PART 7
Sneezing and Nasal Discharges in Pigs
7.1 Case Study

The farmer operated a medium-sized established farm on a single site, with various buildings for breeders, nursery and finisher pigs. The farmer often brought in extra breeder pigs and weaner pigs from nearby farms, to have periods of increased production. The farmer had a good medication and vaccination programme and good ventilation in the buildings. Following a long period of cool and cold weather, the farmer noticed that numerous nursery pigs around 4–7 weeks old were dull and had eye and nose discharges and were often sneezing (Fig. 7.1i). The problem seemed to start in one building and quickly spread to the other buildings. Close inspection indicated that 10–40% of the pigs in each building of the nursery herd were sneezing and had nasal and eye discharges. The nasal discharges were generally pale white with a mucoid to watery texture (Fig. 7.1ii). The affected pigs also had signs of lethargy, reduced appetite, with some coughing. The affected nursery pigs grew poorly but only a few died. At autopsy of these pigs, the farmer and his veterinarian noticed that the pigs also had mucoid exudate in their trachea and bronchial tubes, with scattered irregular areas of firm and dark purple consolidation in the front lung lobes.

Key Features

- Pig movements on to the farm.
- Pale mucoid nasal discharges and sneezing nursery pigs.

7.1a. What is this problem?
7.1b. What control measures may assist the herd?

Fig. 7.1i. Sick pigs with nasal discharges and sneezing.
7.1 Comments

7.1a. This is an outbreak of sneezing, with nasal and eye discharges due to swine flu or orthomyxovirus influenza. This virus sets up a strong inflammatory reaction in the linings of the upper respiratory tract. The virus is then located and spread in the nasal secretions of infected pigs. It is a common infection among pigs all over the world. It is more common in regions with many pig farms and where pig movements occur between farms. This is because the swine flu virus does not form a long-standing infection and does not travel long distances. Swine flu therefore requires close and direct contact with pigs (snout to snout) to develop outbreaks, which are more common in the cold weather of autumn and winter. This form of swine flu is also commonly seen as part of a broader respiratory disease complex, with other infections such as PRRS.

7.1b. Groups of affected pigs may be placed into warm, well-ventilated areas and nursed until they recover. The use of antibiotics does not produce any specific response in affected pigs. A range of commercial swine flu vaccines are available for this disease. However, one problem is that swine flu is a disease where the milk of the sows will contain amounts of maternal antibodies, which will enter the blood of suckling piglets and block the action of any swine flu vaccine injection given to piglets. The swine flu vaccines are therefore usually more effective when they are given to breeder pigs rather than young piglets. A further problem is that there are various serotypes or variants of swine flu and these variants can change over time. The use of commercial vaccines must therefore match the same serotype that is present on the farms in the region.

The major factor to reduce outbreaks of swine flu is to reduce the numbers of times that pigs are moved and mixed with other pigs. One of the golden rules of pig farming is always – do not mix pigs.
The farmer operated a medium-sized breeder farm system, which had several smaller breeder and nursery farm units on different sites. There was good farm biosecurity and an excellent medication and vaccination programme. The farm units had occasional cases of various pig health problems, such as virus infections and pneumonia. The farmer noticed some piglets between 2 and 5 weeks old were sneezing and had a nasal discharge (Fig. 7.2i). Close inspection indicated that several affected piglets had copious nasal discharge and strong violent sneezing. The nasal discharge was voluminous and varied from a sticky mucoid form to a more cheese-like, purulent form. These piglets had difficulty breathing easily and used their mouths to inhale air. Some pigs also had a watery eye discharge and some had swelling around the throat. Only a few of the affected piglets died during the period of sick and sneezing pigs. At autopsy of some of the badly affected piglets, the nasal cavity was opened with a saw and noted to be filled with the cheese-like pus and exudates (Fig. 7.2ii).

**Key Features**

- Piglets with mucoid and cheese-like nasal exudate.

**7.2a.** What is this problem?

**7.2b.** What control measures may assist the herd?

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**Fig. 7.2i.** Piglets with nasal discharge and difficulty breathing.
7.2 Comments

7.2a. This is a viral infection of the nasal cavity (rhinitis) of pigs known as cytomegalovirus or inclusion body rhinitis. It is a rare clinical problem, because any pig that is infected with this virus after the age of 3 weeks old will only develop an inapparent infection with a life-long immunity. So for a clinical problem to occur on a pig farm requires that this virus infection moves from one infected group to a group of naïve piglets, younger than 3 weeks old. So the clinical problems of cytomegalovirus rhinitis, as described in the case study, will only arise sporadically on farms that may have been isolated or somehow become naïve to the virus. On some farms, piglets may be born with a more severe generalized form of the cytomegalovirus infection.

