

## **DENTAL HOMECARE**

By

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## **Dental Homecare**

Nurses provide a vital role in client education especially in the area of dental homecare. Ultimately the choices are the client's, but you should be providing the best information on which they make these decisions. Client handouts are really helpful as most clients don't listen to everything you say!

There are several key opportunities when you as a nurse can educate clients on dental homecare. The first is when the animal is young at the initial vaccination consults, and at puppy pre-school or kitten kindy if you offer these services. The other time is following a professional clean and scale when the patient is discharged or comes back for a re-check.

Also don't forget to bring to the vet's attention any comments that the client may make about bad breath, difficulty eating or discoloured teeth before they enter the consult room for any reason. Quickly skim the patient's notes after a consult to see if you can reinforce any of the vet's concerns with the pet's oral health.

Matching the degree of commitment with the appropriate home care advice will lead to greater co-operation and success in client compliance. Not all patients are willing to submit to, nor are all clients capable of providing homecare. Be careful not to be over enthusiastic in your recommendations, nor disregarding of the pet's and client's abilities, as you may drive clients away!

### So why bother with dental homecare?

From the moment a tooth erupts the enamel of the tooth is exposed to foodstuffs, saliva and oral bacteria. Similarly following a professional scale and polish the teeth are exposed within seconds to microorganisms, saliva and fluids. These are the “ingredients” of plaque.

Plaque is the thin, sticky film that covers teeth and is composed of bacteria and their by-products, saliva, food particles and sloughed epithelial cells. If plaque remains it begins to become mineralized from elements such as calcium and magnesium from within the saliva. Mineralised plaque is called calculus. Calculus is not pathogenic in it self but is associated with disease as it provides a nice breeding ground for destructive bacteria.

Plaque irritates the gums at the tooth-gum interface, and the bacteria it contains proliferate in the sulcus (groove) around each tooth. The bacteria and their by-products in the sulcus cause further inflammation and destruction of the periodontal ligament. This ligament anchors the tooth in the socket.

Inflammatory products are seen as pus oozing from the tooth base, and as the periodontal ligament is destroyed the pocket gets deeper and the tooth looser. Eventually the tooth falls out but not before the surrounding alveolar bone is destroyed also.

When dental disease is just at the gum inflammation stage it is termed gingivitis. As the periodontal ligament is destroyed the disease is termed periodontitis. Note that you can reverse the effects of gingivitis with a professional prophylaxis and/or homecare techniques however periodontitis is *irreversible*.

*So why bother with homecare?*

***Because plaque is the enemy of the tooth's existence!***

### **Fundamentals of dental homecare**

Plaque forms naturally in all species and breeds so we can't stop it altogether. The aim of dental homecare is to reduce plaque formation and hence prevent the development of periodontitis, or after periodontitis has occurred to slow the destruction of the periodontal ligament.

There are two major ways in which plaque control can be achieved:

1. Physically
2. Chemically

The best home care plans usually involve more than one form of homecare treatment. No single product or technique is 100% effective, and like us we still need regular check ups and cleaning procedures by our dentist.

## *Physical plaque control*

The aim of physical plaque control is as the name suggests the mechanical removing of plaque off the teeth. This is the reason we brush and floss our teeth regularly!

Physical methods of plaque control include tooth brushing, foods, chew treats and some toys.

### *1. Tooth brushing*

Tooth brushing is considered the “gold standard” if performed regularly and thoroughly. Ideally the dog or cat should have their teeth brushed at least once daily. Any less frequent than once every two days is ineffective.

Tooth brushing is not only the most effective technique in removing plaque it is also the most cost effective for clients. In spite of all the good points many clients are unwilling or unable to perform the task. Also some animals are not receptive at all to opening their mouth.

Various sizes and designs of toothbrushes are available in the veterinary market, in addition to those designed for human use. Most commonly used are standard straight brushes. A fine bristle tooth brush is the best.

In addition to straight toothbrushes there is multiple head tooth brushes designed to brush a number of tooth surfaces at once. Powered toothbrushes can be used however some pets, especially cats do not like the noise or vibrations.

Rubber finger brushes can be easier for some clients but the bristles are often not as soft. Clients are also more likely to get bitten as they actually have their hand in the pet's mouth.

