

EFFECTIVE TREATMENT AND HANDLING OF POOR DOING PIGS

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ABSTRACT

Because no farm enterprise is immune to production or health challenges the poor doing pig inevitably makes its appearance in every barn. It is, therefore, important to have a plan in place for the early detection, treatment and handling of poor doing pigs. In the event that there is no reasonable prospect of recovery or salvage then there must be a plan for timely euthanasia using a technique that meets current animal care standards.

INTRODUCTION

As margins continue to tighten in the pork industry the tolerance for increased production costs associated with increased variability of growth, off sort sales and death loss continues to decline. The best way to minimize the impact of poor doing pigs is to prevent the occurrence of these pigs in the first place. Prevention is closely associated with procedures related to the optimization of post weaning feed intake. By maintaining an ideal environment, the demands on the piglet's body reserves are minimized as the pig learns to eat solid feed. The treatments for poor doing pigs most commonly involve procedures that will stimulate the pig to eat as well as any medical interventions.

AT RISK PIGLETS

At risk piglets are piglets at weaning that have an increased risk of becoming a poor doing pig. The increased risk may be associated with very young weaning age, low weaning weights or disease. These pigs need to be placed directly into a special needs pen where they can be kept warm and receive a little tender loving care. It is important to treat any incoming piglets that are sick. It is helpful to coordinate with the farrowing room staff so that treatments that were started in farrowing can be completed after arrival at the nursery. Not all of these disadvantaged pigs need to be medicated.

Feed

Most pigs will make the transition from milk to solid feed without any problems. If the transition is handled poorly the piglet will lose weight as it catabolizes fat and muscle for maintenance. If the process goes well then the piglet continues to grow and meet its targeted weight gain over the first week. When sows are not milking well most piglets will be very

familiar with the concept of eating solid feed as they will have had great motivation to consume spilled sow feed or creep feed. When the sows are milking very well the piglets will have had little need or desire to consume solid feed. These piglets can be a greater challenge to get started on to solid feed at weaning. A properly managed creep feed program will greatly assist in the post weaning transition period.

Provide clean fresh feed to the weaned pig on a regular basis. Start with a relatively complex nutrient dense ration. This feed should be fed on a controlled basis. The controlled feeding should not be misinterpreted as limit feeding. In controlled feeding the feed is supplied on a “just in time” delivery basis in order to maintain freshness and therefore palatability.

The largest and oldest pigs are often started directly on the phase 2 feed or a blend of phase 1 and 2. By starting these larger pigs directly on the phase 2 feed it is then possible to hold more of the phase 1 feed in reserve for the smallest pigs. These smaller pigs may receive 2.5 kg more of the phase 1 feed than the average pig. This feed can be saved in a covered cart or feed bag.

A simple rule of thumb for feeding frequency for weaned pigs is the “4,4,4” rule. Provide four feedings per day for four days post weaning for a pig weaned at four weeks of age. If pigs are weaned at a younger age the number of feedings per day can be increased. For example, a ten day old piglet would normally be fed 6 times per day. The frequent feeding of piglets in “piggy barrels” in farrowing rooms is a testament to the effectiveness of frequent feeding in the young weaned pig. The frequent feeding in the farrowing room is associated with the frequent vocalization of the sow that causes the piglets in the barrels to get up and eat solid feed from the trough at the same time that other piglets in the room are nursing.

Increased frequency of feeding is more easily achieved in farrow to finish operations where staff is available to visit the nursery many times throughout the day. In contract nurseries the operator may be doing chores in the morning and evening but are often working off farm through the day. This can present some challenges in optimising the number of feedings per day. No matter how many feedings are available, the goal is to have the feed completely cleaned up between feedings. If only two feedings per day are available you may simply have to make the best of it. Be prepared, however, to detect and respond to “stall out” pigs as soon as possible.

In order to calculate the targeted feed placement at each feeding start by establishing the expected feed conversion and the average daily gain for the feeds and genetics to be used. Given this information the average daily feed intake can then be estimated. This can be used to estimate the targeted total daily feed intake per group. This can then be divided into the number of feedings per day. Relatively small amounts of feed are required at each feeding for the newly weaned pig. Less is more in feeding the weaned piglet. Overfeeding will result in stale feed and less group activity at the feeder. Feed intake will gradually decrease as the feed becomes less palatable over time. When the less palatable feed is finally consumed and is then replaced with palatable feed there is a risk of engorgement.

