

July - September 2020



BULLETIN OF THE PET PRACTITIONERS ASSOCIATION OF MUMBAI.

(For Circulation amongst PPAM Members)

Editorial

Veterinarians Reset for a New Mindset

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Dennis Brooks DVM, PhD,
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Florida

Many individuals have been practicing social distancing by working from home in recent weeks. While this arrangement can be a great way to reduce one's exposure to COVID-19, it's a luxury that's available to just a few individual veterinarians.

The situation for the remaining is uncertain, to say the least. A significant portion of the veterinarians and animal assistants have lost their jobs due to business shutdowns and mandated lockdown orders. Some veterinarians have continued working as usual but may face a higher risk of potential exposure to the virus.

Interesting data from the Occupational Information Network to determine which occupations face the highest risk of exposure to COVID-19 is an eye-opener for veterinarians. The score for each occupation is based on evaluating the data on three physical job attributes covered in the occupational database:

1. Contact with Others: How much does this job require the worker to be in contact with others to perform it?

2. Physical Proximity: To what extent does this job require the worker to perform tasks in close physical proximity to others?
3. Exposure to Disease and Infection: How often does this job require exposure to hazardous conditions?

The research team assigned each attribute an equal weight then aggregated them to arrive at a final COVID-19 Risk Score between 0 and 100, with 100 representing the highest possible risk.

Dental Hygienists have the riskiest non-hospital jobs during the pandemic scoring close to 100 in all three categories. Veterinarians have a Covid-19 risk score of 70, Economists have one of the safest jobs during the pandemic scoring a perfect zero in two categories.

The services veterinarians provide are essential, and despite the risks,



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many have been working. The COVID-19 pandemic has impacted everyone differently, especially in terms of the occupational risks faced day-to-day. Veterinarians on the front lines are taking care of patients are placing themselves at risk to ensure our communities can continue to run smoothly. Meanwhile, those fortunate enough to work from home can help flatten the curve by continuing to practice safe social distancing, even on weekends throughout the entire pandemic.

The veterinarians are learning to cope with this pandemic by following the.

1. Operational strategies.

- Clients asked to wait in the vehicles during treatment.
- Contactless payment options
- Patient history by phone or virtual-only
- Clients visit by appointment only.
- Pickup and drop your pet
- Telemedicine and virtual visits
- Emergency cases only
- Dedicated hours for senior citizens only.

2. Precautionary measures.

- Request clients to maintain a safe distance with each other
- Sanitize clinics and PPE before the next client.
- Clients or staff displaying symptoms to leave the premises.

The scientist talk about copability becoming more important than capability in the times to come. In the world of tomorrow, both capability and copability will become of paramount importance as work changes, working spaces change, compensation changes, work hours change, and work availability itself becomes a source of stress and anxiety. Veterinarians will want to build competencies they wish they had invested in before, to be more digital, to have more variable cost structures, agile operations and automation. This agility will be the core of the future. Redefined, reskilled, redeployed – the resilient veterinarians.

Veterinarians Reset for a New Mindset as to how digital channels can be used to support business continuity through the crisis and beyond. Veterinarians are also considering the impact of these changes on the way they design, communicate, build and run veterinary practices. The Intelligent Enterprise in veterinary practice should be capable of dynamic self-

management and continual adaptation. It is built for agility, resiliency and growth.

Survive, then thrive. Veterinarians are faced with short-term liquidity challenges, as also the need to look at costs and profitability. Funds are also needed for investments in new opportunities, Veterinary clinics are facing plummeting revenues, and increased costs. Actions taken now can have an impact on the survival of our practice, and how quickly it rebounds from the global downturn Building the strength to succeed in a 'never' normal world. Once we reach the other side of this pandemic, it will be important to establish long-term strategies. Going forward, will our profession most likely to survive the pandemic without too much damage or losses? Veterinary practices that have largely survived the pandemic and will most likely rebound to even higher levels than earlier.

In the future veterinary will have a change in workspaces, work culture, skilling, learning-unlearning-relearning, and the choices that lie ahead. 'Last hired, first fired' could be new normal. The first possible victims of the pandemic are likely to be senior veterinarians. They are invariably more expensive to the clients due to their number of years in veterinary practice. They have their own difficulty with re-skilling or up-skilling. The Covid-19 disease also is said to afflict older individuals more, with those above 50 likely to be most at risk. Senior veterinarians will therefore need to be shielded in any case from frontline tasks. Lots of early retirements are likely in the pipeline.

Many professions including the veterinary profession are headed to become 'negative' professions for a while. Dangerous jobs because of potential risk and exposure to the infection, and jobs that may dwindle in some cases because of falling consumer demand.

