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Farm Pets: The 10 Minute Consult Mini Series

Session Three: Pigs and Poultry

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Introduction

Before treating a sick pig it is important that you make a diagnosis. This is not easy as not only are pet pigs difficult to handle but also the owners rarely have proper facilities. I think it is quite reasonable for a practice to only take on a pig client if a clinician has visited the holding first to advise on the minimum requirements for handling. Remember the owner by law has to be registered with DEFRA and have a holding number. It is illegal to feed any scraps containing any meat products to pigs. I am sure this law is often broken, which means the pet pig is likely to be the first animal to contract a notifiable disease. You then as a clinician are likely to be on the front line.

The diseases of pigs, which are notifiable in the UK, are:

Foot and Mouth Disease (FMD)

Swine Vesicular disease (SVD)

Vesicular Stomatitis (VS)

Classical Swine Fever (CSF)

African Swine Fever (ASF)

Anthrax

Aujeszky's disease

Teschen disease

Rabies

a) FMD, SVD and VS

These are termed the vesicular diseases and are best grouped together. The most common finding is the sudden onset of severe lameness. There is a high fever up to 41 C (106 F). The affected animals will have arched backs and be reluctant to move. If goaded they will squeal pitifully. They are depressed and anorexic.

b) CSF and ASF

The CSF and ASF may be difficult to separate. The infected pigs will show a high fever, depression, ataxia, convulsions, and skin erythema with cyanosis, purulent conjunctivitis and death in 3 days.

c) Anthrax

Pigs are anorexic with a high fever and show characteristic inflammatory oedema of the throat and face, with petechiation of the skin. Examination of the throat fluid as a smear with polychrome methylene blue will reveal the organism with its stained capsule.

d) Aujeszky's, Teschen's and Rabies

These three notifiable diseases, which show nervous signs, are extremely unlikely.
If a notifiable disease is suspected the local DVM must be informed immediately. The practitioner should remain on the premise.

Zoonotic aspects

Diseases transmitted from pigs to humans are rare in the UK. Zoonotic infections acquired from eating pig meat are extremely rare.

- Anthrax
- Campylobacter
- Erysipelas
- Influenza
- Leptospirosis
- Mange
- Ringworm
- Salmonella
- *Streptococcus suis* infection
- Toxoplasmosis
- Trichinosis
- Tuberculosis
- Yersinia

Problems associated with reproduction

Parturition

If you are called to an abnormal farrowing, a vaginal examination should be performed if possible with a very well lubricated hand. Restraint may well be a problem. The provision of a farrowing crate for use as an examination crush is highly recommended. If the cervix is not fully dilated an injection of a prostaglandin is helpful. If the cervix is dilated then traction on any piglets which can be felt would be recommended. This should be followed by an injection of 2 IUs of oxytocin.

If there is a torsion then euthanasia or caesarean section are the only options.

Caesarean section

My preference is for a GA as described in the section at the end on anaesthesia. I favour lateral recumbency, with the incision made paramedian just above the mammary gland as far caudally as possible with the upper hind leg drawn backwards. Antibiotics should be given prior to surgery.

Ideally the uterine incision should be made in the body of the uterus. It is very important that ALL the piglets are removed. The uterus should be sutured and then replaced in a normal position. The skin sutures should be small very well tied and placed very close together, as the piglets are liable to damage the suture line. Oxytocin and analgesia should be given on completion.

Prolapsed uterus

Replacement can be achieved under GA. Here is a simple approach: (sadly mortality is high in the region of 25%) once the sow is anaesthetised, antibiotics and NSAIDs should be given. With the sow in dorsal recumbency the hindquarters of sow should then be raised on a bale of straw covered with a clean water proof sheet. All the foetal membranes should be removed and the organ cleaned with warm very dilute hibitane solution. Then the tip of one horn should be pushed back into itself and into the body of the uterus. Pressure should be continued so that the tip of the horn is back into the abdomen of the sow. With care flicking the fingers along the endometrium will result in gravity drawing the horn back into abdomen, the process is then repeated with the second horn. A large dose of oxytocin should be given immediately after replacement.

In theory stitches are not required; however a single “Buhner suture” of uterine tape is a good insurance policy.

Prolapsed vagina

This is a pre-parturient condition. This is not a difficult condition to treat provided the sow is restrained in a crate. You need to get a ring block of local anaesthetic around the vulva. After allowing some minutes for this to anaesthetise the area, place a “Bulner suture” before you replace the vagina. Tie a bow so that the pig keeper can undo it if he suspects the sow is farrowing but retie it if she is not.

Farrowing fever complex

Farrowing fever is normally an *Ecoli* infection, which affects the mammary gland and the uterus soon after farrowing. Treatment with synthetic penicillin with clavulinic acid or tetracyclines is suggested. Tetracyclines are very well absorbed by pigs in a water-soluble solution as a follow-up to the initial injection. Oxytocin is useful for both metritis and mastitis.

