



Siamese Breeders'
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Newsletter

JUNE 2012

Letter from the Editor

Firstly my apologies for the late arrival of this Newsletter which should have been our May issue. Regrettably Tony Perestrelo, our editor, resigned early in April due to increased work commitments. A big thank you, Tony, for the sterling results you accomplished with the Newsletter during your 2 year stint as editor. I have been trying to get this issue completed but have been tied up with show management over the last 2 months so it has been slow going. If there is a member out there who has time on their hands and would like to take over the editorship of the Group's Newsletter please let me know.

It takes time trying to find (and type out) material but both Hazel King and Charlotte van



*San-Shing's Ravens Pass (Seal Point male neuter kitten bred by Paul & Tania Prime) won Cat of the Day at The BIG Cat Club Show in April.
Photo: Krystle Callaghan*

der Riet provided articles for which I thank them. A while back Hazel sent me the article on the Siamese Coat by Phyllis Lauder which she found in an old Cats Calling. Charlotte forwarded me a number of articles on the feline herpes virus sent to her by a vet friend in Australia. One article has been reproduced and perhaps in the next issue one or

two of the others can follow.

Charlotte has also helped tremendously by setting out the Round Up of Show Results and then collating the whole Newsletter so this issue is very much a joint effort.

Hope you all enjoy the articles. Till next time!

Temp 'Ed

Chairman's Report 2011 by Ian Moore (Chairman)

A warm welcome to you all to this the Group's 26th AGM. The year under review passed rather uneventfully as regards Group activities due to the Group not holding a show in 2011.

We held 5 fairly well attended meetings. Marlene kindly arranged for vets from Tygerberg Veterinary Hospital to give talks at 2 of these meetings. Both vets gave interesting, informative talks which were enjoyed by those members present. I thank Marlene for arranging these talks. Thanks also to her and to Charlotte for opening their homes for the Group's meetings during the year.

We welcomed a total of 10 new members during the year and I trust that their membership will be long and mutually beneficial.

Most of the Siamese represented at COTY and CTC 2011 were owned by Group members. Michele Fleischman had Sup Ch Michele's Manray and Gr Ch Michele's Mantle and Marlene van Dyk had Sup Ch Mutti's Anna Sui qualify in the Entire section of COTY. Paul and Tania Prime had the honour of having 3 kittens qual-



Tania Prime & Rimchar Mafdet Jackass of San-Shing (Imp) aka "Jazz" at COTY 2011 Photo: Theresa Fouche

ify in the Kitten section; Mafdet Marchello of San-Shing, Rimchar Mafdet Jackass of San-Shing and San-Shing Baby Tjoklits, quite an accomplishment. Johan Groenewald and Ian Taylor had Taldi Mystical Blu-Ice qualify also in the kitten section. At CTC Paul and Tania ruled with Jackass being crowned Best Entire with Marchello 2nd and Tjoklits adjudged Best Kitten. Marlene's Anna was placed 9th in the Entire section and Charlene du Toit's Sup Pr Mai-Thai's Catsanova was placed 6th in the Neuter section. Congratulations to all the owners and breeders of these lovely cats.

With Janet not actively in-

involved in Siamese Rescue a lot of the phone calls and in need collecting has been passed onto Brenda. Thank you Brenda for taking charge. Janet does still keep her ears open for homes and gives advice when she is able to. Fortunately we do have some monies in the Rescue fund, in case or when we need to outsource some of the rescue work.

Marlene once again hosted our year-end prize giving. After a short meeting and the prize giving, members present, plus a few friends, enjoyed a super braai. I once again thank Marlene for kindly opening up her home for this year-end celebration. Derek Kerr, with a bit of help did his usual thing of braaing everyone's meat and members supplied salads, desserts etc. A pleasant evening was had by all.

I wish to thank all the committee for their dedication and commitment over the last year. We work well as a team.

Finally I wish all breeder and exhibitor members success in their breeding endeavours and/or exhibiting during 2012.

Thank you to you all for being here today.

The Siamese Coat

by Phyllis Lauder

This article was written many years ago especially for Cats Calling, the old Western Province Cat Club magazine, and appeared in the magazine in June 1974. Hazel King passed it on hoping we would be interested, commenting that clearly Cats Calling had had some illustrious contributors. Phyllis Lauder was a breeder and judge of international repute and spent her lifetime with Siamese cats. She is the author of the standard work on the breed.

It can be said that a Siamese cat is, by definition, a cat whose ancestors were brought to Europe from Siam. Its eyes are blue and its colour is restricted to the points.

This restriction of colour to the points ties up with the cat's temperature-mechanism. In utero, the kittens are so warm that no colour shows – they are born 'white' and their colour should begin to show quite soon after but only at the cooler extremities, not on the body. It may happen that one of these cats, taken to equatorial regions, will lose its colour and become a 'white' cat again. It is also true that where there has been a wound on the body, giving coolness, the fur will at first re-grow dark.

Besides the fact that where the cat is cool the colour will show and where it is warm it will not show, there is possibly another aspect of colour-behaviour; as a Siamese will lose its points-

colour in the tropics, so colour will tend to spread onto its body in the colder latitudes. It is an open question whether this is entirely due to the behaviour of the heat-mechanism peculiar to this variety, or is concerned in any way with the protection from the sun's actinic rays. At face value it would seem that these cats will not, in hot climates, get the protection given by pigmentation and that therefore any darkening that may occur in northern latitudes is not the result of radiation from the sun.

A slight acquaintance with the colour-genetics of the Siamese Cat, together with knowledge of the experimental breeding carried on within the Fancy, show that many Sealpoint Siamese carry the factors for Blue

and Brown. These modifications of the Seal-black pigment appeared years ago as a manifestation of the simple Mendelian one-in-four rule for recessive genes which, when carried by both sire and dam, had their



chance of meeting. The resulting kittens – despite exclamations of horror – were duly fostered. They were the ancestors of the 'Blues' and 'Chocolates' of today and of the 'Lilacs' which appeared when Blue and Brown dilution factors were present in both sire and dam. The fact that the

(Continued from page 3)

Chocolate and Lilacpoints have habitually very pale coats is due to the peculiar clumping of the pigment-granules for Brown.