Toothpaste applied to the toothbrush can aid plaque removal by having an abrasive effect on the plaque layer. Many veterinary toothpastes are flavoured for pets (e.g. chicken, malt, beef) to increase acceptance of brushing. They have low levels of fluoride and do not foam. Human toothpastes should not be used as they may be swallowed by pets and cause gastric irritation. Cats and dogs also hate minty, froth and bubbles!

The technique for tooth brushing is as easy as 1-2-3!

1. Apply toothpaste to the brush.
2. Place the brush at a 45° angle to the tooth wall.
3. Use a circular sweeping motion with the emphasis on pushing the brush away from the gum line, to brush plaque from the sulcus.

It is best if you can describe and demonstrate the technique for your client. Alternatively a number of websites including Hills has videos on how to brush pet teeth. Encourage clients to start slowly with their animals otherwise they may be disheartened when they don't co-operate.

Start with just the front teeth by lifting the lip and rubbing them with a piece of gauze. Putting toothpaste on the gauze or dipping it in meat stock or tuna broth can help with acceptance. Over several days once the animal is comfortable, the more caudal teeth can be included in the daily rubbing technique. It is a good idea to reward the pet after each small, positive experience. Never fight with an animal.

After some days or possibly weeks in some animals, it should be possible to introduce a toothbrush. Once again just start off with the front teeth, gradually increasing the number of teeth that can be cleaned in a single session. Eventually the whole mouth can be cleaned at one time. Always reward the dog in some way.

Tooth brushing can be taught at a young age as a preventative measure even though the deciduous (baby) teeth will fall out. This sets the pup or kitten up for a lifelong oral care plan. Alternatively, if recommending the technique to clients of older animals you need to be aware of the limitations. Brushing will not remove calculus. Brushing will not reverse periodontal disease. Brushing is only recommended in animals with early gingivitis or healthy gingiva. Beware that gingivitis is painful and overzealous brushing will cause more pain and bleeding. Following a professional clean and scale wait until the oral tissues have returned to normal. Pain is a very negative experience and will result in failure of the technique to control plaque in the future as the animal will not allow it.

## 2. Foodstuffs and treats

Every animal has to eat and some foodstuffs are useful in helping to control plaque. Foods help control plaque through the natural chewing action, physically moving the plaque from the teeth. Some of the dental treats and dry dental foods also have a chemical plaque control agent also.

Not all foods are equal however and many foodstuffs have not been tested or studied in spite of their support. Dry dog food itself is not any better at controlling plaque than tin or moist food except in the case of specifically formulated dental dry foods.

### a. commercially available dental dry foods

There are four major brands with dental specific diets on the market. They are Hills, Royal Canin, Eukanuba/Iams and Advance. The only dental food that relies exclusively on its physical characteristics to help control plaque is the Hills t/d range. The other companies either incorporate a chemical plaque and/or calculus control agent into the food, or apply it as a coating to the individual kibble pieces.

Hills t/d has a patented fibre matrix technology which allows the kibble to maintain contact with the tooth surface, providing mechanical cleansing. There are no abrasives or active chemicals in the kibble. Standard dry pet foods immediately crumble when chewed therefore providing little mechanical removal of plaque.

Many high quality peer-reviewed studies have been produced on the use of Hills t/d kibble in dogs and cats. This includes both short and long term studies of animals fed Hills t/d following professional teeth cleaning, and also animals with existing dental substrate accumulation without professional cleaning.

All Hills t/d products have the Veterinary Oral Health Centre (VOHC) seal for plaque and calculus control. They were one of the first products to receive the seal which indicates that the product claims have been upheld, and that there are significant statistical differences in animals fed the diet. Hills t/d kibble has been shown to reduce plaque, calculus and dental stains in cats and dogs fed the diet exclusively.

Royal Canin Dog and Cat dental kibble are of a larger size than their standard kibble and also claim to have a mechanical plaque removing effect through the kibble texture shape. These foods have also undergone many studies however the products do not currently have the VOHC seal of approval. The ability of Royal Canin to control dental accumulations is via the addition of sodium tripolyphosphate to the kibble (see later notes on chemical control).