Common medical conditions

Enteric diseases

These are rare in pet pigs. They are likely to be come infected by faeces on visitor’s boots.

- Campylobacter enteritis
- Clostridial diarrhoea
- *E.coli* diarrhoea
- Rotavirus
- Salmonellosis
- Swine Dysentery
- Transmissible Gastro Enteritis (TGE)
- Vomiting Wasting Disease

Nervous Diseases

Nervous diseases are rare in pet pigs except for salt poisoning.

- Abscess in the brain or spinal cord
- Bowel oedema
- *Haemophilus parasuis* meningitis
- Salt poisoning

This poisoning is water deprivation if the water supply is interrupted.

- Streptococcal meningitis

Respiratory diseases

All the diseases listed below are extremely important in commercial pigs. However they are rare in pet pigs. They are mainly seen in growing pigs or newly arrived young gilts and boars.

- Actinobacillosis
- Ascaris migration
- Atrophic Rhinitis
- Enzootic pneumonia (Caused by a Mycoplasma)
- Glaser’s disease (Caused by *Haemophilus parasuis*)
- Inclusion Body Rhinitis
- Pasteurellosis
- PMWS (Post-weaning Multi-systemic Wasting Syndrome)
- PRRS (Porcine Reproductive and Respiratory Syndrome)
- Swine influenza

Skin diseases

- Sarcoptic Mange
- Lice
- Flies

Infectious diseases of the skin

A. Erysipelas

There are four usually manifestations. Firstly; the acute onset febrile disease in growing pigs, Secondly; the subacute form in older pigs which are hardly ill but show the skin lesions. Thirdly; polyarthritis in growing pigs, Finally endocarditis in adults. The organism is very sensitive to penicillin. There is a vaccine.

B. Greasy pig disease

C. Ringworm

This fungal disease is rare in pigs. It should not be confused with Pityriasis rosea which is an inherited condition, appearing in young suckling pigs.

Urinary problems

A 15Kg growing pig requires 2Kg water a day. A 100Kg finishing pig requires 12Kg water a day.

- PDNS (Porcine Dermatitis and Nephropathy Syndrome)
- Cystitis/Pyelonephritis
- Urolithiasis

Internal Parasites

- Helminths

Ascaris and *Trichuris* are very common in young pigs.
Hyostrongylus and *Oesophagostomum* are relatively common in adult pigs
Metastrongylus (Lungworm) is found in outdoor pigs.

- Coccidiosis

Isospora suis causes profuse diarrhoea in 7-10 day old unweaned piglets

Prolapsed rectum

This is a common surgical condition in growing pigs and sows. The trick to repair is to place the purse string suture in place after a local anaesthetic ring block BEFORE replacing the rectum. Then as soon as the rectum is replaced the suture can be tied.

Anaesthesia

Mask very young piglets with Isoflo without premedication. Older piglets premed with Azaperone 2mg/Kg.

Large growing pigs and adults use a combination of drugs given in the same syringe intramuscularly with a hard non-disposable syringe and a 14-gauge needle. The dose for a 100kg pig is; 200mg Xylazine, 1000mg Ketamine and 20mg Butorphanol. It should be acknowledged that these products are not licensed for pigs either alone or in combination.

Euthanasia.
20% Pentobarbitone Sodium can be injected into the anterior vena cava just cranial to the thoracic inlet. The one and half inch needle is directed slightly medially and caudally. However my protocol is to give a GA intramuscularly, followed by an injection of Quinalbarbitone/Cinchocaine with a spinal needle 3 inches long into the heart.
I would not advise small animal practitioners to shoot pigs unless they have received specific training.

Poultry notes

Animal Husbandry

The healthy chicken is a lively, bright, curious animal. They are set apart from other birds by their comb and wattles. These are bright red when the bird is in good health and laying. The various discolorations can give clues as to the cause of disease. Pale can indicate anaemia (think mites), purple can be caused by poor circulation, yellow think avian TB, black can be dried blood or frostbite and sometimes erysipelas.

The comb is also a secondary sex characteristic and is usually much larger in the male. Males also develop spurs, as a weapon for fighting, which are occasionally prone to injury and it should be remembered that there is a blood vessel in the spur, so take care if removing. Filing is safer. The spurs grow by about half an inch per year.

The beak should be clean and dry without crusty build up around the nostrils. The legs in most breeds should be smooth and scaly. Scaly leg mites will cause irritation and lifting of the leg scales with a crusty whitish material.

The rear end is an important area for examination. It should look like a powder puff of soft feathers. Occasionally it will have dried faeces stuck to the feathers, possibly indicating diarrhoea. It is also a good area to look for external parasites, as is under the wings.
The respiratory system of birds is highly developed to enable gaseous exchange on both inspiration and expiration. There is also involvement of 13 air sacs, which can be an “Achilles heel” for birds. They are a perfect place for bugs and mould to settle and can prove tricky to treat. The purpose of the air sacs is to act as short term storage areas for each respiratory cycle.

