

## Feline Chronic Gingivitis Stomatitis

### Introduction

Feline Chronic Gingivitis Stomatitis (FCGS) is a familiar problem in small animal practice. In reality the term covers a wide range of manifestations from the most severe inflammation and ulceration of the whole oral cavity to more focal conditions where inflammation may be confined to specific tissues and locations. It can affect all oral and pharyngeal soft tissues commonly including gingiva, oral and pharyngeal mucosa and the tongue. Inflammation can occasionally be confined to the tissues lateral to the palatoglossal folds – known as caudal mucositis. When inflammation affects the tissues overlying the teeth (premolars/molars/canines) it is termed alveolar mucositis. The term stomatitis is generally reserved for widespread oral inflammation, beyond gingivitis and periodontal disease that may extend into submucosal tissues. (*Source: <http://www.avdc.org/nomenclature.html>*)

This condition is reported to have prevalence of 0.7% in a study of nearly 5,000 cats by 12 practices (*Healey 2007*). A second study (*Girard 2008*) gave a prevalence of 5.5%. Anecdotally prevalence appears to be higher with lesions more intense and severe in North America and southern Europe.

### Aetiology

The actual aetiology is not known but thought to be a complex result of reactions involving a number of disparate factors. It has previously been stated that environmental factors, bacterial infection (and the host response to it) acting in combination with viral infection all influence the disease process. (*Tenorio 1991; Addie 2003*).

One study (*Dolieslager 2011*) compared the oral bacterial flora in normal and FCGS diseased cats using traditional and culture independent methods (bacterial 16S rRNA gene sequencing) in order to identify novel pathogens and species that may be fastidious and challenging to cultivate. In diseased cats the oral flora was found to be less diverse, compared to normal cats, with *Pasteurella multocida* subsp. *multocida* representing more than half the identifiable flora of the oral cavity in these cats lending credence to the theory that it may be an important factor in the aetiology. Another study by the same group (*Dolieslager 2013a*) discovered a group of novel and previously identified bacteria that have potential importance in aetiology that warrants further investigation using 16S rRNA gene sequencing. Subsequent studies have researched the oral microbiome of cats in more detail, also using sequencing (*Dewhurst 2015, Sturgeon 2014*).

The major difference between normal and diseased cats appears to be a hyperimmune response to the antigenic burden that is dental and oral plaque (*Harley 1999*). Low levels of plaque biofilm appear to initiate this abnormal response in susceptible individuals. A study of the innate immune response in both normal and FCGS cats (*Dolieslager 2013b*) compared that response in the presence of putative pathogens previously identified. The study found a good correlation between the severity of clinical signs and the presence of several of these putative pathogens, including *Feline Calicivirus* and *Tannerella forsythia*. Complex inter-reactions occur in affected cats and bacteriology results suggest that opportunistic infections are likely to play a role in influencing the disease process.

With regard to environmental factors, colony cats or those in multi-cat households appear to be more commonly affected early in life. Increased stress levels plus the closer proximity of other cats allowing transmission of viruses and other airborne microorganisms are most likely to be significant factors.

Many studies report a level around 70% of chronically affected individuals (showing signs for over 6 months) testing positive to virus isolation following oropharyngeal swabbing for feline calicivirus. (*Knowles 1989, Thomson 1984, Harbour 1991*). The actual significance of this, within the syndrome, is not accurately known. It is possible that the virus damages cell membranes allowing easier antigenic penetration by other agents. However, other co-factors are necessary before this virus can cause disease as FCV carriage in the general cat population is around 20-30% (*Knowles 1989, Zicola 2009*). One study (*Hennet 2005*) felt that the distribution of lesion in FVC positive cats to be more frequently associated with caudal mucositis. The relationship between calici infection and FCGS appears strong with 70-90% of chronic stomatitis cats testing positive compared with 20% of general population cats (*Knowles 1989, Harbour 1991*).

