DENTAL PREVENTIVE CARE RESOURCE GUIDE
For Medical Leadership
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INTRODUCTION: PREVENTIVE CARE RESOURCE GUIDES

Purpose
For our hospital teams to embrace and excel at preventive care, it is critical that our field and medical leadership are subject matter experts and highly skilled coaches on each of these topics. To help with this, over the next several years we will be producing preventive care resource guides to address each of the five preventive care elements, beginning with this dental guide.

Our goal is to create a single, easily accessible resource where field and medical leadership can access information on these subjects including:
- Our practice philosophy
- Fundamental medical information
- Resources for more in-depth review
- Tools and activities for engaging and educating associates and hospital teams

Intended Use
These guides are intended to enhance your toolbox of available resources for use when needed. While these guides are primarily directed towards helping medical directors (MDs) and chiefs of staff (COS) develop their doctors, much of the information provided can also be used to educate and train all of our hospital team members. We highly encourage all of field leadership to review the medical content together. Use this guide for the following:
- To provide a consistent message about our practice philosophy on preventive care throughout our hospitals
- To educate and engage associates and hospital team members
- To locate resources on preventive care subjects
- To improve functional competencies and medical education
- To coach doctors to develop individual education plans and improve medical competencies

Five Key Ways to Use the Guide
Use the following suggestions to become a better subject matter expert and coach on preventive dental care:
- Utilize the dental and preventive care resource lists in the back of the guide
- Pick a section or topic, every few weeks, to review and do more research using the provided resources
- During hospital visits, use the guide to provide resources on a procedure being performed or answer a question the hospital teams may have relating to a case they've seen recently
- Use the “Meetings in a Box” to help the hospital teams improve in specific subjects
- Review Dental Care Standard Operating Procedures (SOPs) with the hospital teams and use as a guideline for providing consistent, high quality care for our patients
Key To The Resource Guides

Formats
The guides will be available in several different formats for your convenience, including:
- Printable pdf copy - stored in FieldComms and on the dotBanfield Dentistry resource page
- Electronic format - stored on the dotBanfield Dentistry resource page
- Printed booklets produced with the dental campaign in 2013

SmartHelp resources will be updated to reflect the message and content of these resource guides. The medical content of these guides will be updated on an annual basis. In addition, feedback from the field on how to make these a more useful tool for medical and field leadership will be incorporated with each new version.

KEY TO THE RESOURCE GUIDES

Engagement Questions

Action Items / Areas of Opportunity

Group Activities
Lead a team meeting to discuss a topic or develop a hospital policy on a particular subject or give a 10-15 minute educational in-hospital lecture or demonstration.

Read an Article, Document or Paper

Go to a Website

Watch a Video

Meeting in a Box
Use these educational materials to train hospital team members.

Best Practices
Feedback and suggestions from our hospitals that excel at dental preventive care.

Our Clients Have Spoken – Client Quotes
PRACTICE PHILOSOPHY ON PREVENTIVE DENTAL CARE

Preventive care is one of Banfield’s three foundational pillars. Dental care is just as important for our patient’s health as vaccinations, nutrition, behavior, parasite control and all other areas related to preventive care. The vast majority of dental diseases we diagnose in practice every day are completely preventable. Focusing on the prevention of dental disease versus waiting until visible or significant disease is present can decrease medical costs, reduce the chance of associated local or systemic diseases, strengthen the family-pet bond, prevent pain and improve the quality of life for our patients.

The Three Keys to Effective Preventive Dental Care are:

1) Client education
   - Start client education on the first visit
   - Educate clients on the importance of prevention versus waiting for visible or significant disease to develop
   - Be specific and confident about your recommendations

2) Regular oral care at home
   - Show every client how to brush their pet’s teeth (using a finger brush or pet toothbrush and pet-specific toothpaste)
   - Brush three times a week at a minimum; daily is best, if possible
   - Use appropriate dental toys, treats, rinses, wipes and diets in addition to brushing

3) Professional care as prevention and treatment
   - Regular oral/dental examinations:
     - Every pet, every visit – at least every six months
     - Regular examinations detect early signs of dental disease before they become more serious or contribute to other systemic diseases
     - Regular examinations allow the medical team to gain a complete medical history and assess a pet’s risk for dental disease
   - Regular professional dental cleanings:
     - Don’t wait for signs of disease to perform a professional dental cleaning
     - Dental cleanings at least annually, starting at 1 year of age for cats and small-breed dogs and 2 years of age for large-breed dogs
     - Starting professional dental cleanings early saves money, reduces risk of dental and systematic diseases and prevents pain in pets

Please note: These are best practice recommendations and are subject to a doctor’s clinical judgement on what is best for the individual patient.

Every associate. Every visit. Every pet. Every client.
Prevalence of Dental Disease

- Periodontal disease is the most common disorder affecting cats and dogs worldwide
- 78 percent of dogs and 68 percent of cats show signs of oral disease by age 3
- 15.5 million dogs and cats with stage 2, 3 and 4 periodontal disease had not received any previous professional dental cleanings/treatment

Client Perception

- A survey found that approximately 2 out of 3 respondents felt that preventive dental strategies were important. However, only approximately 1 out of 3 of the respondents ever had their pet’s teeth professionally cleaned.
- Only 1 out of 5 pet owners have ever brushed their pet’s teeth.
- Only 1 out of 5 cat owners and 1 out of 4 dog owners stated they would be likely to take their pets in for a dental cleaning.
- Approximately 1 out of 3 pet owners were surprised to learn that their pets can have dental disease without showing any signs of illness.

The veterinary profession has a great opportunity and responsibility to improve how we educate clients on the importance of home dental care and routine professional dental cleanings.
BANFIELD TRENDS IN DENTAL CARE

Areas of Opportunity

Dental disease is the number one diagnosis:
- In all canine breed sizes and all ages of cats except juvenile
- In 2011, 50.9 percent of all dogs had a diagnosis of dental calculus
- In 2011, 40 percent of all cats were diagnosed with dental calculus
- In 2011, 89 percent of dogs and 83 percent of cats over 3 years of age had a diagnosis of dental disease (calculus, gingivitis and/or periodontal disease)
- Since 2006 there has been a rise in the prevalence of dental disease in our dog and cat patient population
  - 12.3 percent increase in dogs
  - 10.2 percent increase in cats

Missed Opportunities

We offered treatment to less than half of the patients we diagnosed with periodontal disease.
- In 2011, only 41 percent of our canine patients diagnosed with periodontal disease received a recommendation for treatment (59 percent of dogs did not)
- In 2011, only 36 percent of our feline patients diagnosed with periodontal disease received a recommendation for treatment (64 percent of cats did not)

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**Over half of our patients we diagnosed with periodontal disease were sent home without appropriate recommendations or treatment.**

**Clients approve treatment 4 out of 5 times it’s offered**

**Total Canines Dx with Periodontal Disease**
- 41% Properly Offered
- 59% Care Not Recommended
- 17% Declined
- 83% Accepted

**Total Felines Dx with Periodontal Disease**
- 36% Properly Offered
- 64% Care Not Recommended
- 20% Declined
- 80% Accepted
When we did offer treatment, more than 80 percent of our clients approved treatment.

- Cat owners approved treatment 4 out of 5 times it was offered
- Dog owners approved treatment 4.2 out of 5 times it was offered
- One of the keys to this successful acceptance rate is our Optimum Wellness Plans® (OWPs), which make dental care more affordable

Recommend professional dental cleanings and treatment to 100 percent of the patients diagnosed with periodontal disease who are healthy enough to undergo anesthesia.

The most common reasons given by our veterinarians for not recommending dental cleanings and/or treatment when they were indicated were:

- The pet's health condition (57 percent)\(^5\)
- The concern of anesthetic risk by the veterinarian or the client (46 percent)\(^5\)

Do not deny dental care to patients solely because of advanced age; dental disease is extremely common in geriatric pets, is often painful and can decrease a pet’s quality of life and affect the family-pet bond.

With appropriate pre-anesthetic workup, anesthetic protocol use and monitoring, the anesthetic risk is low, even for geriatric patients or those with pre-existing medical conditions. See Professional Dental Cleaning on page 25 for a detailed list of ways to decrease anesthetic risks for geriatric patients.

Recommend an individualized home oral care plan (brushing, chews, diet, etc.) and professional dental cleanings (as appropriate) for every dog and cat seen.

Do you think it is better for our patients to recommend prevention (regular home care and annual professional dental cleanings) or wait until there are obvious signs of disease to recommend treatment? What do you think our clients would appreciate the most?
Areas of Strength

Did you know the highest percentage of our adult cats that are on OWP are on an Active Prevention plan (the first level plan that includes dental cleaning)?

- 41.2 percent of our adult dogs are on the Active Prevention plan
- 58.5 percent of our adult cats are on the Active Prevention plan
- 9.3 percent of our adult dogs are on the Special Care plan
- 8.6 percent of our adult cats are on the Special Care plan

Did you know that our patients on an OWP receive more care and better preventive care?

- 96 percent of the pets receiving dentals in our hospitals are OWP patients
- Of patients on an adult OWP, 53 percent are on plans that include dentals

Make sure to recommend the appropriate level plan for your patients upon enrollment and when plans renew:

- Recommend Active Prevention plans, which include professional dental cleanings for:
  - Cats 1 year of age or older
  - Small and medium breed dogs 1 year of age or older
  - Large breed dogs 2 years of age or older; sooner if any visible sign of dental disease is present

- Recommend Special Care plans, which include more extensive diagnostics for:
  - All senior patients
  - Any patients with pre-existing medical conditions

- Recommend add-on “second dental cleanings” for:
  - Dogs and cats with significant periodontal disease
  - Breeds predisposed to periodontal disease
  - Patients with pre-existing medical conditions, like diabetes and Cushings disease, which predispose them to infections
  - Remember, you can also upgrade an OWP anytime to include a dental cleaning

OWPs remove many of the barriers and make it easier for our clients to do the right thing for their pets. Patients on an OWP receive more care and better preventive care.

96% of pets receiving dentals in our hospitals are OWP patients.

Make sure to recommend the appropriate OWP for each individual patient based on species, age, breed and medical history.
OUR CLIENTS HAVE SPOKEN

Clients state they want veterinarians to recommend the best medical care for their pets regardless of cost, but weren’t always sure what the specific recommendations were or what their pets needed and why.

“This Banfield location is wonderful! It is so easy to make an appointment, the staff sets very clear expectations for the visit and my dog’s care, and they are always extremely friendly. What puts them far above the other Banfields I’ve been to is the follow-up. After my first wellness checkup, they discussed dental cleaning and what the upgraded plan would cover. Then they made sure to call me the next month to check in with me for the upgrade and to schedule the appointment. I got a reminder call the day before, a status call the day of, thorough discussion when picking up, and I’m sure, like my last visit, I’ll get a follow-up call sometime this week. The staff at this location is so attentive to their customers and patients! I will ALWAYS be a Banfield customer!”

“I did not have a clear understanding of the dental plan when it was recommended and was sticker shocked when given the quote on Lo’s treatment. I purchased additional items and got home without them. When you drop your dog off, they have ALL DAY to get your dental chews and water treatment ready for you; the only item in my bag was my pet’s antibiotics. I now have to make a separate trip to pick those items up and Banfield is not convenient for me as I live in a rural area.”

“This was my dog’s first dental exam and his first time going under anesthesia. I was very concerned and worried for him and I called to check up on him. The staff assured me that everything was fine and he would be ready for pick up at 5:30 pm. Upon arriving to pick him up, the doctor herself came into the patient room and explained everything to us in detail. She understood my concern and reassured me that everything was fine and she let me know that if I had any questions or concerns, I was free to call them or bring him back for a check-up.”