Birds have a normal temperature of 40-42 degrees Celsius, a heart rate of 250-300bpm and will breathe between 20-40 times per minute depending on the sex.

Life expectancy is about 6-10 years for chickens and turkeys, with bantams lasting a bit longer, 8-12 years.

Housing

Backyard poultry housing can be very simple and inventive or expensive and extravagant. It is big business these days and a standard chicken ark for 3-6 hens could easily be £250. A garden shed works very well, and can be adapted to have laying boxes and perches. It is sensible to replace the Perspex window with small wire mesh to aid ventilation, but make sure it is away from the prevailing wind to avoid rain being blown in. Personally I think shavings make very good bedding, as they absorb any liquid and are less likely to harbour parasites. However, there are a lot of people who use straw, paper or even hay. Birds will naturally look for a place to roost as night falls, and they like to get up high. Providing perches inside their house is a good idea. They should be quite broad, about 2 inches and circular rather than square. The majority of droppings are done at night, so positioning a board underneath can save mucking out.

Hens like small, private areas to lay their eggs, and if you want a hen to incubate a clutch it is a good idea to put her in a separate compartment all together so that the others don’t interfere with her.

Hen pecking is the birds' way of maintaining their social hierarchy. As their memory is short, this can prove very difficult to overcome if returning a recovered hen to the flock or introducing new purchases. The best way is to put them in a completely new environment at night, to unsettle the established ones. Having a cockerel isn't for everyone, but very often he will step in to sort out disputes. Chickens are attracted to the colour red, so once a bird has a wound she will immediately be a target for the others who will continue pecking until she's died unless you can intervene.

Producers capitalise on this attraction to the colour red by making the bottom of feeders and drinkers red.

Nutrition

Poultry are designed to live off seeds and insects, but they are true omnivores and often very ambitious in what they decide to eat. If the birds are free range, they will delight in scratching up insects and worms but nothing quite excites them like a small frog or mouse! It is a good idea to have a proper poultry feed as the basis of their nutrition and then top it up with kitchen scraps. They particularly enjoy left over porridge! Birds can be fed adlib, but care should be taken not to attract vermin or wild birds.

Once food is ingested it is stored in the crop, an outpouching of oesophagus by the thoracic inlet. From here it is slowly taken into the proventriculus (the stomach) for chemical digestion. The next stage is the strongly muscular gizzard which uses ingested grit to grind down seeds and grain. The food will reflux from the gizzard to the proventriculus several times before continuing into the duodenum. The ingesta then passes down the intestines for further digestion and absorption of nutrients. Cellulose is broken down in the caecum by bacterial fermentation. 1 in 10 droppings will be much looser than the normal firm, black and white faeces, and this is caecal voiding and completely normal. The whole process can last anywhere between 3 and 25 hours depending on how full the digestive tract is.

Laying

Birds will start laying at about 20 weeks of age and depending on the breed will lay between 100 and 300 eggs per year. Typically, the prettier the hen the poorer her performance! Birds lay in response to increasing day length and many people will provide electric lighting to give the optimum 16 hours per day. Chickens lay on a 25 hour cycle, so will normally lay later and later every day until they miss a day and start again the next morning. This production takes tremendous resources, so provision of good quality feed is essential. They also need plenty of calcium for shell quality, although this is rarely a problem in backyard hens.

Hens will normally return to the same place each day to lay again. This can be encouraged by using a clay egg that remains there, whilst any fresh eggs can be removed. It is important to remove eggs frequently because once a clutch has been laid it is very inviting for a hen to go broody and try to hatch them, regardless of whether there is a cockerel or not. A broody hen is very protective and will often fluff up her feathers and try to peck rather than move off her nest.

Worming

Routine husbandry of backyard flocks should involve once or twice yearly worming. The products are so cheap and easy there is no excuse not to. At our practice we recommend medicating the food with flubenvet and feeding that for 7 days. The cost to the client is less than £5 for a dozen hens.

Birds should be handled frequently to check body condition and to look for external parasites. It is easiest to start off at night when the birds are dozy. Make sure both wings are clamped against the body and hold the bird like a rugby ball with her head into your armpit and the messy end away from your body. By supporting her weight on your forearm you can then use your free hand to examine her. NEVER pick up chicken up by one leg; they can dislocate hips very easily.

External Parasites

I use Frontline spray quite frequently for mites and lice, but there are reports of allergic reaction to the propellant. If you do use this a couple of sprays under each wing, around the hackles and thighs works wonders. It must only be used in birds which are not going for meat for human consumption.

Birds will moult once a year, this is an annual shedding and replacement of their feathers. They can look pretty ropey whilst it's happening and will go off lay. It takes about 3-4 weeks and they should come back looking like a shiny new version of their old self. If there is a colour change in the new feathers have a nutritional deficiency in your mind.

