

ANIMAL WELFARE

Title: Impact of duration of farrowing crate closure on sow welfare and piglet mortality – NPB #17-068

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SCIENTIFIC ABSTRACT: Concerns about the welfare of lactating sows housed in farrowing crates have emerged because crates physically restrict the sows and possibly compromise their behavior and comfort. The aim of the first experiment was to identify how the opening of a hinged farrowing crate on different days (4 or 7) post-farrowing impacts sow welfare. A total of 36 sows were studied. The sows were randomly allocated to 1 of 3 treatment groups: PC- crate remained closed until weaning (n = 13), T4- crate was opened on day 4 post-farrowing (n = 12), and T7- crate opened on day 7 post-farrowing (n = 11). Three different types of welfare indicators were used: behavioral (activity, posture and location-direction inside the pen), physical (udder and body lesions, lameness and body condition score) and physiological (salivary cortisol concentration). On days 3–8 post-farrowing, salivary samples were collected at 8:00 h and sow behavior captured by continuous video recording of each individual sow daily from 6:00 h to 18:00 h. Sow behavior was observed using instantaneous recording (with a 2-minute fixed sampling interval) and focal animal as the sampling route. Lameness and body condition score (BCS) were evaluated when the sows were moved to farrowing pens and again when they were weaned, while skin lesions were evaluated on those days as well as on days 4 and 7 post-farrowing. After opening the crates (either at 4 or 7 days post-farrowing), we observed that sows utilized the additional space provided to them. Sows exhibited a ~5 fold average increase in the number of different orientations and positions that they occupied in the pen after the crate was opened. Furthermore, sows also spent more time active and performing motivated behaviors such as interacting with their piglets and exploring the environment. Sows kept in pens with open crates also had less teats lesions on day 21 post farrowing compared to sows remaining in closed crates. Salivary cortisol concentration differed only on day 5 as the mean concentration for T4 was greater than T7, but neither differed from PC. The aim of the second experiment was to identify the

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effect of opening a hinged farrowing crate on piglet mortality and physical indicators of sow welfare. A total of

696 sows were studied. The sows were randomly allocated to the same treatment groups Experiment 1. Piglet mortality and four physical indicators of sow welfare were examined: body condition score (BCS), lameness, shoulder lesion and teat lesions, measured on loading day and the day before weaning. The total percentage of piglet mortality was higher for T4 litters than T7, but neither treatment differed from the control group. Laid on and low viability were the two most common reasons for piglet death with each comprising about 1/3 of the total mortality. The risk of piglets being laid on varied by treatment at different times during lactation. While no difference in the risk of being laid on was found in the period 1-3 days post farrowing when all crates were closed, this risk increased whenever the crate was opened. Perhaps unexpectedly the risk associated with several other causes of mortality also increased when the crates were opened at day 4 but not at day 7. We found no association between treatment and three of the sow physical welfare indicators evaluated in the study: BCS, lameness and shoulder sores, but we found a higher risk for teat lesions in PC sows at weaning. In summary, both behavioral and physical measures of welfare employed in this study indicate that the opening of a hinged farrowing crate contributes to improving the welfare of lactating sows. However, the piglet mortality data suggest that only opening the crate after 7 days post-farrowing, and thus avoiding the period when piglets are most vulnerable to crushing and other causes of death in the absence of a crate, has the potential to maintain total risk of mortality at levels similar to crated sows while still providing welfare improvements to the sow.