Choose a quote above. As a team, discuss what was done right, or wrong, and how your team could improve in these areas.
DEVELOPING PARTNERSHIPS (KEYS TO COMPLIANCE)

Increasing Client Involvement in Preventive Care

Make clear recommendations for dental care
- Make sure a clear and consistent message is coming from all team members
- Meet with the client prior to drop-off to set expectations, review the treatment plan, discuss other potential needed treatments and answer any questions
- Be clear about what is and what is not covered by an OWP

Address clients concerns and fears about professional dental treatment
- Fear of anesthesia
  - Emphasize how the benefits outweigh the risk of maintaining good oral health
  - State that the prevalence of dental disease is very high
  - Communicate that there is a very low anesthetic risk associated with dental cleanings
  - Explain our anesthetic protocols, the use of IV fluids and monitoring standards of care
- Lack of knowledge about the oral cavity
  - Dental disease is extremely common
  - Up to 60 percent of dental disease occurs beneath the gums and may not be visible
  - Bad breath is a common indication of dental disease
  - Dental disease can be very painful

Use a dental exam light to show clients their pet’s teeth and explain what they are seeing.

Use the Dental Status Report to educate clients on the current dental health status of their pet.
Client handouts and models can be excellent tools to educate clients on oral health maintenance and dental disease.

This form can be found in SmartHelp > Client Handouts > Dental > Brushing Your Pets Teeth.

- Cost concerns
  - Waiting until disease is present can result in longer time under anesthesia, more invasive procedures and increased expenses for the client.
  - The average pet insurance claim for tooth-related disease is 31 percent higher than the average claim for preventive dental care.
  - The average difference in cost between an Essential Care plan (with no dental) and an Active Prevention plan (with annual dentals) is only $6-7/month.
  - Cats and small and medium-breed dogs moving from the kitten and puppy plans to an Active Prevention plan (to allow for their first annual professional dental cleaning) will see a minimal or no change in their annual plan cost or monthly payments.

- It is more expensive to treat dental disease once it is present than to prevent it in the first place.
Have the hospital associates share in a team meeting the last time they had their pet’s teeth cleaned and why or why not. Also have them discuss what the experience was like from a client’s perspective.

Have the MD or COS share a client complaint concerning a dental care Client Advocate Team (CAT) call. Discuss what was done right, what opportunities were missed and what barriers the client was experiencing (if any).


The doctor should be involved with the client conversation regarding dental health when getting approval for services.

Use good communication skills when educating clients on the importance of good oral health, home care and professional dental care.

“We saw Dr. Anderson at Banfield Pet Hospital and were very impressed with her bedside manner with our pets. She explained the wellness program to us and we thought it was great as we liked the idea of being able to spread the payments out over the course of the year rather than have random high dollar visits. We have always been good about annual dental and health exams; this worked out perfectly.”

Remember to use FRANK and ExCEED whenever speaking with clients.
Our ultimate goal is to prevent periodontal disease, avoid tooth or bone loss, avoid oral infections and prevent related systemic diseases in all of our patients. The following are some key points that can help you educate clients regarding the importance of preventive dental care.

**Prevalence of dental disease**
- Dental disease is extremely common
- 78 percent of dogs and 68 percent of cats over 3 years of age have visible signs of dental disease

**Effect on health**
- Dental disease can be extremely debilitating and cause painful pathology
- Chronic pain can result in behavioral changes that affect the family-pet bond
- Periodontal disease is associated with systemic changes and may increase risk for other illnesses such as heart, liver and kidney disease
- Infection is common in the oral cavity of dogs and cats
- Periodontal disease releases bacteria into the bloodstream during eating, chewing and dental procedures
- Proper dental care may contribute to improving a pet’s quality and length of life


**Easily preventable**
- Early and regular treatment can reduce the need for advanced dental treatment
- Prevention is easy and relatively inexpensive (brushing, exams, professional dental cleanings)
- Even early stages of periodontal disease can cause irreversible damage; prevention can keep damage from occurring
Every associate should talk to each client about the importance of dental health, during every visit, including explaining the systemic problems associated with dental disease.

As a team, put together a dental care education toolkit for your clients. Include client handouts, visual aids, sample pet toothbrush/toothpaste and a list of recommended websites. Create kits to go home with your clients and for exam room education.

Use visual aids, like this periodontal disease chart, to help educate your clients.

This form can be found in SmartHelp > MEDICINE > Dentistry > Forms, Manuals, and Guides > Stages of Periodontal Disease chart.

Go to the Veterinary Oral Health Council website to review products and diets with proven efficacy in decreasing tartar and/or calculus at http://www.vohc.org.
**PREVENTIVE DENTAL CARE STANDARDS**

The chart below outlines our recommendations for comprehensive preventive dental care for all of our patients. Print a copy of this chart, which can be found on the dotBanfield Dentistry page and review with all hospital associates.

| Home Care | Tooth Brushing | Minimum of 3 times weekly in a healthy mouth or immediately after a professional dental cleaning
|           |               | Needed daily if there is any dental disease present
| Diet-Based Therapies | Use toothpaste formulated for dogs and cats; human products often contain:
| Minimum of 3 times weekly in a healthy mouth or immediately after a professional dental cleaning | • Fluoride, which can cause gastrointestinal upset
|           | Minimum of 3 times weekly in a healthy mouth or immediately after a professional dental cleaning | • Xylitol, which can cause a drop in blood sugar levels
|           | Minimum of 3 times weekly in a healthy mouth or immediately after a professional dental cleaning | Toothbrushes made for pets are most effective; but finger brushes, gauze sponges, pastes or powders can be used
|           | Minimum of 3 times weekly in a healthy mouth or immediately after a professional dental cleaning | Regular brushing is the most important thing clients can do at home to help prevent dental disease in their pets
| Diet-Based Therapies | There are diets specifically designed to help improve oral health and slow the buildup of calculus and tartar
| Diet-Based Therapies | Mechanical disruption of the plaque layer on the tooth surface is an effective means of reducing plaque and calculus accumulation
| Dental Products and Treats | Polyphosphate coated biscuits and treats can help control calculus accumulation in dogs and cats
| Dental Products and Treats | Chew aids, like rawhide strips, can provide short-term calculus control in dogs
| Dental Products and Treats | Dental chews and treats alone will not provide effective home care; recommend brushing as well
| Professional Care | Recommended for every patient at least every six months
| Professional Care | Allow for early diagnosis and treatment
| Professional Care | Help ensure optimal home care is occurring
| Professional Care | Provide time for continued client education
| Professional Dental Cleanings | Annually, or biannually, based on species, breed, age and oral examination
| Professional Dental Cleanings | Allow for thorough dental/oral examination and assessment
| Professional Dental Cleanings | Allow for the detection of dental disease hidden beneath the gum line such as fractured teeth, periodontal pockets, bone loss, etc.
| Professional Dental Cleanings | Allow for dental cleaning, which can NOT be adequately performed without general anesthesia
| Professional Dental Cleanings | Allow diagnostics and treatments to be performed while the patient is under anesthesia

Please note: These are best practice recommendations and are subject to a doctor’s clinical judgement on what is best for the individual patient.
What is preventive care?
The practice of veterinary medicine which focuses on disease prevention and health maintenance.

Why is preventive care important?
- Clients want their pets to be healthy
- Clients trust us to make the best recommendations for the care of their pets
- It has the potential to increase longevity and quality of life for all of our patients
- We have a responsibility to prevent diseases whenever possible, instead of waiting to diagnose and treat them once they’re already present
- A focus on wellness visits and screenings permits the prevention or early detection and management of diseases
- Early detection of diseases can result in a better prognosis and lower treatment costs
- The majority of the pets we see each day are presenting for wellness and preventive care
- We can have a much greater impact on the lives of our patients and families by focusing on client education and preventive medicine
- Promotes and enhances the family-pet bond

How do we excel at preventive care?
- Make a leadership commitment to focus on preventive care
- Obtain a commitment from every hospital team member to focus on preventive care
- Utilize all hospital team members to provide consistent client education during every visit
- Emphasize the value of routine wellness care to all clients
- Work together to define hospital team members’ roles and responsibilities
- Create comprehensive, individualized preventive care recommendations for each and every pet, based on breed and life stage
- Make sure to incorporate all five of the preventive care elements in your recommendations
- Utilize PetWare® to create individualized recommendations for each patient
- Use an OWP as a tool to help clients afford excellent preventive care

How do we excel at dental preventive care?
Create comprehensive, individualized dental care recommendations based on breed, life stage, lifestyle, individual risk factors and medical history (see “Personalized Preventive Care” on page 18).

We can have the greatest impact on our patients and their families by focusing on keeping pets healthy, instead of waiting to treat diseases once they are present.

24% of pet owners believe that routine health care is unnecessary.

All of our DVMs should watch the 14 minute video by Dr. Andy Roarke titled “Sharpen your axe,” which highlights the importance of focusing on preventive care every day at www.youtube.com/watch?v=PQ9wdkCsS2o; share with team members as appropriate.


Do the team activity “What would you say to this client” to work out an example script to answer questions clients have concerning the importance of preventive care. (AAHA’s Evolving to a culture of prevention: Implementing integrated preventive care, pages 18 – 20; available on AHAA’s website).
Creating comprehensive, personalized recommendations for each individual pet is important:

- Our clients want us to make personalized recommendations for their pets
- Allows us to educate our clients on the unique medical concerns and needs for their pets
- Can improve client compliance and acceptance of medical recommendations
- Permits early disease detection and prevention

Breed recommendations:

- At least 2/3rds of the several hundred dog breeds have recognized genetic disorders or disease predispositions.
- Conduct breed-specific disease evaluation and screening.
- Focus on breed-related dental diseases and common conditions.
  - Certain breeds have a higher incidence of dental conditions.
    For example, small breeds (for periodontal disease) and brachycephalic dogs (for malocclusions).
  - Early intervention and increased frequency of dental preventive care and assessments are indicated in these breeds.

Life stage recommendations:

- Provides a framework for individualized care.
- Consider age, size and breed when defining a dog’s life stage.
- Begin discussing life stage recommendations and setting expectations at the very first visit.
- Review recommendation for the next year during the “What’s Next Exam.”
- Focus on age-related dental diseases and common conditions.
  - For puppies and kittens (birth to 9 months), evaluate deciduous dentition, retained deciduous teeth, extra or missing teeth, oral development and occlusion. Recommend home care and appropriate toys and dental treats.
  - For young dogs and cats (5 months to 2 years), evaluate permanent dentition, developmental abnormalities, accumulation of plaque and calculus. Recommend home oral care and schedule first professional dental cleaning and assessment.
  - For adult dogs and cats (2 years and over), evaluate for progression of periodontal disease, oral masses, fractured teeth, oral pain, behavioral or grooming/chewing change and quality of life. Recommend home care and annual, or biannual, professional dental cleanings and assessment.

The top 10 breeds at risk for periodontal disease are:
- Toy Poodle
- Yorkie
- Maltese
- Pomeranian
- Sheltie
- Cavalier King Charles Spaniel
- Papillon
- Standard Poodle
- Dachshund
- Havanese
Other considerations:

- Focus on lifestyle and risk for each individual patient including regional prevalence of diseases, nutritional status and diet, chewing habits, etc.
- Make recommendations based on previous medical history; periodontal disease prevention is especially important for patients with underlying conditions like diabetes and Cushing’s disease.

Have your whole team use the juvenile breed-specific client handouts to educate clients on which breeds are predisposed to periodontal disease. Located in SmartHelp > CLIENT HANDOUTS > Breed Handouts.