Teaching & learning will turn remote. The virtual everyday classroom is already a reality. For most teachers, this is a new experience. So also, for their students. Veterinarians will require higher Emotional Intelligence which is really about giving and receiving feedback, not having enough resources, dealing with change, dealing with setbacks and failure – all premium requirements in these difficult times.

Despite difficult times, veterinarians are contributing to society. Veterinary Services, contribute in various ways towards building a common response to the pandemic. In many countries, veterinarians have shown their commitment to support the work of human health authorities. Veterinary laboratories have

used their experience and expertise in high throughput testing capacity of infectious diseases to engage in activities such as surveillance screening, by testing human samples, thereby supporting the diagnostic capacity of human health services. Some veterinary clinics have been donating essential materials such as personal protective equipment and ventilators. Veterinary professionals have also been volunteering in hospitals and laboratories when human resources were not sufficient. In some countries, veterinary epidemiologists have been supporting their counterparts in the public health response to track the disease in humans and to support the development of effective public health interventions.

Nearly every veterinarian has experienced a decline in revenue accompanied by a shortfall in income necessary to accommodate practice operation. Many veterinary practices had seen client visits drop by 50% or less. World over 5% of veterinary practices had stopped seeing clients completely.

The unprecedented nature of this pandemic and the mysteries around this virus require new and innovative approaches to tackle it, these can only be developed through cross-sectoral collaboration and collective action.

Exodontia in a Rabbit

Dr. Nihar Jayakar



Webinars conducted by PPAM July to September

a) PPAM Webinar

LIVE WEBINAR

?? How often has a client expected you to handle their aggressive dog in the clinic?
Has an owner of a dog that is afraid in the clinic, been convinced that the vet scared the pet and never ever come back again?

For solutions to these and many more, PPAM presents

CLINICAL INSIGHTS IN CANINE BEHAVIOUR MANAGEMENT - VETS ASK THE BEHAVIOUR EXPERT

Sunday, 05th July 2020
at 04:30PM to 06:00PM IST

Free registration for vets and vet students

REGISTER NOW

Event powered by **Zoom Backstage**

Shirin Merchant
Canine Behaviourist and Trainer

"In Pursuit of Excellence in Small Animal Anesthesia - Countdown to Unconsciousness and Back" By Dr. Khursheed R. Mama, DVM, Diplomate ACVAA.

Professor, Anesthesiology, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, USA. Was live from Fort Collins, USA on Sunday, 26th July, 2020 at 7:00 pm to 9 pm IST. The main sponsor : Royal Canin. Total Registrations: 2250 (PPAM Members , FSAPAI Affiliated associations members across India, Vet students across India, Leading vets from many countries across the Globe) Technical Support by : ZOHO

PET PRACTITIONERS ASSOCIATION OF MUMBAI

SAVE THE DATE

Sunday, 26th July 2020
at 07:00PM to 09:00PM IST

IN PURSUIT OF EXCELLENCE IN SMALL ANIMAL ANESTHESIA COUNTDOWN TO UNCONSCIOUSNESS AND BACK

WEBINAR BY

DR. KHURSHEED R. MAMA, Professor, Anesthesiology, College of Veterinary Medicine and Biomedical Sciences, Colorado State University

REGISTRATION DETAILS TO BE ANNOUNCED SOON

Event powered by **Zoom Backstage**

b) IVSA MUMBAI and PPAM Webinar

S.A.V.E. DAY 1
Systematic Approaches to Veterinary Emergencies
17th July 2020, Friday

Dr. Makarand Chousalkar
MVS: Pharmacology and Toxicology
Member of Veterinary Emergency and Critical Care Society (VVOCS)

4.00 - 5.00 pm GMT +5.30

Topic :
Are you prepared for Emergencies?

Dr. Dipti Walawalkar
MVS: Animal Reproduction and Obstetrics

Dr. Makarand Chousalkar
MVS: Pharmacology and Toxicology

Topic :
CPR and Clinical cases followed by Q & A

5.30-6.30 pm GMT +5.30

Registration link in bio

S.A.V.E. DAY 2
Systematic Approaches to Veterinary Emergencies
18th July 2020, Saturday

Dr. Nihar Jayakar
MVS: Animal Reproduction, Gynecology and Obstetrics
Trained in Exotic animal medicine and surgery from the European School of Advanced Veterinary Studies

4.00 - 5.00 pm GMT +5.30

Topic :
Emergencies in Exotic pets

Dr. Deepti Deshpande
Masters in Veterinary Cardio-Respiratory Medicine (Massey University, New Zealand)
Completed advanced training in Veterinary Cardiology and Anesthesiology from European School of Advanced Veterinary studies

Topic :
Approach to Cardiac Emergencies

6.00-7.00 pm GMT +5.30

Registration link in bio

IVSA is an international, non-profit, democratic organisation run by veterinary students from all around the globe.

