Dogs lecture notes

Video 1

Common breeds and their characteristics

Dogs can be classified in several different ways - by size, by purebred vs cross-bred and by specific breeds, or groups of similar breeds, and their susceptibility to particular diseases.

Images of most breeds mentioned are on the lecture slides.

Large pure-breds

Labradors (yellow, black or chocolate), Golden Retrievers, German Shepherds
Less common and not shown - Rottweilers, Rhodesian Ridgebacks, Artic Spitz-type breeds like Huskies, Greyhounds

Medium pure-breds

Larger terriers e.g. Staffordshire Bull Terriers, Miniature Schnauzers, numerous spaniel breeds such as Cocker Spaniels and Cavalier King Charles Spaniels, Miniature Poodles

Small pure-breds

Chihuahuas, small terrier breeds e.g. Westies (West Highland White Terriers), toy versions of larger breeds e.g. Toy Poodles, Pomeranians and Dachshunds.

Australian National Kennel Council classification system

Group 1: **Toys -** usually the very smallest dogs e.g. Pug, Toy Poodle

Group 2: **Terriers –** originally went down holes to hunt e.g. Jack Russell, Staffy

Group 3: **Gundogs -** originally used to hunt birds e.g. Labs, Retrievers

Group 4: **Hounds –** the first hunters. Rely either mostly on sight e.g. Whippets or mostly on scent e.g. Beagles

Group 5: **Working dogs -** e.g. Border Collie, Maremmas acting as sheep guards

Group 6: **Utility dogs -** rescue dogs e.g. Newfoundland, Bernese Mountain Dog

Group 7: **Non-sporting dogs –** includes several brachycephalic breeds e.g. Bulldogs and also Poodles

In Australia, the working dogs are particularly important as they are used to assist with livestock. Border Collies, Kelpies and Cattle Dogs (or sometimes crosses of those breeds) are the most common breeds. You may also hear cattle dogs referred to as heelers because of their habit of biting at the heels of stock as they work them.

Classifying dogs is by anatomical similarity

One example is the group of breeds known as the brachycephalics where brachy means short and cephalic means related to the head. Visually they have large heads with flat noses. Internally, they have very specific anatomical features of the respiratory tract which results in them having very narrow airways and consequent respiratory issues which have a huge impact on their health. Common examples are Pugs, French Bulldogs and Boxers,

Mixed breeds

The majority of these are probably unplanned matings and most likely to include combinations of Kelpie, Maltese, Jack Russell, Staffordshire Bull Terrier, Cattle Dog, Shih Tzu and Labrador Retriever although many owners don't really know. These cross breeds are often healthier than pure breeds as they have more varied genetics resulting in hybrid vigour.

Designer breeds

Regarded by some as a variation on mixed breeds, deliberate or designer breeds are becoming more common e.g. Maltese-Shih Tzu, officially known as malshis, and poodle crosses e.g. Cavoodles (poodle x CKCS) and labradoodles. There are many others.

Video 2

Welfare of puppies and dogs

Environment

Their own bed where they can rest undisturbed.

Poisonous or hazardous items stored safely out of reach. This is especially important with puppies as they explore the world with their mouths

Safe vehicular travel – if unfamiliar with crates or harnesses, which is common, puppies are best travelling on someone's lap on the very first trip home as they may panic. If they are familiar with crates and harnesses and in the longer term, they should ideally travel with those restraints.

Housing needs to be secure.

Diet

There are differences in many aspects between puppies and adult dog nutrition. Four that are among the most important are extra protein required for growth and muscle development, higher level of fat to give greater calorie density needed to allow a pup to eat enough despite its small stomach, calcium and phosphorus in the correct proportions.

Especially for puppies, recommend a commercial puppy diet as many homemade diets do not fulfil the animal's dietary needs. Can change to adult diet when they are about 80% of adult size. Age varies roughly between 9 months (very small breeds) and 16 months (large and giant breeds).

Commercial foods are also recommended for adults. The amount of food required varies dramatically between dogs.

The main concerns about raw meat diets are whether they are nutritionally complete for the animal and the risk of human infection from bacteria in the raw ingredients. The AVA recommends food be cooked to improve safety and to seek advice about home-made diets to make sure they meet the pet's nutritional requirements.

There are some foods dogs should absolutely not have because they are directly toxic or cause other health problems.