The first feeds are usually supplied in sealed plastic lined bags. These bags should be kept closed when not in use and stored in a dry, cool, odour free place. This will help to keep the feed fresh. The increased freshness of feed will improve palatability and feed intake.

Group feeding of piglets for a few days after weaning will greatly assist in getting the greatest percentage of the pigs started on solid feed. This group feeding imitates the piglet's group feeding behaviour in the farrowing room. A small proportion of the first feed is usually provided in a tray style feeder. If a tray style feeder is not available then some feed can be placed on a solid floor, heat pad or comfort mat. The piglets may waste some of this feed, but this small amount of wasted feed is a trade off against getting the piglets accustomed to solid feed. These tray feeders or mats increase the available feeding space making it possible for all pigs to eat at the same time. The bulk of the feed is placed into the feed trough of the hopper style feeder.

A predetermined amount of feed can be more easily delivered using a scoop that has been calibrated according to the weight to volume ratio of the feed. The scoop size should be matched to both the targeted intakes per group and the common increments of feed that will occur over the first few days. Avoid using a scoop that is overly large as this will often result in over and under feeding except in the hands of a very skilled operator. All tray feeders should have some sort of fastener so that they can be held in place when empty. These feeders should be cleaned and disinfected before being moved to another pen.

Track the feeding quantities by group on a card or some other temporary recording device. A clothespin can be moved along a series of marks that are placed about half an inch apart on the feeder. The marks on the feeder correspond to the number of scoops being placed in the feeder at each feeding. In this way anyone that is feeding can feed the appropriate amount on a pen by pen basis. If the piglets do not clean up all of their feed at the previous feeding, then the amount they are fed in the subsequent feeding is reviewed and possibly reduced. Limits can be placed on how rapidly the feed may be increased depending on previous history. Rapid increases in intake that could lead to increased risk of stale feed should be avoided. By using the recording system you can more closely track feed disappearance by group and the amount of feed placed in the feeder will be more closely matched to actual intakes.

Remove any spoiled feed or accumulations of fines from the feeders at least daily. Feeders should be adjusted as necessary to control feed wastage and to monitor feed intakes. Often the feeder openings are increased at weaning or agitators are loosened off to make it easier for small pigs to access the feed. The feed system drop tubes should be adjusted before filling the feeders. When the pigs enter the room the drop tubes should be set close to the bottom of the feeder so that the feed is kept fresh. Feeders should be adjusted such that 30% to 40% of the feed trough or pan is visible. After the pigs are eating well this can be tightened such that 50 % of the bottom of the trough is visible.

Once the pigs have made the transition from sows milk to solid feed at weaning the pigs are then gradually switched to free choice feeding. The objective at this point is to keep the feed fresh and uniformly available from the self-feeders. As the pigs grow the complexity and density of the ration will decrease.

Water

Ensure adequate water quality and appropriate water flow. If the height of the water drinker is adjustable it should be set to a height slightly above the back of the pig. Record the water disappearance on a daily basis if a water metre is available. Ensure proper operation of the medicator and refill stock solutions as necessary. If protocol dictates, stock solutions should be mixed and purged into the lines in order to treat the piglets effectively as soon as they need it. If the pigs exit the nursery at 28 to 32 kg then aim for 0.75 liter per minute water flow. If water temperatures are extremely cold the water can be preheated by running the water through coils of water line inside the barn.

Environment

The duration of lighting and the age at which pigs are weaned can influence their immune system and weight gains. Pigs that were weaned at 28 days of age gained more weight with 16 hours of light per day during the period from weaning to 10 weeks of age, compared to control pigs receiving only eight hours of light per day. On the first day, however, you can shut off all lights when leaving the barn as this will calm the pigs after a heavy day of activity including the stress of weaning, movement, vaccination and sorting. All lighting should allow for easy observation of the pigs. Without proper lighting it will be difficult to detect stall outs.

Aim for a relative humidity (RH) of 65% in the spring, winter and fall. This will allow for improved disease control by reducing bacterial populations in the air. The RH can be measured with a relatively inexpensive RH measuring device. Readings above 65% will indicate excessive moisture and increased bacterial disease loads. Readings below 60% will indicate excessive ventilation rates with a risk of chilling related to increased air speeds. The lower humidity will also dry out the respiratory passage making it more difficult for the pigs to clear respiratory infections from their lungs.