IVSA Mumbai is a local chapter under IVSA Global, formed by students of Mumbai Veterinary College, in an attempt to dive deep into the vast expanse of knowledge that is offered through numerous symposia, student exchange programmes and seminars, all related to the field of veterinary sciences.

One such webinar was conducted by our very team of IVSA Mumbai. After much brainstorming, we came up with "S.A.V.E.- Systematic Approach to Veterinary Emergencies", which was a 3-day certified online workshop. Emergencies are the most stressful aspect of clinical work, given that it requires both a quick pace and an astute skill set. It is, thus, crucial to learn how to handle such cases without losing your calm. Knowing that this is something that gives vets at all levels and from all corners of the world a rush of adrenaline equally, this topic was unanimously chosen for the event.

IVSA MUMBAI IN ASSOCIATION WITH PPAM ORGANIZES

S.A.V.E.
SYSTEMATIC APPROACHES TO VETERINARY EMERGENCIES

3 DAYS | 5 SPEAKERS | 7 LECTURES

WHAT'S MORE?
[QUESTIONNAIRES TO TEST YOUR KNOWLEDGE]
[E-CERTIFICATES AT THE END OF WORKSHOP]

SAVE THE DATES.
17,18,19 JULY 2020

STREAMING PARTNER **zoom**

This workshop couldn't have been possible without the much-needed help from the community of excellent veterinarians at PPAM, who got us in touch with 5 renowned speakers. Intriguing case studies, gripping presentations, thought-provoking Q&A sessions, interspersed with pop cultural references and funny polls, made sure that we received an overwhelming response from the audience, both in and out of India, on all 7 lectures.

The organising committee for S.A.V.E., consisting of the General Body Members and managed by the Executive Committee of IVSA Mumbai, put in all their best efforts not only behind the stage with the social media outreach, but also as co-anchors during the webinar along with PPAM coordinator Dr. Jamshyd Cooper Sir, handling the platform app and working their way through the few technical difficulties encountered.

Needless to say, the event was a huge success, having being backed by the best team possible. This only motivates us to push ourselves further and come up with more such informative and insightful seminars in the future, hopefully in association with PPAM again too!

Although S.A.V.E. was one of our most successful work, we have tried to keep busy with many other activities too. Online exchange programs with IVSA Nepal, IVSA Indonesia, IVSA Selangor and IVSA Faisalabad have taken place. Wildlife Week, a week-long workshop, bridging the



gap between a layman and a wildlife veterinarian, was also arranged. Our local chapter was one of the moderators for Online Asian Symposium too, where awareness around zoonoses and public health was raised. One of the guest speakers was Dr. Gatne Sir, who talked about Parasitic Zoonoses.

As a team, we have tried our best to make this lockdown period productive and we promise to continue doing so even after, for the welfare of animals everywhere.

Follow us on our Instagram handle @ivsa_mumbai and Facebook page IVSA Mumbai to know more about us and what we do!

Important news

Project Lion and Project Dolphin to be launched.

Prime Minister Narendra Modi on August 15, 2020, announced that the centre will launch Project Lion and Project Dolphin using modern technology to replicate the success of Project Tiger. The projects will be launched by the central government for the biodiversity will involve the conservation of Asiatic Lion and its landscape. The project will involve habitat development by engaging modern technologies in management as well as in addressing the issue of diseases in lion and its associated species through veterinary care and advanced world-class research. The project will also be addressing the Human-Wildlife conflict which will involve local communities living in the vicinity and will also provide livelihood opportunities. The Gangetic Dolphin is one of those indicator species whose status provides information on the overall condition of the ecosystem. They also provide the status of other species in that ecosystem, for the Ganga Ecosystem as they are extremely vulnerable to the changes in water quality and flow. Gangetic Dolphin has also been categorized as endangered on the International Union for the Conservation of Nature Red List. Project Dolphin, as announced by PM Modi, will aim at the protection and conservation of the Dolphins in the rivers and oceans of the country. The project will involve the conservation of aquatic habitat and Dolphins through the use of modern technology, especially in anti-poaching activities and enumeration. Project Dolphin will engage the fishermen and other rivers and ocean dependent populations to improve the livelihood of the local communities. The Dolphin conservation will also envisage activities that will also help in the mitigation of pollution in oceans and rivers.

Desert hospital has room for 4,000 ailing camels Saudi Arabia.

The world's largest camel hospital was opened this week in Buraidah, in the northern Qassim province. It has room for 4,000 patients, admittedly housed in sheds rather than wards, and will offer everything from camel IVF to CT scans and an intensive care unit. It will also act as a research centre. The purpose of the IVF centre is to improve breeding methods. Buraidah is home to the world's largest camel market, where the best specimens used in racing can fetch prices of more than \$1 million, though most are sold for their meat. Camel racing is popular and lucrative across the Gulf.