Similarly the Australian made products by Advance (Dog Dental and Cat Dental) rely on larger, more textured kibble to provide mechanical plaque removal to teeth. Advance dental diets have the same ingredient as Royal Canin Dental to reduce calculus formation.

Eukanuba do not have a specific dental product however the “Dental Defense System” of the company is applied to all the adult product range. The “Dental Defense System” is that the kibble is coated with sodium hexametaphosphate. This chemical is related to those used by Royal Canin and Advance.

#### b. raw meaty bones

There have not been extensive high quality clinical trials evaluating the effectiveness of raw meaty bones in controlling plaque in dogs or cats. Many people still wish to feed their animal's bones as an aid to control plaque so it is worthwhile knowing the pros and cons of feeding bones to pets. The aim of providing bones is NOT for the animal to eat them but just to chew on them.

The positives of feeding bones are that the client and pet usually enjoy it. Bones are relatively cheap, and bone use encourages chewing and gnawing over a period of time using various teeth in the mouth. It is the repeated chewing action that mechanically removes plaque and calculus.

The negatives of feeding bones are real and not to be dismissed but they can be eliminated or lessened by some simple guidelines. Chewing on bones may fracture the teeth which may expose the pulp cavity, causing pain and leading to tooth root abscess formation. The upper fourth pre-molars or carnassial teeth in dogs are the most frequently fractured teeth. Canine teeth in cats and in dogs are also commonly fractured from chewing on bones.

Gastrointestinal complications such as constipation, bowel perforation and pancreatitis can also occur. These serious GIT issues can be almost eliminated in most animals by following the simple guidelines for offering bones. Small fragments from the bone can become caught in the mouth or across the teeth. These animals usually present very distressed pawing at the mouth. Occasionally an owner will miss this stage and the animal will present because of ongoing drooling, a foul smelling mouth or reluctance to eat.

Bones need to be disposed of promptly and not left lying around the house or yard. Raw meaty bones are an ideal food source for bacteria especially Salmonella. Therefore not only can the health of the pet be affected but so can the owners. Feeding of raw meat and bones from non-human grade suppliers can expose pets to parasites such as tapeworm (e.g. pig hunting dogs). Recommend all-wormers for cats and dogs regularly.

My guidelines for owners who wish to use bones as a feedstuff for cats or dogs, remembering that I want the pet to chew the bone not eat the bone:

1. *Choose the right size/type of bone.*

The larger the bone the better for dogs. Cats may prefer to have a chicken wing disarticulated into 3 smaller segments. Chicken necks for dogs or cats are not suitable – they aren't chewed enough usually to make a difference before the animal swallows them! (Remember the aim.)

2. *No cut surfaces.*

The bone should not be sectioned lengthwise (to “expose the marrow”) or through to expose a cut end. Dogs especially are more likely to hook their teeth and fracture them. Most dogs do not need the extra fat from marrow in their diet also!

3. *Always raw.*

Don't cook in any way, this includes leftovers from the BBQ! Bones are more likely to splinter if cooked. Also do not offer frozen bones as they are more likely to fracture the animal's teeth.

4. *Always supervise.*

Supervision prevents the animal from fighting with other pets, ensures that the animal does not accidentally remove a small fragment that could cause oral trauma or an obstruction, and prevents the yard being dug up.

5. *Throw away after the pet has stopped chewing, or earlier if the animal has excessively chewed the bone exposing the marrow or removing pieces.*

Don't forget that as a foodstuff bones add calories to the pet's diet. I consider a bone to be the equivalent of at least one meal. Trim off excess fat before offering as our pets don't need the calories or a dose of pancreatitis!

### c. commercial dental treats/chews

There are a large number of treats and chews on the market most of which have not undergone rigorous testing of their claims. Treats and chews need to be fed regularly to have an effect, preferably daily, so their use can become costly and calorie burdening. The occasional treat will be nice for the pet but will not significantly impact on their oral health.

Examples of dental treats and chews include Greenies for dogs and cats, Dentastix, rawhide chews and pigs ears. Like bones the correct size needs to be used for each pet and supervision is important.

Greenies are a bone shaped treat for dogs that is coloured with chlorophyll. They are non-staining and are difficult for pets to remove pieces. Greenies have undergone many studies and carry the Veterinary Oral Health Centre (VOHC) seal of approval. The VOHC seal is only given to dental products that have strong clinical trial evidence of effectiveness against plaque and tartar.