The information in the remaining pages of this guide relates to the skillset required by our veterinarians and hospital team members when providing excellent preventive dental care and dental treatment to our patients. In addition, there are detailed resource lists for both dental care and preventive medicine at the end of this guide.

DENTAL PREVENTIVE CARE: SKILLSET

Standard Operating Procedures (SOPs) for Dental Care

The Banfield Medicine team, including Medical Quality Advancement, in cooperation with a dental specialist, have created a number of SOP documents for dental care, which can be used to:

- Set expectations for appropriate care
- Incorporate best practice recommendations
- Serve as a tool for training hospital team members
- Ensure a high minimum standard of care

The following is an example of an SOP for professional dental cleaning:

Dental SOPs will be located on the dotBanfield Dentistry page.

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- Incorporate best practice recommendations
- Serve as a tool for training hospital team members
- Ensure a high minimum standard of care

The following is an example of an SOP for professional dental cleaning:

Dental SOPs will be located on the dotBanfield Dentistry page.
Roles and Responsibilities

- Providing effective preventive care and client education requires the entire hospital team.
- Assigning specific roles to each team member can help ensure that each and every one of our clients is educated on the important subject of dental preventive care.
- Roles also ensure our equipment stays well maintained and that our patients receive the best care.

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<th>WHAT</th>
<th>ROLES</th>
<th>RESPONSIBLE TEAM MEMBER</th>
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<tr>
<td>Client Education</td>
<td>Discuss home oral care options</td>
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<td></td>
<td>Demonstrate tooth brushing</td>
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<td></td>
<td>Discuss dental chews and treats</td>
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<td>Recommend annual dentals after 1 year of age for cats and small breed dogs or 2 years of age for large dog breeds</td>
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<td></td>
<td>Discuss the importance of good oral health and the medical risks and consequences of dental disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discuss any abnormal findings or pathology and present a treatment plan</td>
<td></td>
</tr>
<tr>
<td>Oral Examinations</td>
<td>Every pet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Every visit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>At least every six months</td>
<td></td>
</tr>
<tr>
<td>Professional Dental Prophylaxis or Treatments</td>
<td>Preanesthetic assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perform anesthesia and intubation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monitor anesthesia and IV fluids</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chlorhexidine rinse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dental charting and documentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine if dental radiographs are indicated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Take dental radiographs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpret dental radiographs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ultrasonic scaling, supra- and subgingivally</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teeth scaling with curettes subgingivally</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Periodontal treatment, root planing and/or debridement, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perform dental blocks, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perform extractions, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perform oral/dental surgery, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Polish</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chlorhexidine rinse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apply Doxycycline polymer gel, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exutube and monitor recovery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administer post-op pain injection and/or prescribe oral pain medications, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient discharge to owner with home care instructions</td>
<td></td>
</tr>
<tr>
<td>Equipment Maintenance and Care</td>
<td>Dental instrument care and storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Instrument sharpening</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Routine IM3 maintenance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Routine Bonart Scaler-Polisher maintenance</td>
<td></td>
</tr>
</tbody>
</table>

Work as a team to create your own roles and responsibilities schedule as shown above. You can find a printable, blank template on the dotBanfield Dentistry page.
Veterinarian Responsibilities

- Doctors should be aware of the preventive care medical competencies and should be familiar with the description of what it means to be competent at providing preventive dental care.

Dental:
Focuses on preventive dental care and client education/counseling for health maintenance. Diagnoses and treats existing dental or oral abnormalities.

- Doctors must be familiar with what activities licensed veterinary technicians and veterinary assistants are legally allowed to perform in their state, especially concerning professional dental cleanings and treatment.

Go to this site to review your state veterinary board requirements.
http://www.aavsb.org/DLR

#1 The number one best practice for providing excellent preventive care is to have a passionate preventive care advocate at the leadership level.

It is the responsibility of doctors to lead the hospital team in delivering excellent preventive care and client education.
Oral/Dental Examinations on an Awake Patient

Oral/dental examinations are an integral part of every comprehensive physical examination. These exams:

- Allow for early disease detection and diagnosis
- Help ensure optimal home care is occurring
- Provide time for client education

Every patient should receive a thorough oral/dental examination at least every six months.

What does a healthy pet mouth look like?

- No gingivitis
- Absence of plaque and tartar
- Proper tooth and jaw alignment
- Absence of other oral abnormalities
  - Tumors
  - Gingival hyperplasia
  - Fractured teeth
  - Other oral pathology

Below is a checklist for what should be covered during an oral/dental examination:

<table>
<thead>
<tr>
<th>Oral / Dental History and Examination Checklist for Dogs and Cats</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
</tr>
<tr>
<td>• The general health status of the pet</td>
</tr>
<tr>
<td>• Nutritional status, diet and chewing habits, including access to chew toys, etc.</td>
</tr>
<tr>
<td>• Drool or excessive salivation</td>
</tr>
<tr>
<td>• Difficulty eating, chewing, including dropping food while eating</td>
</tr>
<tr>
<td>• Bad breath</td>
</tr>
<tr>
<td>Exam – extraoral</td>
</tr>
<tr>
<td>• Facial symmetry</td>
</tr>
<tr>
<td>• Swelling or draining tracts</td>
</tr>
<tr>
<td>• Assess for pain on opening/closing of mouth</td>
</tr>
<tr>
<td>• Nasal or ocular discharge</td>
</tr>
<tr>
<td>• Lymph node size</td>
</tr>
<tr>
<td>Exam – intraoral</td>
</tr>
<tr>
<td>• Assess gums for color, inflammation or recession</td>
</tr>
<tr>
<td>• Assess teeth for plaque, calculus and mobility</td>
</tr>
<tr>
<td>• Note retained, extra teeth or crowded teeth</td>
</tr>
<tr>
<td>• Note missing or damaged teeth</td>
</tr>
<tr>
<td>• Note malocclusions</td>
</tr>
<tr>
<td>• Assess oropharyngeal area for masses, lesions, ulcerations, inflammation, etc.</td>
</tr>
<tr>
<td>• Assess sublingually for masses, lesions, inflammation, etc.</td>
</tr>
</tbody>
</table>

Print off the oral examination check list and review with your entire team. The form can be located on the Dentistry resource page on dotBanfield.
**Oral/Dental Examinations Under General Anesthesia**

One of the most important aspects of performing annual or biannual professional dental cleanings in our patients is the ability to perform a more thorough oral/dental examination.

A detailed examination under anesthesia allows for:

- Dental charting
- Periodontal probing
- Detection of dental disease and/or oral masses
- Dental radiography
- Professional dental cleaning
- Additional dental treatment, as indicated

Thorough oral examinations under anesthesia are especially important for geriatric patients who have an increased incidence of severe and/or painful dental diseases.
Ways to Decrease Risks for Our Geriatric Patients Undergoing Anesthesia and Professional Dental Cleanings/Treatment:

- Pretreatment with appropriate antibiotics when severe dental/periodontal disease is present
- Perform a thorough pre-anesthetic diagnostic workup and follow-up on all abnormalities
- Use the appropriate anesthetic protocol, based on the workup and examination findings
- Perform procedures on geriatric patients earlier in the day to allow for longer post-op monitoring in hospital
- Use dental blocks, which are anesthetic sparing, for any extractions or painful procedures
- Use gingival flaps when needed to reduce extraction trauma and time
- Prescribe appropriate pre and post-op pain management, tailored to the individual patient
- Provide close monitoring during and after anesthesia


Utilize the Meeting in a Box “How to Perform a Dental Exam” which is located on the Dentistry resource page on dotBanfield.

Professional Dental Cleaning

The term “professional dental cleaning” is the most frequently used terminology, but it is important to differentiate:

**Dental prophylaxis** is performed on a patient with an essentially healthy mouth or one with mild gingivitis. The goal of dental prophylaxis is to prevent periodontal disease and includes:
- Thorough oral examination and charting of the mouth
- Scaling teeth supra- and subgingivally with ultrasonic scaler and subgingivally with curettes
- Polishing

Dental cleanings should begin at 1 year of age for cats, small and medium breed dogs and at 2 years of age for large breed dogs (sooner if any visual indication of dental disease). AAHA, *Dental Care Guidelines.*
Dental treatment is performed when dental or periodontal disease is present. The goal is to treat existing abnormalities and includes:

- Thorough oral examination and dental charting of the mouth
- Dental radiographs, if indicated
- Scaling teeth supra- and subgingivally with ultrasonic scaler and subgingivally with curettes
- Root planing, periodontal debridement, nerve blocks, extractions or other surgical procedures, if needed
- Polishing

All dental procedures should be performed in a dedicated space, separate from the sterile surgery.

Performing dental prophylaxis for prevention or dental treatment at the very first sign of disease often leads to:

- Shorter, less involved procedures
- Shorter anesthetic times and decreased risk for the patient
- Decreased likelihood of bone or tooth loss
- Reduced pain for the pet
- Decreased expense for the client

The goal should always be to intervene with prophylactic procedures to prevent or halt disease progression to more advanced, irreversible periodontal disease associated with chronic pain.

Meeting in a Box “How to Perform a Dental Cleaning” can be found on the Dentistry resource page on dotBanfield.

Use the dental cleaning SOP to train team members on the correct performance of a professional dental cleaning.

A team member should talk to the client at the time of drop-off for professional dental cleaning to review the treatment plan and answer any questions the client may have before the procedure.

A veterinary assistant, veterinary tech or doctor should speak with all clients when they come for pick-up following a professional dental cleaning to review what was done, why and to make home care recommendations.
Periodontal Debridement and Root Planing

- Indicated whenever 4-7 mm periodontal pockets are present and there are no clear indications for extraction, especially when there is subgingival plaque and calculus present
- Select the curette based on the tooth involved
- Curette in horizontal, vertical and oblique directions

Use the SOP for training on periodontal treatments.

Doxycycline Polymer Gel Treatment

- Indicated following root planing for periodontal pockets which are 4-7 mm deep
- Should be administered as the final step in professional dental cleaning, after the Chlorhexidine flush, to insure the product isn’t inadvertently removed from the pocket

Use the SOP for training on correctly applying doxycycline polymer gel.
Two commonly discussed subjects concerning dental cleanings include the use of antibiotics for dental disease and the practice of teeth scaling without anesthesia (non-professional dental cleanings).

**Antibiotic Use for Dental Disease**

There are two main indications for the use of systemic antibiotics:

- **To treat local bacterial infection**
  - Begin a few days prior to a professional dental cleaning
  - Use when severe periodontal disease, osteomyelitis, ulcerative gingivitis or severe stomatitis is present
  - Continue for up to one week post-procedure
- **To prevent bacteremia**
  - Give an IV Cefazolin injection at the time of induction and repeat in two hours if the procedure is still being performed
  - Can alternatively give an oral dose the morning of the procedure
  - Indicated for periodontitis, osteomyelitis and/or severe gingivitis
  - Also consider with pre-existing conditions like cardiac disease, joint replacement, or other orthopedic implants, splenectomized patients and those with hyperadrenocorticism
- Antibiotics are not appropriate for long-term use for dental conditions where the underlying condition is not also being addressed with professional dental cleanings and/or treatment
- The antibiotics which are most appropriate for the common bacteria found in the oral cavity include clindamycin, metronidazole and CLAVAMOX®
- Baytril® is not an appropriate antibiotic for oral indications, based on typical oral bacterial flora

**Non-Professional Dental Cleanings**

Hand-scaling alone, without general anesthesia or without direct supervision of a veterinarian is NEVER acceptable care. This type of procedure is:

- Cosmetic only and misses serious disease below the gumline
- Does little to affect the pet’s health
- Provides a false sense of accomplishment and can delay appropriate care
- Does not allow for effective removal of adherent tartar or calculus which requires ultrasonic scaling
- Does not allow for the assessment of periodontal disease or the performance of radiographs
- Can result in bacterial and tartar/calculus particle aerosolization and aspiration
- Can be significantly stressful for the patient
- Can lead to “mouth-shy” behavior that makes home care or oral examinations more difficult
- Can injure the pet; slight movement can result in serious tooth or soft tissue damage
- Can result in human injury from bites

Read the AVDC position statement on the use of antibiotics in Veterinary Dentistry at http://www.avdc.org/statements.html.

