Pasteurellosis
Mannheimia haemolytica is of considerable economic importance to the sheep industry causing septicaemia in young lambs, pneumonia in older sheep, and mastitis in ewes.

Clinical signs in adult sheep
The clinical signs include acute onset depression, lethargy and inappetance. Affected sheep typically become separated from the remainder of the group. They show an increased respiratory rate with an abdominal component and a fever (>40.5 °C). In some situations, the animal is found dead.

Pathology
The lungs are heavy, swollen and purple-red in sudden cases, and the airways contain blood-stained froth.

Fig 1: Sheep with pasteurellosis are typically separated from the remainder of the group, and do not eat and appear very dull with ears down.

Fig 2

Fig 3
Figs 2 and 3 The clinical signs of acute pasteurellosis in adult sheep include sudden onset depression and lethargy.
Fig 4: The lungs are heavy, swollen and purple-red in sudden death cases caused by pasteurellosis.

Diagnosis
Diagnosis of respiratory disease caused by M. haemolytica is based upon clinical signs but there is no confirmatory test in the living sheep. Confirmation of diagnosis is made at necropsy with histopathological examination of lung lesions and bacteriology.

Treatment
A good treatment response to antibiotic therapy necessitates rapid detection of sick sheep by shepherds. Oxytetracycline is the antibiotic of choice for pasteurellosis as there are few antibiotic resistant strains in sheep.

Management/Prevention/Control measures schemes
Prevention is best attempted using vaccines incorporating iron-regulated proteins. Breeding ewes require a primary course of two injections four to six weeks apart followed by an annual booster four to six weeks before lambing. However, this vaccination regimen only provides passive immunity to the lambs for up to five weeks. Lambs can be protected by two doses of vaccine administered from 10 days-old as colostral antibody does not interfere with the development of active immunity.

Fig 5: Prevention is best attempted using vaccines incorporating iron-regulated proteins.

Economics
The low cost of vaccine (ca. 25 pence per dose) should permit vaccination of all susceptible sheep.

Atypical pneumonia
A non-progressive chronic pneumonia of housed sheep under a year-old caused by Mycoplasma ovipneumoniae, and possibly other organisms (Parainfluenza 3 virus and Chlamydia psittaci). The true prevalence of this disease is unknown because the clinical signs are mild and do not generally warrant veterinary investigation.

Clinical presentation
The significant clinical finding is one of slightly reduced growth rate despite an appropriate ration. A chronic soft cough and nasal discharge spreads slowly through the group most noticeable when the sheep are suddenly disturbed.

Pathology
Lung changes are usually only detected at the abattoir and consist of red-brown or grey collapsed areas in the apical and cardiac lobes.
Fig 6: Lung changes are usually only detected at the abattoir.

Treatment
Treatment is generally not necessary because clinical signs are mild. Oxytetracycline should be given to sick lambs which are not eating.

Management/Prevention/Control measures
Control can be attempted by improving ventilation and reducing the stocking density. The airspace should not be shared with older sheep. Purchased lambs should be housed separately from homebred stock.

Parasitic bronchitis
Lungworm may cause coughing and weight loss in heavy infestations but this is very uncommon. Relative to parasitic gastroenteritis, lungworm infestation is of no economic significance to sheep farmers.

Treatment/Control
Treatment for lungworm is not necessary as their control can effectively be achieved by regular anthelmintic treatments used in the management of parasitic gastro-enteritis. Severe lungworm infestations are often seen in sheep with paratuberculosis (Johne's disease) due to compromise of the immune system.

Fig 7: Control of enzootic pneumonia can be attempted by improving ventilation, and reducing the stocking density.

Fig 8: Severe lungworm infestation in sheep with paratuberculosis (Johne's disease).

Chronic suppurative pneumonia/Lung abscesses
Lung abscesses are very common in mature rams but are difficult to identify by inspection alone and veterinary investigation is essential to establish an accurate diagnosis. Chronic respiratory disease is a very important disease in breeding rams which is all too frequently overlooked or treated incorrectly.

Clinical presentation
Sheep with significant chronic lung lesions present with a history of weight loss although appetite may appear normal. The rectal temperature is often slightly elevated.
At rest, affected sheep have a higher respiratory rate compared to normal sheep in the group, and cough occasionally. There may be an occasional purulent nasal discharge.

**Treatment**
Veterinary examination is very important, not least because the patient is likely to be a valuable breeding ram. Penicillin is the antibiotic of choice for chronic respiratory disease. A three to four week treatment regimen for treating valuable breeding stock with multiple pleural and superficial lung abscesses identified by ultrasonographic examination has produced encouraging results. A single long-acting injection of oxytetracycline will not work.

**Management/Prevention/Control measures**
The common finding of lung abscesses in mature rams is probably related to long periods of housing after birth and during their first winter. Viral infections (see enzootic pneumonia above) are common during such times, and such lesions may become infected with bacteria causing abscesses. Failure to recognise and treat early lesions allows these abscesses to grow into significant structures. Weight loss during the mating period causing debility may render rams more prone to infection or exacerbate existing pathology.