

Research Summary

ANTIMICROBIAL USE IN LACTATING SOWS, SUCKLING AND NURSERY PIGS

June 2021

University of Guelph & CIPARS

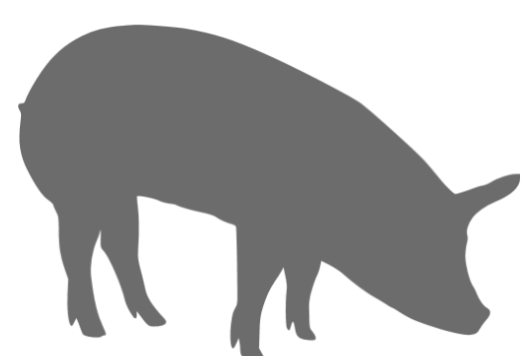


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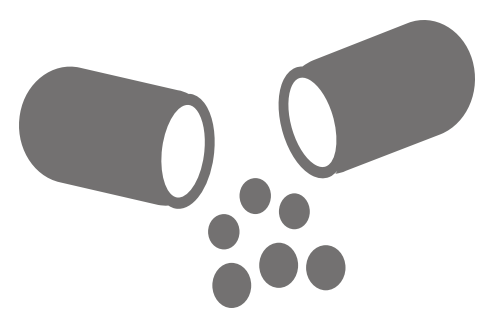
Canada

WHY WAS THIS RESEARCH DONE?



THE Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) reports data on antimicrobial use in *grower-finisher* pigs in Canada on a yearly basis, however current data on antimicrobial use in earlier production stages was lacking.

WHAT DID WE DO?



VETERINARY epidemiologists at CIPARS and the University of Guelph collected data on biosecurity, herd health, pig numbers, and antimicrobial use during one production cycle from 25 *sow* and 25 *nursery* pig herds in Ontario, between May 2017 and April 2018

2016

2017-2018

2018-2019

Present

Project Initiated

Consulted with industry members and engaged University of Guelph graduate student

Data collection

Contracted veterinarians enrolled volunteer sow and nursery herds and collected data

Data analysis

The data was checked and analyzed in several ways

Data reporting

Results shared with Canadian veterinarians, producers and other stakeholders

IN ADDITION...

WE launched a survey asking swine veterinarians across Canada their thoughts on the various antimicrobial use metrics used to describe antimicrobial use data



WHAT DID WE FIND?