Wing clipping is necessary if you are to stop your hens flying out of their pen, or roosting up trees at night. They can be pinioned as day olds, but more normally the feathers are just cut on an annual basis. Remember it will need to be done after each moult as they will have regrown! It is best to do only one wing so that the bird is unbalanced. Extend the wing by holding the elbow and cut the primary and secondary feathers from the elbow towards the wing tip. Take care not to catch the skin. Sometimes the last 2-3 primary feathers will be left untouched to give some shape to the wing.

Menopon gallinae – The common fowl louse. These are about 2mm long, flat and pale yellow colour. They will move very quickly out of the light when the feathers are parted. They feed off skin debris, so are not life threatening to the bird but can be irritating. Infestations can be controlled with louse powder.

Dermanyssus gallinae – Red mite. This mite lives in the cracks of wooden houses and creeps out at night to suck blood from the chicken. It causes anaemia and occasionally death, as the mites retreat during the day. It is worth spraying the bird with frontline, but efforts should concentrate on the house and bedding. Remove all bedding and burn it. Mix up an acaricide in a weedkiller spray and spray the inside of the house. This is better than powder as the liquid will run into the crevices. We use Deosan Deosect at our practice.

Ornithonyssus sylvarum – Northern mite. This is very similar to the red mite, but spends its entire time on the host bird so anaemia and death are more common. Treatment is with frontline spray at 3 week intervals.

Knemidocoptes – Burrowing mite. This causes Scaly leg, depluming itch and scaly face or beak. The old fashioned treatment for scaly leg is to scrub with surgical spirit at weekly intervals and/or smother the legs in Vaseline to suffocate the mite. The frontline spray may be less effective due to the burrowing nature of this mite. Repeated treatment with a suitable louse powder may be the only answer.

Reproduction

If your clients intend to breed from their chickens it is helpful to know a bit about bird sex. Although there are no external genitals, the bottom of the cockerels' cloaca will form a groove of tissue to funnel the semen into the hen. The male cockerel has two testes located near the kidneys, under the spine. He will ejaculate 0.5 to 1ml of semen and this can be stored in the vagina for up to 14 days in chickens (72 days in turkeys!) so bear this in mind if swapping cockerels.

Once an egg has been layed it does not need to be incubated immediately, in fact it can cause problems if the eggs are too fresh, they will hatch early. Equally if they are too old then the chicks may have unhealed navels. Between 24 hours and 10 days is about right for the age of egg before it is incubated. The broody hen will sit tight for 21 days, rarely venturing off to defecate, eat and drink before scuttling back. It is possible to "candle" lighter shelled eggs to see if it is growing a chick. This is done by shining a bright torch under one end after 7 days of incubation.

Incubation takes 21 days in chickens and 28 days in turkeys or guinea fowl.

Infertility in cockerels can be related to disease or stress but is perhaps more commonly due to a lack of libido. The sperm maturation process is much quicker in birds than in mammals, so any problems will manifest themselves in reduced sperm quality quite quickly. It is not very common. Remember that birds are seasonal and will be most fertile in the spring and summer.

Attempting to hatch eggs in an incubator is not something to undertake lightly. Not only can it be quite challenging, but once you have done it you are suddenly mother hen! Each incubator is different and I would advise following the manufacturers instructions. However, play particular attention to the humidity as this is surprisingly important and can make the difference between success and failure.

If your chicks are hatched naturally, under a broody hen, she will be very protective, but it is still a good idea to provide some form of secure housing to keep the other hens and predators out until the chicks are a bit older. Cockerels will occasionally kill all the chicks in a brood. A cockerel that is aggressive to humans can be quite intimidating and is normally best culled, particularly if children are at risk. Some people advocate cuddling!

Vaccines

The commercial poultry industry has a plethora of vaccines that are available. They are all designed for huge numbers and you will do well to find a pack less than 1000 doses. However, they are reasonably affordable for the small holder. In reality, we have only ever used the Mareks vaccine which is an injection.

Introducing new birds

When introducing new birds to a flock it is a good idea to give some precautionary cover. Worm all the birds for a week with flubenvet. If there is a history of mycoplasma in the existing flock it is a sensible idea to cover the new birds with antibiotics such as Tylan or Baytril for a few days. In an ideal world a period of quarantine would be good to allow treatment of worms, lice and mites and also to watch for other signs of disease.

General notes for backyard poultry practice

Poultry medicine can be interesting and rewarding for the general Practioner. It is an opportunity to return to first principles and develop an ability to take a good history and thorough clinical exam. The clients can be quite difficult to manage, but will often surprise you by how much they care about a chicken, and how much they will spend. At our practice we try to encourage backyard poultry keepers to involve us in the health and wellbeing of their flocks, so we keep our charges reasonable. The post mortem is often the most rewarding diagnostic test.

Blood sampling is usually done to measure antibodies, either in response to disease or vaccination. Take 1-2ml from a pre-plucked area along the underside of the ulna.