Feline Immunodeficiency Virus (FIV) infection may also have a role to play by predisposing the cat to secondary infections. Both FIV and FeLV contribute to an aberrant immune response to oral antigens but one study (*Dolieslager 2011*) showed a group of FCGS cats to have only a 4% prevalence for testing positive FIV and FeLV. This is similar to the cat population as a whole. It has been reported that the relationship between FCV and FIV appears strong but the association between the two has never been established for FCGS cats. (*Knowles 1989, 1991*)

Pre-existing dental disease of any form can also have an exacerbating effect on the syndrome. Conditions such as periodontal disease, tooth resorption lesions, or both, are important factors contributing to the overall hyperimmune response. Paradoxically the condition is often present in the absence of significant accumulation of calculus on the teeth.

## Clinical Presentation

The syndrome can be seen at any stage in a cat's life but three distinct periods are recognised;

1. At the time of kitten vaccinations oral inflammation can occasionally be seen. Whether this is an immune response to vaccinal elements or to the eruption of deciduous dentition and consequential increased levels in dental plaque is not known. The inflammation is generally transient and usually resolves with improved oral hygiene and gingivectomy (if needed).
2. The second period to see an increase in oral inflammation levels is when the permanent teeth erupt. This is very commonly a time that gingival inflammation levels can be severe, even in normal cats. Cats with soft tissue lesions beyond the gingiva require enhanced oral hygiene to both resolve the inflammation and prevent permanent tissue changes such as gingival recession or gingival hyperplasia.
3. The largest group of affected cats is seen later in life with a mean age of 7 years (*Johnston 2012*).

Adult cases of FCGS syndrome present a wide range of severity and location of clinical signs. The implication is that some cats have a very low threshold to the driving aetiological factors(s) whilst others have a higher threshold approaching the level for normal cats.

Most cats present with dysphagia and pain due to extensive oral inflammation and ulceration of the soft tissues. In some cases it can be hard to understand how the individual manages to eat or function normally with such extensive oral inflammation. Severely affected cats are often unkempt as grooming is hard or impossible with severe oral pain. Weight loss may also be a feature but most cats with advanced disease do maintain a weight that is normal or over-weight.

Inflammatory lesions may involve some or all of the oral soft tissues. Most severe cases present with inflammation and ulceration of the tissues lateral to the palatoglossal folds (caudal mucositis) in addition to the gingiva and mucosa overlying the cheek teeth (alveolar mucositis). Sublingual mucositis can also be present and, also, contact mucositis describing lesions secondary to soft tissue contact with a tooth surface - also known previously as "contact ulcers" or "kissing ulcers". The pharynx, tongue and mandibular molar salivary glands can also be affected in severe cases. The stomatitis disease activity index sheet (SDAI- table 1) is designed to allow this to be recorded and measured as a score.

Halitosis is often marked and cats may drool thick, tenacious saliva. The mandibular lymph nodes are often markedly swollen and palpation is resented.

## Diagnostic Pathway

A standard, systematic, diagnostic approach is best performed early in the case progression before irreversible changes take place and to ensure samples are collected at a time when the results are of most use. It is important to follow a step-wise approach for these cases.

- **Review the general medical and specific oral history**
- **Perform a full clinical examination.** Cats may present initially with weight loss and poorly thriven. Although the oral cavity may be by far the most obvious reason for concern, a full examination is still required to eliminate other systemic conditions.
- **Perform a full examination of the head and mouth** – Many cats resent a thorough oral examination and this may be best performed under anaesthesia. Be aware that most inflammatory lesions look much less "angry" under the effect of anaesthetic drugs.
- **Score the oral soft tissues using the standard method (e.g. Stomatitis Disease Activity Index sheet and chart (see Table 1/Table 2/Table 3)** Scoring the lesions for location and severity at each examination allows the clinician to record this and assign a score. As time passes the success or otherwise of treatments can therefore be measured. The time taken is minimal but it provides very useful prognostic information. The score sheet is based on one designed by Anderson and Lommer.
- **Blood tests for Haematology/Biochemistry:** One study (*Hennet 1997*) reported 10% of affected cats with chronic renal failure. Any underlying systemic disease may significantly affect the prognosis or the safety of anaesthetic protocols and other drugs (e.g. long term NSAID's)
- **Virus testing:** Testing for FCV/FHV assists prognosis. Additional tests for retroviruses (FIV, FeLV) are advised to ensure that there are no contraindications to subsequent therapy. Virus

isolation is possible but PCR tests provide qualitative and quantitative information of viral burden ([www.scanelis.com](http://www.scanelis.com)). At this time the significance of the quantities of viral antigen reported by PCR testing is not established as studies are ongoing.

