# **Improving Client Compliance with Periodontal Homecare**

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Numerous studies with various levels of evidence have been published regarding the benefits of various oral health products, techniques and medications. These evaluations are rarely compiled together in a way that a logical approach to developing a home care "plan" can be formed for patients. I like to think of these different products or techniques as having positives and negatives and along with that, different efficacies for preventing periodontal disease. When considering these materials' functionality and efficacy as proven by the veterinary and human literature, a general tiered system can be used. Constructing a home care regimen is individualized for each patient.

### Tier 1

Daily brushing remains the gold standard for the prevention of periodontal disease and maintenance of good oral health. Since veterinary patients are being brushed to prevent periodontal disease, rather than prevent cavity formation, brushing once daily is sufficient. Different studies show reduction of plaque or tartar based on various frequencies of brushing. Although there is reasonable evidence to support that three times weekly brushing is sufficient, daily brushing is likely to have improved compliance by setting a routine. Having the pet become acclimated to the toothbrush gradually can improve client and pet compliance. Pairing the brushing with a positive daily "reward" will create a pet who expects or seeks the tooth brushing activity. I recommend brushing once daily before feeding. By disrupting the subgingival bacterial matrix once daily, an environment which predisposes the gram negative anaerobic bacteria to overpopulate is reduced. Human toothpaste should not be used since the amount of fluoride contained in these products is not meant to be swallowed and may cause fluorosis of the kidneys. Veterinary research suggests that brushing with water versus veterinary toothpaste demonstrates no significant difference in the amount of plaque and tartar accumulation. Veterinary toothpaste tastes good to dogs and cats and functions more as a reward than a primary cause for plaque reduction.

Which pets should be conditioned to the toothbrush- the short answer is: the safe ones. As veterinarians we do not want to put the clients in harm's way. An unpredictable pet, fear biter, or animal who has a history of biting, are all animals that should not be brushed. In addition, tooth brushing in pets is centered on preventing periodontal disease. Periodontal disease in the classic sense will not be a disease effecting animals under 6 months. Save tooth brushing recommendations for animals 6 months of age or older. Ideally this could be taught at spay/neuter time. Also, do not encourage tooth brushing in animals over 1 year of age without performing an anesthetized thorough oral exam. If unappreciated areas of disease are unknowingly contacted by the tooth brush, the pain may result in the client being bit, or the animal associating the toothbrush as something that causes pain. The large number of bristles and flexibility of those bristles to reach under the gum line make tooth brushing the most efficacious method of preventing periodontal disease.

## Tier 2

Regarding food, in most situations dry food results in less plaque and tartar accumulation. Veterinary prescription diets like T/D and Royal Canin incorporate technology which results in the fiber within the food to be orientated in a manner that predictably affects the way the food breaks when chewed. Repeated chewing creates a mechanical disruption of plaque before it can mineralize into calculus. Eukanuba/Iams and Royal Canin make pet food products containing polyphosphates. Polyphosphates are responsible for chelating calcium found in saliva. When the salivary calcium is rendered unavailable to plaque, the process of plaque mineralization and subsequent calculus formation slows. Polyphosphates are bound to sodium in the dry form. The molecules dissociate in saliva. Prescription diets designed to be low in sodium (renal and cardiac diets) will not be labeled as having polyphosphates in the ingredient list.

#### Tier 3

No one polices the marketing claims found on the labels of veterinary treats and toys. Careful selection of appropriate treats and toys that are not so hard that they fracture teeth is important. The muscles of mastication can generate more pounds per square inch than teeth can withstand. Dogs who are heavy chewers are prone to fracturing the major chewing teeth (upper 4th premolars) when gnawing on these hard objects. Careful selection of chew treats and toys should be made to avoid tooth fracture. A good rule of thumb for clients is- "if you can hit yourself in the knee with it and it hurts, it's probably too hard for them to chew on." Chew treats and toys offer a limited mechanism of periodontal disease prevention. While mechanical disruption of plaque may be helpful, the chew objects do not reach below the gum line where periodontal disease occurs. The Veterinary Oral Health Council website (www.VOHC.org) is a great source for clients and veterinarians to find reliable information about which oral health products work. Many more products may be safe and efficacious than are presented on this list. These manufacturers have gone through great expense to perform high quality scientific experiments to prove their product works.

