

VACCINATION

Background

Vaccination has long been a key component of disease prevention in pigs and the reduction in the use of antibiotics on farm which in the UK population fell by a further 18% to 72mg/kg PCU to the year ending December 2022 has been helped by targeted use of vaccines to control disease.

We have become so used to using vaccines that we often forget how they work. In recent history with Covid infection, all the world became 'experts' on vaccination. In Covid these were Messenger RNA (mRNA) vaccines. mRNA is a molecule that is necessary for protein production rather than an actual bacteria or virus. In animal medicine, all licensed vaccines are live (attenuated) or killed vaccines although the Pharmaceutical companies are working on mRNA and it is likely that we may have some in the future.

There are many different vaccination strategies that we use to protect pigs and the timing of vaccines is essential in protection.

How vaccines work

Vaccines are targeted to stimulate an immune reaction which primes the animal's immune system to respond more quickly and effectively to any future infection against the specific pathogen. It doesn't prevent future infection although it may be used to control the level of disease and therefore the challenge of the organism in the environment (we use this in mass vaccination with live PRRS vaccine).

Targeting Protection

There are several targets for protection of pigs;

Protecting the individual – This is by direct vaccination and would need to be done with one (live vaccine) or two doses (killed vaccine typically) a least two weeks ahead of the time of challenge. (We use with Mycoplasma and PCV 2 vaccine).

Protection of the unborn litter - This is by vaccination of the sow ahead of service. (The classic long standing vaccination in this way would be by parvovirus vaccination of sows and gilts which protects the developing foetus from the virus).

Protection of the newborn – This is done by vaccination of the sow in mid to late pregnancy to increase the amount of antibodies in the colostrum to protect the naïve piglets. There is no direct transfer of circulating antibodies into the foetus across the placenta (unlike humans).

How we get vaccines into pigs

With so much cost involved with vaccines used, it is vital that we get the most out of them. They need to be administered as advised and not otherwise and there are currently four ways that we can do this.

Subcutaneous injection – with a short needle through the skin.

Intramuscular injection – aim for the neck muscle behind the ear – with an appropriate needle length (15mm piglet, 40mm sow).

Intradermal - needless into the skin – lower risk of abscess formation and less stressful for pig.

Oral vaccine – usually live vaccines – remember additions present in the mains water (eg Chlorine) can kill the vaccine before it gets into the pig.

All vaccines come with a recommendation on how it is used and this needs to be complied with if it is to work.

Vaccine Handling

For a vaccine to work in a pig it needs to be undamaged ahead of entry into the pig and used as described above in the way it was intended. Of particular importance is storage.

All vaccines should be kept refrigerated.

As we are in the middle of winter, it is important to remember that fridges are designed to keep products cool (between 4c and 8c for vaccines). They cannot keep the cold out in sub zero temperatures. Make sure fridges are not sited in unheated areas in winter.

Likewise in summer it is important that fridges are capable of maintaining 4c to 8c in high temperatures if we experience a heat wave.

Ensure that fridges are not overfull. It is essential that air can circulate around a fridge. If the cardboard packaging is damp and wet, it is likely that the vaccine is frozen and it is then useless.

Handling of pigs

Having a system to vaccinate pigs which minimise stress on pigs and staff is essential if we are to get the best out our vaccines. Consider setting up a bespoke handling system. These can often make life much easier

Hygiene

Ensure pigs are clean. Never inject into a site visible contaminated with faeces. This will often resulting abscess formation and vaccine failure.

Needles

Where needles are used, they should be an appropriate size for the pig and as small a bore as possible. Needles must be sterile and sharp. Where litters are being vaccinated,, a new needle should be used for each litter and if groups vaccinated, then a new needle for every 5 to 20 pigs (the older the pig, the thicker the skin and the quicker the needle is damaged). Damaged needles introduce infection which can cause abscesses and result in vaccine failure.

Dose Rates

Often when using an automated syringe, the efficiency can become affected. It is not an unusual occurrence for extra vaccine to be left at the end of the day. This means that an insufficient dose may have been administered. Check that guns are delivering the correct targeted dose.

Vaccine Audit

There are many ways that can affect the efficiency of the vaccines that we use. Often this is inadvertent and historical (we have always done it that way). With the costs of failure high (both in vaccine and cost of uncontrolled disease) it is important that we do what we can to ensure our pigs are as well protected as possible and that we have the best return on investment possible.

We are in combination with one of our own suppliers running external vaccine audits which effectively looks at the whole process on each individual farm from supply through storage and to the point of pig vaccination. Let us know if you would like us to do an audit to check on this at your visit.

Regards and Happy New Year

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