



Welfare Issues at the Time of Weaning

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Objectives

Why is weaning so challenging to individual pigs?

Challenges that impinge upon the welfare of the pig at weaning include:

- Agnostic behaviors,
- Rearing conditions,
- Movement from the lactation to the nursery environment,
- Nutritional disruption.

Introduction

Defining what is meant by pig welfare can be challenging. Still, one knows adequate or inadequate welfare when it is observed. Sick or injured pigs clearly have poor welfare. Pigs in an inadequate environment are at risk to experience poor welfare. Weaning is one of the most traumatic events that piglets experience and includes numerous acute and chronic stressors including separation from their mother, changes in their nutritional supply and accommodation, mixing of unfamiliar pigs, and transportation [1–5].

Challenges for the recently weaned pig

Agonistic behaviors and the olfactory environment

Mixing unfamiliar piglets is a common practice at weaning that often results in aggressive interactions of varying intensities and durations [6, 7]. The olfactory environment (what the pig can smell) has been noted to be a sense that the pig uses extensively. If the olfactory environment could be manipulated to result in a reduction in negative behaviors (aggression) and an increase in positive behaviors (eating and drinking) at the time of weaning this would result in an increase in an individual pig's welfare.

McGlone and others showed that the odor of dominant pigs reduced agonistic behaviors in other weaned piglets [6]. McGlone and Anderson exposed weaning piglets to maternal pheromone or a placebo control and they measured post-weaning behavior and performance. Maternal pheromone was applied to the feeder or the snout of weaned piglets. Piglet post-weaning feeding behavior was increased and agonistic behaviors were decreased. Weight gain was also stimulated and the piglets were about 2.2 lbs (1kg) heavier 4 weeks after weaning when exposed to the maternal pheromone at weaning [8].

Rearing conditions

The rearing condition for piglets may have long-term effects on social relationships that piglets are able to form. It has been reported that indoor born and raised piglets display greater activity at the udder and suckle more compared to outdoor born piglets [9]. At weaning, outdoor-born piglets feed more than indoor-born piglets. In addition, indoor-born piglets were more likely to engage in aggression compared to those born outdoors; but nose contact, belly nosing, and tail biting were not different [10, 11]. These differences in aggression could be related to the piglets' social experiences. Outdoor piglets can interact with foreign piglets of different ages and sizes; and the quality of the interaction may be different, with outdoor piglets having more space to resolve conflicts. Consequently following weaning, the outdoor-born piglet may be able to establish hierarchies without resorting to aggression.

Movement from the lactation to the nursery environment

Usually at weaning, piglets are moved and mixed to standardize size and/or gender in a nursery barn to make available the farrowing stalls for the next group of sows. The idea to wean by removing the sow from the farrowing stall and leaving the piglets in place is not a new one [12] but is rarely used, except perhaps in the Swedish multi-suckling systems, where it is usual practice to remove the sows at weaning and keep the piglets in the multi-suckling pen up to about 55 lb (25 kg) of body weight. There are a few studies available to determine the effects of movement at weaning on piglet welfare. Although Rantzer and Svendsen [13] have highlighted concerns with hygiene and morbidity when leaving piglets in the home pen at weaning, other studies have shown advantages compared to moving the litter. For example, leaving some litters in the farrowing pen compared to others being moved to flat decks resulted in more pen-mate manipulation including tail-biting [14] and higher aggression, decreased immunity, and elevated glucose levels for piglets that were moved [15].

Nutritional disruption

Prior to weaning, piglets have access to hourly meals of high quality readily digestible ingredients consisting of simple carbohydrates, proteins, and fats provided by the sow's milk [16]. At the time of weaning, piglets are faced with a radically different nutritional source - a pelleted ration with liquid being restricted to water. This dietary alteration effects gut local immune status, gut microflora [17, 18], and digestive enzyme activity. Combining this dietary change with an early weaning regime, problematic effects of delayed feeding, increased behavioral problems, and excessive drinking have been reported.

When the sow and her litter are kept intact and separated from others, there may be changes in certain parameters of nursing, such as a decrease in total nursing duration and an increase in the percentage of nursings terminated by the sow [19]. However, there is no change in the total number of successful nursings per day over a 4 to 5 week post-partum period. This is quite different from what occurs in the 'natural' situation and in other farrowing systems, such as those that allow the sow to get away from her litter or which allow sows and / or litters to mix prior to weaning. In a semi-natural enclosure, weaning is a very gradual event, beginning within the first few weeks after parturition and ultimately being completed at 12 to 17 weeks [20-22]. Over that time period, the number of suckling events per hour decreases steadily from the 2nd week of lactation until the 10th week, and drops more steeply. The number of nursings initiated by the piglets and terminated by the sow increases, and more nursing occur with piglets missing [23].

With 'get-away' systems, the sow will increasingly choose to spend time away from her litter. In systems with mixing of sows and litters prior to weaning, there is some evidence that nursing frequency reduces over lactation compared to individually housed sows and litters. These differences in nursing behavior will subsequently impact how the piglets react to weaning when it is imposed. For those piglets with high reliance on nursing, the abrupt change from milk to only solid feed will have the greatest impact, resulting in a marked growth check as piglets' energy intake drops drastically albeit temporarily [24-26].

Associated with weaning are marked changes in the histology and biochemistry of the small intestine, such as villous atrophy and crypt hyperplasia [27]. The use of creep feed for piglets prior to weaning is contentious, and may have little effect for post-weaning feed intake or may not make the transition from milk to solid feed at weaning any easier. This is probably because of the different circumstances under which it may be offered. If it is offered to piglets in conventional individual farrowing systems weaned at 2 to 3 weeks of age, it is unlikely to be of much benefit as milk availability is likely to be consistently high up to the point of weaning. However, where piglets may be weaned at a later age or where the nursing frequency declines over lactation, creep feed may well help piglets contend with weaning. Pajor and others mea-

sured creep feed intake in piglets from day 10 to day 28 of lactation, and found that up to day 21, average intake was less than 0.8 ounces (5 g) per day, with large variation both between and within litters. From day 21 to day 28, average intake increased quite rapidly up to 2.2 ounces (63 g) per day, but it was the larger, more physically mature piglets which ate most; and there was no direct relationship between pre-weaning intake and post-weaning gain [28].

Summary

Several factors can influence pig welfare at weaning time. Some of these include aggressive behaviors, rearing conditions, change in health status, nutritional disruption, and change from the lactation to nursery environment. In addition, weaning age has a variety of impacts on the welfare of the nursery pig at weaning. The challenges at weaning must be addressed to provide the most welfare-friendly environment to the newly weaned pig. This will ultimately improve pig production measures, pig welfare, and enhance profitability.

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