- **Bacteriology:** Bacteria are a known co-factor in the aetiology of this condition. Cats with FCGS have a less diverse flora than normal cats and a high proportion of cats tested show *Pasteurella multocida* to be the dominant species (*Dolieslager 2011*). In addition *Tannerella forsythia* - if found - is considered a putative pathogen (*Dolieslager 2013b*). Test for both aerobic and anaerobic species. Check with your lab what swab material and transport medium they might require.
- **Biopsy:** Histopathology of affected areas often yields little useful specific information with a high proportion of lymphocytes (mixed T and B cells) and plasma cells found with fewer neutrophils and some mast cells. Often a non-specific diagnosis given by the lab. However before treatment alters the tissue cell content it is important to eliminate neoplasms (e.g. Sq. Cell Carcinoma, Lymphoma etc.) and other immunopathologies. This is very important if lesions are not symmetrical. Sending tissue to a laboratory that is used to reviewing oral lesions is wise.
- **Dental chart and full mouth dental radiographic survey.** For any dental procedure the use of a chart (table 3) is both useful and necessary in every case to ensure all teeth and tissues are assessed for abnormal findings with all "missing" teeth examined to locate any retained or broken root tips or those with resorptive lesions. The diagnostic yield of full mouth radiographs in cats is very significant. Studies show they reveal clinical hidden pathology in 42% cats with an otherwise "normal" mouth and additional pathology in 54% of cats in mouths with abnormal findings. (*Verstraete 1998; Kim, 2012*). Full mouth radiographs are essential early in FCGS cases.

## Clinical Management

It must be understood that the primary role of the clinician in the treatment and management of FCGS is to reduce the burden of oral antigen on a long term basis and simultaneously improve the welfare of the patient by reducing the considerable pain that these cats endure and eliminate or improve the inflammation of the oral soft tissues.

In addition to the diagnostic tests advised above, **the most important first step** in all cases is to clean the teeth and remove those with no future. Some cats respond very well to routine dentistry and improved hygiene alone, while others will respond poorly to this treatment. The aim is to restore the balance between the immune response and the oral antigen burden. In effect this means zero tolerance of both existing dental disease and of oral/dental plaque.

If teeth are affected by advanced periodontal disease they are best removed. Similarly teeth affected by tooth resorption lesions should be removed at this stage using a technique appropriate for resorption type. Teeth affected by Type 1 resorption must be removed conventionally. Teeth affected by Type 2 or Type 3 lesions may be suitable for crown amputation depending on radiographic diagnosis.

Antibiotics are initially useful in most cases to control excessive inflammation and allow soft tissues to heal after surgery. Until bacteriology results are available, the initial choice should include agents with a good aerobic and anaerobic spectrum that work in the presence of pus and penetrate bone. For most cases this initially means clindamycin at 11mg/kg/day for up to 14 days. Oral treatment can be challenging for owners when the mouth is very painful. Anecdotally

keeping capsules in the fridge and rolling the powder into butter balls can help the owner administer them orally. It should also be noted that some cats may culture *P. multocida* which is clindamycin resistant (**Unpublished data**). Some clinicians find Cefovecin (*Convenia*, Zoetis) useful for cats hard to medicate orally as it provides 14 days therapy from a single injection and has good activity against Pasteurella species.

Topical chlorhexidine provides the most effective oral antisepsis in these cases - both short and long term. Chlorhexidine paste or gel used once or twice daily will provide excellent post-operative plaque control and aid in reducing the overall antigenic burden. Finding a suitable product for cats can be a problem due to the bitter taste of some gels. Bright Bark & Meow (Keystone Industries [www.krpvet.com](http://www.krpvet.com)) or HS Petcare Chlorhexidine Paste 0.12% (Henry Schein Animal Health) seems to be acceptable to most cats. The paste can be wiped inside the lips twice daily - or brushed if the cat will allow it. Another possible alternative product from Keystone is a chlorhexidine gluconate spray.