Barrier sealants like Oravet have also been shown to reduce plaque and tartar buildup. While Oravet is not a replacement for brushing, it can be used in patients where daily tooth brushing is taking place. It is important to remember that when clients are applying Oravet, they should brush the teeth first that day, and then apply the Oravet treatment. Twenty-four hours after Oravet is applied, it is believed to have repelled itself all around the exposed tooth surface. I describe Oravet as "ChapStick for your teeth." Being a waxy substance, it is hydrophobic and therefore, plaque has difficulty adhering. In addition this product spreads itself around the teeth because of a slight cationic charge. Applying the material to the cheek side of teeth and waiting 24 hours before brushing should provide ample time for the material to coat the entire tooth.

# Tier 4

The use of water additives, oral rinses and prescription antibiotics should be used carefully and sparingly in veterinary oral health management. An ingredient in some water additives include xylitol, which despite having antibacterial properties, also has a very narrow therapeutic margin and puts canine patients at great risks of xylitol toxicity. Oral rinses typically contain chlorhexidine or ascorbic acid which both functionally serve to have antibacterial properties. The ultimate problem with rinses and water additives, even when used properly, is that they do not penetrate into the targeted area where periodontal disease develops- subgingivally. Penetration into the periodontal pocket and gingival sulcus is extremely limited. These products are better used on desired treatment of surfaces where these products can have sufficient contact time. These products will help manage surface bacteria on the gingiva, bacterial load on the tongue or mucosa.

Antibiotics predominately serve as a band-aid for the long-term management of periodontal disease. With extended use, selection for resistant bacteria is expected. The use of "pulse dosing" antibiotics can be helpful in cyclically reducing the load of subgingival bacteria colony forming units. It has been established in people that beyond a certain threshold of colony forming units, the host's response and bacterial byproducts begin to incite sufficient inflammation that results in bone resorption. A commonly used pulse dosing schedule involves medicating the patient for the first 5-7 days of each month. Drugs used for the treatment and management of periodontal disease includes clindamycin, clavamox, metronidazole and doxycycline. The concentrating ability of doxycycline in the gingival crevicular fluid as well as the anti-inflammatory effects makes doxycycline a good choice for patients requiring long-term therapy. Doxycycline is best titrated to the lowest effective dose and consistently administered.

- Doses I use for these medications include:
- Clindamycin 5-11 mg/kg, twice daily
- Clavamox 12.5-13.75 mg/kg twice daily
- Metronidazole: 10-25mg/kg twice daily
- Doxycycline: 3-5 mg/kg twice daily
  - Long term therapy with doxycycline should be titrated to the response of the patient's clinical disease.
    Typically I like a full dose (3-5 mg/kg BID) for three to four weeks. Then, 3-5 mg/kg once daily for 3-4 weeks, then same dose every other day and lastly 2.5 mg/kg once or twice daily.

Dental cleaning and oral evaluation under anesthesia is necessary to identify and treat oral pathology before its chronicity results in spontaneous exfoliation of teeth. Undue discomfort and suffering accompanies progressive periodontal disease states and successful prevention allows for maintaining a positive "quality" of life. Tips for helping clients maintain a healthy oral cavity can be created from the perspective of many different directions using many different products. Whichever home care techniques are recommended, the goal should be to minimize the time, cost and number of invasive therapies required of future dental procedures. Help clients recognize that "an ounce of prevention is better than a pound of cure."

#### **Recommended reading**

Roudebush P, Logan E, Hale FA. Evidence-based veterinary dentistry: a systematic review of homecare for prevention of periodontal disease in dogs and cats. J Vet Dent. 2005 Mar;22(1):6-15.

Gengler WR, Kunkle BN, Romano D, Larsen D. Evaluation of a barrier dental sealant in dogs. J Vet Dent. 2005 Sep;22(3):157-9. Hale FA. The owner-animal-environment triad in the treatment of canine periodontal disease. J Vet Dent. 2003 Jun;20(2):118-22. www.vohc.org

Hennet P, Servet E, Soulard Y et al. Effect of pellet food size and polyphosphates in preventing calculus accumulation in dogs. J Vet Dent 2007; 24(4):236-9.