- Onions – cause changes in red blood cells which cause the cell membrane to rupture and results in anaemia

- Chocolate – contains a substance called theobromine which is related to caffeine and is toxic to dogs, although not often fatal. Dark chocolate is more toxic than milk which is more than white.
- Coffee – similar to chocolate
- Cooked bones – not toxic in themselves but can splinter in the intestines and cause a perforation
- Fatty foods - not toxic in themselves but can induce inflammation of the pancreas which is called pancreatitis and can be a very serious disease.
- Mouldy foods – effects will depend on the mould

Exercise is very important but opinions vary on the amount of exercise is appropriate. One rule of thumb from the Kennel Club in the UK is 5 minutes per month of age until fully grown but it depends a lot on the puppy and its lifestyle. It's very important not to over-exercise them while they are growing, especially large-breed pups. Exercise for puppies doesn't need to be always a walk – they can also just have an active playtime in the yard in many cases. Before walking a puppy, need to familiarise them with harness/collar and lead walking.

Adults - out of the home or garden at least once daily, ideally with some off-lead time. The ideal amount of time varies between individuals, .and factors such as age, breed and weather.

Behaviour – already covered but mentioned to remind you that it is part of welfare

Coat - Often clients' major concern about coat is how much they are likely to shed as allergies are relatively common. It's not actually the hair itself which acts as the allergen but actually proteins, most significantly Can f 1 (Canis familiaris f 1) which are produced by sebaceous glands (small oil-producing glands) which are found in dog dander (flakes of skin in an animal's fur or hair).

Hair is generally smooth, and longer and finer than fur. Hair goes through a slower growth cycle resulting in less shedding. The lower rate of shedding and the fact that dander is often trapped in the longer coat means they tend to cause fewer allergies.

Dogs with fur often shed twice a year, especially those with double coats, where a thick undercoat provides insulation in cold weather.

Toenails

Clip off only a very small amount at a time so don't cut into the quick and make it bleed, especially with black nails as it is hard to see the quick. Clinics often use silver nitrate sticks or styptic powder to stop the bleeding. At home you can use flour or cornflour or a bar of soap.

Video 3

Health care of puppies and dogs

Vaccinations

The WASVA core vaccines for dogs are:

- Canine parvovirus
- Canine adenovirus
- Canine distemper virus

Together, these are known as a C3 vaccine.

The common non-core vaccines used for dogs in Victoria are those which are active against two causes of canine cough (also known as kennel cough). These are:

- Parainfluenza virus
- *Bordetella bronchiseptica*

Dogs going to boarding kennels will need a C5 and many clients choose that anyway. Most shelters also give a C5 due to the risk of kennel cough.

Example vaccination protocol – SE Australia
A vaccination protocol where triennial vaccines are used could be:

- **6-8 wks** Distemper, Hepatitis and Parvovirus (C3)
- **12-14 wks** Distemper, Hepatitis, Parvovirus, Parainfluenza virus, *Bordetella bronchiseptica* (C5)
- **16-18 wks** Distemper, Hepatitis, Parvovirus, Parainfluenza virus, *Bordetella bronchiseptica* (C5)
- **12 months after 3rd puppy vaccination** Distemper, Hepatitis, Parvovirus, Parainfluenza virus, *Bordetella bronchiseptica* (C5)

Different vaccines will be important in different regions e.g. rabies and leptospirosis are important in different areas of the world.

Gastrointestinal parasites

Roundworms are a particular problem in very young puppies as they can be transmitted in utero and in milk. This is possible because roundworm larvae can become encysted in hosts and during pregnancy the encysted larvae can start to develop and cross the placenta into the puppies. They can also pass through milk. Pups can pass fertile eggs within 2 weeks of birth. Most common signs are pot belly, vomiting and diarrhoea. All puppies need to be wormed every two weeks until 12 weeks of age, then every month until 6 months of age.

Heartworm

Heartworm has a really variable incidence in Australia with probably less than 1% prevalence in southern states but much higher prevalence in northern areas. It is caused by *Dirofilaria immitis,* a parasitic roundworm that is spread from host to host through the bites of mosquitoes. The mosquito is required as an intermediate host because the infective larvae can only develop in the mossie. Clinical signs are not seen until adult worms take up residence in the pulmonary arteries which does not occur until **several months** after infection which means you won't see heartworm cases in young puppies. They can become infected from a very young age and this means preventatives should be started at puppy vaccination if the owners want to start prevention. HW management is different from intestinal worms – for intestinal worms the medications remove active infections whereas for HW the common medications prevent development but don't treat an active infection. That's a more challenging procedure you want to avoid if you can. Most common choices for prevention are annual injection, often done at the time of vaccination, and monthly oral or spot on treatments which are usually less expensive but rely on owners giving them.

Fleas

Fleas can be a problem for puppies as they are for kittens, although larger puppies cope better with similar flea infestations because of their larger blood volume. Most commonly puppies are itchy and irritated. There are many products available but be sure to check the safety at different ages.

Video 3

Welfare and preventative health of adult dogs

Environment – similar to puppies

Diet - appropriate quantity of a diet suitable for their age and health status. Most will eat commercial diets and sometime table scraps or other treats added.