Oral disinfection with a suitable chlorhexidine product once or twice daily is one of the most important and effective measures available. Treatment may well be lifelong.

### **All cases should be re-assessed in 7-10 days after cleaning:**

**If improved** - continue chlorhexidine up to twice daily and review in 4 weeks and subsequently as required. Advise the owner that more frequent scaling and polishing intervals will probably be necessary – perhaps up to 3-4 per annum. The need for professional dental cleaning is signalled when the daily use of chlorhexidine is failing to control the inflammation adequately.

**If not improved** - move to elective extraction of all cheek teeth as soon as possible. The rationale is that if the tissues fail to respond (by reduction of inflammation and pain) within 2-4 weeks despite the best hygiene we can provide, elective surgical extraction of all the cheek teeth should follow without delay. Although many clinicians and owners are reluctant to take this step at this time, studies over the last 18 years (**Hennet 1997: Girard 2005: Bellei 2008: Jennings 2015**) consistently show the benefit of this procedure. In general 50% of cases requiring no further treatment to resolve their signs and a further 37% need only low levels of inflammation support but being markedly better than before. With the benefit ratio of around 9 out of 10 cases improving it is hard to argue against this step from a welfare point of view.

Elective surgical extraction of whole cheek teeth quadrants should not be undertaken lightly. Consideration should also be made as to whether surgery should or could be performed in one session. If teeth are excessively mobile, or otherwise easy to extract, one session is preferable. On the contrary, if the surgery is challenging, it may be best to utilise two sessions out of consideration to both patient comfort and recovery and, also, operator fatigue. Surgical extraction, utilising single whole quadrant mucogingival pedicle flaps, allows removal of bone and improves access to the root furcation area. This allows sectioning of multirooted teeth and removal of individual roots. Closure of flaps in a tension free manner improves post-operative comfort markedly.

One study (**Jennings 2015**) did not see any marked difference between full mouth extraction (including canines and incisors) and cheek teeth only.

## **Post-operative management**

**Analgesia:** Morphine or methadone are powerful analgesics for premedication and post-operative analgesia. Some reports mention dysphoria and occasional hyperthermia in cats post op

and temperature measuring is wise. Regional analgesia using mepivacaine or bupivacaine/lidocaine is also effective in a multi-modal regime. An NSAID, such as meloxicam, with due regard to the dose recommendations is also useful in addition to, but not instead of, opiates. Buprenorphine is considered good for moderate to severe pain in cats at 1ml per 15kg (0.3mg/ml solution) every 8 to 12 hours. Owners can administer this analgesic very easily by mouth for transmucosal absorption if the correct dose is dispensed pre-filled in 1ml syringes for up to five days post op and beyond if indicated.

**Antibiotics:** As the primary condition is a hyperimmune reaction to mixed oral antigen, antibiotics by themselves give minimal success. In the perioperative period, they will guard against opportunist infection and are often best started pre-operatively. The selected drug should have good activity in bone and on anaerobic bacteria. Clindamycin, potentiated amoxicillin or Cefovecin (if oral administration is a problem) are the drugs of choice in most cases. Many *Pasteurella* species can be resistant to clindamycin but post extraction it is a good choice as bone has been exposed.

**Feeding:** Nutritional assistance may be necessary short or medium term. In very severe cases it may be necessary to consider oesophagostomy feeding or assisted oral feeding in hospital in others. If fluid intake is sub-optimal, this should be addressed also. Most cats do better at home if the owner is able to provide active help. Favourite soft and strongly flavoured foods (pilchards in tomato sauce) may be necessary for three to five days post-op.

## **Other Anti-inflammatory or Immunomodulation Therapies**

In the past there have been many drugs and alternative therapies advocated for this condition. Most have only anecdotal evidence to support them and/or the studies are based on very low case numbers. As a result clinicians often find treatment of difficult cases frustrating. A consensus statement by a group of European specialists in 2010 followed a review of all the available literature. The statement indicated that feline recombinant interferon omega, as a treatment, is most effectively used in the group of cats which are FCV positive and are long term non-responders to full mouth extraction.