Unfortunately it has happened that the coats of the Seal and Bluepoints have darkened, often to such an extent that individuals of these varieties appear practically as self-coloured; there are Seals whose coat-colour is that of mahogany and



Lilac Point Siamese

Blues with grey coats often tinged with yellow. Such cats seem hardly to be Siamese cats at all and this is a sad thing for anyone who appreciates the striking beauty of the contrast between the pale body and de-



Blue Point Siamese

cidated points of a really good Siamese cat.

It is, however, easy to criticize: anyone who desires to correct the fault that had made itself manifest, has first to discover the cause. When man steps in to breed any species he becomes a selective agent for that species. Whether in enthusiasm for type, our desire – in my view deplorable – to breed exceptionally long heads, we may have chosen individuals whose coats are not the palest; whether residence in cool countries has encouraged the colour to spread, or living in hot ones has brought into play some factor for protective colouration; whether some cytological alteration has oc-

curred- these things are not known. We do not even know whether the apple-cheeked, kink-tailed, squinting cat of sixty-odd years ago had always worn a pale coat! I saw, some thirty years ago in a museum, a stuffed so-called example of the Siamese cat, whose coat was anything but pale.

Fortunately there are still Seal and Bluepoint cats with really pale coats. Until we have more knowledge, the best way for us to preserve the lovely colour-contrast of these delightful creatures is to exercise our function as selective agents by mating together those with the best coat-colour.



Seal Point Siamese

New Members

The following new members were welcomed into the Group since the beginning of the year. We trust that they will all enjoy a long and mutually beneficial association with the Group.

Maryna Ulyate

Lee-Ann Driessel

Rita Wiseman

Show Results Roundup Feb - June 2012

TRANSVAAL CAT SOCIETY 25/2/2012

Best Adult & Runner-up Best Adult
on Show

Sup Ch Siamlove Zimbali

Seal Tabby Point Female

Owned & bred by Elizabeth van Renen



Best Neuter & Neuter Qualifier

Tr Sp Pr Mai-Thai's Catsa-

nova Seal Tabby Point Neuter

owned by Charlene du Toit & bred by
Charlotte van der Riet

Best Kitten

MyEden's Alaska

Lilac Point Male

owned & bred by Tony & Ivone Perestelo

Best on Show Kitten Qualifier

San-Shing's Kings Best

Caramel Point Neuter

bred by Paul & Tania Prime

Best Kitten on Show

San-Shing's Gallant Man

Seal Point Neuter

bred by Paul & Tania Prime



BREEDERS OF REX & SPHYNX 17/3/2012

Best Adult

La Montanara Tiffany of Taigha

Lilac Point Female

owned by Lucy Arends-Wagner & bred
by Heidi Hoffman

ALL BREEDS CAT CLUB 3/3/2012

Best Adult & Adult Qualifier

Gr Ch Rimchar Mafdet Jack-

ass of San-Shing (Imp)

Seal Point Female

owned by Paul and Tania Prime



PROVINCIAL CAT SOCIETY 24/3/2012

Best Adult

Ch La Montanara Tiffany of Taigha

Lilac Point Female

owned by Lucy Arends-Wagner & bred
by Heidi Hoffman

THE BIG CAT CLUB 14/4/2012

Best Adult

Ch San-Shing's Baby Tjoklits

S A ABYSSINIAN & SOMALI ASSOCIATION 24/3/2012

Best Adult on Show

Ch San-Shing's Baby Tjoklits

Chocolate Point Female

owned & bred by Paul & Tania Prime

Best Neuter & Neuter Qualifier

Tr Sp Pr Mai-Thai's Catsa-

nova Seal Tabby Point Neuter

owned by Charlene du Toit & bred by
Charlotte van der Riet



(Continued from page 5)
Chocolate Point Female
owned & bred by Paul & Tania Prime

Best Neuter
**Tr Sp Pr Mai-Thai's Catsa-
nova**
Seal Tabby Point Neuter
owned by Charlene du Toit & bred by
Charlotte van der Riet



Best Kitten on Show & Cat of the
Day
San-Shing's Raven's Pass
Seal Point Neuter
bred by Paul & Tania Prime



RAND CAT CLUB 14/4/2012
Best Adult
**Gr Ch La Montanara Tiffany
of Taigha**
Lilac Point Female
owned by Lucy Arends-Wagner & bred
by Heidi Hoffman

Best Kitten
Siamlove Seal'd with a Kiss
Sealpoint Female



owned & bred by Elizabeth van Renen

**NORTHERN CAPE/FREE
STATE CAT CLUB 21/4/2012**

Best Adult
**Ch Pretty von Hestemaas of
Taldi (Imp)**
Seal Tortie Point Female
owned by Ian Taylor & Johan Gro-
enewald



Best Neuter & Cat of the Day
Pr Wizz Billy the Kid
Seal Point Neuter
owned & bred by Rita Wiseman



Best Kitten
Taldi Alaska
Lilac Point Female owned & bred by Ian
Taylor & Johan Groenewald



**CAT FANCIERS CLUB
12/5/2012**

Best Kitten
Siamlove Seal'd with a Kiss
Seal Point Female
owned & bred by Elizabeth van Renen

**EASTERN CAPE CAT CLUB
12/5/2012**

Best Adult & 8th Best Cat on Show
**Ch Pretty von Hestemaas of
Taldi (Imp)**
Seal Tortie Point Female
owned by Ian Taylor & Johan Gro-
enewald

Best Neuter & 3rd Best Cat on Show
Gr Pr Wizz Billy the Kid
Seal Point Neuter
owned & bred by Rita Wiseman

5th Best Cat on Show
Wizz Sundance Kid
Chocolate Point Neuter
Owned & bred by Rita Wiseman