A static pressure manometer can be used to check ventilation efficiency. Aim for 0.04 inches of static pressure in the barn in the summer. This will allow for the optimum exchange rate of air that will keep the pigs comfortable in the summer. Aim for 0.08 inches in the winter. This will allow for the adequate inlet air speed in winter. Proper static pressure maintenance in the winter is only possible when the room is properly sealed.

Ensure that the ventilation controllers are set according to targeted entry and exit levels with an appropriate step down program. Some mercury max / min thermometers will help to establish if the digital probe is accurate. When the electronic probe connections become corroded the readings on the digital controller may not accurately reflect the true barn temperatures.

The growing pig's body posture and behavior will tell you more about whether or not they are comfortable than the thermostat readings. The pig's behavior takes into account effective temperatures as mitigated by conduction, convection, radiation and evaporative heat transfer.

Provide a warm, dry, and draft free environment in a properly insulated room. This includes both the walls and the ceiling. Do not be afraid to top dress with additional heat in order to maintain air quality including gases, dust, humidity and temperature. Avoid excessive variability in temperature and humidity. Floor heating can take approximately 24 hours to reach normal operating temperatures. The thermostats that control these pads should be adjusted and setup in advance of receiving piglets and are usually warmed to 32°C where the room temp is 25°C. The exhaust fans should be set to a minimum ventilation rate prior to the arrival of the piglets. Return to the facility several hours after placement as a precautionary visit to check temperatures and the comfort level of the piglets and make any environmental adjustments as necessary. Excessive drafts should be identified and corrected as soon as possible. All ventilation covers should be ready for use and in their proper location and position. Backdraft boxes for the first and or second stage fans should be mounted in their proper location for the winter months.

Create a "micro-environment" for the newly weaned pig if and when specific sub-populations require warmer temperatures than the rest of their roommates. A microenvironment can be achieved with the addition of solid pen partitions in the sleeping area. A movable plywood or plastic lid with a valence and a heat lamp can be used to increase the temperature within the sleeping area. These solid dividers will also help to prevent drafts in the sleeping area. The area of the pen close to the water drinker and feeder will be the activity area of the pen. A comfort board can be used to provide a comfortable sleeping area with reduced updrafts and less contact with cold floors. If the pigs start to manure on the comfort board then it is normally removed and washed and may not be replaced if the pigs appear comfortable.

Daily Inspections

Careful observation of each pig allows the pigs to tell if there is a problem. Perform a routine check of the pigs every morning and late afternoon. The comfort of the pig can be assessed by careful observation of the pig's laying patterns. A rule of thumb is that half of the pigs should be sitting up and the other half lying on their sides. If all of the pigs are lying on their sides it is excessively warm. If all are sitting straight up, hunched up, piling or shivering then the pigs are too cool.

As long as there are no active diseases that may be transmitted from pen to pen via boots you can walk through the pens looking for sick or stall out pigs. Walk through the pen in a calm manner using a circular route around the outside perimeter of the pen watching for poor doing pigs as they parade past. It is important to note any piglets that do not rise to the stimulus of being fed. The piglets that are not up and active should be inspected in order to determine the problem and allow for the appropriate action to fix the problem.

Sick pigs should be identified and treated promptly. A medication kit that can be brought into the room will make it easier to attend to health issues immediately when they are detected. This kit should contain important items such as syringes, needles, antibiotics, and markers. The operator should also have a notebook and pen to document specific treatments.

A treatment guideline for common problems should be established. Problems can be assessed through a decision tree. For example, the type of problem could be initially divided into two categories such as scouring or not scouring. If the problem is determined to be scouring then further questions such as blood or no blood in the manure can be used to point towards a specific cause and therefore treatment. If the piglet is not scouring then the decision tree could be further classified by including assessments of coughing or not coughing, skin condition or no skin condition, etc. The treatment guideline should discuss injectable, topical, feed or water treatments. Sick pigs may be removed from the group immediately if very sick or if they present a significant risk of infection to their pen mates. Less severely affected animals may remain in the pen but should be moved to a hospital pen if they fail to thrive.

Gruel Feeding

At risk pigs or normal pigs that are having trouble adjusting to solid feed can benefit from a technique such as gruel feeding. This is a very effective way to encourage at risk or stall out pigs to consume feed. The gruel feed is a mixture of complex starter ration that is soaked in warm water prior to feeding. The gruel feed is usually fed three times per day. The feedings usually occur early in the morning, at noon and then again at the end of the day. The gruel feeding can be provided for 5 to 7 days post entry. The gruel should be consumed within about 15 minutes. Gruel fed pigs should also be given small amounts of dry fresh feed in their regular feeders.