Respiratory Conditions

As discussed earlier, the respiratory system in birds is highly developed but also prone to many problems.

Aspergillosis: All types of bird are susceptible. Mouldy bedding gives off the spores which are inhaled. Often goes unnoticed until too late. It is possible to have a go at treating with itraconazole, but don’t be disappointed if you don’t succeed. It manifests as respiratory distress or sudden death when stressed.

Avian flu: Nicknamed cathedral disease due to the silence in the turkey sheds when the workers went in in the morning. It is Notifiable and waterfowl are implicated in its spread. Clinical signs include sudden egg drop, sudden death, respiratory distress, swelling around the head and diarrhoea.

Infectious Bronchitis: This causes respiratory disease and can infect the oviduct leading to wrinkled or misshapen eggs. It spreads very quickly throughout a flock. If there is an odd hen laying wrinkly eggs she may be a carrier and is probably best culled. If you attempt treatment, use Tylan 200 injection.

Mycoplasmosis: Characterised by foamy eyes, swollen sinuses and breathing difficulties. It is very contagious, and can be spread by wild birds. Tylan 200 injection will keep it under control, but beware periods of stress. Baytril orally is very useful. Mycoplasma synoviae is the causative agent of infectious arthritis.

Pasteurella: Clinical signs include respiratory distress and acute death. Blood is frequently seen in the mouth. On post-mortem there is significant lung consolidation. Treat promptly with Amoxicillin.

Psittacosis: Zoonotic risk causing pneumonia and abortions in humans. Not just parrots, but domestic poultry and waterfowl also spread it. Clinical signs include ocular and nasal discharge and respiratory distress. The treatment of choice is tetracyclines for prolonged periods. E.g. Chlorotetracycline in the water.

Syngamus trachea: This is the gape worm. The adult worms migrate to the trachea and cause respiratory distress by their physical presence. The eggs are coughed up, swallowed and passed in the faeces. The birds will gape and cough repeatedly. Treat with flubenvet in the feed.

Sinusitis: Swollen sinuses commonly due to mycoplasma. Treat with Tylan 200 or Baytril.

Cardiovascular system

Atherosclerosis: The pathogenesis is very similar to that in humans. It is the couch potatoes of the poultry world that succumb. It is more common in females due to the high levels of circulating fat necessary for egg production. It is hereditary but can be reversed by diet management.

Heart attack: More common in heavy breeds. A purple comb can be a sign of poor circulation. Birds have extremely high blood pressures, so bruise very easily and will die if stressed, particularly during your examination!

Marek's Disease: This viral infection normally causes peripheral nerve paralysis but can also lead to lesions in the heart muscle or blood vessels.

Sodium toxicity: An excess of salt in the diet leads to heart damage.

Vitamin E deficiency: Lesions in the heart muscle, respond to Vitamin E supplementation.

Alimentary system

Trichomonas is a protozoa causing oral canker in birds. This is seen as a cheesy substance in the mouth and throat. There is no treatment available.

Crops can become impacted, particularly with long fibrous vegetation. This prevents further passage of food and ends ultimately in death. In theory, you can syringe a small amount of liquid paraffin down the birds' throat to soften the impaction, then turn the bird upside down and gently massage the mass back up the oesophagus. In practice I have never been very successful at this.

A pendulous crop is often a sequel to impaction. Once the muscles have been weakened, the crop is prone to swelling and sagging as it lacks the strength to push the food into the proventriculus. The bird should have all food (including grass) withheld for a few days, before very gradual re-introduction. The long term prognosis is poor.

Sour crop is caused by the yeast Candida. It often overgrows following oral antibiotic therapy. There is a noxious smell and the bird appears depressed. Treat with ketoconazole orally. Gizzard impaction can be caused by a lack of grit in the diet or by eating shavings. The birds appear very miserable and off their food. Treat by starving and giving a little liquid paraffin orally.

Vitamin deficiencies are unusual in free range back yard flocks but will occasionally appear, sometimes as a result of bullying or overcrowding. Most of the vitamins can be toxic in large amounts so be careful if supplementing.

Vitamin A is found in grass and, with carotene, is responsible for the orange colour in egg yolks. If the yolks start to turn paler this could be an early sign. A deficiency leaves birds more susceptible to bacterial infection.

A deficiency of B Vitamins in the adult birds can lead to embryo death in the shell during incubation – "dead in shell". It may also show as skin disorders.

Calcium deficiency will give the classic bowed legs of rickets in young birds. Laying birds may have thin or soft shelled eggs.

Vitamin E deficiency can lead to early embryo death, heart disease and muscle disorders. It is also thought to be involved with capture myopathy in waterfowl.

The most common reason for a Vitamin K deficiency in backyard flocks is unintentional consumption of rat poison. The birds die from lack of blood clotting.

A deficiency of Sodium chloride can lead to reduced egg production.