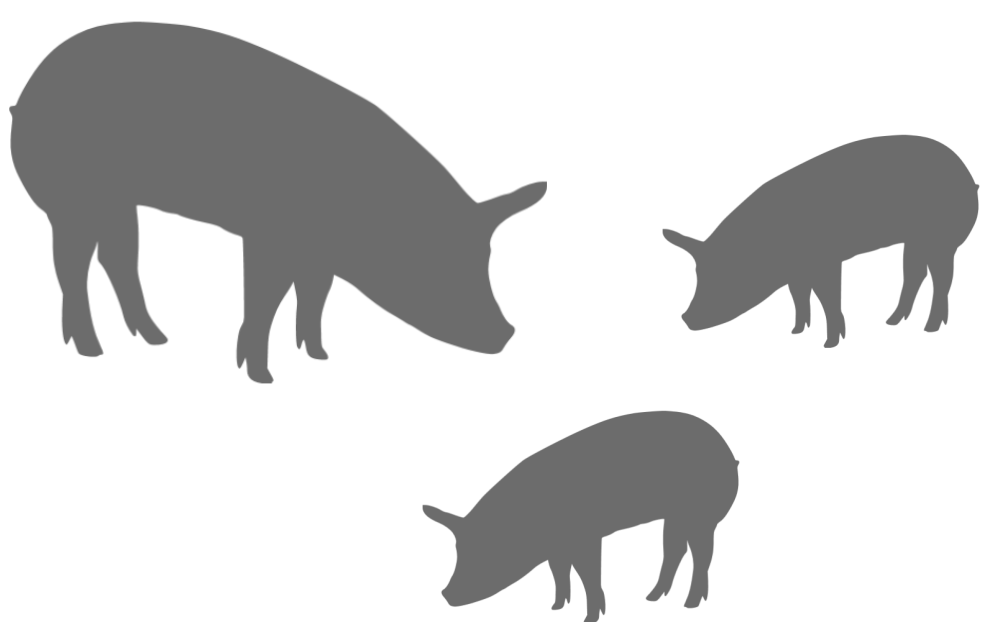
Herd demographics

Sows per herd

100-1,600 sows

Nursery pig capacity

400-3,200 pigs



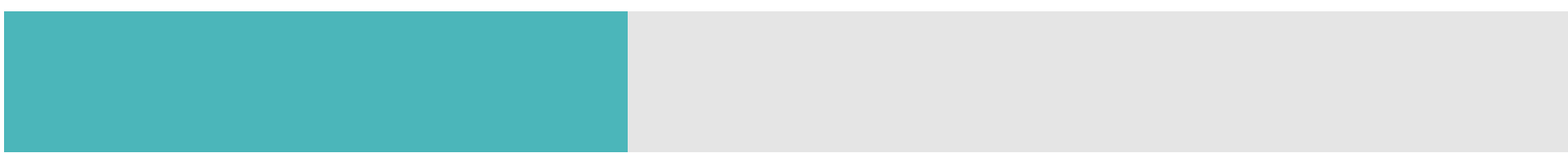
Raised without antibiotics ➤ 4 sow herds & 2 nursery herds

Biosecurity

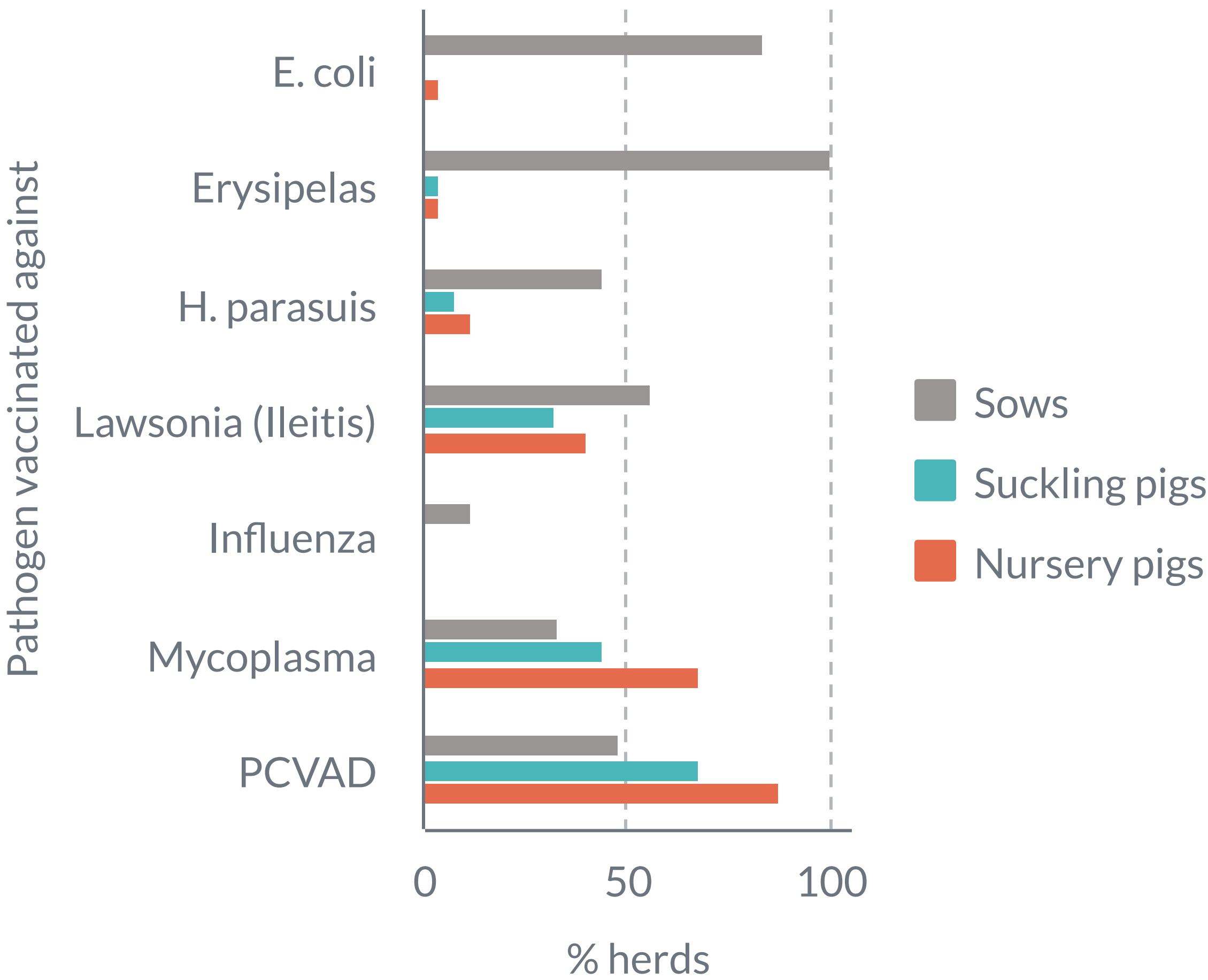
Use of most biosecurity practices was high among all herds, except for boot dips, which are often ineffective in barn environments