Foods to avoid

- Onions – cause changes in red blood cells which cause the cell membrane to rupture and results in anaemia
- Chocolate – contains a substance called theobromine which is related to caffeine and is toxic to dogs, although not often fatal. Dark chocolate is more toxic than milk which is more than white.
- Coffee – similar to chocolate
- Cooked bones – not toxic in themselves but can splinter in the intestines and cause a perforation
- Fatty foods - not toxic in themselves but can induce inflammation of the pancreas which is called pancreatitis and can be a very serious disease.

Exercise – need to exercise out of the home or garden at least once daily, ideally with some off-lead time. The ideal amount of time varies between individuals, and factors such as age, breed and weather.

Behaviour – covered previously

Health care

Vaccines - the C3 core vaccines and the common non-core vaccines in SE Australia (Bordetella bronchiseptica and canine parainfluenza virus). These need to continue through life but not all given every year.

The duration of immunity varies between different brands of vaccine and between vaccines for different types of diseases. With the core vaccines, some brands only have a 12 month duration of immunity while others give 3 years' immunity e.g Protech brand only gives 12 months protection while Nobivac protects for 3 years. Some clinics carry only one type while others may have both and give clients the choice.

Respiratory vaccines are given annually as they have a shorter duration of immunity (this may change in the future).

Example vaccination protocol

- **12 months after 3rd puppy vaccination** Distemper, Hepatitis, Parvovirus, Parainfluenza virus, *Bordetella bronchiseptica* (C5)
- **2 years old** - Parainfluenza virus, *Bordetella bronchiseptica* i.e. respiratory component
- **3 years old** - Parainfluenza virus, *Bordetella bronchiseptica*
- **4 years old** - Distemper, Hepatitis, Parvovirus, Parainfluenza virus, *Bordetella bronchiseptica* (C5)

Adult dogs with unknown vaccination history

Dogs first vaccinated as adults or with an unknown vaccination status should be given 2 doses 4-6 weeks apart. They should not be considered fully protected until 10 days after the last dose, although they could potentially have naturally acquired immunity.

Gastrointestinal parasites

As dogs get older hookworms, whipworms and tapeworms can be problems as well as roundworms. The most common sign of worms in an adult dog is diarrhoea. In rural areas hydatid tapeworms can cause zoonotic disease so ensure the worming medication contains praziquantel, which is effective against tapeworms as not all preparations do.

Heartworm

Many puppies start on prevention quite young but because a dog can get bitten by a mosquito at any time they need to stay on prevention all the time if there is a risk of infection.

If an adult dog has not been on prevention consistently since a young age it should be tested for heartworm, most commonly with an in-house SNAP test, before they start or restart prevention as they can have a reaction to the medication if they are infected.

Fleas

Adult dogs may just be irritated and scratch with flea infections or they may develop flea allergy dermatitis where one flea is enough to cause them to scratch and bite until they develop painful 'hot spots'.

Flea treatment and prevention products can divided into topical (applied to the skin), systemic (carried in the blood stream) and environmental (treating the animals immediate environment (bedding, carpets etc)). They can also be categorised by the stage of the flea life cycle which they are active against – some kill adult fleas while others affect growth and development of larval and pupal stages. Many of the products are combined with intestinal and heartworm treatments and preventatives and most are given monthly. In multi-animal households all animals need to be treated.

Ticks

There are three types of ticks found in Victoria, the bush tick, brown dog tick and paralysis tick, all in the eastern and northern parts of the state and all three are found up the east coast. The most important one is the paralysis tick. The ticks are very small when they attach and engorge as they feed. The majority of dogs showing disease have travelled to tick areas but that is not always the case. The first clinical signs are often seen a few days after the tick attaches and will usually be some combination of a change in bark, hindlimb weakness, respiratory distress and vomiting and signs will progress to death from respiratory failure if the tick is not found and removed. In endemic tick areas constant vigilance is required in the summer tick season, when bushy areas should be avoided on walks and dogs examined every day for ticks. In addition, there are several products that can be used for prevention.

Another tick-related disease which is emerging in Australia not caused by the tick itself but by a bacterium known as Ehrlichia canis which is carried by the brown dog tick. Brown dog ticks are more common in humid northern areas and the disease ehrlichiosis was first diagnosed in northern Western Australia in 2019 and last year was seen in South Australia so may continue to spread south and east. It is seen in the US in the warm, humid Gulf Coast states in the US and in other areas around the world.

Parasiticides

There are a large number of parasiticides available and new products become available frequently. Ensure you are familiar with products in any workplace.

Teeth

Dental disease is a common problem, particularly in middle-aged and older animals. By 3 years of age, 80% of dogs and 70% of cats will have evidence of dental disease. Owner education and regular dental checks are most important. Prevention can include tooth brushing if the dog is amenable, dental chews, feeding raw bones and dental treatment if there is a significant problem.

