooth and the restoration. This does not indicate that there is active decay in the tooth. If a dentist suggests that decay is present in the tooth you should inform the dentist that the staining may have occurred as a result of silver fluoride treatment.
3. Part of the process of protecting the tooth requires leaving some decay behind over the pulp that will harden after the silver fluoride treatment. If a dentist takes an X ray of the tooth within 12 months of the restoration being placed it may look as though there is decay present. You should inform the dentist that the tooth has been treated with silver fluoride and the decay is currently hardening under the restoration.