The thin bird

One of the most common presentations to the general Practioner is a thin chicken, either dead or alive. Fortunately there are only a few things that can cause this. A lack of nutrition is unlikely, but can happen if one is being bullied. External parasites are easily diagnosed and treated. Internal parasites are easily identified at post-mortem and can be treated effectively in the remaining live birds. That just leaves Avian TB, Kidney disease or liver failure.

Birds will be bright, alert and still eating with Avian TB, but just seem to waste away. It is possible to do a test, similar to that in cattle, but you inject into the wattle. It will mainly be seen in birds older than 2 years. It is spread by wild birds, but it is probably best to cull any carriers within the flock to remove a source of infection.

Occasionally birds will have a yellow tinge to their comb if they are suffering from liver disease, but this isn't a very reliable sign. The signs for both liver and kidney failure are nondescript, unthrifty, depressed birds. Birds will occasionally show lameness with kidney disease due to the anatomy of the nerve. It is worth trying to treat with oral Baytril but prognosis is guarded.

Diarrhoea

Diarrhoea in chickens can be caused by many things. Excess cabbage is the commonest nutritional reason.

Infectious causes of diarrhoea.

Salmonella: There are many different strains. *S. pullorum* causes white diarrhoea, previously known as Bacillary white diarrhoea. This is increasingly rare thanks to the testing and eradication that is going on in the commercial poultry industry.

S. gallinarum causes fowl typhoid leading to yellow diarrhoea and a loss of condition. Thankfully this is increasingly rare too.

S*. enteritidis and typhimurium* are zoonotic. They affect very young chicks and often present as foul smelling, high death rates and messy vents.

These are commonly spread via the egg and in incubators, so it is best to wash all hatching eggs in virkon before setting. If eggs are being washed it is important to make the water warmer than the egg to ensure the membrane inside the shell doesn't shrink away from the shell.

Vermin also carry and spread salmonella, so should be controlled. Occasionally, rats will creep into a bird house at night and nibble on turkeys without the stupid turkey reacting or moving! This is effectively injecting the bird with salmonella.

Treated birds are likely to become carriers, so culling is recommended.

E. coli is a normal gut inhabitant but in times of stress it can flare up causing disease, particularly if there are concurrent problems. Chicks of about 4 weeks old are usually affected, they look miserable, have ruffled up feathers and pant, although deaths are rare. Treat with amoxicillin in the water.

Rotavirus causes intestinal villous destruction in young chicks. This causes malabsorption diarrhoea and allows colonisation by secondary bacteria. It tends to be a response to stress – weather or environmental change. To prevent, try to make changes gradually or cover with prophylactic antibiotics if stress is anticipated.

Clostridial diseases can cause ulcerating enteritis in intensive flocks. It is quite rare and should be treated with lyncomycin.

Parasitic causes of diarrhoea

Coccidiosis in poultry is caused by a protozoa of Eimeria spp. and is of major importance. It is a disease of intensification, so most backyard flocks cope very well with low levels of infection. There are two major types, the malabsorption group and the haemorrhagic group. The haemorrhagic are much more destructive and cause higher mortality. The oocysts are extremely robust, being able to survive for years in the environment. It is diagnosed by microscopy of gut contents to visualise oocysts.

Very effectively treated with Baycox. There is a vaccine (Paracox) but it should not normally be necessary in backyard flocks.

Helminths can cause greenish diarrhoea. They often have earthworms as intermediate hosts, but should not be a problem in well managed flocks thanks to the advent of flubenvet. Panacur is not as good. Some immunity will develop in older birds.

Hexamita is an opportunistic motile protozoa, it can spring up to cause a problem in times of stress or overcrowding. Signs include listlessness and diarrhoea. It has to be identified in a very fresh corpse (30 minutes) and is known as the disco dancer.

Histomonas is another protozoa, also known as blackhead. It affects chickens as asymptomatic carriers and causes disease in young, free range turkeys. Histomonas uses the caecal nematode Heterakis as a vector. The Heterakis eggs are passed out in the bird droppings and eaten by earthworms. Once the earthworm is then eaten by a turkey the Histomonas will penetrate the caecal wall and is carried to the liver. Clinical signs include yellow droppings and occasionally cyanotic head/wattles. Mortality may reach 100%. It is diagnosed at post-mortem by discreet circular white lesions on the liver or necrotic lesions on the caecum. Control centres around avoiding rearing turkeys on ground shared by chickens. Treatment is with metronidizole.

Musculoskeletal system

Arthritis is commonly seen in backyard poultry due to the potential for birds to be overweight and live to old age. Remember that bacterial causes of arthritis exist too. Arthritis medication in poultry may be open to ethical discussion but if treatment is instituted meloxicam is the drug of choice.

Bumblefoot is essentially a staphylococcal infection of the foot pads. It is predisposed by bruising, so ensure that perches are rounded and not square. Treatment is normally hopeless so euthanasia is warranted.