Read the AVDC position statement on non-professional dental cleanings at http://www.avdc.org/statements.html.
Dental Charting

Dental charting is an important part of record keeping for veterinary patients. Accurate documentation of abnormalities allows for a better assessment and treatment recommendations on subsequent examinations. Charting should be done on every pet receiving a professional dental cleaning. Until charting can be integrated into PetWare, notation of any abnormalities should be transcribed into the medical notes section of each pet’s record. The following table outlines what should be charted during an oral examination under anesthesia. This chart is located on the Dentistry resource page on dotBanfield.

<table>
<thead>
<tr>
<th>Dental Charting for Dogs and Cats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Canine Dental Formula</strong></td>
</tr>
<tr>
<td>Deciduous</td>
</tr>
<tr>
<td>Permanent</td>
</tr>
<tr>
<td><strong>Feline Dental Formula</strong></td>
</tr>
<tr>
<td>Deciduous</td>
</tr>
<tr>
<td>Permanent</td>
</tr>
<tr>
<td><strong>Modified Triadan System</strong></td>
</tr>
<tr>
<td>Quadrant Numbering</td>
</tr>
<tr>
<td>Upper right</td>
</tr>
<tr>
<td>Upper left</td>
</tr>
<tr>
<td>Lower left</td>
</tr>
<tr>
<td>Lower right</td>
</tr>
<tr>
<td>For Deciduous Teeth</td>
</tr>
<tr>
<td>Tooth Numbering</td>
</tr>
<tr>
<td>Start at central incisor</td>
</tr>
<tr>
<td>canine</td>
</tr>
<tr>
<td>Fourth premolar</td>
</tr>
<tr>
<td><strong>Periodontal Indexes</strong></td>
</tr>
<tr>
<td>Plaque Index (PI)</td>
</tr>
<tr>
<td>PI 0 = no observable plaque</td>
</tr>
<tr>
<td>PI 1 = covers less than 1/3 buccal surface</td>
</tr>
<tr>
<td>PI 2 = covers between 1/3 – 2/3 buccal surface</td>
</tr>
<tr>
<td>PI 3 = covers more than 2/3 buccal surface</td>
</tr>
<tr>
<td>Calculus Index (CI)</td>
</tr>
<tr>
<td>CI 0 = no observable calculus</td>
</tr>
<tr>
<td>CI 1 = covers less than 1/3 buccal surface</td>
</tr>
<tr>
<td>CI 2 = covers 1/3 – 2/3 buccal surface with minimal subgingival extension</td>
</tr>
<tr>
<td>CI 3 = covers more than 2/3 buccal surface and extends subgingivally</td>
</tr>
<tr>
<td>Gingival Index (GI)</td>
</tr>
<tr>
<td>GI 0 = normal gingival with sharp, noninflamed edges</td>
</tr>
<tr>
<td>GI 1 = marginal gingivitis, minimal inflammation with no bleeding on probing</td>
</tr>
<tr>
<td>GI 2 = moderate gingivitis, wider band of inflammation, bleeding on probing</td>
</tr>
<tr>
<td>GI 3 = advanced gingivitis, inflammation reaching mucogingival junction, bleeding gums</td>
</tr>
<tr>
<td>Periodontal Disease Index (PDI)</td>
</tr>
<tr>
<td>PD 1 = Stage 1, no attachment loss (see common dental abnormalities chart for more details)</td>
</tr>
<tr>
<td>PD 2 = Stage 2, 0 – 25% attachment loss</td>
</tr>
<tr>
<td>PD 3 = Stage 3, 25 – 50% attachment loss</td>
</tr>
<tr>
<td>PD 4 = Stage 4, &gt; 50% attachment loss</td>
</tr>
<tr>
<td>Tooth Mobility Index</td>
</tr>
<tr>
<td>Tooth Mobility (TM)</td>
</tr>
<tr>
<td>M 0 = no mobility</td>
</tr>
<tr>
<td>M 1 = less than 1 mm movement when instrument applied to crown</td>
</tr>
<tr>
<td>M 2 = moves laterally more than 1 mm, but still firmly attached to alveolus</td>
</tr>
<tr>
<td>M 3 = moves freely in the alveolus laterally and apically</td>
</tr>
<tr>
<td>Furcation Exposure</td>
</tr>
<tr>
<td>Furcation Index (FI)</td>
</tr>
<tr>
<td>F 0 = no exposure</td>
</tr>
<tr>
<td>F 1 = mild exposure, probe extends 25% under crown in any direction on a multi-rooted tooth with attachment loss</td>
</tr>
<tr>
<td>F 2 = moderate exposure, probe extends more than 50% under crown, but doesn’t pass through</td>
</tr>
<tr>
<td>F 3 = extensive exposure, probe passes from one side all the way through to other side</td>
</tr>
<tr>
<td>Periodontal Pockets</td>
</tr>
<tr>
<td>Dogs</td>
</tr>
<tr>
<td>Record if &gt; 3 mm</td>
</tr>
<tr>
<td>Cats</td>
</tr>
<tr>
<td>Record if &gt; 0.5 mm</td>
</tr>
</tbody>
</table>
Use the dental charting SOP for team training.

Laminate a copy of the dental chart and complete it for each oral examination you perform. Following the exam, make a copy of the chart and send it home with the client.

Preprint a dental chart and attach it to the patient’s record the night before the procedure, so it’s easy to chart every pet while you perform the dental exam and professional dental cleaning.

These charts can be found at SmartHelp > MEDICINE > Dentistry > Forms, Manuals & Guides > Canine Dental Chart (and Feline Dental Chart).
Common Oral/Dental Conditions

If left untreated, dental disease can progress to irreversible pathology such as alveolar bone loss, tooth mobility, oral infection, oral pain and eventual tooth loss. Early diagnosis and intervention with appropriate treatment of dental diseases early in their course can greatly improve the outcomes for our patients.

### PERIODONTAL DISEASE

**Key findings**
- Plaque-inducing disease of the supporting structure of the teeth which includes gingiva, periodontal ligament and alveolar bone (periodontium)
- The number one medical diagnosis in dogs and cats over 1 year of age

**Cause**
- A combination of bacterial infection and inflammatory host response causing disease and destruction of the periodontium

**Diagnosis and staging**
- Recognized via thorough oral examination, dental charting, probing and dental radiography under anesthesia

**Periodontal probing**
- Measure depths of gingival sulcus and periodontal pockets
- Spot probing is not accurate; it is recommended to perform circumferential probing – checking six sites around each tooth, three buccal, three lingual or palatal
- Record depth in mm
- Dog: normal probing depth is less than 3mm
- Cat: normal probing depth is less than 0.5mm
- Increased probing depth indicates loss of attachment and is a sign of periodontal disease

**Radiographic findings**
- Bone loss is a common change noted with periodontal disease
- Crestal bone loss to a level below the cementoenamel junction, decreased bone height and potential furcation exposure
- Horizontal bone loss of a similar level across several teeth on the entire arcade
- Vertical bone loss in a single area surrounding roots of teeth where the bottom of the pocket is below the crest of the bone

| Treatment Recommendations for Periodontal Disease | < 25% support loss, stage 2 periodontal disease | 25 – 50% support loss, stage 3 periodontal disease | >50% support loss, stage 4 periodontal disease |
|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Good to fair prognosis                            | Root planing                                    | As above for stage 3, except extraction is indicated with furcation exposure, significant mobility or inability to provide daily home care |
| Dental cleaning                                  | Daily home dental care                          |                                                   |
| Periodontal debridement                          | Root planing                                    |                                                   |
|                                                  | Daily home dental care                          |                                                   |
|                                                  | Doxycycline treatment                           |                                                   |
|                                                  | Daily home dental care                          |                                                   |

*Periodontal disease is the most common disorder affecting dogs and cats worldwide.*

---

*Key findings*

- Plaque-inducing disease of the supporting structure of the teeth which includes gingiva, periodontal ligament and alveolar bone (periodontium)
- The number one medical diagnosis in dogs and cats over 1 year of age

*Cause*

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- Horizontal bone loss of a similar level across several teeth on the entire arcade
- Vertical bone loss in a single area surrounding roots of teeth where the bottom of the pocket is below the crest of the bone
FELINE TOOTH RESORPTION

Key findings
- The most common dental disease in cats, followed by periodontal disease
- Up to 50 percent of cats are affected by resorptive lesions
- Full-mouth radiographic screening of cats showed a prevalence of 29 to 60.8 percent radiographic resorptive lesions
- Cause remains unknown

Diagnosis
- First sign is often a small, localized, painful area of inflammation at the gum line
- Symptoms associated with pain
- Visual inspection during oral examination
- Examination under general anesthesia
- Dental radiography
- Once present, resorption lesions are often seen in other teeth
- It’s important to stage and type each tooth to allow for appropriate treatment
- See chart on page 56 and 57 “Common Dental and Oral Abnormalities” for staging teeth

Treatment
- Choosing the appropriate treatment is critical when treating feline tooth resorption appropriately

Indications for surgical extraction
- Stage 1 – 4, Type 1
  - Periodontal ligament space is evident
  - Root structure is radiographically identifiable

Indications for subgingival crown amputation
- Stage 1 – 4, Type 2
  - Periodontal ligament space is lost
  - Bone has replaced tooth root structure
  - Root structure is not radiographically identifiable
  - Gingival closure should be performed for either type of treatment

Resorptive lesions are one of the most common, but least recognized, health conditions in cats.

The most common sites for resorptive lesions are the mandibular premolars and molars.

Full mouth dental radiographs should be performed on cats with any resorptive lesions and repeated annually thereafter.

Read BARK Literature Review – Feline Tooth Resorption (March 2011).
**STOMATITIS (FELINE GINGIVOSTOMATITIS)**

**Key findings**
- A painful, severe, progressive inflammation of the oral cavity in cats
- More common in purebred cats
- History of excess salivation, bad breath, difficulty chewing food, decreased appetite and weight loss
- Typically not associated with Feline Leukemia Virus (FeLV) or Feline Immunodeficiency Virus (FIV), but can be a cause for nonresponsive cases; recommend viral testing prior to proceeding with diagnostics/treatment
- Cause remains unknown

**Diagnosis**
- Oral exam reveals red, ulcerative, proliferative lesions throughout the oral cavity, including the gingiva, tongue, lips, buccal mucosa and/or hard palate and caudal areas of the oral cavity
- Inflammation typically surrounds the entire tooth, compared to gingivitis which is usually restricted to the buccal surfaces
- Recommend dental radiographs to assess for resorptive lesions and periodontal disease
- If unilateral, biopsy to rule out neoplasia

**Treatment**
- Typical lack of significant or permanent response to oral hygiene and medications (antibiotics, anti-inflammatory and immunosuppressives) as the sole method of treatment
- First line therapy should involve thorough professional dental cleaning with extraction of all teeth with resorptive lesions and/or stage 3 or 4 periodontal disease followed by daily home dental care
- Extraction of all teeth distal to the canine teeth consistently results in 60-80 percent cure without the use of follow-up medications
- For cases which don’t respond to selective extractions as above, consider surgically extracting all the teeth
- Refractory cases have a guarded prognosis
Common Dental and Oral Abnormal Conditions in Dogs and Cats

The following chart describes the diagnosis and appropriate treatment of the most common dental diseases we see in dogs and cats in general practice. This complete chart is located in the appendix of this guide.

