

# Comparison of injection sites between needle-free injections and needle injections in swine

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Needle-free injectors (NFI) are commercially available in Canada for administering drug to animals and humans. Using needles in food producing animals creates a risk of broken needles remaining in the meat. NFI may provide an effective alternative to needles. NFI utilize compressed gas to drive a spray through the skin. Drug is dispersed in spray pattern through the skin, fat and muscle tissue. In contrast, needles deposit drugs in a bolus or pool. As a result, NFI use is reported to increase drug absorption and reduce tissue damage. Vaccine efficacy is reportedly as good or better for certain vaccines.

This study examined drug placement with the NFI with four sizes of pig. One pig of each size category (nursing piglet, nursery pig, market hog, and sow) was injected with blue dye using the NFI and conventional needles. Animals were euthanized within 30 minutes and injection sites examined by dissection. The NFI delivered dye intramuscularly (IM) in both nursing and nursery pigs. Dye was well dispersed through the skin, subcutaneous (SQ) and muscle layers. Needle injections in the nursing and nursery pigs produced more tissue damage and deposited dye in a bolus deep in the muscle. In the sow and market hog, the NFI placed dye intradermally (ID) and subcutaneously (SQ) only. Thicker skin and fat in older pigs appeared to prevent IM placement.

## **Implications:**

NFI can effectively deliver drugs IM in nursing piglets and nursery pigs with less tissue damage than needles. This unit delivered dye ID or SQ only in the market hog and sow. New units may be capable of IM delivery in the future. Some drugs and vaccines are effective when given ID or SQ. The drug manufacturer should be consulted for ID/SQ efficacy before using NFI in larger pigs. Since the highest risk of broken needles is in the nursery stage, NFI is an effective method to reduce the risk of broken needles in pork.