Dentastix have conducted trials using the VOHC guidelines but as yet do not have the VOHC seal. They are long straight chews with an X-shape. Designed for dogs they come in three different sizes.

Rawhide chews with and without additional enzyme systems are readily available to clients. These treats require supervision as some animals attempt to swallow them before they are soft enough and can cause GIT obstructions. There is clinical evidence of their effectiveness as a plaque and calculus control agent.

### 3. Chew toys

Many toys on the market are unsuitable chew items. Cheap plastics and rubber toys are best avoided as they commonly break and pieces may become lodged in the mouth or act as a GIT foreign body obstruction. Chewing inappropriate items such as sticks and rocks will wear away the enamel exposing the dentine of the tooth, and possibly the pulp

cavity. Tennis balls act like sand paper and abrade the enamel also. These are best avoided. Rope toys can irritate the gums if fibres get caught between the teeth and tug-o-war is best left for the muscle-minded humans of this world. It is possible to fracture teeth, particularly in puppies if you play too rough. Tug-o-war is also an aggressive form of play that should not be encouraged, especially by children who may be bitten.

A few of the more expensive chew toys are suitable as an aid to controlling plaque by encouraging the natural chewing behaviour of the pet in a safe manner. They are made of flexible but very durable rubber. The most well known brands are the Kong range and the Gummabone range of Nylabone. The original Nylabone are too firm for the strong chewer and cause oral irritation as the surface roughens.

Always choose the most appropriate size and type of chew toy for the pet. Some toys such as the Kong range have a softer model for deciduous teeth of puppies. Note there is no such thing as an indestructible chew toy! (If you have ever had the pleasure of working with Staffy's you'll know what I mean!!)

### **Chemical plaque control**

In addition to physical plaque control, certain chemicals can be used to reduce bacterial numbers associated with plaque formation, or to impede the formation of calculus by interfering with the binding of salivary calcium to plaque.

These chemicals maybe delivered to the oral cavity by a number of means including:

- as an ingredient in foodstuffs and treats
- in mouth rinses, gels and sprays
- as a drinking water additive
- impregnated dental wipes

Some of the products listed above also have a mechanical action to control plaque and have already been discussed.

The chemicals most commonly seen in veterinary dental products include chlorhexidine, zinc salts and polyphosphates.

Chlorhexidine (e.g. Hexarinse, Aquadent) is a true plaque control agent that is bacterial and viral killing. It binds to the pre-plaque matrix (pellicle) reducing the bacterial numbers and weakening them. Due to its ability to adhere to tissues and teeth, chlorhexidine has a prolonged contact time. Chlorhexidine use over a prolonged period can stain the teeth. These stains are temporary and can be removed by professional polishing. Chlorhexidine is very bitter and leaves an odd after taste which can be difficult to hide.

Zinc salts such as zinc ascorbate and zinc gluconate disrupt the “operating systems” of the oral bacteria. This decreases the production and release of foul smelling sulfur compounds from the bacteria. On a practical basis this means the mouth smells less!

Zinc ascorbate stimulates collagen production helping repair diseased tissue. Zinc gluconate inhibits plaque and calculus maturation. It also enhances the anti-plaque activity of chlorhexidine.

Polyphosphates are commonly added to dry foods as discussed previously. They are mineral chelators, which mean they lock away or bind calcium from the saliva. The calcium is therefore not free to “invade” the plaque and turn into calculus.

### **Conclusion:**

Plaque is the thin, sticky film that covers teeth and is composed of bacteria and their by-products, saliva, food particles and sloughed epithelial. Mineralised plaque is called calculus. Failure to control plaque and calculus results in periodontal disease.

There are numerous products available to clients to assist them in providing dental care in between professional teeth cleanings. The highest quality of evidence exists for tooth brushing (cats and dogs), chlorhexidine (dogs), dental foods with textural characteristics (dog and cat), zinc acerbate (cats) and some dental treats (dogs).

Nurses can help reduce the incidence of periodontal disease in their patients by understanding and recommending suitable dental homecare programs. Not all products are suitable or effective for all patient/clients.