Skeletal deformities are not uncommon and are usually inherited. They can occasionally be due to cramped or inappropriate housing conditions when the birds are young. Euthanasia should be recommended for most deformities, but if the individual can cope with bent toes (for example) then do not euthanase but recommend that it is not used for breeding.

Fractures of distal bones can often be splinted but if joint involved or compound then euthanase.

The nerves innervating the legs pass through the kidneys so any kidney disease may well show as a lameness. Try treating with oral Baytril incase of mycoplasma.
Traumatic injury can produce a temporary paralysis/lameness. Good nursing and pain relief with meloxicam is beneficial

Reproductive system

Egg bound birds look constipated. It is normally due to a calcium imbalance. Birds should be given oxytocin, kept warm and their vent should be lubricated with warm lube gel or KY jelly.
Egg eating is really annoying! It is normally due to an inappropriate nesting box, or eggs being laid in the wrong place. Once started it is difficult to stop them. Old wives will fill a “blown egg” with strong mustard or curry powder. Others suggest scattering golf balls in the chicken house, or simply collecting the eggs several times a day.

Egg peritonitis is caused my misdirection of the egg yolk, so that it descends into the abdominal cavity rather than the reproductive tract. The yolk is a perfect place for infection to establish and the resulting peritonitis is fatal.

Poor hatching can be a result of a nutritional deficiency, but as discussed earlier this is rare in backyard hens. Poor egg storage or incubation can be at fault, or it may be a seasonal dip in fertility. Several diseases can reduce hatchability including infectious bronchitis.

If a bird prolapses she will often be found dead, having been attacked by the others. The reasons for prolapse are normally stress, age and obesity.

Vent gleet is one of the most pungent problems with poultry. The vent appears moist, yellow and inflamed. It is a herpes virus, so treatment is futile and affected birds should be culled.

Nervous system

Botulism is caused by a clostridial bacterium. The bacteria proliferate in carcases and in hot weather this can be very rapid. The bacteria release a toxin which is normally fatal. The signs are sudden death or flaccid paralysis. The normal route of infection seems to be the consumption of infected maggots.

Marek’s disease is caused by a herpes virus and is not uncommon in backyard poultry, being spread by wild birds. The virus attacks the peripheral nerves and one of the first signs is a drooping wing with lameness on the same side. The virus is not transmitted through the egg, so chicks are born free of the disease but are commonly infected at an early age. Infection occurs through inhalation and will generally lie dormant until a time of stress. Silkies and Sebrights are prone with females more commonly affected than males. The vaccination

prevents shedding but not necessarily disease. The bird stands a better chance if it is older when it comes into contact with the virus.

Newcastle disease is one of the two Notifiable poultry diseases. It is zoonotic causing conjunctivitis in humans. The signs can vary from green diarrhoea to torticollis to sudden death. The virus can survive for quite a long time in the dead bird or in faeces. There are very strict importation controls, to maintain our semi clean status. There are occasional outbreaks amongst waterfowl. It is compulsory for racing pigeons to be vaccinated against it.

Nutritional deficiencies in Vitamins A or E or in thiamine occasionally produce nervous signs, commonly stargazing and weakness/paralysis. Take care when initiating supplementary treatment.

Liver and Kidneys

Fatty liver syndrome tends to occur in overweight older birds. When they are stressed suddenly, the liver will haemorrhage and they will die.

Gout occurs when the kidneys are no longer functioning properly, so urate crystals are deposited in the abdomen or on synovial membranes. Signs are vague; poor doers and off feed. Articular gout is hereditary and these birds should be culled.

Nephritis is quite a broad term, encompassing several causal agents, IB, mycoplasma or Gumboro. Birds will show signs of general listlessness and be poor doers. There may be lameness as well if the nerve(s) is affected.

Nephrosis is caused by toxins that lead to kidney damage. Apart from removing the source of the toxin there is no specific treatment.

Excess sodium in the diet of young chicks will lead to kidney damage, but this can be reversed by the provision of potassium.

Ureters can be blocked by uroliths. These are normally caused by a calcium imbalance or IB. The birds will find it painful to move so sit hunched up and are off their feed.
All kidney problems are helped or avoided by a plentiful supply of clean drinking water.

Miscellaneous diseases

Tumours – lymphoid leucosis or sarcoma. These are more common in pet chickens that live to old age. Lymphoid leucosis is caused by a retrovirus, but it is not very contagious and there is no treatment. The infection is passed down in the eggs though, so birds are best culled. Signs include wasting and thickening legs.

Gumboro (Infectious Bursal Disease) – affects young chicks at about 3 weeks old. Birds will die quite quickly (in 2 days) after clinical signs of depression and hunching up are seen. It is highly contagious, but if the keeper is able to provide good nursing and prompt antibiotic cover some will survive. There is a vaccine and it is normally given to the breeding hens to afford some passive immunity in the chicks.

