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Comparison of intra-dermal vs. intra-muscular vaccination for influenza in pigs

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With recent improvements in needle-free injector technology as well as the ever increasing need to reduce production costs in the North American swine industry two studies were developed to determine whether low dose intra-dermal injections of Swine Influenza Virus (SIV) vaccine could be used as an alternative to conventional full dose intramuscular injections of the same vaccine.

Study 1

A 2600 sow unit was chosen for study. 50 sows of random parity were enlisted in the trial, all of which were in the same gestation row and bred within the same week. On day 68 (average) of gestation every other sow and/or gilts in the gestation row chosen were injected with 2ml of an autogenous H3N2 Swine Influenza vaccine in the hip muscle with an automatic syringe and needle (N group). The remainder of the sows and gilts were vaccinated with 0.2ml of the same vaccine intra-dermally (ID group) in the skin covering the ham muscle (perineal region). A blood sample was collected from every animal just prior to vaccination and again 21 days post vaccination. All serum was analyzed for IgG antibody response using a homologous HI created at the University of Minnesota. The results were not all available at the time the proceedings were written however a summary of the preliminary results are as follows:

- Significantly increased titers after vaccination in group ID. (paired t-test).
- Significantly increased titers after vaccination in group N. (paired t-test).
- Significantly higher titers in group N compared to group A (after vaccination). (t-test).

Blood samples from pigs weaned from both groups were also taken to determine the level of maternal antibody passed to piglets during suckling. Results were not finalized at the time of the printing of the proceedings.

Study 2

34 weaned piglets were chosen for a trial to evaluate: the effectiveness of low dose intra dermal versus low dose intramuscular vaccination of growing pigs with an autogenous H3N2/H1N1 Swine Influenza vaccine and to evaluate pigs' antibody response after a single vaccination versus a single vaccination followed by a booster vaccination.

A 2800 sow farrow to 50lb operation was chosen for this study. This sow site was believed to be naïve to H1N1. 34 weaned pigs from various sows and gilts were chosen randomly and sorted into two groups, intra-dermal (ID) and intramuscular (N) with 17 piglets per group. A blood sample from all pigs was obtained at the time of first vaccination. All pigs in group ID were individually tagged and vaccinated intra-dermally with 0.5ml of the vaccine. All pigs in group N were individually tagged and vaccinated with 0.5ml IM of the same vaccine. 3 weeks post primary vaccination a blood sample from all pigs was obtained and boosters of the same vaccine were administered in the same fashion as the primary vaccination. 6 weeks post primary vaccination a third and final blood sample was obtained from all pigs (Table 1). All blood samples were submitted to the University of Minnesota for homologous HI IgG testing for H1N1. Results were not finalized at the time of printing of the proceedings.

Table 1:

Group N	Weaning – blood sample and primary vaccination 0.5ml IM
	Weaning +3weeks – blood sample and booster vaccination 0.5ml IM
	Weaning +6 weeks – blood sample
Group ID	Weaning – blood sample and primary vaccination 0.5ml ID
	Weaning +3weeks – blood sample and booster vaccination 0.5ml ID
	Weaning +6 weeks – blood sample