The hospital was built for 100 million Saudi riyals (£20 million) by the private Salam Veterinary Group. Rashid bin Assaf al-Ajmi, the group's chief executive, said that the hospital had an unrivalled variety of laboratories offering blood tests, scanning and nutritional specialists, as well as vets. "This is the first in hospital in the world to have these departments and special machinery for camel treatment," he said.

Cambodia bans eating of dog meat: The sale and consumption of dog meat has been banned after pressure from animal rights groups. The provincial government where the tourist attraction stands, announced that anyone convicted of dealing in the meat will face a prison sentence of up to five years and a fine of up to 50 million riel (£10,000). It's said the trade was behind the spread of rabies. The historic decision by the government to ban the stealing, trading and killing of dogs is a huge milestone for animal welfare in Cambodia and is reflective of current sentiment among people.

Appeal to PPAM Members to Renew Membership

- | | |
|---------------------------------|--|
| 1. Renewal of Annual Membership | Rs. 1500.00 + GST (Rs. 270.00) = Total Rs. 1770.00 |
| 2. New Membership | Rs. 1750.00 + GST (Rs. 315.00) = Rs. 2065.00 |
| 3. Life Membership | Rs. 17500.00 (No GST) |

Bank Details :

Indian Bank; A/c name - Pet practioners association	Branch- Santacruz (w)
A/c no. 744946564	IFSC: IDIB000S010

(As soon as payment transfer is made please send a message to Treasurer Dr. Anil Vade on 9820016420. Please also mention your complete name, date of payment and transaction id)

Current Concepts in Veterinary Ophthalmology

Examination of the eye. PART-2

Dennis Brooks DVM, PhD

Diplomate, American College of Veterinary Ophthalmologists,
Professor Emeritus, University of Florida

Conjunctiva and third eyelid

The palpebral conjunctiva is examined by manual eversion of the upper and lower eyelids. Although the lower eyelid everts rather easily, the upper palpebral conjunctiva, to be adequately examined, may need topical anesthesia and eversion of the lids by digital pressure, chalazion forceps, Q-tip cotton swabs or wooden tongue depressors. Excessive lymphoid follicles, increased vascularity, foreign bodies, ectopic cilia, obstructed tarsal glands, hemorrhage, lacerations, abnormal growths and edema (chemosis) may be abnormalities observed.

Coloration of the conjunctiva can be used to assess the presence of anemia and icterus. Because the palpebral conjunctiva is transparent, chalazia or impacted Meibomian glands appear as slightly raised yellow masses.

Examination of the palpebral (outer) and bulbar (inner) surfaces of the nictitans is important for diagnosis of several common external ocular conditions. Frequent abnormalities are eversion of the cartilage of the nictitans, prolapse of the gland (cherry eye), foreign bodies, follicular conjunctivitis, and enlargement of the secretory gland, foreign bodies, follicular conjunctivitis, and enlargement of the bulbar lymphoid tissue.

Examination of the palpebral conjunctiva is usually accomplished by digital manipulation; distorting the palpebral fissure and retropulsing the globe causes protrusion of the nictitans. Examination of the bulbar aspect requires topical anesthesia, thumb forceps (without rat teeth) and restraint of the head. Occasionally, with intractable individuals, sedation or general anesthesia is necessary. The leading margin of the nictitans is gently grasped and pulled medially, allowing visualization of the bulbar surface and fornix.

Sclera

The sclera is examined from the limbus to near the equator. By moving the patient's head in different directions, the more posterior aspects are inspected. The sclera should be scrutinized for change in color, abnormal masses, and tears or lacerations. Small vessels in the episclera are usually visible and occasionally a large vortex vein (especially the dorsolateral vein) can be seen. Enlargement and congestion of the episcleral veins occur commonly with glaucoma. This venous enlargement remains even after the glaucoma is "controlled". Hyperemia of the episcleral vessels occurs in association with inflammatory conditions. The "ciliary flush" or limbal hyperemia from iridocyclitis is usually less affected

by topical phenylephrine while that associated with the conjunctivitis will usually blanch. The perilimbal scleral vessels are small straight and immovable vs larger mobile and branching conjunctival vessels.

Cornea

Examination of the cornea is accomplished with a focal light source and magnification (head loupe or hand held lens) or with the slit lamp biomicroscope. Measurement of the cornea using calipers may provide approximation of globe size, except in cases of micro and megalocornea.

Corneal sensitivity (corneal reflex) is tested by a small wisp of cotton gently touched to the cornea. (This must be done prior to topical anesthetic instillation). If the animal sees the stimulation, you will get a false positive.