### **Feline Recombinant Interferon Omega (Virbagen: Virbac)**

Studies appear to indicate that Feline Recombinant Interferon Omega equals or exceeds the potential of other treatments for this condition. (*Hennet 2011*). Long term follow up appears to indicate that it exceeds the potential of other treatments for this condition (*Gracis 2010*).

Results in a study of 39 cats (*Hennet 2011*) indicated that feline recombinant interferon is an effective treatment, particularly in the group of cats which are FCV positive and are non-responders to elective extraction. Our own studies over nine years confirm that feline recombinant interferon is able to reduce inflammation and improve comfort levels in the group of cats that are non-responsive to elective cheek teeth extraction (*Johnston 2012*).

Often the success of interferon allows clinicians to drop less effective treatment regimes. The trend is for oral administration by the owner in most cases. This is less expensive than injections but it must be stressed to the owner that it may not be suitable for severe cases.

### **Transmucosal Oral use**

Interferon given per os is believed to work by initiating a cytokine cascade when it comes into contact with cells providing an immunomodulatory effect over a long period of time. The cascade then has distant effects. It is the least expensive regime but does not work in all cases.

The contents of a 10MU vial is reconstituted and injected into a 100ml bag of sterile saline. Ten separate fractions of 10ml are created, which are then frozen. When frozen they have a reported shelf life of one year. The first 10ml fraction is used to give a dose of 1ml per os per cat per day resulting in a daily dose of 100,000 units of interferon. This fraction can be refrigerated normally and will have a shelf life of three weeks.

The owner continues to give 1ml per day alternating the side of the mouth used each day until all the fractions are used. Ideally, treatment lasts for 100 days but longer may be required. After three months, the progress should be reassessed using our Stomatitis Disease Activity Index (SDAI) scoring system. Cats can be rechecked for calici virus carriage in the oropharynx at this time.

**Subcutaneous injections**

In cases of severe inflammation, or when per os use has failed to provide resolution, the recommended regime by the manufacturer is subcutaneous injection. The dose is 1-2mu/kg every other day for five doses repeated after an interval of 21 days. This regime is much more expensive, relative to per os use, but likely to be more effective in refractive cases.

**Intralesional use**

The consensus statement in 2010 indicated that intralesional treatment is not probably necessary to initiate therapy. In some very severe cases, an initial treatment total dose of 5 MU injected locally into multiple sites at the junction between healthy gum and a diseased tissue can provide an initial boost to a treatment course. Using a 10MU vial, enough saline or sterile water is drawn into the syringe to provide a reasonable volume for use - normally 1-2ml depending on area to be injected. The contents are administered in fractions of 0.1 - 0.2ml over the areas inflamed. Five injections are given in each side of 0.2ml each.

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***Preliminary results of interferon therapy in a long term study of 41 cats  
(DentalVets 2007 to 2015)***

- **Breed:** Cats presented with FCGS were CDSH 60% and pedigree 40%. Within the pedigree group, 44% comprised Siamese and Main Coon.
- **Age:** Mean age at presentation was 5years 6 months with 60% male/n and 40% female/n
- **Calici:** 75% of cats tested positive for FCV on first presentation  
Only 9% cats initially testing positive to FCV became negative after INF treatment

Success rates were measured using the SDAI score sheets.

- ✓ A successful outcome was considered to be an SDAI score of 5 or less at revisit.
- ✓ A complete resolution of signs was defined as an SDAI score of 2 or less.
- ✓ Improvement was defined as a 50% reduction in initial SDAI score.  
(NB; a “normal cat” with moderate gingivitis would score around 4 on an SDAI sheet).