Common dental and oral conditions of cats and dogs include:
- Periodontal disease
- Discolored teeth
- Fractured or worn teeth
- Missing teeth
- Supernumery teeth, rotated teeth, overcrowded teeth
- Retained deciduous teeth
- Malocclusion
- Gingival hyperplasia
- Feline juvenile gingivitis
- Feline tooth resorption
- Stomatitis

Use the dental algorithm for clinical decision support on the more common dental abnormalities. This form is located in SmartHelp > MEDICINE > Dentistry > Forms, Manuals & Guides > Dental Algorithm.


Dental Radiology

Dental radiographs are an extremely important part of dental care and treatment.

**Common indications for dental radiography include:**
- Signs of periodontal disease, such as periodontal pockets, gingival recession, furcation exposure and tooth mobility
- Fractured teeth, discolored teeth
- Missing teeth, supernumerary teeth
- Evaluation of root anatomy pre-extraction, retained root tips and other root abnormalities
- Documentation of the completion of procedures (pre-and post extraction)
- Feline tooth resorption

**Dental radiographs are important because:**
- Three of the four components of the periodontium are located below the gum line, out of visual view, including the cementum, periodontal ligament and alveolar bone.
- Radiography is the only way to determine what is below the fourth component (the gingiva).
- In several studies of patients with no visible dental abnormalities, 27.8 percent of dogs and 41.7 percent of cats had significant pathology detected when whole-mouth radiographs were performed.\(^{14,15}\)
- It is important to remember that bone loss is not evident on radiographs until 30-50 percent mineralization is lost, so radiographs may underestimate the true extent of bone loss.

*Whole-mouth radiographs are indicated in patients with any resorptive lesions.*

*Visual appearance alone is rarely sufficient to make an assessment of abnormal teeth and determine the most appropriate treatment recommendations.*
Use the SOP and Dental Radiograph Positioning Guide for team training on taking whole-mouth radiographs for dogs and cats.

Review the positioning guides with your entire team. They can be found in SmartHelp > MEDICINE > Dentistry > Forms, Manuals & Guides > Feline and Canine Dental Radiograph Positioning Guides.


For hospitals with dental radiograph capability, every associate should educate the client on the possibility that dental radiographs may be required to adequately evaluate dental disease below the gum line.

Put an estimate for two to four dental radiographs on the treatment plan for every professional dental cleaning and explain that more images may be required.
Dental Nerve Blocks

Dental nerve blocks should be used as a part of the multi-modal pain management protocol in painful oral procedures.

Indications:
- Surgical extractions
- Non-surgical extractions
- Root planing/periodontal debridement
- Feline subgingival crown amputations
- Gingivectomy
- Periodontal surgery
- Oronasal fistula repair
- Oral biopsies

Advantages:
- Anesthetic sparing, by blocking the strong sensory stimuli that most dental procedures and treatment can induce
- Blocking the sensory nerve transmission during oral surgery can also decrease the likelihood of central pain sensitization and chronic pain syndromes
- Provides post-operative pain management, in conjunction with oral and/or injectable medications, which can ease recovery

Performing dental nerve blocks:
- Bupivicaine, 0.5 percent
- Onset of action 10 to 15 minutes
- Duration of action three to eight hours
- Maximum total dose 2 mg/kg dogs and 1 mg/kg cats
- Typical volume per injection site is 0.5 mL for dogs and 0.2 mL for cats
- Always aspirate prior to injection; cannot be given IV due to cardiotoxic effects

Refer to the chapter 3 in *Anesthesia for the Pet Practitioner, 3rd ed.*, p. 24-29 for detailed instructions for performing dental blocks with illustrations.

The following four dental blocks should provide appropriate analgesia for any dental procedure performed at our hospitals:

**Infraorbital Dental Nerve Block**
- Dogs: Upper third premolars to incisors
- Cats: Upper molars, premolars, canines and incisors
Caudal Maxillary Dental Nerve Block

- Dogs: Upper fourth premolar and molars
- Cats: Not applicable

Use the SOP for training to perform dental nerve blocks.
Inferior Alveolar (Mandibular) Dental Nerve Block

- Dogs: All lower teeth
- Cats: All lower teeth

Use the SOP for training to perform dental nerve blocks.
Middle Mental Foramen Dental Nerve Block

- Large and medium breed dogs: Lower incisors
- Cats and small dogs: Not applicable

Dental nerve blocks should be used as part of multimodal pain management in painful oral procedures. Indications for dental nerve blocks include:

- Surgical extractions
- Non-surgical extractions
- Subgingival crown amputation (feline)
- Root planing/periodontal debridement
- Gingivectomy
- Periodontal surgery
- Oronasal fistula repair
- Oral biopsies
- Mandibulectomy/maxillectomy

Use the middle mental foramen dental nerve block when performing one of the above procedures that affects the following:

- Large and medium-sized dogs: Lower incisors
- Cats and small breed dogs: Not applicable

Palpate ventral to the mesial root of the lower second premolar, just caudal to the mandibular labial frenulum.

Insert needle into the submucosa in a rostral to caudal direction and advance it into the middle mental foramen.

Draw up Bupivicaine in a 1 ml syringe with 25 gauge 5/8 inch needle.

Calculate Bupivicaine 0.5% (5 mg/ml) dose.

General dose per site is:

- Dogs: 0.5 ml
- Cats: 0.2 ml

Maximum cumulative dose:

- Dog: 2.0 mg/kg
- Cat: 1.0 mg/kg

Inject slowly, aspirate, and wait 5 to 10 minutes to begin procedure.
Dental Extractions, Non-Surgical and Surgical

Indications for extractions

- Severe periodontal disease with greater than 50 percent bone loss, extensive gingival recession and root exposure, tooth mobility and/or severe gingival buccal stomatitis
- Fractured, discolored and/or nonvital teeth; when root canal is not an option
- Retained deciduous teeth
- Supernumerary teeth if causing problems
- Interceptive orthodontics (extracting deciduous teeth to treat malocclusions in puppies)
- Traumatic malocclusions
- Dentigerous cysts
- Other dental pathology like internal or external resorption, retained root tips, jaw fractures, etc.

Non-surgical extractions

- Primarily performed on deciduous and single-rooted teeth, with the exception of canine teeth
- Pre- and post-extraction radiographs recommended
- Dental nerve blocks required
- Suture with simple, interrupted absorbable suture, if needed
- Prescribe oral analgesics, antibiotics and oral rinse
- Recommend soft foods and no chew toys for two weeks post extraction
- Schedule recheck in three to four weeks

Prepare clients ahead of time for the potential need for dental radiographs and extractions.

Painful, mobile teeth or those surrounded by severe periodontal disease and support loss should always be extracted; these teeth are irreversibly damaged and are a detriment to the health and quality of life of the pet.

Use the SOP for training on non-surgical dental extractions.
Surgical extractions

- Primarily performed on canine teeth and all multi-rooted teeth
- Require pre- and post extraction radiographs
- Require dental nerve blocks
- Perform mucogingival flaps
  - Provide easier exposure and access to buccal bone
  - Facilitate root exposure
  - Provide a tension-free closure
  - Maximize blood supply for healing
- Remove buccal bone surrounding tooth roots (1)
  - Identifies roots, periodontal ligament space and furcation
  - Reduces tooth attachment to alveolar bone
- Section multi-rooted teeth (2)
  - Facilitates root luxation and elevation (3)
  - Helps ensure complete root removal (4)
- Curette alveolar socket (5)
  - Removes debris within the extraction site
- Perform alveoplasty
  - Smooth ridges with diamond bur
  - Facilitates healing of surgical flap and extraction site
- Suture closure of all surgical dental extractions (6)
  - Use simple, interrupted absorbable suture
  - Ensure there is NO tension on the suture line
  - If needed, use periosteal releasing incisions along the base of the flap to reduce flap tension
- Prescribe oral analgesics, antibiotics and oral rinse
- Recommend soft foods and no chew toys for two weeks post extraction
- Schedule recheck in three to four weeks


Oral Surgery

The American Veterinary Dental College (AVDC) defines operative dentistry as “any dental procedure which invades soft or hard oral tissues, including any procedure that alters the structure of teeth or repairs damaged or diseased teeth.” In our general practice, the most common oral surgeries we perform include dental extractions, oronasal fistula repair, subgingival crown amputations and oral mass incisional and excisional biopsies.

Basic Principles of Oral Surgery

● The oral cavity has an abundant blood supply
● Strict sterile preparation of the oral cavity is not necessary, but it is still imperative to use clean, sterile instruments when performing oral surgeries
● Good accessibility and tissue exposure is important
● Use proper instruments which are sharp, clean and well-maintained
● Minimize tissue trauma
● Use absorbable suture materials and simple interrupted suture patterns
● When suturing, avoid gaps, placing tension along the suture line and suturing over roughened bone
● Provide appropriate pain management, including pre-op and post-op medications and local blocks

ORONASAL FISTULAS (ONF)

Key findings

● A pathologic pathway between the oral and nasal cavities
● Most commonly noted in dolichocephalic (long nose) breeds, especially Dachshunds

Cause

● Loss of alveolar bone leading to an opening between the oral cavity and nasal cavity or sinus, leading to chronic infection
● Frequently related to maxillary canine and/or fourth premolar root abscesses or traumatic extractions
● Can also be secondary to advanced periodontal disease, trauma, foreign body, bite wounds, electric cord injuries or oral cancer

Diagnosis

● History will often include chronic unilateral or bilateral nasal discharge and sneezing
● Thorough examination under anesthesia with periodontal probing

Treatment

● Requires surgical repair
● It is critical to perform an adequate repair, with no tension on the gingival tissue flap, for the first procedure. If failure occurs, each subsequent surgery becomes much more difficult and more likely to fail.
● If severe infection is present, consider 10-14 days of preoperative antibiotics before primary closing of the ONF
● Closure via simple, interrupted absorbable sutures
Subgingival Crown Amputations:

- See “Feline Tooth Resorption” on page 32 for indications for this procedure
- Require pre- and post extraction radiographs
- Require dental nerve blocks
- Expose the alveolar bone around the tooth
  - Use a small periosteal elevator
  - Reflect an envelope flap
- Resect the crown of the tooth at the gumline (1)
  - Use a Round 4 bur
  - Direct perpendicular to the tooth crown at the level of the alveolar crest
- Remove any residual root (2)
  - Use a Round 4 bur
  - Bur down 2 – 4 mm into the root remnant
- Smooth any rough bone edges (3)
  - Use a football-shaped diamond bur
  - Smooth bone edges and coronal portion of the tooth root
- Rinse with chlorhexidine
- Suture gums closed (4,5)
  - Use simple, interrupted absorbable suture
  - Ensure there is NO tension on the suture line
  - Use periosteal elevator to free up gum edges if needed
- Prescribe oral analgesics, antibiotics and oral rinse
- Recommend soft foods for two weeks post extraction
- Schedule recheck in three to four weeks
Oral Masses and Growth

These charts describe the diagnosis and recommended treatment for the most common benign and malignant oral masses seen in dogs and cats. This complete chart is located in the appendix of this guide.