The cornea is normally transparent, avascular, moist, and unpigmented with a smooth, even contour. It should be carefully examined for loss of transparency (edema or infiltrates), opacity, vascularization, pigmentation, dryness, growths, foreign bodies, lacerations, changes of contour, and ulceration.

Two types of vascularization occur in the cornea: superficial and deep. Superficial vessels occur in the anterior one-half of the corneal stroma, are usually continuous with visible conjunctival vessels, are "tree-like", and associated with external corneal diseases. Deep vessels appear as small, fine vessels in the corneal stroma that extend from the anterior sclera or deeper limbal vessels (paint brush border), and are associated with intraocular inflammation.

Slit lamp biomicroscopy permits the most accurate localization of corneal lesions. The layers can be differentiated into epithelium, stroma, and Descemet's membrane - endothelium.

Examination of the cornea is incomplete without utilization of topical ophthalmic stains. Fluorescein is used to demonstrate the presence or absence of corneal ulcers. For topical use, fluorescein impregnated paper strips are preferred to fluorescein solution to insure sterility.

Because the water-soluble fluorescein stains the preocular film, a faint green may occur on the corneal surface. The corneal epithelium is lipid-selective and prevents any appreciable corneal penetration by fluorescein. In the presence of a corneal epithelial defect, the dye rapidly diffuses into the corneal stroma. An area of fluorescein retention by corneal stroma is indicative of an epithelial defect (a corneal ulcer/erosion).

Rose Bengal is a valuable stain in the evaluation of the health of the corneal and conjunctival epithelium. It produces a brilliant red coloration of any dead or degenerating cells, and indicates defects in the mucin layer of the tear film. Rose Bengal is retained by the cornea and conjunctiva in early fungal keratitis, keratoconjunctivitis sicca, pigmentary keratitis, exposure keratitis, viral keratitis, and certain other corneal ulcers.

Anterior chamber and iris

The anterior chamber is evaluated from the anterior, lateral and dorsal aspects using magnification and a focused beam of light. The slit lamp biomicroscope provides additional magnification. The anterior chamber can be evaluated for elevated protein levels (flare), blood, iris cysts, depth, parasites, cellular contents, and foreign bodies. Increased protein in the aqueous humor, when viewed with a focal light source, gives the appearance of a light beam passing through smoke. This is known clinically as "aqueous flare" and its appearance results from the optical Tyndall phenomenon. Examination for flare can be performed easily by using the small dot of the ophthalmoscope and shining the light from the front while looking from the side. Focus the dot on the cornea (usually <1 cm from the cornea). There is a space (the anterior chamber) between the small dot in the cornea and the long dot which represents the lens. A Tyndall effect as smoke in a movie theater beam indicates aqueous flare. Aqueous flare means there is uveitis. When checking for flare compare the depth of the anterior chamber between eyes and if you suspect a lens luxation there may be variation in chamber depth within an eye.



Aqueous flare in uveitis



Slitlamp

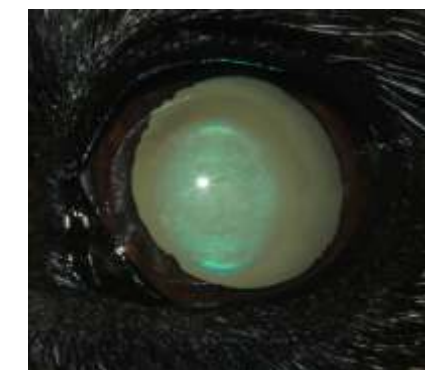
The iris is examined with a focused beam of light and magnification from a slitlamp for color, shape, pupil size, surface, and movement. Iridal color in dogs varies from dark brown to blue, and generally 3 "zones" of color are evident (pupillary margin, iris collarette and the iris base). Light brown irides occur in many breeds, such as the Brittany Spaniels, German Short Hair Pointers and other breeds. Iridal heterochromia is not uncommon in white cats, St. Bernard's,

Great Danes, Beagles, merle Collies, Australian Shepherds, Old English Sheepdogs, Dalmatians and the merle Sheltie.

Iris color in cats varies from blue to yellow-green to brown. In acute iritis, the iris may appear congested and swollen with loss of detail, and it may become darker in appearance with chronicity. Transillumination and retroillumination is used for anterior segment diseases to differentiate hollow (i.e. cysts) from solid masses (possible tumors). The transilluminator is positioned in the limbal area. Light penetrates the sclera to highlight structures in the eye. Retroillumination utilizes the fundus reflex in the same manner.