➤ **FCV negative group (n=10):**

8 cats (80%) scored SDAI less than 5 at the 3 month revisit with 6 scoring <2.  
2 cats (20%) scored SDAI a 50% reduction at the 3 months revisit

➤ **FCV positive group (n=31):**

16 cats (52%) scored SDAI less than 5 at the 3 month revisit with 8 scoring <2.  
10 cats (32%) scored SDAI a 50% reduction at the 3 months revisit  
5 cats (16%) failed to improve

## **Mesenchymal Stem Cell Therapy**

There are promising reports of studies using mesenchymal stem cells (MSC) (*Arzi 2015*). These cells are found in fat, bone marrow and other tissues and have a powerful ability to modulate innate and adaptive immunity by inhibition of T-cell proliferation, altering B-cell function, down-regulating MHC II and inhibiting dendritic cell maturation and differentiation. Cells administered IV to a group of 7 cats previously non-responsive to any treatment resulted in complete resolution of signs in 5 cats.

## **Corticosteroids**

This group of drugs are used to control inflammation in refractive cases which have had elective cheek teeth extraction and are not sufficiently controlled by feline recombinant interferon. Used as rescue therapy, their use is mainly justified on welfare grounds at the minimum effective dose rate. A short acting molecule, such as prednisolone, at a dose rate of 5mg twice weekly or 2mg every other day tapering downwards. They can be used in conjunction with feline recombinant interferon omega according to the manufacturer.

## **NSAID's**

NSAID's do not provide sufficient pain control or inflammation reduction on their own to justify their use as a monotherapy in the author's opinion. If used, the best option appears to be meloxicam with robenacoxib also reported as showing some promise. Any NSAID needs to be prescribed with due regard to the appropriate guidelines for use of long term NSAIDs in cats (*Sparkes 2010*).

## **Cyclosporine**

Cyclosporine has been used to control the signs of FCGS, mainly in North America where feline recombinant interferon omega is not easily available. A study of 16 cats over 6 weeks (*Lommer 2013*) reported significant improvement in SDAI scores in most cats. The cats in this study did not receive a commercial product but a micro emulsified liquid formulation compounded by a pharmacy using a tuna flavoured fish oil base. All but one owner managed to administer the medication easily.

Bioavailability of orally administered cyclosporine has been a challenge previously. In this study the micro-emulsified formula improved bioavailability but where trough whole blood levels of cyclosporine dropped below 300ng/ml the oral dose had to be increased to obtain this level.

## **CO2 laser surgery**



There is not enough objective and peer reviewed data to recommend CO2 laser use routinely in the management of FCGS syndrome. It may have a role in adjunctive pain control. One single cat case study concluded that the use of a CO2 laser assisted recovery of soft tissues after extraction therapy but would not have been as useful as a monotherapy (*Lewis 2007*).

## Nutritional Support

Good quality nutritional support can encourage an effective immunological response and post-extraction healing process. Various diets and supplements have been suggested, including vitamin preparations and omega-3 polyunsaturated fatty acids (PUFA), but there is no study which has data to prove a recommendation for any specific product. Some cats receiving placebo treatment in the Lommer study showed an unexpected improvement, possibly due to the fish oil high in omega 3 polyunsaturated fatty acids providing an anti-inflammatory and immunomodulatory effect. There is also anecdotal evidence that use of diets or supplements high in omega 3 EFA's affects platelet function and can result in excessive haemorrhage during extraction surgery

## Summary

Feline Chronic Gingivitis Stomatitis is a poorly defined syndrome characterised by focal or a diffuse chronic inflammatory response involving the gingiva, oral mucosa, and frequently the pharynx, tongue and other oral soft tissues.

The actual aetiology is thought to be a complex result of reactions involving a number of factors including environmental, bacterial and an aberrant host response in combination with viral infection.

Studies show the bacterial population of the mouth is less diverse in affected cats and that certain bacteria (*Tannerella forsythia*) can influence the severity of the immune reaction. There is a correlation between the severity of clinical signs and the presence of putative pathogens, including *feline calicivirus* and *T. forsythia*. Opportunistic infections also play a role in influencing the disease process. The major difference between normal and diseased cats appears to be a hyperimmune response to the antigenic burden that is dental and oral plaque with low levels of biofilm able to initiate a disproportionately high response in susceptible individuals.

Successful management of this complex syndrome requires a logical diagnostic approach. A treatment plan must start with improved oral hygiene including professional scaling, polishing, subgingival debridement and attention to existing dental disease. The owner should be aware that aggressive homecare will also be required.