Incisional biopsies are recommended prior to complete removal of the abnormality. Radiographs and local blocks are recommended prior to incisional biopsy. Indications for incisional biopsies include the following:

- Presence of unusual gingival mass, growth or inflammatory response
- Oral mass, growth or swelling
- Radiographic bone or tooth changes not consistent with periodontal disease or other known dental process
- Lingual lesions

**RADIOGRAPHS**

Local block(s)
Use a #15 blade to remove the tissue sample
Excise a small, wedge-shaped sample of the mass
Place sample in biopsy jar
If needed, suture the incision in a simple interrupted pattern with absorbable suture
Document procedure in medical notes

**Squamous Cell Carcinoma (SCC)** is the most common oral tumor of cats – and carries a grave prognosis.

The most common oral tumors of dogs are malignant melanoma, SCC, fibrosarcoma and acanthomatous ameloblastoma.

Aspiration of the local draining lymph node and chest radiographs are indicated for working up oral masses.

Use the SOP for training on incision biopsy techniques.
## Dental Equipment Care and Maintenance

- It is imperative to keep periodontal instruments sharp and dental equipment well-maintained to optimize performance and length of use.
- Dull or broken equipment can result in tissue trauma and injuries to the patient and can make dental procedures more difficult and time consuming.
- It is important to ensure you are using the appropriate instrument for procedures.

<table>
<thead>
<tr>
<th>Dental Equipment</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Periodontal probe</strong></td>
<td>Used to measure periodontal pockets, gingival recession and furcation exposure. Measured in mm marking so appropriate indices can be documented.</td>
</tr>
<tr>
<td><strong>Dental explorer</strong></td>
<td>Used to examine the teeth and detect tooth surface abnormalities including tooth resorption, fractured teeth with pulp exposure, root smoothness and other dental abnormalities. Not used for calculus removal.</td>
</tr>
<tr>
<td><strong>Dental curettes</strong></td>
<td>Two types: Universal and Gracey. Various size and shank lengths. Can be used throughout the mouth, above and below the gum line. Have one working cutting edge and one non-working cutting edge that form a half moon shape with a rounded toe and back. Gracey curettes are area-specific and use a universal numbering system which determines which curettes are used on which teeth. Gracey 7/8 curettes are used on anterior teeth and 11/12 curettes are used on posterior teeth (molars).</td>
</tr>
<tr>
<td><strong>Jaquette Sickle Scalers</strong></td>
<td>Have two parallel cutting edges that come to a point and the cross section of the working end is triangular in shape. Are only used above the gum line.</td>
</tr>
<tr>
<td><strong>Periosteal elevators</strong></td>
<td>Used to reflect and retract the mucoperiosteum when making gingival flaps to extract teeth, or for advanced periodontal surgery and oral surgery.</td>
</tr>
</tbody>
</table>
Extraction forceps
- Used to grasp, twist and extract teeth
- Pediatric forceps are small enough for use in all canine and feline teeth

Winged extraction elevators
- Have a wide, but short, working edge
- Come in a variety of sizes; the most common elevators are 2 mm, 3 mm, 4 mm and 6 mm

Straight extraction elevators
- Have a small, more narrow, and long working edge than winged extractors
- Available in various sizes
- Size of elevator must be appropriate for tooth size

Root tip pick
- Have a narrow sharp point used to retrieve and “pick” out fractured root tips

Bone curettes
- Have a rounded, spoon-like end and is used to debride the tooth socket/alveolus after tooth extraction

Round burs
- Have a cutting surface on all edges
- Used parallel to the cutting surface
- Can be used to remove buccal bone and dental tissue

Cross cut fissure burs
- Have straight parallel sides with cutting portion on the sides
- Used for removing buccal bone and sectioning multi-rooted teeth

Football-shaped medium size diamond burs
- Have a diamond grit-like sand paper surface
- Used to smooth alveolar ridges and bone spicules that are created when extracting teeth, making the alveolar bone smooth and allowing the gingival flap to be sutured securely closed over the area
Bur blocks
- Used to store and place burs while working
- Keep burs well-organized
- Can be autoclaved

Sharpening stone
- Used to sharpen the dull edges of scalers and curettes
- The Arkansas stone is a fine stone used with oil

Proper grip for periodontal probe and dental explorers
- Modified pen grasp
- The ring finger and pinky can be used for additional support of the instrument

Proper grip for extraction elevators
- Use the index finger to control the elevator and act as a “stop” to prevent patient injury in case the instrument tip slips

Supragingival scaling (above the gum line)
- Hand scaling above the gum line with curettes or a scaler

Subgingival scaling (below the gum line)
- Root planing is only needed when there is dental calculus present below the gum line
- Hand scaling below the gum line with curettes (not scalers)

It is imperative to keep equipment sharpened and well-maintained to optimize performance.

Dull or broken equipment can result in tissue trauma and injuries to the patient.

Use the SOP for training on dental instrument sharpening.

Dentistry Standard Operating Procedures

Instrument Sharpinging

It is recommended to have up to two associates responsible for sharpening the dental instruments.

- Test the sharpness of dental instruments before each use.
- Hold the sharpening stone at a 110° angle with the blade of the instrument.
- Sharpen the instrument at the desired angle, forming a 110° angle.
- Hold the instrument steady and move only the sharpening stone in short even vertical strokes towards the tip of the instrument, keeping the stone in contact with the blade throughout the sharpening procedure.
- Wipe metal particles and lubricant off the instrument with gauze.
- Test the instrument for sharpness. If the blade of the instrument is still dull, re-evaluate the angle of the stone and repeat the sharpening procedure.
- Repeat the sharpening procedure to sharpen the other side of sickle scalers and universal curettes.

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Repeat the sharpening procedure to sharpen the other side of sickle scalers and universal curettes.

Dentistry Standard Operating Procedures

Instrument Care and Storage

Dental instruments are extremely delicate and must be properly cared for and stored. Instruments should be washed between each patient and autoclaved daily. Follow complete steps after dental procedures are completed for the day; follow steps one through nine in between dental procedures.

- Soak instruments in warm water immediately after use.
- Scrub instruments with soft nylon brush.
- Dry instruments immediately.
- Place instruments on a surgical towel.
- Rinse instruments in warm water.
- Add instrument cleaner.
- Rinse instruments.
- Spray instrument lubricant on all instruments with a box lock (hinge).
- Place a surgery towel and autoclave steam indicator strip in each tray.
- Place extraction instruments in extraction instrument tray:
  - Periosteal elevators
  - Extraction elevators
  - Extraction forceps
  - Root tip pick

- Place periodontal instruments in periodontal instrument tray:
  - Probe/explorer
  - Curettes
  - Scaler
  - Cheek retractor.

- Wrap each instrument tray with two layers of instrument wrap.
- Tape packs with autoclave steam indicator tape.
- Write “Dental Extraction Pack” or “Periodontal Pack”, date and initials on top.
- Place sterilized packs in a dry storage area with dental equipment.
- When autoclave cycle is complete, verify autoclave steam indicator tape indicates the packs are sterilized.
- Run autoclave on pack mode.
- Place in autoclave.

Use the SOP for training on dental instrument care and storage.
APPENDIX
Glossary of Oral and Dental Terminology

DIRECTIONAL NOMENCLATURE:
- Buccal: Surface of tooth facing the cheek.
- Lingual/palatal: Surface of tooth facing the tongue.
- Occlusal: Biting surface of the tooth.
- Mesial: Surface of tooth closest to the median plane.
- Distal: Surface of tooth furthest away from the median plane.

GENERAL GLOSSARY:
- Dental chart: A written and graphical representation of the mouth, which includes noting pathology and procedures performed.
- Abrasion: Pathological wear on a tooth or teeth, due to external force or source, such as aggressive use of dental instruments or chewing on abnormal objects.
- Attrition: Pathologic or physiologic wear on a tooth or teeth, as a result of chewing, such as malocclusion and teeth wearing against other teeth.
- Apical abscess: Abscess at the apex of the tooth.
- Brachycephalic: Dogs or cats with short, broad facial profiles (e.g., Bulldogs, Boxers, etc.).
- Caries: Decay of hard dental tissues including enamel, dentin and cementum; appears as a structural defect on the surface of the tooth filled with soft, necrotic dentin.
- Chelitis: Inflammation of the lip.
- Deciduous: The first set of teeth which are typically shed prior to permanent tooth eruption.
- Dental professional cleaning: A procedure performed on a patient under general anesthesia which includes a thorough oral examination, dental charting and supra- and subgingival ultrasonic scaling and plaque and calculus removal. May also include root planing, periodontal debridement, topical antibiotic application, nerve blocks, extractions or other surgical procedures if needed.
- Dental prophylaxis: A professional dental cleaning performed on a patient with an essentially healthy mouth or one with mild gingivitis as a preventive measure for periodontal disease.
- Dentin: The hard calcified tissue which makes up the bulk of the tooth, located under the enamel of the crown.
- Dolichocephalic: Dogs with a long, narrow facial profile (e.g., Collies, Dachshunds, etc.).
- Dysphagia: Abnormal, decreased or absent, swallowing capability.
- Embedded tooth: An incompletely erupted tooth covered with soft tissue.
- Enamel: The hard, calcified tissue covering the crown of the tooth; the hardest substance in the body.
- Enamel hypoplasia: Inadequate deposition of enamel, affecting one or more teeth, which can appear as discoloration or pitting on the tooth surface.
- Endodontics: Treatment and therapy of the pulp canal system.
- Epulis (plural epulides): A benign tumor arising from the periodontal tissue stroma.
- Exodontics: Removal of a tooth; also known as extraction.
- Fissure exposure: Gingival and bone loss resulting in exposure to the points roots diverge in a multi-rooted tooth.
- Gingivitis: Inflammation of the gingival tissues (stage 1 periodontal disease) that is reversible.
- Gingival hyperplasia: A proliferation in the number of normal gingival cells (histopathological diagnosis) resulting in gingival enlargement.
- Gingivectomy: Removal of enlarged gingival tissue surrounding a tooth.
- Gingivoplasty: Contouring the gingival tissue surrounding a tooth.
- Grade: The quantitative assessment of degree of severity of a disease or abnormal condition, at the time of diagnosis.
- Glossitis: Inflammation of the mucosa on the dorsal and/or ventral surface of the tongue.
- Halitosis: Bad or malodorous breath.
- Home oral/dental care: Anything the owner does at home to prevent the buildup of plaque and/or calculus and maintain oral health of the pet. Records are kept of procedures performed on a patient under general anesthesia which includes a thorough oral examination, dental charting and supra- and subgingival ultrasonic scaling and plaque and calculus removal. May also include root planing, periodontal debridement, topical antibiotic application, nerve blocks, extractions or other surgical procedures if needed.
- Interdental: In between adjacent teeth.
- Malocclusion: Any deviation from the normal bite or occlusion.
- Mucoperiosteal flap: Full-thickness gingival flap which extends from the mucosa and periosteum.
- Mobile tooth: Tooth that moves more than expected when digital or instrument pressure is applied.
- Modified Triadan System: Charting system which assigns a three-digit value to each tooth based on quadrant and position.
- Oronasal fistula (ONF): Abnormal opening between the maxillary oral cavity and nasal cavity.
- Palatitis: Inflammation of the gingiva covering the surface of the hard and/or soft palate.