7.2b. Some affected piglets may continue to show clinical signs and purulent rhinitis for several weeks, after the initial cases at 2–5 weeks old. There is no vaccine and no specific control measures. The clinical problem will usually dissipate, so no specific action is required in the face of cytomegalovirus infections.

Fig. 7.2ii. Nasal cavity filled with mucoid and purulent cheese–like exudate.
7.3 Case Study

The farmer operated a large breeder and nursery farm system, in a region with many other pig farms nearby. The farm had a range of ongoing health problems, including swine fever and PRRS, which were partly controlled by vaccination programmes. The farm was located in a region that had numerous infections with foot-and-mouth disease (FMD) virus in pig farms and other livestock, such as neighbourhood cattle and goats. FMD was most common during the rainy season, when there were many movements of infected cattle. The farmer had previously had occasional outbreaks of FMD lesions on the feet of the pigs, but these were now controlled by a vaccination programme. The farmer noticed that during one rainy season, many of the breeder sows became lethargic and had a poor appetite. Many of these sows had mucoid nasal discharges and some were sneezing and had lesions on their snout (Fig. 7.3i). The affected sows lost condition and produced lower amounts of milk, but few deaths were noted. Close inspection indicated localized ulcerative lesions on the snouts of these older sows and finisher pigs (Fig. 7.3ii).

Key Features

- Pig farm in a region with a high level of FMD infections.
- Snout lesions on older pigs.

7.3a. What is this problem?
7.3b. What control measures may assist the herd?

Fig. 7.3i. Older pig with snout lesions and nasal discharge.
7.3 Comments

7.3a. These are moderate snout lesions and nasal irritation due to FMD in pigs. This syndrome, rather than severe foot or mouth lesions, is generally seen in sows or other animals that only have partial immunity. The sows may have some immunity from a vaccination programme for FMD. However, there is inevitably some variation in quality of FMD vaccines and vaccine storage and usage may not be optimal on all farms, leading to some sows with weaker immunity. Also, various strains or serotypes of FMD virus occur, which may lead to little or no cross-protection if the FMD vaccine strain is a different form of the virus.

Breeding sows will tend to have some innate resistance to FMD and may only show milder lesions, even in the face of a challenge from a high dose of FMD virus. High levels of FMD may circulate in regions with many infected farms, especially in certain seasons, such as rainy seasons when infected animals may move between regions. The infected pigs can amplify the virus and have huge amounts of virus in their expired breath. This can lead to FMD virus aerosols appearing over many pig farms and spreading to neighbourhood farms.

7.3b. FMD is highly contagious and is on the OIE list A of international trade. Any suspicion of FMD should lead to the farmer calling the government authorities, who may stop all movement of people and animals on and off the farm. Samples of lesions, other tissues and blood samples must be sent to designated laboratories in secure packaging for virus isolation and identification.

Fig. 7.3ii. Close up of snout lesions and nasal discharge in sow.
The farmer operated an established medium-sized breeder, nursery and finisher farm, with various older buildings on a single site. The farmer had maintained a breeding and nursery programme with his pigs for many years, and often purchased replacement gilts and pregnant females from other smaller farms. The farmer used a minimal medication and vaccination programme. The farmer noticed that several groups of nursery pigs had sneezing and nasal discharges. Close inspection indicated that numerous pigs in some groups at 6–12 weeks old were snorting and sneezing. Many pigs had a serous to thick mucoid nasal discharge, and some pigs had bloody mixtures in this sneezing nasal discharge (Fig. 7.4i). There were also pigs with eye discharges, leading to dirty discoloured hair and skin below their eyes. Some of the pigs had some difficulty in closing their mouths properly. The pigs that had been affected for longer periods were growing slowly and some had noticeable deformities of their nose with a wrinkled nose or a twisted nose and snout (Fig. 7.4ii).

**Key Features**

- Nursery pigs with sneezing and mucoid-bloody nasal discharges.
- Nursery pigs with twisted nose and snout.