Cases failing to respond to professional and high level plaque control as a first stage treatment should be considered for elective cheek teeth extraction and adjunctive treatments at an early date. Cases still non-responsive may be helped by immunomodulatory therapy which may include daily oral interferon therapy. Mesenchymal stem cell treatment shows promise in a proof of concept study (*Arzi 2015*).

It is important that the owner is involved at an early stage with discussions as to prognosis, treatment plans and help with homecare. A highly motivated owner is a strong ally in the provision of successful treatment.

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**Table 1**

INITIAL EVALUATION FORM: STOMATITIS DISEASE ACTIVITY INDEX

PATIENT: \_\_\_\_\_

DATE: \_\_\_\_\_

WEIGHT TODAY: \_\_\_\_\_

DIET: \_\_\_\_\_

**CLIENT REPORT:** Please evaluate the following (circle one number for each of the following criteria):

1. **Appetite:** 3 = eats only pureed food, or only when hand fed 2 = eats wet food on his/her own; cannot eat dry food 1 = eating wet and dry food, but less than normal amount.  
0 = eating normally
2. **Activity level:** 3 = no interest in people or other pets, spends most of time sleeping 2 = low activity level, but will play occasionally when engaged by people or other pets 1 = plays spontaneously, but not frequently 0 = normal activity level (playful and active)
3. **Grooming behavior:** 3 = will not groom 2 = grooms occasionally but not at 'pre-illness' level 1 = grooming excessively 0 = grooming normally
4. **Perceived comfort:** On a scale of 0-3, with 0 being most comfortable and 3 being most painful, rank your cat's present comfort level: \_\_\_\_\_

**VET EVALUATION:**

<b>STOMATITIS DISEASE ACTIVITY INDEX</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Owner's evaluation( average appetite/activity/grooming)				
Owner's evaluation perceived comfort				
Maxillary buccal mucosal inflammation				
Mandibular buccal mucosal inflammation				
Maxillary attached gingival inflammation				
Mandibular attached gingival inflammation				
Inflammation lateral to palatoglossal folds				
Molar salivary gland inflammation				
Oropharyngeal inflammation				
Lingual and/or sublingual inflammation				
<b>TOTAL SCORE (max = 30)</b>				

**Owner evaluation: average of the circled values above for 1, 2 and 3.**

**Inflammation of oral cavity sites: 0 = none 1 = mild 2 = moderate 3 = severe**

**Table 2**

RE-EVALUATION FORM: TREATMENT OF CHRONIC FELINE STOMATITIS

<b>STOMATITIS DISEASE ACTIVITY INDEX</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Owner evaluation appetite/activity/grooming				
Owner evaluation comfort				
Maxillary buccal mucosal inflammation				
Mandibular buccal mucosal inflammation				
Maxillary attached gingival inflammation				
Mandibular attached gingival inflammation				
Molar salivary gland inflammation				
Inflammation of areas lateral to palatoglossal folds				
Oropharyngeal inflammation				
Lingual and/or sublingual inflammation				
<b>TOTAL SCORE (maximum = 30)</b>				

RECHECK DATE: \_\_\_\_\_ WEIGHT TODAY: \_\_\_\_\_ LAST VISIT: \_\_\_\_\_

<b>STOMATITIS DISEASE ACTIVITY INDEX</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Owner evaluation appetite/activity/grooming				
Owner evaluation comfort				
Maxillary buccal mucosal inflammation				
Mandibular buccal mucosal inflammation				
Maxillary attached gingival inflammation				
Mandibular attached gingival inflammation				
Molar salivary gland inflammation				
Inflammation of areas lateral to palatoglossal folds				
Oropharyngeal inflammation				
Lingual and/or sublingual inflammation				
<b>TOTAL SCORE (maximum = 30)</b>				