PERIODONTAL DISEASE:
- Periodontal disease: A plaque-inducing disease of the gingiva, periodontal ligament and alveolar bone.
- Periodontal pocket: A pathologic space between supporting structures and the tooth, extending apically from the normal site of the gingival epithelial attachment.
- Periodontal therapy: The treatment of periodontal disease which may include professional dental cleaning and root planing, periodontal debridement, topical antibiotic polymer gel application, nerve blocks, extractions or other surgical procedures as needed.
- Periodontitis: Destruction of the supporting structures of the teeth (gingiva, cementum, periodontal ligament and alveolar bone) that is not reversible.
- Pharyngitis: Inflammation of the pharynx.
- Plaque: Adherence of bacteria, glycoproteins and extra-cellular polysaccharides on the tooth surface.
- Pulp exposure: Abnormal defect allowing the communication between the pulp canal and the environment.
- Pulpal necrosis: Death of the pulp of a tooth.
- Pulpitis, irreversible: Inflammation of the pulp resulting in pulpal death, necrosis and a nonvital tooth.
- Resorptive lesion: Abnormal lesion which is the result of dental hard tissues resorption.
- Retained root: Incomplete extraction resulting in remaining root segment.
- Root exposure: Gingival and bone recession resulting in the exposure of the root surface.
- Root planing: Cleaning and scaling of the surface of a root within a periodontal pocket (closed) or accessed by a gingival flap (open).
- Stage: The assessment of the extent of abnormal lesions in the course of a progressive disease.
- Strategic tooth: A tooth with significant structure or function (e.g., maxillary fourth premolar, canine teeth, mandibular first molar).
- Stomatitis: Inflammation of the mucosa lining or any of the structures of the mouth or oral cavity; used to clinically describe widespread oral inflammation, beyond gingivitis and periodontitis.
- Supernumerary: Extra teeth.
- Tonsillitis: Inflammation of the palatine tonsil(s).
- Tooth fracture, uncomplicated (crown, root or crown-root): A fracture that does not expose the pulp canal.
- Tooth fracture, complicated (crown, root or crown-root): A fracture that exposes the pulp canal.
- Transillumination: The use of a light to evaluate transmission of light through a tooth to evaluate pulp vitality.
**Dental Resource List for Hospital Associate Education**

This document along with links to all the resources can be found in SmartHelp › MEDICINE › Dentistry › Policies › Dental Resource List.

### ONLINE RESOURCES

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<td>Virbac University (create an account to access free education)</td>
<td>Client education, dental anatomy, terminology, pathology, periodontal disease, radiology, etc.</td>
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<tr>
<td>American Veterinary Dental College (AVDC)</td>
<td>Dental anatomy, periodontal disease, tooth fractures, oral masses, etc.</td>
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<td>Oral ATP: Oral Assessment, Treatment and Prevention</td>
<td>Periodontal disease prevention, oral exams, instrumentation, pathology, periodontal disease, radiology, etc.; Oral ATP Dental Case of the Month via email sign-up</td>
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<tr>
<td>American Veterinary Dental Society (paid membership required to access most information)</td>
<td>List of veterinary dental specialists across the US; step-by-step compendium of dental procedures (available for purchase)</td>
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<td>These reviews draw from peer-reviewed literature and Banfield’s own data to provide the clinical bottom line on medical topics like periodontal disease, pet obesity and more! On this page you can access our current and past BARK White Papers.</td>
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<tr>
<td>BARK White Paper: Literature Review – Feline Tooth Resorption</td>
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### BANFIELD LEARNING CENTER

Dental Basics  
Dental Prophylaxis  
Dental Radiograph Basic Principles  

Dental Radiograph Positioning  
Canine Dental Radiograph Positioning  

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### MANAGING FELINE ORAL DISEASE

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# Dental Resource List for Client Education

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## Client Handouts and Brochures

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<td>Dental Prophy Discharge Instructions</td>
<td>SmartHelp &gt; Client Handouts &gt; Client Handouts &gt; Dental &gt; Dental Cleaning Discharge Instructions</td>
</tr>
<tr>
<td>Periodontal Disease</td>
<td>SmartHelp &gt; Client Handouts &gt; Client Handouts &gt; Dental &gt; Periodontal Disease</td>
</tr>
<tr>
<td>Brushing Your Pet’s Teeth</td>
<td>SmartHelp &gt; Client Handouts &gt; Client Handouts &gt; Dental &gt; Brushing Your Pet’s Teeth</td>
</tr>
<tr>
<td>Feline Tooth Resorption</td>
<td>SmartHelp &gt; Client Handouts &gt; Client Handouts &gt; Dental &gt; Feline Tooth Resorption</td>
</tr>
<tr>
<td>Dental Care Brochure</td>
<td>Brochure rack</td>
</tr>
</tbody>
</table>

## Preventive Care Resource List

<table>
<thead>
<tr>
<th>WHAT</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAHA Senior Care Guidelines for Dogs and Cats</td>
<td>Article outlining health care recommendations for senior dogs and cats. <a href="https://www.aahanet.org/PublicDocuments/SeniorCareGuidelines.pdf">https://www.aahanet.org/PublicDocuments/SeniorCareGuidelines.pdf</a></td>
</tr>
<tr>
<td>First Year of Life Resource Guide</td>
<td>Resource guide focusing on preventive care recommendations for the first year of life for dogs and cats. Banfield Library</td>
</tr>
<tr>
<td>Taking Preventive Care to the Next Level: Banfield Journal Article</td>
<td>Article discussing the importance of comprehensive preventive care and introducing breed specific and life stage recommendations.</td>
</tr>
<tr>
<td>Puppy Preventive Care Schedule</td>
<td>SmartHelp &gt; MEDICINE &gt; Health Stages &gt; First Year of Life &gt; Puppy preventive care schedule</td>
</tr>
<tr>
<td>Kitten Preventive Care Schedule</td>
<td>SmartHelp &gt; MEDICINE &gt; Health Stages &gt; First Year of Life &gt; Kitten preventive care schedule</td>
</tr>
<tr>
<td>Canine Inherited Disorder Database</td>
<td>Website for canine inherited disorder information <a href="http://www.upei.ca/~cidd/intro.htm">http://www.upei.ca/~cidd/intro.htm</a></td>
</tr>
<tr>
<td>OMA: Online Mendelian Inheritance in Animals</td>
<td>Website for canine inherited disorder information <a href="http://omia.angis.org/au/">http://omia.angis.org/au/</a></td>
</tr>
<tr>
<td>Inherited Diseases in Dogs</td>
<td>Website for canine inherited disorder information <a href="http://www.vet.com.ac.uk/idid/">http://www.vet.com.ac.uk/idid/</a></td>
</tr>
</tbody>
</table>
## Resources and Citations

7. 2011 VPI Study.
# Common Dental and Oral Abnormal Conditions in Dogs and Cats

<table>
<thead>
<tr>
<th>Dental/Oral Abnormal Conditions</th>
<th>Diagnosis</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Periodontal Disease</strong></td>
<td><strong>Stage 1</strong>: Gingivitis or chronic gingivitis with no attachment loss; plaque, calculus and bad breath may be present</td>
<td>Dental prophylaxis; institute home care; recheck oral exam in six months; annual prophylaxis</td>
</tr>
<tr>
<td></td>
<td><strong>Stage 2</strong>: Gingivitis, attachment loss 1 – 3 mm, up to 25% bone loss, bad breath, oral pain</td>
<td>Dental cleaning with treatment +/- dental radiographs +/- periodontal treatment; institute home care; recheck oral exam in six months; dental cleaning/treatment every six to 12 months</td>
</tr>
<tr>
<td></td>
<td><strong>Stage 3</strong>: Gingivitis, attachment loss 3 – 7 mm with furcation exposure, 25 – 50% bone loss, some tooth mobility, bad breath, oral pain</td>
<td>Dental cleaning/treatment with dental radiology, periodontal treatment +/- extractions; institute home care; recheck oral exam in three months; dental cleaning/treatment every six months</td>
</tr>
<tr>
<td></td>
<td><strong>Stage 4</strong>: Gingivitis, attachment loss to apical end, over 50% bone loss, significant tooth mobility, apical disease present, bad breath, oral pain</td>
<td>Dental cleaning/treatment with dental radiology, periodontal treatments and extractions; institute home care; recheck oral exam monthly and dental cleaning/treatment in three months, then every six months or more often as needed</td>
</tr>
<tr>
<td><strong>Discolored Teeth</strong></td>
<td>Differentiate extrinsic, or surface discoloration, versus intrinsic, or underlying dentin changes. Most common examples include: Enamel hypoplasia: defect in enamel development resulting in the pitting and discoloration of the teeth; has been associated with febrile events or systemic illnesses, including distemper, during the enamel formation phase at 2 weeks – 3 months of age. Discoloration within the tooth, along with decreased transillumination, indicates a non-vital tooth or pulpal death, usually associated with trauma which has resulted in the disruption of blood supply or damage to the pulp; acute cases often appear red or pink, turning purple, light gray and then dark gray with time.</td>
<td>For severe generalized cases, soft diet, elimination of hard chew toys, good home oral care and annual, or biannual, dental cleanings with radiographs. Referral for restorative procedures, as indicated. Anesthesia with assessment and radiographs; probable treatment with root canal or extraction.</td>
</tr>
<tr>
<td><strong>Fractured or Worn Teeth</strong></td>
<td>Fractured deciduous teeth</td>
<td>Extraction to prevent infection, pain and potential abscessation as well as interference with adult tooth eruption</td>
</tr>
<tr>
<td></td>
<td>Complicated fracture of adult tooth; fracture with pulp exposure</td>
<td>Anesthesia with assessment and radiographs; root canal therapy or surgical extraction, to prevent infection, pain and potential abscessation. &quot;Wait and See&quot; approach is not appropriate.</td>
</tr>
<tr>
<td></td>
<td>Simple fracture of adult tooth; no pulp exposure</td>
<td>If no evidence of pain or pulp exposure, monitor. If pain or pulp exposure present, root canal or extraction is indicated</td>
</tr>
<tr>
<td></td>
<td>Attrition: Wearing or abrasion of teeth can occur with repeated chewing; if this occurs slowly over time, dentin replacement will often prevent pulp exposure</td>
<td></td>
</tr>
<tr>
<td><strong>Missing Teeth</strong></td>
<td>Present, but impacted or non-erupted teeth Fractured below gum line Previously extracted</td>
<td>When no history of extraction is present or in patients who have never had dental procedures, anesthesia with assessment and radiographs are indicated to make a diagnosis.</td>
</tr>
<tr>
<td><strong>Supernumery Teeth, Rotated Teeth or Overcrowded Teeth</strong></td>
<td></td>
<td>Selective extraction of the affected teeth to prevent pain, malocclusion and the acceleration of periodontal disease.</td>
</tr>
<tr>
<td><strong>Retained Deciduous Teeth</strong></td>
<td>Deciduous teeth which remain in the mouth after 6 months of age in the dog and 5 months of age in the cat, or any deciduous tooth occupying the same space as an adult tooth.</td>
<td>Extraction to prevent damage to the permanent tooth and its periodontal ligament attachment, as well as the collection of food, debris, hair, plaque and calculus leading to early gingivitis and periodontal disease. &quot;Wait and see&quot; approach is not appropriate.</td>
</tr>
<tr>
<td><strong>Stomatitis</strong></td>
<td>A chronic, painful condition most common in felines; inflammation of soft tissues of the oral cavity (buccal, labial, gingival, palatal, lingual and/or floor of the mouth), pain, bad breath.</td>
<td>Dental cleaning and treatment of any present periodontal disease, assessment under anesthesia with biopsies for a definitive diagnosis. Treatment is aimed at managing pain and controlling clinical signs. Antibiotics, corticosteroids and nutritional support may be used; some cases require full-mouth extractions for resolution.</td>
</tr>
<tr>
<td>DENTAL/ORAL ABNORMAL CONDITIONS</td>
<td>DIAGNOSIS</td>
<td>TREATMENT</td>
</tr>
<tr>
<td>--------------------------------</td>
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</tbody>
</table>
| Malocclusion | General concerns  
  **Class 1:** Normal jaw lengths with malposition of one or more individual teeth.  
  **Class 2:** Maxilla longer than the mandible (overshot), causing the lower teeth to contact, and in some cases, penetrate the hard palate  
  **Class 3:** Mandible longer than the maxilla (undershot)  
  Maxillary-mandibular asymmetry can occur in a rostro-caudal, side-to-side or dorso-ventral direction or when mandibular and maxillary jaw lengths are asymmetrical (wry bite) | Intervention is required for tooth-on-tooth and tooth-on tissue trauma. Orthodontics, endodontics, extraction or odontoplasty (refer when minor crown reduction is required); choose whichever is the least invasive option for the patient.  
  Class 2 for juveniles, whenever adverse dental interlock is occurring due to dentition being trapped by teeth or soft tissue of the opposite arcade or where occlusal trauma is present, expedient treatment is required to prevent pain, infection and to free the jaw movement and allow the possibility for self-correction (ideally as soon as the condition is noted, between 6 – 8 weeks of age).  
  Adult Class 2: Crown reduction and vital pulpotomy of teeth contacting the hard palate.  
  Considered “normal” in brachycephalic breeds.  
  Gingivectomy to remove the excess tissue and gingivoplasty to recontour the gingival margin. | |
| Gingival Hyperplasia | A pathological increase in the amount of gingival tissue; etiologies include familial predisposition (Boxers), reaction to periodontal disease, side effect of some medications. | |
| Feline Juvenile Gingivitis | Gingivitis in juvenile cats which surrounds the teeth, but does not extend to the back of the mouth; etiology may involve exaggerated inflammatory response to tooth eruption, viral exposure, immune-mediated diseases, etc. | Treat aggressively, because these cases often progress to the adult form of stomatitis. Dental cleaning and assessment under anesthesia with dental radiographs. Reassess every three months and repeat dental cleanings every three to six months as needed until adulthood or resolution of the inflammation. Institute aggressive dental home care. |
| Feline Tooth Resorption | Resorption lesions or localized gingival inflammation adjacent to a painful tooth. Radiographs are used to assess and grade.  
  **Based on Crown Involvement:**  
  Stage 1 (TR1) mild loss of cementum and/or enamel; occurs only subgingivally  
  Stage 2 (TR2) moderate loss of cementum and/or enamel with loss of dentin that does not extend to the pulp cavity +/- hyperplastic gingiva  
  Stage 3 (TR3) moderate loss of cementum and/or enamel with loss of dentin that extends to the pulp cavity; most of tooth unaffected; extensive loss of cementum and/or enamel with loss of dentin that extends to the pulp cavity; most of tooth is affected  
  Stage 4A (TR4a) crown and root equally affected  
  Stage 4B (TR4b) crown more severely affected than roots  
  Stage 4C (TR4c) root more severely affected than crowns  
  Stage 5 (TR5) remnants of dental hard tissue only visible as irregular radiopacities; gingival covering is complete; significant root replacement with gingival covering  
  **Based on the root appearance:**  
  Type 1 (T1) focal or multi-focal radiolucency present in the tooth with an otherwise normal radiopacity of the tooth and normal periodontal ligament and roots  
  Type 2 (T2) a decreased radiopacity of part of the tooth and a narrowed or nonvisable periodontal ligament space  
  Type (T3) a combination of type 1 and type 2 findings | Dental cleaning and assessment under anesthesia with whole-mouth dental radiographs required  
  Stages 1, 2, 3 and 4 with T1 roots = complete surgical extraction is indicated, followed by gingival closure  
  Stages 1, 2, 3 and 4 with T2 roots = intentional subgingival crown amputation followed by gingival closure; unless there is significant periodontal disease, FeLV or FIV positive status or stomatitis where complete surgical excision is indicated (as above) |
## Common Oral Masses in Dogs and Cats (Benign)