Lens

The entire lens can only be fully evaluated with drug-induced mydriasis or in cases in which the pupil is already dilated. Many small focal cataracts can occur outside the central pupillary axis of the lens (at the equator) and will escape detection unless mydriasis is employed. The lens is examined by direct and oblique illumination with some magnification, direct ophthalmoscopy (set at +8 to +12 diopters), indirect ophthalmoscopy, slit lamp biomicroscopy, and retroillumination.



Nuclear cataract

The lens, which is normally a transparent avascular structure, should be examined for opacities (cataracts), position, presence, and size. Focal cataracts should be localized within the various parts of the lens as prognosis and etiology may be suggested by location. Nuclear cataracts are usually stationary while those affecting the equator or posterior cortex are often progressive. By slit lamp biomicroscopy, the canine lens may contain focal imperfections that are not "cataractous." Early cataract formation, evidenced usually as focal crystallization, vacuoles and water clefts, can be detected long before visual disturbances occur. Localization of focal cataracts can be performed using the tapetal reflex to highlight the opacity and then observing which direction it moves as the animal's eye moves. For practical purposes, in the dog and cat the center of axis of rotation of the eye is the center of the lens. Thus if a cataract is in front of the lens it will move with the eye movement. If a cataract is in the back of the lens it will move in the opposite direction of the eye movement. Location of a cataract may give clues about its cause i.e. inherited or associated with PRA.

Nuclear sclerosis of the lens begins to develop in dogs around 6 years. Biomicroscopic examinations can detect refractive changes between the lens nucleus and cortex as early as three years of age in dogs. Advanced nuclear sclerosis is clinically evident as a blue zone limited to the lens nucleus that does not impair ophthalmoscopic visualization of the fundus and does not impair vision. This is frequently mistaken for cataract formation in older animals by owners and veterinarians.

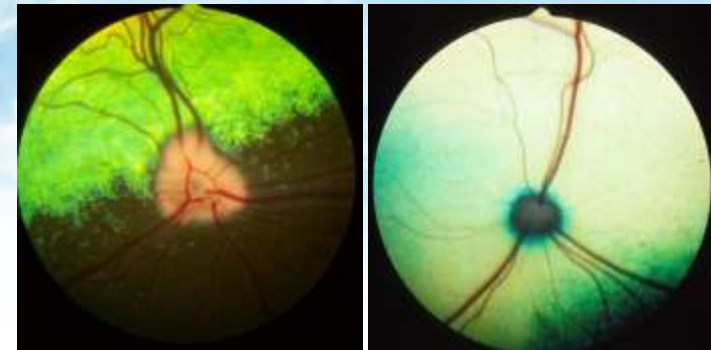
Vitreous

The vitreous humor is normally a clear gel. The anterior portion can be examined using focal illumination and some magnification. The posterior aspect of the vitreous is examined by ophthalmoscopy or the slit lamp biomicroscope with added lenses. Frequently seen vitreous abnormalities include vitreous strands, asteroid hyalosis, hemorrhage and infiltration with inflammatory cells. Small remnants of the hyaloid vasculature (seen as white strands) are frequently encountered behind the central posterior lens capsule in the vitreous immediately posterior to the lens. Liquefaction of the vitreous is called syneresis, and opacities that occur in the liquefied state are called "synchysis scintillans". These opacities often rise and fall in the vitreous as the eye moves.

Differentiation of lens and vitreous opacities may pose a problem for the clinician. Localization of intraocular opacities can be achieved by noting direction of movement in relation to the center of the globe, or by slit lamp biomicroscopy. The first procedure is convenient and assumes the center of rotation of the eye is the posterior aspect of the lens nucleus in the dog. Opacities which are anterior will move with eye movement; for example, an anterior cortical cataract will move left when the eye turns left. Opacities posterior to the center of rotation will move in the opposite direction. In the horse the optical center of the eye is the posterior pole of the lens. The stability of the opacity may also help to differentiate lens from vitreous. Lens opacities are fixed and remain stationary when the eye stops moving. Vitreous opacities tend to move slightly or oscillate within the gel vitreous after eye movement ceases.

Fundus

The ocular fundus is examined last and requires direct and/or indirect ophthalmoscopy. Although the fundus can be viewed without drug-induced mydriasis, dilation of the pupil greatly facilitates examination of the complete ocular fundus. The ocular fundus is examined for changes in the normal appearance, detachment of the retina, chorioretinal hypoplasia or dysplasia, vascular patterns, attenuation, congestion, hemorrhage, colobomas, scars, alteration in coloration, changes in pigmentation and foci of inflammation. The optic disc should also be examined for size, shape, color, masses, and pits or colobomas. Swelling and inflammation of the optic disc occurs with optic neuritis, which is characterized by blindness. Myelination of the disk must be differentiated from swelling of the disk.