**7.4a.** What is this problem?

**7.4b.** What control measures may assist this herd?
7.4 Comments

7.4a. This is progressive atrophic rhinitis, which is a bacterial disease of pigs. It is unusual in that it is caused by a combination of two bacteria working together, *Pasteurella multocida* type D and *Bordetella bronchiseptica*. It is also unusual in that these bacteria have toxins that can specifically attack the bones and cartilage of the nasal turbinate bones. Most bacteria and viruses only attack soft tissues. The damage to the nasal bones leads to the highly distinctive twisting and wrinkling of the nose of affected pigs – enabling these pigs to sniff around corners. This disease was quite common on many farms up until the 1990s. However, this disease is now rare, for two reasons. First, there are many effective commercial vaccines that provide protection against the two causative bacteria. Secondly, there are now many lines and breeds of gilts and replacement pigs, which are free of the disease and are certified free. The disease is now mainly seen on older farms where piglets are derived from various sources of non-vaccinated gilts and are mixed together.

7.4b. The affected pigs may be treated with antibiotics, such as amoxicillin, that may control the two causative bacteria. In affected farms, the extent of damage to the nose may be examined in dead pigs at the slaughterhouse, by using a saw to cut across the upper face, at the level of the first premolar tooth. Use of commercial vaccines will usually control and prevent new outbreaks on farms that are positive. Restocking of the farm with pigs that are clean of the disease will lead to disappearance of the disease. The use of vaccines and restocking with these clean pigs means that a farm can become free of this disease and it seems to rarely return.
7.5 Case Study

The farmer operated an established nursery and finisher farm system, with groups of pigs housed in several older buildings (Fig. 7.5i). The ventilation and manure control systems on some of these buildings were becoming outdated and difficult to repair. Large groups of grower pigs were housed in the closed and dusty sheds in the colder winter months, on slatted floors, over deep manure pits and tanks that were now full of older slurry (Fig. 7.5ii). The farmer had not cleaned these manure pits or tanks for several years. The farmer noticed that many of these indoor pigs were sniffing and sneezing and had eye and nasal discharges. The hospital pens in these closed buildings had many pigs and the level of pig mortality in these buildings had increased during the winter months, with various cases of pneumonia and sick pigs. The farm workers also complained that these buildings were dusty and smelly and that if they stayed in the buildings for more than an hour, they also developed a nasal sniff and watery eyes.

Key Features

- Poorly ventilated and dusty, closed buildings.
- Nasal and eye discharges in pigs over full manure pits.

7.5a. What is this problem?
7.5b. What control measures may assist the herd?
7.5 Comments

7.5a. These are direct irritations of the upper respiratory tract caused by building dust and gases arising from manure pits in poorly ventilated buildings. The pigs in close contact with the dust and gases will suffer if the buildings are not properly ventilated to allow fresh air to enter on a regular basis. Besides the problems of excessive dust in closed pig farm buildings, there are two main gases that can arise from manure pits and irritate pigs and farm workers by direct irritation of nasal passages. The first gas is ammonia (NH₃). This is a common odorous gas found in pig environments, derived from decomposing slurry. At levels above 50 ppm inside a building, it irritates the mucosa of the eyes and nose. Repeated and prolonged exposure inside buildings will lead to sniffing and discharges in pigs and farm workers. The second gas is hydrogen sulfide (H₂S), which is also an odorous gas derived from decomposing slurry, particularly in tanks holding liquid manure. There may be a large release of toxic H₂S (rotten egg gas) whenever these tanks are agitated or removed. It is therefore vital to exclude any pigs and people from buildings and areas above these tanks, when these tanks are agitated or handled. Death can occur quickly in pigs or humans if the level of H₂S gas in the atmosphere goes above 200 ppm. A further gas that can occur in manure pits is methane (CH₄). This can reach high and foamy levels in deep manure pits if the feed of the pigs contains large amounts of dried distiller’s grain extracts (DDGS). These soluble extracts are by-products derived from the fuel ethanol industry, which are placed into pig feeds. CH₄ is both an irritant and an explosive so the foamy CH₄ gas may catch fire or explode if an electrical spark occurs nearby.

7.5b. This is a farm management problem that is best addressed by attention to adequate safety procedures, farm maintenance and an ongoing building, manure-pit and ventilation-system replacement strategy. It is important to maintain proper ventilation and manure-pit operations, not only for the pigs but for farm-worker safety.

Fig. 7.5ii. Old sheds with workers in full manure pits.