Among sow herds:

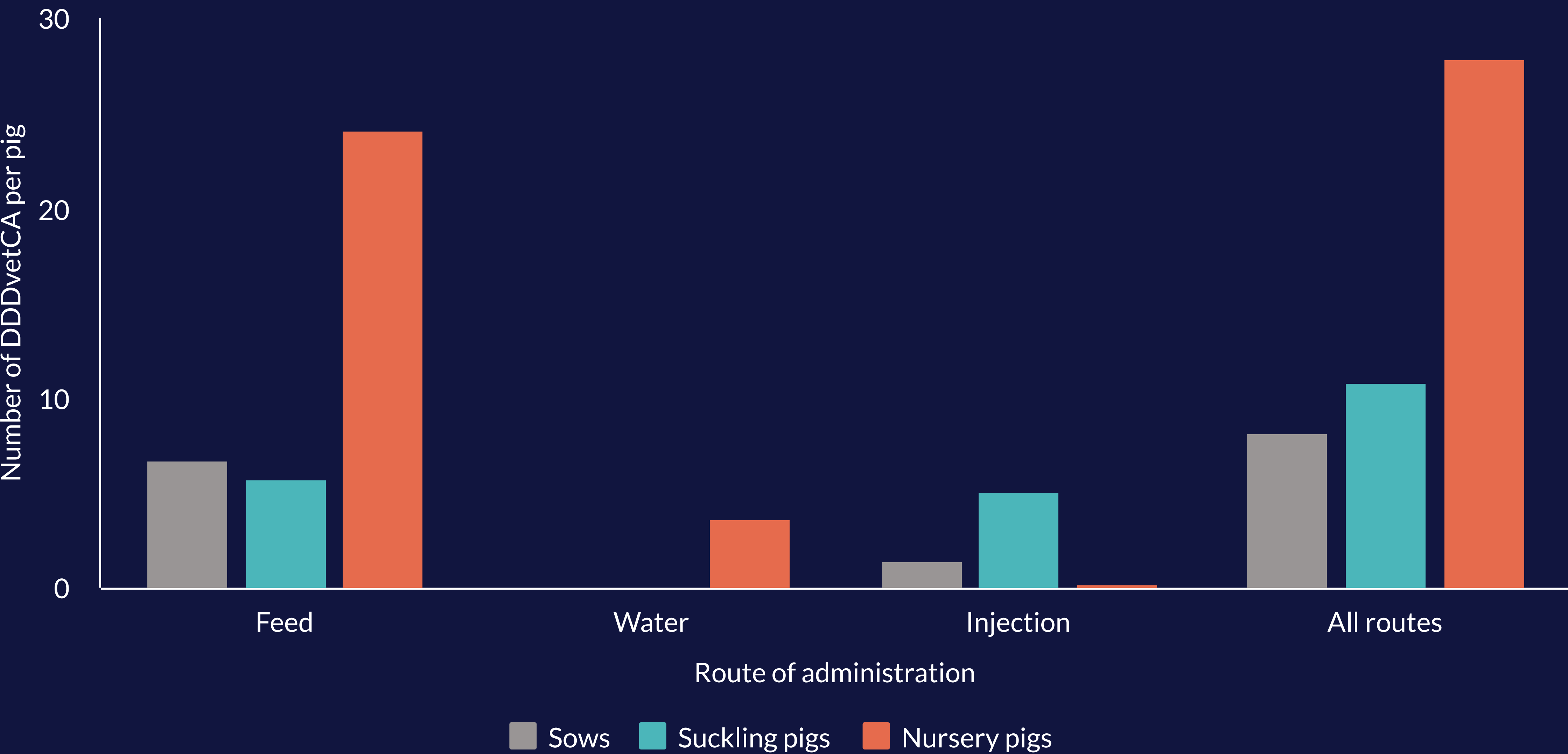
Quarantine of new gilts
40% of herds



Vaccination status



Antimicrobial use after adjusting for dose and the number of pigs



Top antimicrobials used in Canadian defined daily doses per 1,000 pig-days

Lactating sows

Bacitracin

In-feed

Procaine Penicillin G

By injection

Suckling pigs

Chlortetracycline

In creep feed

Benzathine Penicillin G

By injection

Nursery pigs

Chlortetracycline

In-feed

Procaine Penicillin G

By injection

Amoxicillin

In-water

During one production cycle:

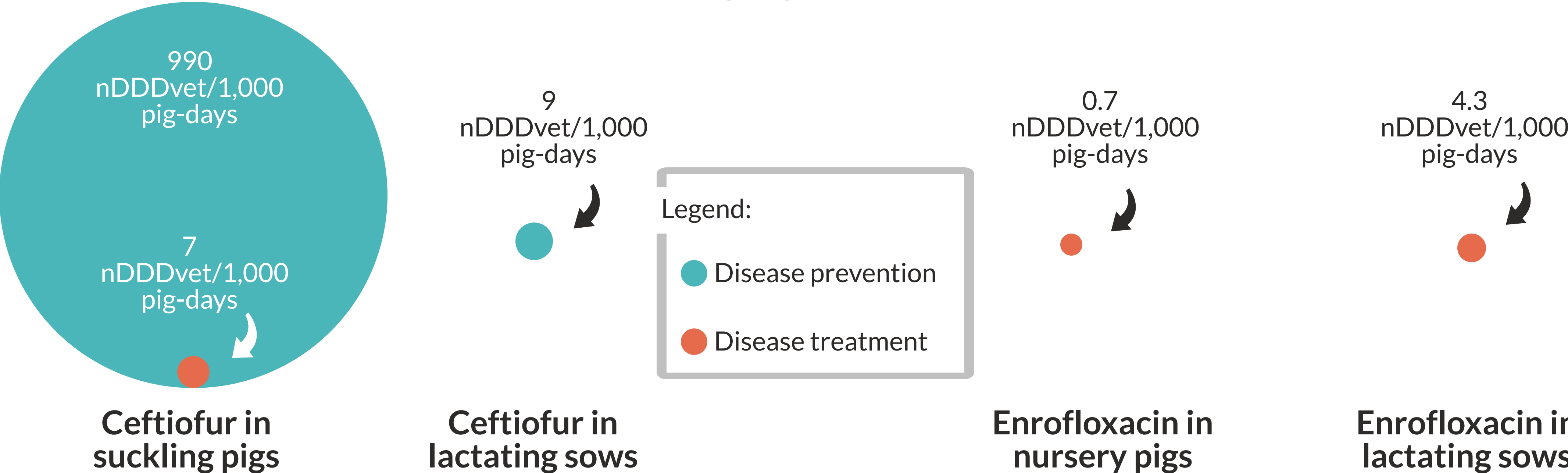
92% of herds gave antimicrobials to suckling pigs

96% of herds gave antimicrobials to nursery pigs

92% of herds gave antimicrobials to lactating sows

All creep feed was medicated with antimicrobials.

The use of Health Canada Category I antimicrobials (very important to human medicine) by injection



The use of antimicrobials very important to human medicine, such as ceftiofur, for disease prevention purposes is contrary to WHO guidelines for antimicrobial use in food animals

SURVEYED swine veterinarians preferred **dose-based** metrics (like defined daily doses for animals) over weight-based metrics (like milligrams per kilogram) and frequency measures (like % rations medicated and days medicated).

Top 3 factors affecting swine veterinarian's preferences for metrics

- 1 Ability to detect changes in use
- 2 Ability to make comparisons in use with like-minded farms and other regions
- 3 Ability to account for the dose of the antimicrobial

Swine veterinarian's comfort with explaining metrics to clients



Comfort with client conversations involving frequency and weight-based metrics is high.



Comfort with client conversations involving dose-based metrics could be improved.