(Continued from page 6)

11th Best Cat on Show

Ikins Davron Soundofmusic

Lilac Point

Owned by Ian Taylor & Johan Groenewald & bred by Ronnie Gerber



Best Kitten & 12 Best Cat on Show

Okonor Levendula of Taldi

(Imp) Lilac Point Female

owned Ian Taylor & Johan Groenewald



WESTERN PROVINCE CAT CLUB 19/5/2012

Best Adult on Show

Ch San-Shing's Baby Tjoklits

Chocolate Point Female

owned & bred by Paul & Tania Prime



Best Neuter

Tr Sp Pr Mai-Thai's Catsanova

Seal Tabby Point Neuter

owned by Charlene du Toit & bred by

Charlotte van der Riet

Best Kitten on Show & Cat of the Day

San-Shing's King's Best

Caramel Point Neuter

bred by Paul & Tania Prime

Best Siamese Kitten & Kitten Qualifier



San-Shing's Gallant Man

Seal Point Neuter

bred by Paul & Tania Prime

SOUTHERN AFRICA CAT COUNCIL 2/6/2012

Best Adult

Gr Ch Mai-Thai's Glamorous

Seal Tabby Point Female

owned Mark & Louise Sherwood & bred by Charlotte van der Riet



Best Neuter

Tr Sp Pr Mai-Thai's Catsanova

Seal Tabby Point Neuter

owned by Charlene du Toit & bred by Charlotte van der Riet

Best Kitten on Show

San-Shing's King's Best

Caramel Point Neuter

bred by Paul & Tania Prime

PROVINCIAL CAT SOCIETY 2/6/2012

11th Best Cat on Show

Ch Michele's Merritt

Cream Point Male

Owned & bred by Michele Fleischman



ALL BREEDS CAT CLUB 16/6/2012

Best Adult

Gr Ch San-Shing's Baby Tjoklits

Chocolate Point Female

owned & bred by Paul & Tania Prime

Best Neuter

Tr Sp Pr Mai-Thai's Catsanova

Seal Tabby Point Neuter

owned by Charlene du Toit & bred by Charlotte van der Riet

Best Kitten

San-Shing's Gallant Man

Seal Point Neuter

bred by Paul & Tania Prime

Best on Show Kitten Qualifier

San-Shing's Ravens Pass

Seal Point Neuter

bred by Paul & Tania Prime

All show results and photo's at <http://siamesebreedersgroup.weebly.com>

Homing Kittens - *Smoothing the way* by Sarah Heath

Sarah Heath is a renowned UK feline behaviourist. Article reproduced with kind permission from the FAB CatCare issue February 2012.

Making the transition from rearing environment to new home can be a source of stress for young kittens and minimising anxiety during this process is an important goal both in terms of preventing behavioural problems but also in terms of promoting good welfare.

When should kittens be rehomed?

Choosing a suitable age for homing is a matter of some contention and, unfortunately, there is a lack of scientific evidence to categorically support the selection of one particular age. In the UK there is no legal regulation over the age of rehoming kittens but the Governing Council of the Cat Fancy (GCCF) does seek to impose some regulation over breeders of pedigree cats and states on its website that 'kittens should be at least 13 weeks old before they leave the breeder. Thirteen to 14 weeks is probably

the best age, especially for all foreign breeds.'

According to the information on the website this recommendation appears to be primarily related to the issue of cats needing to be fully vaccinated and in the GCCF Code of Ethics it states that 'the GCCF strongly recommends that no kitten should be permitted to go to a new home before 13 weeks of age. At least 7 days prior to this the kitten should have completed a full course of vaccinations, including health check, given by a veterinary surgeon or by a listed veterinary nurse given under the direction of a veterinary surgeon. The breeder should ensure that the kittens are house trained, inoculated and in good general health.'

Whilst these recommendations



are strongly worded and rigorously applied there does not appear to be any specific scientific validation either for or against them. In some countries the regulation of kitten rehoming is of a legal nature. In Denmark in November 2009 legislation was passed which made it illegal to rehome kittens earlier than 12 weeks of age. A fine is imposed on people who sell or 'in other ways give away' kittens of less than 12 weeks and the same penalty applies to anyone found to be importing kittens before that age. There are exceptions in the legislation for situations where the kitten is rehomed with its mother or where orphaned kittens are relinquished to a cat shelter or to an establishment where the kittens are fostered onto another queen. The legislation is strongly supported by the Danish Society for the Protection of Animals and other Danish animal welfare organisations but there is no scientific evidence to either support or refute it.

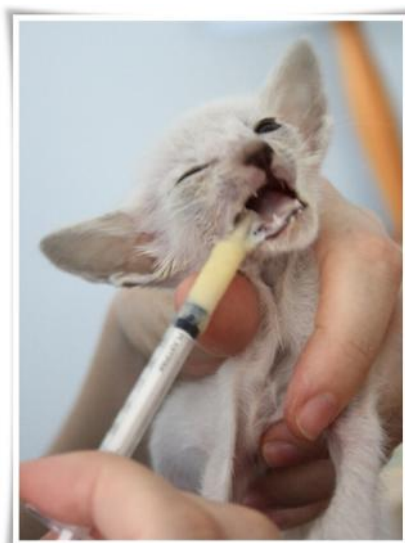
With a lack of published scientific evidence to assist in deciding when it is optimal to rehome kittens, authors have used a range of criteria to support their varying positions on

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this subject. Recommendations usually fall into one of two camps with some authors advocating rehoming kittens at between 7 and 8 weeks of age and others preferring a later age of between 12 and 13 weeks. The deciding criteria can be broadly divided into two sections – biological criteria and behavioural criteria.