<table>
<thead>
<tr>
<th>ORAL MASSES</th>
<th>DESCRIPTION</th>
<th>DIAGNOSIS/TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epulis</td>
<td>Is a general term referring to a gingival mass of any type. They are generally considered benign tumors arising from the periodontal ligament. Most adhere to bone and surrounding attached gingiva and are non-encapsulated masses which can progress to expansile masses which can displace teeth if not treated early. Examples of epulides include: focal fibrous hyperplasia, peripheral odontogenic fibroma and acanthomatous ameloblastoma.</td>
<td>Diagnose and address early. “Wait and See” is not appropriate. Oral examination and assessment under anesthesia with radiographs and deep excisional biopsy (down to bone) for definitive diagnosis.</td>
</tr>
<tr>
<td>Focal Fibrous Hyperplasia</td>
<td>This is often referred to in veterinary medicine as fibrous or fibromatous. These are different than the peripheral odontogenic fibromas. These are very common in dogs with the clinical appearance usually a separate lesion that is smooth and pink, not inflamed or ulcerated and firmly attached to the gingiva.</td>
<td>Diagnose and address early. “Wait and See” is not appropriate. Oral examination and assessment under anesthesia with radiographs and deep excisional biopsy (down to bone) for definitive diagnosis.</td>
</tr>
<tr>
<td>Peripheral Odontogenic Fibroma</td>
<td>Is a slow growing benign tumor that is common in the dog. They are generally well attached to the gingival margin, smooth, but can be irregular in shape. Radiographic features vary depending on the presence and amount of mineralized products within in mass.</td>
<td>Once an excisional biopsy confirms a diagnosis, surgical excision of the mass with at least 1 cm margins is usually curative, extracting all of the affected teeth with extensive curettage of the alveolar sockets.</td>
</tr>
<tr>
<td>Acanthomatous Ameloblastoma</td>
<td>These masses arise from remnants of odontogenic epithelium located in the gingiva near and surrounding the teeth. They have an irregular surface, but often times can be extremely aggressive causing bone lysis, destruction and deviation of the teeth involved. The radiographic pattern shows bony infiltration, alveolar bone resorption and tooth displacement.</td>
<td>Due to aggressive nature, at least 1 cm margins, often with partial mandibulectomy/maxillectomy indicated +/- radiotherapy; consider referral based on size and extent of mass.</td>
</tr>
<tr>
<td>Odontoma</td>
<td>Oral mass arising from odontogenic epithelial and mesenchymal origin; most commonly seen in young pets; considered benign, but may recur. The dental tissues may or may not exhibit the same internal make up.</td>
<td>Oral examination and assessment under anesthesia with radiographs and aggressive surgical excision. Monitor of local recurrence.</td>
</tr>
<tr>
<td>Complex Odontoma</td>
<td>An odontoma that has a conglomerate of dental tissues present in a disorderly pattern with no resemblance to a tooth. Radiographs will show a sharply defined mass of calcified material surrounded by a radiolucent band.</td>
<td>Oral examination and assessment under anesthesia with dental radiographs. Surgical excision via enucleation and intracapsular excision and aggressive debridement of cyst walls is usually curative.</td>
</tr>
<tr>
<td>Compound Odontoma</td>
<td>An odontoma that has rudimentary tooth like structures present indicating advanced cellular differentiation. Radiographs will show numerous tiny tooth like structures present.</td>
<td>Same as complex odontoma.</td>
</tr>
<tr>
<td>Dentigerous Cyst</td>
<td>Another type of an odontogenic cyst and are associated with impacted teeth. The most common location is the lower first premolars and will present with oral swelling. In early stages of formation the condition is asymptomatic, however, as the cyst enlarges, the mucosa overlying the cyst will appear slightly blue or purple and a fluid filled cyst is present.</td>
<td>Anesthesia with dental radiographs of all missing teeth is required. If the tooth is present and impacted, extraction of the unerupted tooth, complete enucleation of the cyst wall, curettage and osteoplasty of the surgical site is indicated.</td>
</tr>
<tr>
<td>Papillomatosis</td>
<td>They can be solitary or proliferative with multiple cutaneous tumors at mucocutanous junctions. They appear as cauliflower-like growths that have frond like projections. They are typically seen in young dogs.</td>
<td>Diagnosis is most often by physical examination and clinical findings. Treatment in clinical cases is usually not necessary as lesions will likely spontaneously regress. Excisional, laser or cryosurgery may be indicated in dogs with multiple lesions. Autogenous vaccinations have been found to induce regression.</td>
</tr>
</tbody>
</table>
## Common Oral Masses in Dogs and Cats (Malignant)

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Melanoma</td>
<td>The most common malignant oral tumor in dogs and number 3 most common in cats. Males are more predisposed than females. The majority involve the gingiva. They are firm, grayish or brownish black, nonencapsulated, irregular, rapidly expansive, develop extensive ulcerations, necrotic; hemorrhage is common in chronic cases, severe halitosis and metastasize within weeks to months.</td>
<td>Diagnose and address early. “Wait and See” is not appropriate. Chest radiographs to rule in or out distant metastasis and FNA of lymph nodes for staging. Dental radiographs and deep incisional tissue biopsy for definitive diagnosis and then referral for surgical removal with 2 cm margins +/- chemotherapy or melanoma vaccine.</td>
</tr>
<tr>
<td>Squamous Cell Carcinoma (SCC)</td>
<td>Rapid growth, progressive local invasion of neoplastic epithelial cells; number 1 oral mass in cats, number 2 in dogs. Metastasis rare in cats, but site dependent in dogs (low rate in rostral masses, higher in caudal masses). Sites that are common include the gingiva, tonsil, oral mucosa, lip and palate.</td>
<td>Diagnose and address early. “Wait and See” is not appropriate. Chest radiographs to rule in or out distant metastasis and FNA of lymph nodes for staging. Dental radiographs and deep incisional tissue biopsy for definitive diagnosis and then referral for surgical removal with 2 cm margins +/- chemotherapy or radiation therapy.</td>
</tr>
<tr>
<td>Fibrosarcoma</td>
<td>Slowly progressive (months) oral invasion of neoplastic mesenchymal cells. Number 3 most common oral mass in dogs; number 2 in cats. Highly invasive to surrounding bone, but metastasis is not common. Sites that are common include, gingiva, hard palate and labial mucosa.</td>
<td>Diagnose and address early. “Wait and See” is not appropriate. Chest radiographs to rule in or out distant metastasis and FNA of lymph nodes for staging. Dental radiographs and deep incisional tissue biopsy for definitive diagnosis and then referral for surgical removal with 2 cm margins +/- chemotherapy or radiation therapy.</td>
</tr>
<tr>
<td>SCC (tongue)</td>
<td>Rare tumor; more commonly seen in cats on the ventrolateral surface of the body of the tongue; rapid growth and highly metastatic to LN (37%) and lungs (43%) at the time of examination. Appearance may vary.</td>
<td>Diagnose and address early. “Wait and See” is not appropriate. Chest radiographs to rule in or out distant metastasis. Oral examination and assessment under anesthesia with dental radiographs, deep incisional tissue biopsy and FNA of regional LN for definitive diagnosis. Prognosis is grave due to extensive local disease and high rate of metastasis; refer for staging and potential aggressive surgery and feeding tube placement.</td>
</tr>
<tr>
<td>SCC (tonsil)</td>
<td>Rapid, progressive local invasion of the tonsillar fossa in dogs and cats; local extension is common; metastasis rate is extremely high (98% to LN, 63% to lungs, 20% to distant organs).</td>
<td>Same as SCC (tongue).</td>
</tr>
</tbody>
</table>

**ACKNOWLEDGMENTS:**
We would like to extend a big thank you to the talented associates at Banfield Pet Hospital who contributed to this guide:

**Subject Matter Experts and Content:**
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