Coat maintenance

Particularly for long-coated and -oodle-type breeds whose hair (not fur) grows about 2-3cm a month, it is important to maintain coat condition to avoid problems such as becoming matted, which is very hard to manage once it occurs without a full clip. This is particularly the case over summer when they can get very hot or when grass seeds are present. Regular shampooing and clipping will keep the dog comfortable.

Ears

Floppy-eared breeds such as spaniels as particularly prone to ear disease, although all dogs can have problems. Dogs with ongoing problems may need regular ear cleansing and plucking.

Toenails

Dogs that are kept indoors and spend minimal time on concrete or other abrasive surfaces need regular nail trimming or they may grow around into the pads. When you are clipping, clip off only a very small amount at a time so you don't cup into the quick and make it bleed. You need a lot of care for black nails as it is hard to see the quick. When you inevitably do cut them, you can use silver nitrate sticks or styptic powder which are often available in clinics. At home you can use flour or cornflour or a bar of soap.

Video 4

Breeding and reproduction management of dogs

Female reproduction

Females start cycling from 6-15 months of age with larger breeds tending to start later.

Bitches have two heat periods per year (about 6 months apart) lasting 2-3 weeks and are unusual in having a long dioestrus and inter-oestrus period. Large breeds may only cycle once a year.
They will usually show vulval swelling and bloody/straw coloured discharge for about 10 days while they are on heat. Owners may also see increased frequency of urination and behavioural changes, especially if there are male dogs hanging around.

Gestation and post-partum

Once a bitch is pregnant, ultrasound from 3 weeks post-breeding is the best way to detect pregnancy and assess viability of pups. Once birth is close if you want to know how many pups there are, a lateral abdominal radiograph is the best way.

Pregnancy lasts around 63 days. Many breeds don't have problems with whelping but brachycephalics often do because of their large heads and narrow pelvises.

Puppies should start weaning at 3-4 weeks with gradual introduction of milk replacer and solid puppy food. Usually wean over 2-3 weeks.

Desexing - female

The surgery to desex females is commonly known as a spay but the technical term is an ovariohysterectomy because both ovaries and uterus are removed in Australia. There are different techniques in other parts of the world.

It has been common to desex dogs at 6 months of age and this is still a common recommendation. However, it is becoming increasingly recognised that there are consequences to desexing beyond reproduction such as timing of growth plate closure, which is affected by the absence of testosterone and oestrogen. Desexing before the growth plates have closed delays closure so they end up with longer bones. In females particularly early desexing increases the incidence of incontinence.

For females there are 3 main reasons to spay:

- prevention of pregnancy
- prevention of pyometra, which is a bacterial infection of the uterus and can be fatal if not treated promptly. The phrase 'Never let the sun set on a pyometra' has a real imperative behind it. It's really common in unspayed older bitches and Lort there are often more than one in a day.
- significantly reduced risk of mammary tumours if spayed early. If spayed later in life (i.e. after about 2 years of age) mammary carcinomas may already be present even though they may not become clinically evident for a number of years.

Male reproduction

Males can become sexually mature from around 5 months although more commonly 6-12 months. Have a bulbis glandis which swells during copulation, resulting in the copulatory tie which lasts anywhere from five minutes to an hour. The same pair may mate and tie several times.

Desexing - male

In males the procedure is called castration as you all know.

The main reasons to castrate are:

- prevention of unwanted offspring
- prevention of testicular tumours
- Decrease of aggression and roaming
- Decrease in prostate and perianal tumours

You need to check that both testes have descended, which they should do by about 12 weeks of age. If they haven't the animal is known as a cryptorchid. If one or both are retained it's an even stronger reason to castrate because of the higher risk of development of testicular tumours and you shouldn't breed those dogs anyway as there is a genetic basis to cryptorchidism. Desexing at 6 months is common but with the developing understanding of the consequences of desexing, those standards may change in the coming years.

Other procedures at desexing

Other procedures which may be done at desexing are tattooing in the left ear to show they have been desexed – it's easy to tell in the boys but not so much the girls. Other procedures that may be done are microchipping, removing retained deciduous teeth (the smaller teeth here are deciduous teeth that have not fallen out despite the adult teeth being close to fully descended), removing loose hind dew claws, which tend to get caught on things and bleed if they are left and umbilical hernias, where the umbilical ring does not fully close.

Umbilical hernias are genetic birth defects. Pets with hernias should not be bred as they can pass this genetic trait to their offspring.

Microchipping and registration

Animals are usually microchipped at desexing if they have not been done before. All animals leaving shelters will be microchipped before they are made available for adoption. Microchipping is a requirement for animal registration in some council areas. They're kind of the NLIS tag for dogs and cats. Needles are large (often 12 gauge) so great when it can be done under anaesthesia. Registration requirements vary between councils but most require animals to be registered by 3 months of age. Some require the pet to be microchipped before registration.