Biological criteria

One of the most important criteria cited by breeders and rehoming centres in relation to deciding when to rehome, is the potential effect on the health of the kitten. Infectious diseases are recognised as being an important threat to feline health and most pedigree breeders prefer to ensure that their kittens are fully vaccinated before leaving the relative safety of the breeding environment. This criterion is less commonly applied when kittens are reared in rescue situations. In these cases it could be argued that the environment is less 'safe' in terms of disease control and, therefore, there is less potential advantage, and even some potential disadvantage, in keeping the kittens for longer. Another biological factor that is considered is that of weaning. It is generally accepted that kittens should be nutritionally independent be-



fore rehoming takes place and, therefore, the weaning process should be complete and the kitten should be able to acquire adequate nutrition without assistance. The literature suggests that the weaning process commences at around 3 to 4 weeks of age, but there is less consensus over the age at which the process is complete, with a range of ages from 6 to 10 weeks being cited.

Behavioural criteria

From a behavioural perspective, the criteria that are considered relate to behavioural development and the relative importance of feline and human interaction in that process. Kittens need to learn how to communicate effectively with their own species, and time spent with their mother and littermates is undoubtedly an

important factor in this regard. In addition, interaction with the queen has been shown to be important in acquiring emotional control and learning to deal with the potential for frustration. Weaning is considered to be both a nutritional and a behavioural process and interaction with the mother during this stage of development has been reported to be an important factor in prevention of behavioural problems in later life. However, for kittens destined for a life in a domestic context, there is the additional need to learn about human interaction and to be exposed to environmental stimuli which may be potentially fear-inducing from a purely feline perspective. Many authors consider the balance between these two requirements to be an important factor in deciding on a homing age and cite this as a reason for considering every kitten as an individual and making a decision based on the relative advantages of time spent in the rearing environment and early exposure to the environment in which the kitten will spend its future.

How can veterinary practices help in the transition process?

Veterinary practices have an important role in ensuring the

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welfare of kittens during the process of transition from the rearing to the home environment and should be involved in offering advice to breeders, be they professional or casual, and to rehoming centres. In addition, they have the potential for a high level of contact with new owners and therefore the opportunity to give valuable advice about how to minimise stress during the early days and weeks in a new home. Imparting information about normal feline behaviour will help owners to understand the need to provide for normal coping strategies, such as hiding and elevation, and also to consider appropriate ways to socially interact with their new family member.

Information about normal feline communication systems will also explain why prophylactic use of pheromone exposure can be beneficial in aiding the transition from the rearing environment to the new home. The importance of appropriate socialisation and habituation can also be emphasised and it is important to include information about the influence of emotional state on the outcome of exposure to both social and environmental stimuli. One of the most effective ways of educating is through exam-

ple and the way in which the veterinary practice deals with feline patients can be hugely instrumental in influencing owner behaviour towards pets. Adopting the principles of the FAB Cat Friendly Clinic initiative can, therefore, benefit cats not only during visits to the practice itself but also during interactions with their owners at home.



Are kitten socialisation classes a good idea?

The process of imparting information can be time consuming and when the information is of vital importance it is worth considering how best to ensure that new owners receive and understand it. While some advice can be given to owners during first and second vaccination appointments it should be remembered that retention of verbally delivered information is generally poor and, when the environment in which it is received is one that is potentially stressful for the owner, that retention rate can be further impaired. The use of veterinary nurse clinics and kitten infor-

mation evenings can, therefore, be extremely beneficial and provide a friendly and relaxed environment in which to educate new owners. There has also been information in the literature about running so called 'kitten socialisation classes' or 'kitten kindies' in which owners bring their new kittens to the practice. These events have been considered to be somewhat controversial and certainly the running of kitten events along the same lines as 'puppy parties' is not recommended. Feline social behaviour differs considerably from that of dogs and the aims of appropriate socialisation in kittens are, therefore, not the same. Advocates of 'kitten kindy' suggest that these events should be more about human-related social contact and emphasise that the aim is not to encourage social interaction between kittens but to allow the opportunity to practise feline communication skills and enable kittens to maximise their ability to communicate with other cats and effectively distance themselves from unfamiliar individuals when necessary.

From a practical perspective the running of these events can be challenging and the ability to ensure a kitten-safe venue, both in terms of physical safety and disease control, is an over-

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riding consideration. Feline-only practices may be better placed to offer this service but every practice needs to consider the relative benefits before deciding how to proceed.

Kitten information evenings, in which owners come to the practice without their kittens, to learn about the behavioural needs of their new family member are certainly easier from a logistical point of view and,

therefore, more likely to be possible for most practices to offer.

Conclusions

The homing of kittens is an important consideration for both breeders and rescue organisations and the aim is always to ensure that the process is as stress free for the kitten as possible. As yet there is no scientifically validated consensus over the optimum way in which to home kittens or indeed the

optimal age at which to do so. However various factors can be considered to assist in making the best decision for individual kittens based on the background from which they are being homed and the environment that they are going into. Ensuring the welfare of kittens during the homing process is a joint responsibility and breeders, rehoming centres and veterinary practices all have a part to play.

Why cats find next door gardens so convenient

Copied from The Daily Mail UK

It can be an explosive cause of conflict between cat owners and their neighbours, but when your moggy uses the next-door garden as a litter tray, your argument that it is purely down to chance may no longer hold water.

Researchers have discovered that cats foul neighbouring gardens intentionally to mark the edge of what they consider their territory – typically less than 300m from home. The feline behavioural traits were revealed when GPS trackers and tiny cameras were fitted to nine pets. Animal behaviourist, Roger Tabor, who led the study, said ‘territorial marking’



could be a serious source of dispute between neighbours.

“If you are not careful, it can lead to falling out and even people moving” he added. “If you have a tiny garden and if you don’t want to fall out with your neighbours, it’s important to leave an area of loose soil at the end of the garden, which you can clean when needed.”

The study also suggests town cats are more stressed than

their rural cousins because territory is smaller and they have to spend much of their time protecting it against numerous rivals.

In the experiment, city cats crossed the paths of at least 10 other felines a day and half of them had to deal with rivals entering their homes to steal food. Rural cats, which rarely came across other felines, were able to dedicate more time to hunting, with some catching up to five mice, voles and small birds a week.