On occasion the water drinkers may be turned off so that the only source of water is the water contained in the gruel. The pigs are then more likely to consume the gruel in order to satisfy their thirst. The piglet's water intake for the day is calculated by multiplying the pig's body weight in kilograms by 10%. For example, if the pig weighs 6.5 kg it will drink approximately 0.65 kg of water or 0.650 liters of water per day. This amount of water is divided into three feedings and mixed with 1/3 of the pigs expected daily feed intake. The piglet should be eating well within a few days.

Hand Feeding

At risk pigs or stall out pigs can be fed a small amount of moistened feed by hand. A small handful of phase 1 starter is wetted. The soft pellets are placed in the piglet's mouth. A small 12 cc syringe with the end cut off can be used to push a more gruel-like mixture into the piglet's mouth. When the mixture contacts the tongue it will stimulate a swallowing reflex. The pig should be placed near the feeder so that they will associate the hand feeding with the feeder. As little as 20 to 30 grams of feed can be sufficient to prevent a piglet from starvation. A hypoglycaemic pig will appear quite dull. They may become increasingly disoriented as their blood sugar drops.

“Overstock and Sort”

“The sick are the greatest challenge to the healthy!” “Overstock and sort” refers to the practice of placing 5 to 15% more pigs in the pens when filling the room. Because only the target numbers for the nursery are placed in total there are a number of empty pens that are

left at the beginning of the nursery stage. As non-competitive pigs or sick pigs arise, they are removed from the overstocked pens and placed into a sort pen or hospital/recovery pen. This procedure allows for a non-competitive environment for the least competitive pigs. This practice also allows for removing or streaming the sick pigs from the group.

This practice subsequently reduces the disease challenge to the “at risk” pigs in the pen. The 5 to 15% is adjusted based on genetic variability of growth and expected incidence of disease. If variability or disease is less than anticipated then the pens will still need to be thinned down before the end of the batch in order to allow for the growth of the pigs.

Sort Pens

Sort pens are the pens that are left empty when the barn is filled so that small noncompetitive pigs can be removed from the regular pens where they were originally placed. The pigs that are removed to the sort pen are usually healthy but simply noncompetitive pigs. If these pigs stay in with the regular pigs they will probably become sick. Some operators simply trade these pigs between pens in order to make the pen groups more uniform by size. This practice of swapping pigs is very disruptive to the pen social order and is more likely to spread disease.

Hospital Pen / Recovery Pen

Hospital pens are used to house acutely ill piglets that present a significant infective challenge to their pen mates or need some tender loving care away from the more aggressive healthy pigs. These pigs often successfully recover from their various ailments, and they can then be transferred to the recovery pen.

The hospital pen is usually located in the warmest and the most draft free area of the room. These hospital pens should be located on interior walls, as this will reduce the heat loss due to radiation. The hospital pen is usually equipped with supplemental heat in the form of a heat lamp. A third of the pen should be covered with a lid in order to create a warm, draft-free comfort zone. The front of the lid should have a valence fastened to the underside of the cover. The valence should descend 10 to 12" below the level of the lid in order to hold in the warm air.

The water nipples can be used to dispense medicated water to the piglets or the supplemental tray feeder can be used to distribute treated drinking water with medications, electrolytes and vitamins.

When the pig has sufficiently recovered it can be transferred to the recovery pen. If fully recovered the pig can be placed back into a regular pen especially with large group housing. In many cases the recovered pigs are kept intact as a group even as they are moved to the finishing barn.

Euthanasia

When treatments, segregation for extra care or humane slaughter are not acceptable or if the pig is experiencing abnormal intensity or duration of pain then the pig should be euthanized. Once a decision has been made that euthanasia is the best answer then the most appropriate technique must be selected. The decision process must take into account the needs of the people, the pig and society as a whole. There are a relatively limited number of practical options for euthanasia in the nursery. A few of the most common alternatives are presented here.

Captive bolt pistol trauma. An explosive charge is used in a specially designed pistol to fire a “bolt” into the cranium. Gun powder cartridges, compressed air or a spring under tension may be used to drive the bolt into an appropriate area of the top of the head/brain with sufficient force such that the animal is rendered unconscious instantaneously. In addition, there may be sufficient trauma to the brain such that respiration and cardiac output cease and the animal dies without regaining consciousness.