HOW ANTIMICROBIAL USE IS DESCRIBED

Frequency measures describe the extent of the use practice across the country or on a farm

EXAMPLES INCLUDE:

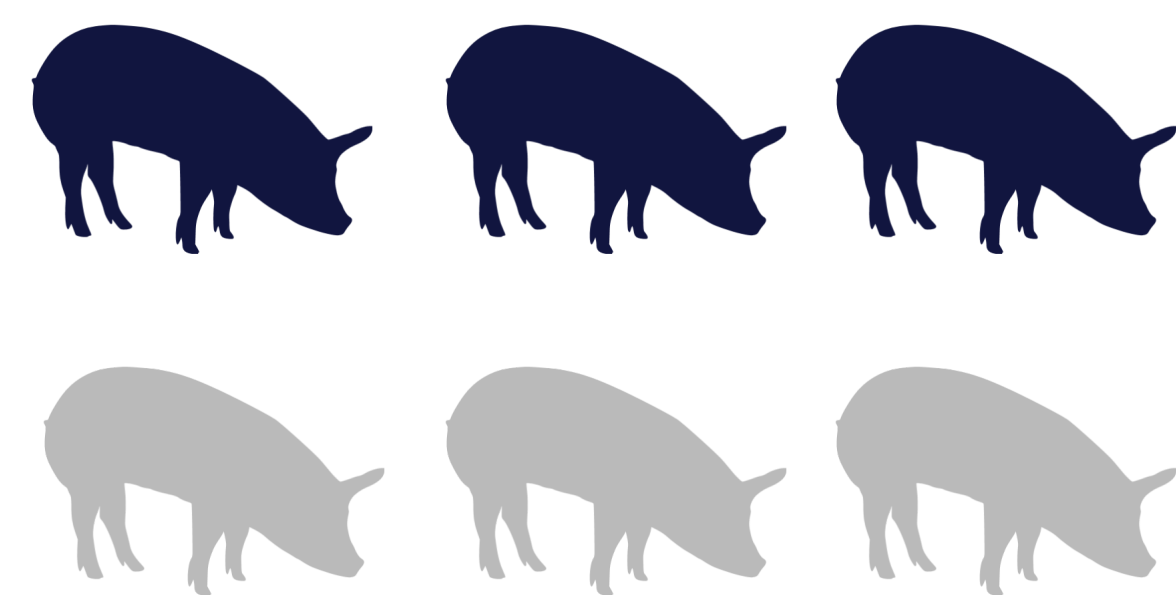
The number (%) of farms or herds using an antimicrobial



The number (%) of rations medicated with antimicrobials



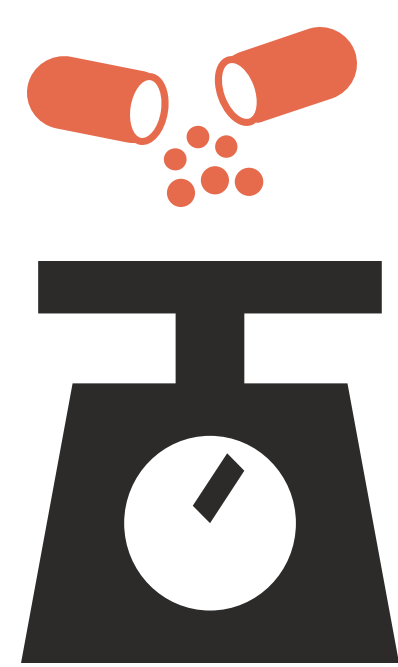
The number (%) of pigs in the herd exposed to antimicrobials



Quantitative measures describe the amount or quantity of antimicrobials used

EXAMPLES INCLUDE:

Weight-based measures, such as total kilograms used or milligrams per kilogram of pig



Dose-based measures, such as the number of Canadian defined daily doses per pig or the number of Canadian defined daily doses per 1,000 pig-days



NOTE: The number of doses in 1 kg of antimicrobial A does not necessarily equal the number of doses in 1 kg of antimicrobial B

ADJUSTING for differences in doses among the antimicrobials used helps us to better understand **changes in antimicrobial use over time** and **differences in antimicrobial use between farms**, and helps us to more accurately assess exposure to antimicrobials.

RESEARCH SUMMARY

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For more information, please send an email to cipars-picra@phac-aspc.gc.ca