The study found the average moggy spends 12 hours a day snoozing in a favourite resting place, usually where it can keep an eye on its territory.

Feline Herpes Virus -1 Ocular Infection

Thanks to Dr Ninette Keller, Senior Lecturer: Companion Animal Medicine, School of Veterinary and Biomedical Science, James Cook University, QLD, Australia) for forwarding this interesting article for publishing.

Last updated on 7/13/2011

Contributors:

Mary B. Glaze DVM, MS, DACVO

Synonyms:

FHV-1, herpes, rhinotracheitis virus, herpetic conjunctivitis, herpetic keratitis, herpetic keratoconjunctivitis, dendritic corneal ulcer, geographic corneal ulcer

Disease description:

ETIOLOGY

Feline herpesvirus-1 is a double-stranded DNA alphaherpesvirus with similarities to human herpes simplex virus (HSV-1). Important characteristics of this viral subfamily include rapid replication and cell-to-cell spread, lysis of infected cells, and the ability to establish neuronal latency. With its limited ability to replicate at temperatures of 37° C, FHV-1 targets cooler surfaces including conjunctival, nasal, and pharyngeal epithelium. Epithelial erosion, multifocal epithelial necrosis, neutrophilic infiltration and fibrinous exudation are consequences of the cytopathic effect as the virus replicates and ruptures host cells. Conjuncti-

vitis is the predominant ocular sign of primary FHV-1 infection, although on occasion viral replication may cause microdendritic lesions within the corneal epithelium.

Disease description in this species:

PHYSIOLOGY/ PATHOPHYSIOLOGY

Feline herpesvirus is widespread in the general cat population, with a reported seroprevalence of 50% to 97%. Transmission occurs via close contact with an infected cat and exposure to its respiratory, oral and ocular secretions. Kittens are most susceptible to primary infection, especially at 8 to 12 weeks of age when maternal antibodies decline. Sneezing can transmit viral particles up to 4 feet, making close or crowded quarters prime environments for transmission. Virus is shed in large quantity by acutely infected animals. Small quantities of infective virus are also present in oronasal and conjunctival secretions of latently-infected carriers during recrudescence episodes. Though inactivated by most common disinfectants, FHV-1 can remain viable for up to 18 hours in a moist environment, making indirect transmission possible via contaminated cages, bedding, utensils, and personnel. The incubation period for herpesvirus

is 2 to 6 days. Recovery from the primary viral infection begins in 10 to 14 days, with resolution of clinical signs typically within 3 weeks of infection. Secondary bacterial infection enhances the pathogenic effect of FHV-1 and may prolong clinical disease.

Latency is described as a biologically quiescent period of viral infection. During the primary infection, FHV-1 virions invade sensory nerve endings within the conjunctiva, ascend the trigeminal nerve, and establish latency in the trigeminal ganglia. FHV-1 DNA has also been identified in the vestibular ganglion. Other non-neuronal latency sites proposed, but not yet proven for FHV-1, include the cornea and facial skin. While actively replicating virus cannot be detected during latency, transcription of a small portion of the viral genome called latency-associated transcript (LAT) does occur. Minimal viral protein translation during latency could allow for evasion of humoral and cell-mediated immune responses.

More than 80% of recovered cats become latently infected carriers. Of these, recrudescence will occur in an estimated 45% as latent virus reactivates either spontaneously or in response to stress. Common stressors include travel, relocation, boarding, breeding, parturition/lactation, and corticosteroid administration. Approximately 70% of latently in-

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affected cats shed virus after treatment with corticosteroids. Once stressed, a lag period of approximately 1 week occurs before viral shedding begins. Shedding then continues for a period of 1 to 2 weeks. A refractory phase of several months is then likely before viral shedding recurs.

The precise molecular mechanisms of reactivation are poorly understood. Once the latent virus receives the necessary signal, virions



Figure 1: Neonatal ophthalmia

Copious ocular discharge accompanies primary herpesvirus infection in two kittens.

replicate and descend sensory nerves to epithelial tissues where viral replication continues. Ocular signs of recrudescence include conjunctivitis, typically less severe than that of the primary infection, and corneal ulceration. FHV-1 reactivation and viral shedding also occur without any clinical signs of disease.

Although the herpesvirus paradigm consists of primary, latent, and recrudescence infections, recent studies suggest that a low-grade persistent infection may also exist. A study of HSV-1 in a murine model demonstrated persistent viral DNA without detectable viral protein

synthesis in chronic inflammatory lesions of the eyelids, conjunctiva, and cornea. Certain HSV-1 DNA sequences also appear immunogenic and capable of stimulating inflammatory responses in persistently infected tissues. While similar studies are lacking for FHV-1, the feline cornea may harbor the virus in a state of very low-level replicative activity. It is possible that FHV-associated diseases, such as stromal keratitis, represent corneal inflammatory responses to an immune-mediated reaction against viral antigens, virus-altered host proteins, or host proteins that mimic FHV-1.

CLINICAL DISEASE

Primary Infection (First Exposure)

Severity of clinical signs is determined by individual susceptibility, viral strain, and the intensity of the exposure. Primary infection of susceptible cats typically produces upper respiratory disease with fever, lethargy, anorexia, sneezing, coughing, and nasal discharge. Morbidity of FHV-1 infection is high but mortality is low. In neonatal kittens or debilitated animals, rare instances of viremia and secondary bacterial infection may cause fatal pneumonia. FHV-1 has also been recovered from the brain, liver, and spleen of infected animals. Kittens with adequate maternally-derived antibody born to latently-infected queens may become latent carriers without ever showing clinical signs.