Medicines

There are few licensed drugs for the backyard poultry keeper, so the cascade should be followed and owners should be advised to implement 28 day withdrawal on eggs.

Euthanasia

Killing a chicken can be surprisingly traumatic for the veterinarian. There is either a sobbing group of children or a tough old gamekeeper who used to pull heads off with his teeth. Wing veins are incredibly easy to blow and intraperitoneal injections can be painful for the bird.

If you are required to “neck ‘em” then this can be done effectively by resting the bird with its chest on the ground, holding its legs in your hands and laying a broom handle over the back of the neck. Then tread on the broom handle and pull up with the legs. Remember that the purpose of the exercise is to kill the bird and you shouldn’t have any trouble.

For a more sensitive approach an injection of barbiturates into the breast muscle is the most sensitive and peaceful method. The bird will gradually go to sleep and die. With practice and a good knowledge of the internal anatomy you can inject directly into the liver. This is frighteningly quick but very acceptable.

I use a 23 guage needle and about 15mls of Lethobarb into the wing vein for a turkey.

Post Mortem

To conduct a post-mortem, start on the outside. Examine the bird for external wounds, external parasites, body condition and feathering. Open the mouth for evidence of oral canker or choking.

Lay the bird on its back with feet towards you. Pluck away some of the feathers from the ventral neck to allow access to the trachea. Cut out a length of trachea and open lengthways. Look for gapeworm, mucus or blood. Beware artefacts created by your euthanasia technique. Make a nick in the skin with a scalpel blade over the keel. Peel back the skin to reveal the breast muscles. Make a second nick over the soft, unprotected abdomen at the caudal edge of the breast muscles. Then cut down the line of the breast muscles, both sides with strong scissors. You should then be able to retroflex the breast plate, revealing the abdominal contents underneath. Examine in situ first before gently extracting and examining. Remember that the lungs are situated close to the underside of the spine.

Look for gross pathology and take samples from the intestines for microscopy to look for worm eggs or coccidial oocysts.

If you have killed the bird yourself you may see hexamita still dancing. It is possible to take samples and send these away to a local specialist or VLA for further diagnosis. However, if at all possible, it is preferable for the owner to take the live birds to these places themselves to allow fresh specimens.

Game Birds

We are going to discuss Pheasants and Partridges. Game keepers catch adult birds from the previous season. Eggs are then collected and disinfected. They are incubated for 24 days when they should hatch and are termed ‘day olds’. They are then reared in a circular pen with a heat lamp. They are fed on crumbs and littered with shavings. Water drinkers are normally yellow. They are kept inside with the pen slowly being enlarged. Electrolytes and Vitamins are given in the water.

Vet involvement

- Writing prescriptions
- Post mortems
- Submission of samples/birds to the lab
- Liaison between the game keeper and the specialist

Conditions seen in the first week

- Heat lamp failure
- Smothering
- Predators
- Starve out
- Rotavirus
- Salmonella

Conditions seen in the first month

- E coli
- Feather pecking

Conditions seen from one month to release

- Internal Parasites:
    1. Coccidia
    2. Hexamita
    3. Helminths
    4. Histomoniasis

Water Fowl

- Ducks eggs / meat
- Geese eggs / meat
- Pets
- Ornamental

Husbandry

- Provision of water is essential
- Need to be fed
- Pinioning up to 7 days. Metacarpals to be removed. To be done by a veterinary surgeon

External parasites

- Holomenopon (Shaft Lice)
- Nasal Leeches

Beware of ivomectins

Males

- Sexual aggression to young
- Spiral phallus that may protrude after mating
- Chose mate in the winter
- Most fertile in the spring
- Ducks lay every day
- Geese lay every other day
- Incubation period for ducks is 28 days maybe up to 32 days for geese
- Condition of prolapsed phallus

Respiratory and cardiovascular disease

- Nasal leeches
- Pasteurella anatipestifer
- Vitamin E deficiency
- High blood pressure causing bruising

Alimentary disease

- Candida infection (Sea Ducks)
- Coccidia
- Dropped tongue
- Duck viral enteritis
- Duck viral hepatitis

- Gizzard worm
- Helminths
- Impaction with fibrous material or wire causing peritonitis

Musculoskeletal disease

- Angel wing
- Arthritis
- Lameness (Parasites)
- Slipped tendon

Neurological disease

- Duck viral enteritis
- Duck viral hepatitis
- Parvovirus
- Botulism
- Hereditary Hawaiian Geese Disease

Avian Influenza

- It may be high or low pathogenicity
- Important in migratory waterfowl.
- Poultry keepers with more than 50 birds need to register with DEFRA
- Symptoms

1. Oedema of head
2. Cyanosis
3. Respiratory distress
4. Sudden death
    - Differentials

1. Newcastle disease
2. IB
3. Mycoplasma
    - Prevention

1. Biosecurity
2. Housing birds (and feed and water)
3. Prevent access o wild birds.