RECHECK DATE: \_\_\_\_\_ WEIGHT TODAY: \_\_\_\_\_ LAST VISIT: \_\_\_\_\_

**TABLE 3: FELINE DENTAL CHART**

**FELINE DENTAL CHART**



DATE	
ANIMAL'S NAME	AGE
OWNER'S NAME	SEX
BREED	NUMBER

Buccal																			
Buccal	R	MAXILLA	L																
Palatal																			
	109 108 107 106	104 103 102 101 201 202 203 204	206 207 208 209																
CI	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
GI	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
Other	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
Buccal																			
Buccal	R	MANDIBLE	L																
Lingual																			
	409 408 407	404 403 402 401 301 302 303 304	307 308 309																
CI	<table border="1"><tr><td></td><td></td><td></td></tr></table>				<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									<table border="1"><tr><td></td><td></td><td></td></tr></table>					
GI	<table border="1"><tr><td></td><td></td><td></td></tr></table>				<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									<table border="1"><tr><td></td><td></td><td></td></tr></table>					
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Treatment	Recommendations
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**GI (Gingivitis Index)**  
 0 = Normal: no inflammation  
 1 = Marginal gingivitis: red line/oedema  
 2 = Bleeds on gentle probing. Swollen  
 3 = Severe inflammation. Spontaneous bleeding

**CI (Calculus Index)**  
 0 = No calculus either side tooth  
 1 = Up to 25% cover buccally above/below gingiva  
 2 = From 25%-75% cover on buccal crown  
 3 = From 75%-100% cover on buccal crown

**Tooth Mobility**  
 M0 = Normal  
 M1 = Slight  
 M2 = Moderate movement of approximately 1mm  
 M3 = Severe movement more than 1mm in any direction or depressible

**Feline Tooth Resorption (Feline TR) - Tooth resorption is classified on the severity (Stages 1-5) and the location of the resorption (Types 1-3). Radiographs are required.**

Type 1 (TR1) - A focal or multifocal resorption in the crown/roots. The rest of the tooth has a normal radiopacity an intact periodontal ligament and visible pulp chamber.  
 Type2 (TR2) - Narrowing or disappearance of the periodontal ligament and pulp chamber in at least some areas and decreased radiopacity of part of the tooth.  
 Type3 (TR3) - Features of both type 1 and type 2 appear in different areas of the same tooth.

Stage 1 (TR1) - Mild loss of dental hard tissues. Cementum or cementum and enamel loss.  
 Stage 2 (TR2) - Moderate dental hard tissue loss extending to the dentine.  
 Stage 3 (TR3) - Deep dental hard tissue loss that extends to the pulp cavity.  
 Most of the tooth maintains its integrity.

Stage 4 (TR4) - Extensive loss of the dental hard tissues. Most of the tooth has lost its integrity. The TR4 subsection should also be noted.  
 - TR4a = A stage 4 TR where the crown and root are equally affected.  
 - TR4b = A stage 4 TR where the crown is more affected than the root.  
 - TR4c = A stage 4 TR where the root is more affected than the crown.

Stage 5 (TR5) - Only remnants of dental hard tissues left that are visible as irregular radiopacities, gingival covering is complete.

<b>CODE KEY</b>	<b>T/FX</b>	<b>OM</b>
<b>X</b> Missing Tooth	<b>PE</b> Fractured Tooth	<b>ORAD</b> Oral Mass
<b>P (mm)</b> Extracted Tooth	<b>CCF</b> Pulp Exposure	<b>ST</b> Radiograph
<b>GH</b> Periodontal Pocket	<b>UCF</b> Complicated Crown Fracture	<b>RD</b> Stomatitis
<b>GR</b> Gingival Hyperplasia	<b>T/NV</b> Uncomplicated Crown Fracture	<b>RC</b> Persistent deciduous tooth
<b>GR</b> Gingival Recession	<b>AB</b> Non Vital Tooth (i.e. discoloured)	<b>E/D</b> Enamel Defect
<b>F</b> Furcation Exposure (F <sub>1</sub> , F <sub>2</sub> , F <sub>3</sub> )	<b>AT</b> Abrasion (Tooth/Object)	<b>RC</b> Root Canal Therapy
<b>RTR</b> Retained Tooth Root	<b>FX</b> Attrition (Tooth/Tooth)	<b>PRO</b> Periodontal therapy



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