If herpesvirus infection occurs prior to eyelid opening, notable periocu-



Figure 2: FHV-1 conjunctivitis

An adult domestic shorthair (DSH) cat with recurrent unilateral conjunctivitis exhibits hyperemia, chemosis, and ocular discharge.

lar swelling develops as ocular discharge accumulates behind the lids. Concurrent conjunctival and corneal ulceration predisposes to permanent adhesions (*symblepharon*) that alter surface anatomy and clarity. If not treated in a timely fashion, neonatal ophthalmia (**Figure 1**) can cause extensive corneal damage, even perforation.

The predominant ocular sign of primary herpesvirus infection is *conjunctivitis* (**Figure 2**). Signs are typically bilateral, with blepharospasm, marked hyperemia and chemosis. The combination of herpes-related neuritis and epithelial disruption account for pain more severe than that of conjunctivitis of other causes. The initial serous discharge becomes purulent as the virus induces a substantial neutrophilic infiltrate. Conjunctival epithelial ulceration and fibrinous exudation occur in severely affected animals. Symblepharon or adhesions of adjacent ulcerated surfaces (**Figure 5**) form quickly in these patients. Lasting sequelae of symblepharon include nasolacrimal punctal occlu-

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sion, chronic epiphora, decreased tear volume, altered mobility of the eyelids and nictitans, and corneal opacity sufficient to cause vision loss.

Viral replication within the corneal epithelium is limited during primary infection, occurring in a biphasic pattern on days 3 and 12 of infection.² Microdendritic corneal lesions occur but may be difficult to demonstrate without rose bengal staining.²⁰

Recrudescence Infection (Viral Reactivation)

Clinical signs in the adult cat are more likely to represent viral reactivation from latency rather than primary infection. Recurrences tend to be unilateral rather than bilateral, affecting the same eye repeatedly while the fellow eye remains clinically normal. Recurrent conjunctivitis is the most common feature of viral recrudescence.²¹ Discomfort, conjunctival hyperemia, chemosis and ocular discharge are usually less severe than those associated with the initial infection. Signs of upper res-

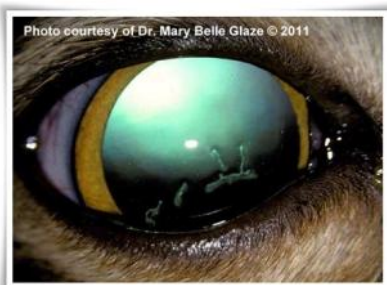


Figure 3. Dendritic ulcer
Pathognomonic linear epithelial defects substantiate herpesvirus infection in this young adult DSH.

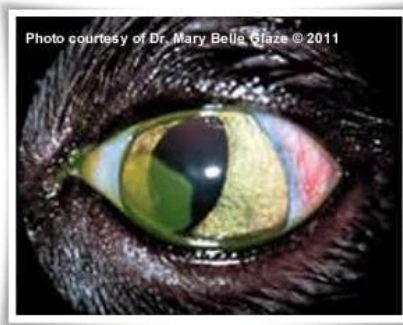


Figure 4. Geographic ulcer
A fluorescein-positive epithelial defect developed in this adult cat after inappropriate treatment of its conjunctivitis with a topical steroid.

piratory disease are uncommon.

Viral reactivation may also occur within the cornea, creating linear or branching epithelial defects referred to as *dendritic ulcers* (Figure 3). These early lesions are considered pathognomonic for herpesvirus infection but are often subtle and easily overlooked. The epithelial irregularities can be highlighted by retroilluminating the cornea against the bright tapetal reflection. At this stage, rose bengal stain may delineate the lesions better than fluorescein since the initial cytopathic effect seldom disrupts the entire epithelial thickness. The dendritic lesions quickly coalesce into larger geographic ulcers that retain fluorescein dye and are often rimmed by ragged, poorly adherent epithelium.

Viral ulcers may be extensive but only disrupt corneal epithelium (Figure 4). Deeper ulcers are more likely a consequence of secondary bacterial infection. Ocular discharge and conjunctivitis accompany the corneal disease. Regardless of size, FHV-1-induced ulcers are quite painful. Herpetic

ulcers may heal spontaneously or may persist for long periods, regardless of therapy.

Topical corticosteroids applied during an active herpetic infection may contribute to stromal keratitis (Figure 6).²² This particularly refractory complication of herpesvirus infection is characterized by stromal edema, cellular infiltrates, and deep vascularization.

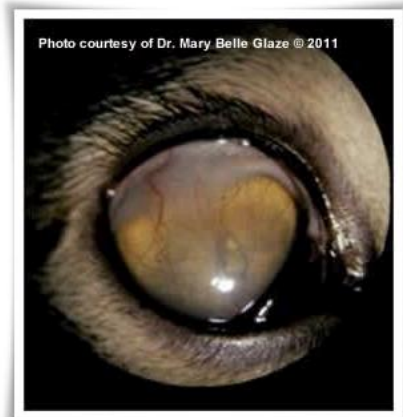


Figure 5. Symblepharon
Conjunctival-to-corneal adhesions account for the corneal opacification, vascularization, and third eyelid prominence in this adolescent DSH.

Ocular Diseases Linked to FHV-1 Infection

Feline herpesvirus is incriminated etiologically in a variety of ocular diseases, including corneal sequestration, eosinophilic conjunctivitis, eosinophilic keratitis, calcium keratopathy, keratoconjunctivitis sicca, anterior uveitis, and periocular dermatitis (Figure 7). Constant blepharospasm caused by recurrent or persistent ocular surface disease also contributes to acquired lower lid entropion.

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DIAGNOSIS

Definitive diagnosis of herpesvirus infection by laboratory methods is problematic, especially in adult cats with chronic or recurrent conjunctivitis. Serum neutralizing antibody and ELISA serology are considered nondiagnostic. Results of fluorescent antibody, virus isolation, and PCR testing of ocular surface samples are variable. False positive results reportedly occur in 3 to 49% of cases owing to the presence of virus and viral shedding in clinically normal cats and the inability of currently available



Figure 6. Stromal keratitis
Marked corneal opacity (with cellular infiltrates, fibrosis, edema, vascularization, and multifocal sequestrum formation) characterizes this chronic immunological complication of herpesvirus infection in a geriatric DSH.

tests to differentiate between vaccine and wild-type virus. False negative results occur due to the intermittent nature of viral shedding by infected cats, as well as sampling errors that include effects of pre-sampling application of topical anesthetics and fluorescein dye on test accuracy and sensitiv-



Figure 7. Herpetic dermatitis.
Periocular erosive dermatitis and conjunctivitis developed in this young adult cat after treatment of inflammatory bowel disease with systemic corticosteroids.

ity.