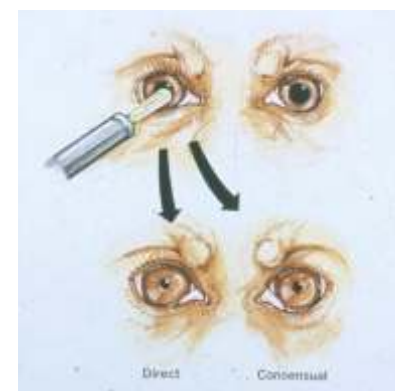


Dog fundus

Dog fundus

Pupillary light reflexes (PLRS)

The size of the pupils is evaluated and the direct and consensual pupillary light reflexes (indirect reflex) are tested. This should be done with a bright light (halogen) in a dimly lit room. A penlight, otoscope without speculum, transilluminator, or an ophthalmoscope is used. PLRs are tested early in the examination so you can start to chemically dilate the pupils for evaluation of the posterior structures of the eye.



The PLRs are affected by the psychic state of the animal, room illumination, age, many topical and systemic drugs and the intensity of the light stimulus. If an animal is highly nervous or frightened, the pupils may be dilated and respond poorly to low intensity light. However, with acclimation or with a strong light source, this effect is minimized. Older animals may exhibit slow and incomplete PLRs resulting from atrophy of the iris sphincter muscle. This is common in small dogs, especially poodles. The pupillary margin may have an irregular or scalloped appearance. Incomplete iris atrophy may give an irregular pupil shape.

The rapidity of pupillary light response, extent of miosis and ability to maintain miosis to constant light stimulation are evaluated. The consensual pupillary reflex is normally equal to the direct. The pupillary light reflexes require integrity of retinal neural cells, optic nerves, optic chiasm, optic tracts, midbrain (Edinger-Westphal nuclei), and parasympathetic fibers via the oculomotor nerve, ciliary ganglia and the iridal sphincter musculature. The reflex is subcortical and should be considered an evaluation of the integrity of the retina and optic tracts, not of vision.

Drug induced mydriasis is not used indiscriminately. The instillation of mydriatics is avoided in animals with predisposition to glaucoma, those who are suspicious of glaucoma and lens luxation. Young puppies dilate slowly, often incompletely, and may require multiple drops. Mydriasis produced by darkening the room may permit a cursory but not a complete examination of the ocular fundus. 1% Tropicamide (Mydracyl-Alcon Laboratories) provides mydriasis within 15 to 20 minutes in a normal eye. During this time the anterior ocular structures are examined. Additional mydriatics, 2.5% phenylephrine (Mydfrin), may be required in eyes which do not dilate well.

Corneal/conjunctival cultures and cytology

Corneo-conjunctival cultures and cytology are helpful in the diagnosis and classification of corneal and conjunctival diseases. The procedures are especially valuable in chronic, severe and nonresponsive external ocular conditions. The cultures should be done before any administration of drops, since many of the drugs contain bacteriostatic agents. Topical anesthetics are used prior to the collection of cytologic material. Sterile swabs are used to collect material for culture. The swab should be moistened. The moistened swab is rubbed over the area to be cultured taking care to avoid skin, hair and other nearby structures. Bacterial identification and disc sensitivity tests aid in the choice of antimicrobial therapy. To obtain a specimen for cytologic examination topical anesthetic is instilled 2-3 times over a few minutes and the animal's head and muzzle are held firmly by the assistant. To obtain a conjunctival scraping, the lower eyelid is everted and the ventral conjunctival surfaces are vigorously rubbed with a stainless steel or platinum spatula. The collected material is distributed onto glass slides. Ideally, conjunctiva should be scraped vigorously enough to obtain basilar cells without inducing hemorrhage. To obtain a smear of

exfoliated cells, a moistened Dacron tipped applicator is rubbed along the conjunctival cul-de-sac and then rolled on glass slides. The specimens are stained with new methylene blue, Gram's, Wright's, Giemsa's, or modified Sani's methods.

Nasolacrimal system and tear production

The nasolacrimal system and preocular tear film are evaluated by considering both the secretory and excretory components.

Schirmer tear test

The precorneal tear film is essential in maintaining normal corneal health. Measurement of tear production is an important diagnostic test when deficiency of the lacrimal system is suspected. The tear-producing system is evaluated qualitatively by examination of the corneal surface for moistness and luster and quantitatively by the Schirmer tear test. The diagnosis of "dry eye" or keratoconjunctivitis sicca (KCS) may be missed if the Schirmer tear test is not routinely used. The Schirmer tear test measures only the aqueous

aspects of tears. Currently, aqueous tear production is most commonly measured using the Schirmer tear test.