Alternatively the trauma may not have been sufficient to cause respiration or cardiac output to cease. The animal may regain consciousness if no other action is taken. If respiration and cardiac output do not cease then the procedure must be followed immediately by an additional procedure such as exsanguination. Exsanguination is more commonly required in larger animals following the use of a captive bolt pistol because of poor penetration to the brain. A high degree of skill is required in order to carry out this procedure. The animal must be properly restrained in order to ensure proper contact and targeting of the captive bolt pistol. The pistol is directed at the midline of the forehead, one inch above the level of the eyes, and the pistol is most often directed upwards at approximately 20° towards the brain. Some adjustment to targeting may be required because of slight anatomical differences between breeds. As the pig grows, the position of the brain relative to the eye remains relatively static as the optic nerve stops growing relatively early in life. It is important to note that the power that must be generated by the cartridge will vary based on the size of the pig to be euthanized. Cartridge strength may diminish over time if the powder is exposed to moisture. “Keep your powder dry!” The equipment must be cleaned on a routine basis as the explosive charge is very corrosive. The round cup shaped cutting edge of the bolt must be maintained in order to achieve maximum penetration. It has been reported that some producers have modified the internal collars on some equipment to allow for greater penetration of the cranium but the safety implications of this modification are not defined. If the procedure is carried out effectively the animal should collapse immediately. This is followed by a 15 second period of spasm and then by “galloping” movements of the legs of increasing frequency.

Advantages:

- When performed with properly maintained equipment, proper charge selection and targeting this method can be quick, humane and cost efficient.

Disadvantages:

- If improperly performed can be inhumane. Some types of captive bolt pistols with less powerful charges will provide poor repeatability in larger animals.

- Aesthetically displeasing for personnel performing or observing the procedure because of the trauma itself as well as the involuntary thrashing.
- Accidental or malicious discharge can be dangerous to farm staff.
- Care must be taken to accurately and safely cut into the jugular and carotid artery or the axillary blood vessels.
- Some cleanup of blood required.
- Requires some investment in equipment (\$200 to \$1000), cartridges and maintenance.

Carbon dioxide gas. Carbon dioxide (CO₂) is an anaesthetic gas that causes depression of the central nervous system via a lowering of the pH in brain tissue. Inhalation of 60 % CO₂ will result in unconsciousness within 45 seconds and respiratory arrest within 5 minutes. Inhalation of CO₂ in concentrations of 7.5% increases the pain threshold while higher concentrations of CO₂ have a more rapid anesthetic effect. Pure CO₂ is an odorless gas that is heavier than air. Animals do not detect the CO₂ immediately and because of this its depressant action takes place almost unnoticed. The chamber design for exposing the pig to the CO₂ should allow for precharging with CO₂ prior to placing the pig in the chamber. The chamber should be easily cleaned with easy access for removal of the dead animal. In order to minimize cost and maintain effectiveness there should be minimal loss of CO₂ from the chamber.

Because of the container size needed, it is not normally practical to do pigs over 70 to 80 pounds. A plastic garbage pail type bucket with a lid could be used. Carbon dioxide is heavier than air so it should enter at the top with any air vented from the bottom moving to a non-occupied area. Compressed CO₂ gas in cylinders is the most common source. Inflow to a euthanizing chamber needs to be regulated with compressed CO₂. The optimal flow rate appears to be one that will displace approximately 20% of chamber volume per minute. When using compressed CO₂, O₂ can be added providing a mix of 30% O₂ and 70% CO₂ such that the discomfort associated with the lack of oxygen prior to unconsciousness is minimized. The area must be well ventilated. Animals should remain in this atmosphere for 5 minutes until they are dead. Effective CO₂ anaesthesia includes the elimination of all withdrawal and palpebral reflexes. The use of levels of CO₂ above 30% may cause some nasal irritation prior to unconsciousness. CO₂ generated by dry ice or fire extinguishers is unacceptable.

Advantages:

- The use of CO₂ is well understood.
- CO₂ gas can be easily purchased in cylinders.
- It is nonflammable and non-explosive so it poses minimal hazards to farm staff.
- CO₂ is widely used for humane slaughter of swine for human consumption.

Disadvantages:

- The main disadvantage to CO₂ is that it is heavier than air so incomplete filling of the chamber may permit a tall or climbing animal to avoid exposure and survive.
- In immature animals, the time required for euthanasia may be substantially prolonged.

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