The diagnosis of primary FHV-1 infection in kittens is generally based on clinical signs alone. The presence of dendritic corneal ulceration is pathognomonic of FHV-1 infection. Otherwise the role of herpesvirus in cats with chronic or recurrent conjunctivitis or keratitis is often presumptive and based on history, clinical signs, and response to therapy.

Treatment/Management/Prevention:

Specific Therapy

Antiviral agents should be considered when ocular signs are severe, persistent, recurrent, or when corneal ulceration is present. Antivirals are unable to prevent or eradicate latent viral infection.

No antiviral agent has been developed specifically for FHV-1. Agents used in the treatment of closely-related HSV-1 are not predictably effective against FHV-1, nor do safety profiles of the drugs reliably translate from humans to cats. Antiviral agents tend to be

more toxic than antibacterials, even when applied topically, potentially limiting therapeutic tolerance and duration. Currently available drugs are virostatic and most require frequent administration to retard viral growth. The relative *in vitro* potency of available antivirals tested against FHV-1, in decreasing order, is trifluridine >> idoxuridine ≈ ganciclovir >> cidofovir ≈ famciclovir/penciclovir > vidarabine >> acyclovir >> foscarnet. **Table 1** summarizes the available antivirals.

Selection of an antiviral agent is not necessarily a straightforward decision. An agent seemingly effective in one cat may have limited benefit in another. Topical irritation is common (especially with trifluridine) and frequently misinterpreted as a treatment failure when conjunctival inflammation worsens. Patient cooperation and drug toxicity can limit duration of therapy. The stage of infection, severity of the clinical disease, owner finances and likelihood of compliance are additional considerations.

With no ideal antiviral to offer, treatment recommendations vary widely among ophthalmologists. The following summarizes a regimen I often use in the initial management of feline herpetic keratoconjunctivitis. It should be considered no more than a starting point from which an antiviral regimen can be tailored for your own feline patients.

1) *Spontaneous recovery* from primary FHV-1 infection can occur within 3 weeks. Antiviral therapy

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is seldom used in this instance, unless the conjunctivitis is particularly severe or accompanied by corneal ulceration. A topical antibacterial ointment such as tetracycline or erythromycin, with efficacy against *Chlamydomphila felis*, is applied 3-4 times daily for 2 to 3 weeks to eliminate other primary conjunctival pathogens and discourage secondary bacterial infection.

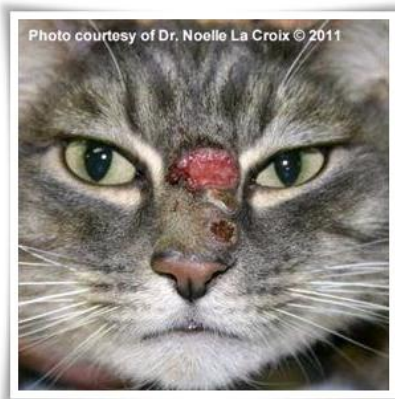


Figure 8. Feline herpesvirus facial dermatitis.

2) **Antiviral therapy** is the mainstay of treatment in adult cats with *recrudescant conjunctivitis* or keratitis. Treatment may be optional in patients with mild conjunctivitis, as the reactivation can be self-limiting. In patients with severe discomfort, inflammation and/or ulceration, treatment begins with either oral famciclovir or topical cidofovir, the route based on the owner's ability to administer the drug reliably.

a) **Famciclovir** is empirically dosed at 125 mg/adult cat q 12 hours for 2 to 3 weeks.

b) Alternatively, **0.5% cidofovir** is

applied to the affected eye q 12 hours for 2 to 3 weeks. In either instance, treatment is continued for 1 week beyond resolution of clinical signs. If clinical signs have improved but not resolved, a second 2-week regimen continues with the same antiviral as originally prescribed. If negligible response is seen, then a second 2-3 week regimen is prescribed using the alternative antiviral. Famciclovir and cidofovir are expensive, even in generic form. If cost is a factor, then topical **idoxuridine** is my recommended alternative.

Supportive Therapy

1) **L-lysine**

Lysine inhibits *in vitro* FHV-1 replication, presumably by competitive inhibition of arginine during viral nucleocapsid assembly. The amino acid has been given to cats with recurrent keratoconjunctivitis with the goal of reducing severity and/or frequency of recrudescant episodes. Recent evidence has brought lysine's benefits into question, particularly in shelter cats. While initial trials demonstrated reduced clinical signs and viral shedding in small numbers of lysine-fed cats, larger groups of shelter cats fed diets formulated with lysine actually showed increases in disease severity and viral shedding. These paradoxical results may disprove lysine's benefits, or may simply expose the limitations of lysine in shelters from factors such as group housing, variable food

consumption, and viral transmission by contaminated utensils and personnel. To lend support to the latter interpretation, a primary investigator in one of the shelter studies continues to recommend an oral bolus of 500mg L-lysine twice daily to client-owned cats.

2) **I n t e r f e r o n**
Interferons (IFNs) are released by host cells in response to viral infection. Although these cytokines have no effect on infected cells, they are thought to limit infection of healthy cells and shorten the disease course.³⁴ Experimental studies of human IFN- α and feline IFN- ω have shown reduced viral shedding, but supporting clinical studies have yet to be conducted. The inherent instability of IFNs may limit their clinical application. Anecdotal clinical improvement has been observed in cats with conjunctivitis treated solely with a compounded topical IFN- α 2 β solution (3000 IU/mL) TID. Others have proposed using a concentration of 300 IU/mL but no controlled clinical studies have been done on either formulation.