Schirmer values:

Dog: 21.9 +/- 4.0 mm wetting/minute
Cat: 20.2 +/- 4.5 mm wetting/minute
Horse: 24 +/- 5 mm wetting/minute

Excessive manipulation of the eyelids, topical anesthesia and exposure to other topical and systemic drugs (such as tranquilizers and atropine) are avoided before the test. Increased tear production because of corneal irritation during the test appears to be of little significance in the dog and the cat. The round end of the test paper is bent while still in the envelope and positioned without contamination in the lacrimal lake at the junction of the lateral and middle thirds of the lower eyelid. The animal usually closes its eyelids during the test. After one minute the paper is removed and measured on a millimeter scale on the paper envelope. The STT strip should be left in position for one minute. It is not a linear test, so if you obtain a value of 7 mm/30 seconds this does not mean it will be 14mm/min!!!! If you get an abnormal value <15mm in less than one minute the test should be repeated leaving the strip in for a full minute.

Phenol red thread (PRT) test

The Phenol Red Thread Test is a new, fast and equally accurate method to assess tear production. In the PRT tear test, the thread is 75 mm long and is impregnated with phenol red, a pH-sensitive indicator. A 3 mm indentation at the end of the thread is inserted into the inferior conjunctival sac for 15 seconds. The alkaline tears turn the pale yellow thread red. A test time of 15 seconds is required compared to the 5 minutes needed for the STT in humans or the 1 minute in dogs.

Anesthesia is not necessary for the PRT tear test because the subject has little or no sensation from the thread. It is theorized that the minimal sensation and short test time give a more accurate indicator of the volume of residual tears in the inferior conjunctival sac of the eyes. Mean length of absorption for the PRT tear test in cats is 23.0 mm ± 2.2 mm/15 seconds. The normal range in cats for the PRT tear test is 18.4 to 27.7 mm/15 seconds. In dogs the mean length of absorption using the PRT tear test is 29.7 to 38.6 mm/15 seconds. The mean PRT absorbance value in cats (23.0

mm/15 seconds) is approximately two-thirds the mean PRT absorbance value in dogs (34.2 ± 4.4 mm/15 seconds). The mean normal Schirmer tear test value in cats (20 mm/minute) is also less than the mean normal Schirmer tear test value in dogs (22 mm/minute).

Tear drainage

The excretory component of the nasolacrimal system is evaluated by the presence or absence of medial canthal tearing; passage of fluorescein instilled onto the eye; nasolacrimal flush; catheterization of the entire system, and by dacryocystorhinography. The nasolacrimal drainage apparatus consists of two puncta and canaliculi, a poorly developed nasolacrimal sac and the nasolacrimal duct. The oval puncta are situated in the upper and lower medial eyelid margins about 1 to 2 mm in the palpebral conjunctiva. A partial to complete ring of pigment may surround the puncta and facilitates their detection.



Passage of fluorescein from the eye to the external nares is a reasonable test for patency of the nasolacrimal system. A strip of fluorescein is moistened with a few drops of sterile eyewash and touched to the upper bulbar conjunctiva. The dye usually appears at the external nares in 3 to 5 minutes. Both sides should be performed at the same time to compare passage times. Ultraviolet light enhances detection of the dye. Fluorescein passage in brachycephalic dogs and is not reliable as the dye may exit more readily into the nasopharynx. The animal's tongue and saliva should be examined with a UV light in these cases.



The nasolacrimal flush determines patency of the system and the treatment of many of its disorders. The upper punctum is cannulated with a 22-23 g blunt lacrimal needle under topical anesthesia. Tranquilization or general anesthesia is seldom necessary for the dog but often necessary for the cat. A 2 to 3 ml plastic syringe with sterile saline is used to inject the solution through the upper punctum, canaliculus, nasolacrimal sac, lower canaliculus and out the lower punctum. Once this "arc" is established, the lower punctum is compressed digitally and the solution is forced through the nasolacrimal duct and out the external nares. If the dog's head is positioned upward, the dog will swallow or gag on the solution. Excessive pressure should be avoided to minimize the danger of rupturing the N-L system above an obstruction.

The nasolacrimal system may be catheterized with a fine stiff nylon suture or very fine polyethylene tubing under general anesthesia. Catheterization of the nasolacrimal system is valuable in the diagnosis and treatment of obstruction of the nasolacrimal sac and duct. Retrograde flushing or cannulation in the dog is difficult but can be done. In the horse, retrograde nasolacrimal lavage is the method of choice. The complete nasolacrimal system can be outlined by radiopaque contrast material (dacryocystorhinography).



External Ophthalmic Stain FLUORESCEIN

Examination of the cornea is incomplete without utilization of topical ophthalmic stains. Fluorescein is used to demonstrate the presence or absence of corneal ulcers. For topical use, fluorescein impregnated paper strips are preferred to fluorescein solution to insure sterility.



Fluorescein dye



Fluorescein positive melting ulcer

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