3) **Probiotics**

Enterococcus faecium SF68 is an immune-enhancing probiotic used as a dietary supplement. A pilot study reported decreased morbidity in some cats with chronic FHV-1 infection but benefits have yet to be substantiated in a clinical setting.

4) **Anti-inflammatory agents**
As a general rule, corticosteroids should be avoided in the treatment of feline conjunctivitis until an infectious

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cause has been ruled out.

Ample evidence exists to warn clinicians against the use of corticosteroids in herpes-infected individuals. It is not uncommon to see reactivation of herpesvirus conjunctivitis or ulceration when using steroids in the treatment of other ocular disorders such as anterior uveitis. Corticosteroids are implicated in the pathogenesis of stromal keratitis in herpes-infected cats – then paradoxically prescribed in conjunction with antivirals for treatment of this immune-mediated disorder. Ulti-

mately there are few instances that a corticosteroid should be used in a herpes-infected cat, even if combined with topical antiviral therapy.

Careful consideration is also warranted regarding use of topical cyclosporine or nonsteroidal anti-inflammatory agents (NSAIDs) to manage surface inflammation in herpes-infected cats. Contradictory reports of the safety of these medications in non-feline species describe either substantial improvement (with or without antivirals), maintenance of the status quo, or exacerbation of clinical

signs comparable to that of steroid use. One author advocates adding 0.03% flurbiprofen or 0.2% cyclosporine to the conventional antiviral regimen when marked inflammation persists despite a 2-week course of antivirals.

5) **V a c c i n a t i o n**

Although intranasal vaccine has been advocated to boost local immune response, there is no data documenting a beneficial effect of the intranasal vaccine administered either nasally or directly to the ocular surface in cats with chronic persistent infection, and topical application of vaccine is no longer recommended.

6) **Give the eye a break**

If a prolonged topical regimen of antiviral +/- antibiotic fails to improve clinical signs, stop treatment for a few days. Topical antivirals are not only toxic to viruses but also to epithelial cells! Use of a preservative-free over-the-counter artificial tear such as Refresh® provides soothing lubrication during the washout period.

7) **Procedures for symblepharon, corneal ulceration**

Developing conjunctival adhesions are broken down frequently, even daily, to prevent permanent symblepharon formation. Topical 0.5% proparacaine is applied to the ocular surface and a sterile cotton-tipped swab is used to disrupt the early adhesions. The more severely affected kittens may benefit from concurrent antiviral therapy.

Poorly adherent epithelium at the margins of geographic ulcers is debrided with a sterile cotton-

Table 1: Summary of available antivirals

Drug	Trade Name	Formulation	Dose
Idoxuridine	Compounded	0.1% solution 0.5% ointment	Apply at least 5 times daily.
Vidarabine	Compounded	3% ointment	Apply at least 5 times daily.
Trifluridine	Viroptic®, generic	1% solution	Apply at least 5 times daily.
Cidofovir	Compounded	0.5% solution	Apply twice daily. ²⁵
Ganciclovir	Zirgan®	0.15% gel	Undetermined.
Acyclovir	Zovirax®	Tablets, capsules, oral suspension 3% ointment	Effective plasma concentrations not reached with predictably safe doses. Apply at least 5 times daily.
Valacyclovir	Valtrex®	Tablets	Fatal in cats. DO NOT USE.
Famciclovir	Famvir®, generic	Tablets	Undetermined. Safety established at 90mg/kg t.i.d. for 21 days.

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tipped swab following topical anesthesia. Normal epithelial migration subsequently improves and the cornea's viral load decreases. The loose epithelial margin should not be confused with the indolent-type ulcer commonly seen in middle-aged and older dogs. **Keratotomy is contraindicated** in herpes-infected cats due to the risk of corneal sequestration following this procedure.

Preventive Measures:

- 1) Yearly vaccination is advised in at-risk animals, e.g. frequent boarders. In strictly household cats, triennial vaccination may be sufficient after the first annual vaccine.
- 2) Neither parenteral or intranasal vaccination provides complete or permanent immunity against FHV-1. Vaccination also does not prevent latency, nor does it provide

protection against viral reactivation or shedding.

Differential Diagnosis: Conjunctivitis

- 1) *Chlamydomphila felis* (previously *Chlamydia*) causes acute conjunctivitis but spares the cornea. In acute infection, conjunctival cytology may reveal basophilic intracytoplasmic inclusions within epithelial cells. FHV-1 is 2.7 times more likely to be detected in sneezing cats than is *C. felis*.
- 2) *Mycoplasma* spp. is linked with conjunctivitis but likely requires a stressor such as FHV-1 to cause disease. Diagnosis is established by finding conjunctival epithelial cells with coccoid inclusions or by PCR.
- 3) Calicivirus has been incriminated as a cause of feline conjunctivitis but multiple studies investigating infection with different calici strains have shown that conjunctivitis is rarely observed.

4) Rare cases of parasitic conjunctivitis are attributed to *Thelazia californiensis* and larvae of *Cuterebra* sp.

5) Non-infectious causes of conjunctivitis include trauma, drug reaction, insect sting, allergy, eosinophilic conjunctivitis, and lipogranulomatous conjunctivitis. Conjunctival hyperemia and swelling occur with lymphosarcoma and squamous cell carcinoma. Conjunctival hyperemia/congestion also occurs with anterior uveitis, glaucoma, and retrobulbar cellulitis/abscess.

Corneal ulceration

A multitude of etiologies are associated with feline corneal ulcers. Keep in mind that FHV-1 ulceration is epithelial in nature. Deeper ulceration implies other complicating factors such as secondary bacterial infection.

The opinions expressed in this Newsletter are those of the author(s) and are not necessarily shared by the Editor or by the Siamese Breeders' Group of S A

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