



Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS)

2008

FARM SURVEILLANCE IN PIGS PRELIMINARY RESULTS: ANTIMICROBIAL USE



... working towards the preservation of effective antimicrobials for humans and animals...

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Preamble

We are posting the antimicrobial use preliminary findings for the calendar year 2008 for the CIPARS *Farm Surveillance* component in pigs. This is the second posting of antimicrobial use results from this component of CIPARS and is in addition to the previously posted antimicrobial resistance 2008 Preliminary Results for: *Surveillance of Human Clinical Isolates, Abattoir Surveillance, Retail Meat Surveillance, Surveillance of Animal Clinical Isolates*. Additional results based on human and agri-food antimicrobial resistance and antimicrobial use data will be presented in the full 2008 CIPARS Annual Report.

CIPARS Farm Surveillance

The swine industry was selected as the pilot commodity for surveillance infrastructure development because there is extensive implementation of the Canadian Quality Assurance (CQA[®]) program by the industry, the absence of a recent foreign animal disease outbreak and there was a similar initiative in swine in the United States (Collaboration in Animal Health and Food Safety Epidemiology). The Farm Surveillance component focuses on grower-finisher pigs in the 5 major pork producing provinces in Canada (Alberta, Saskatchewan, Manitoba, Ontario, and Québec). In each of the 5 participating provinces, the number of CIPARS sentinel sites is proportional to the national total of grower-finisher units. The Ministry of Agriculture in Alberta provided laboratory and financial support for additional sentinel sites in that province. The objective of this design was to provide nationally representative data for pigs immediately prior to entering the food processing chain.

Twenty-three swine veterinarians from private and corporate practice have enrolled 95 client producers that are CQA[®] validated, produce more than 2000 market pigs per year, and are representative of the demographic and geographic distribution of herds in the veterinarian's swine practice. Criteria for exclusion were; herds that were regarded to be organic pertaining to animal husbandry, herds that were feeding edible residual material or herds that were pasture raised. The inclusion/exclusion criteria help ensure that the herds enrolled are representative of the majority of swine production in Canada.

Pooled fecal samples are collected from pens of close to market weight (>175 lb) finisher pigs 3 times annually in each participating herd. The bacteria of interest are generic *E. coli*, *Enterococcus* and *Salmonella*.

Questionnaires are administered by herd veterinarians to collect ongoing antimicrobial use data for feed, water and injectable products as well as demographic, animal health, management and production information.

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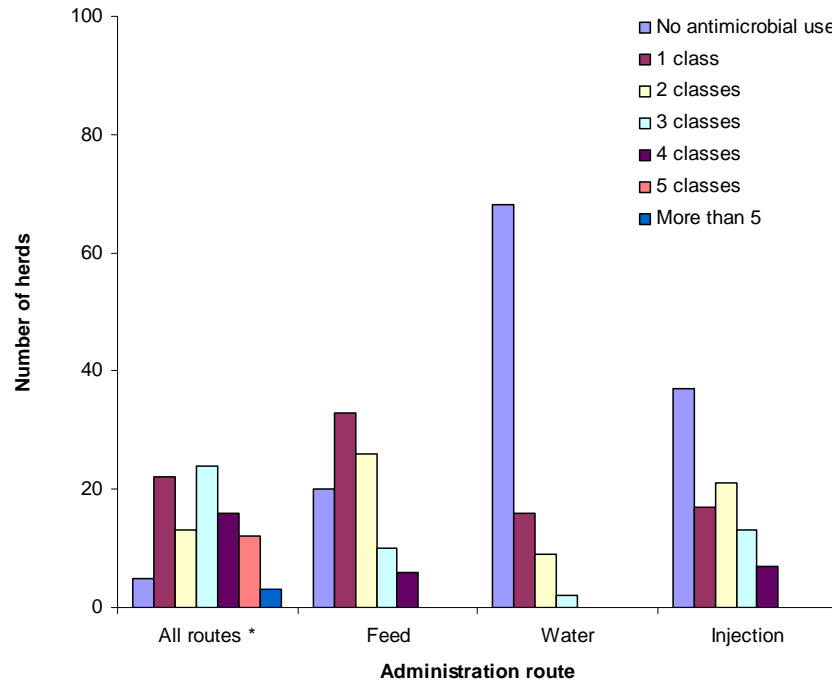
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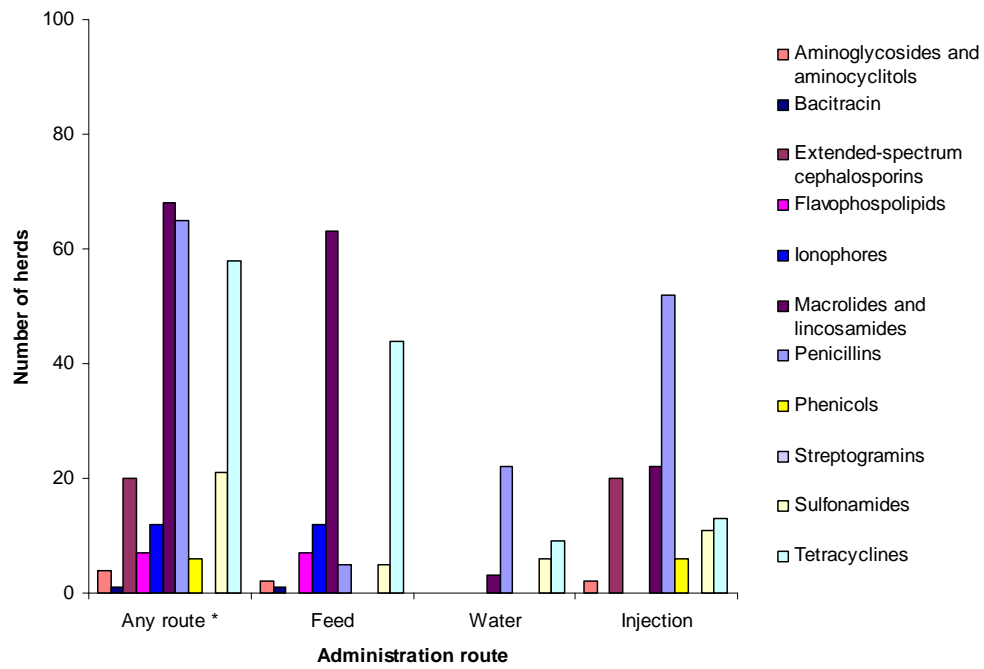
Antimicrobial Use

Figure 1. Number of sentinel swine herds with reported use of no antimicrobials, a single antimicrobial class, or multiple antimicrobial classes, by administration route (n = 95); *Farm Surveillance, 2008.*



* All routes: The sum of antimicrobial classes reportedly used in each herd, counting each class no more than once regardless of number of administration routes reported.

Figure 2. Number of sentinel swine herds with reported use of specific antimicrobial classes, by administration route (n = 95); *Farm Surveillance*, 2008.



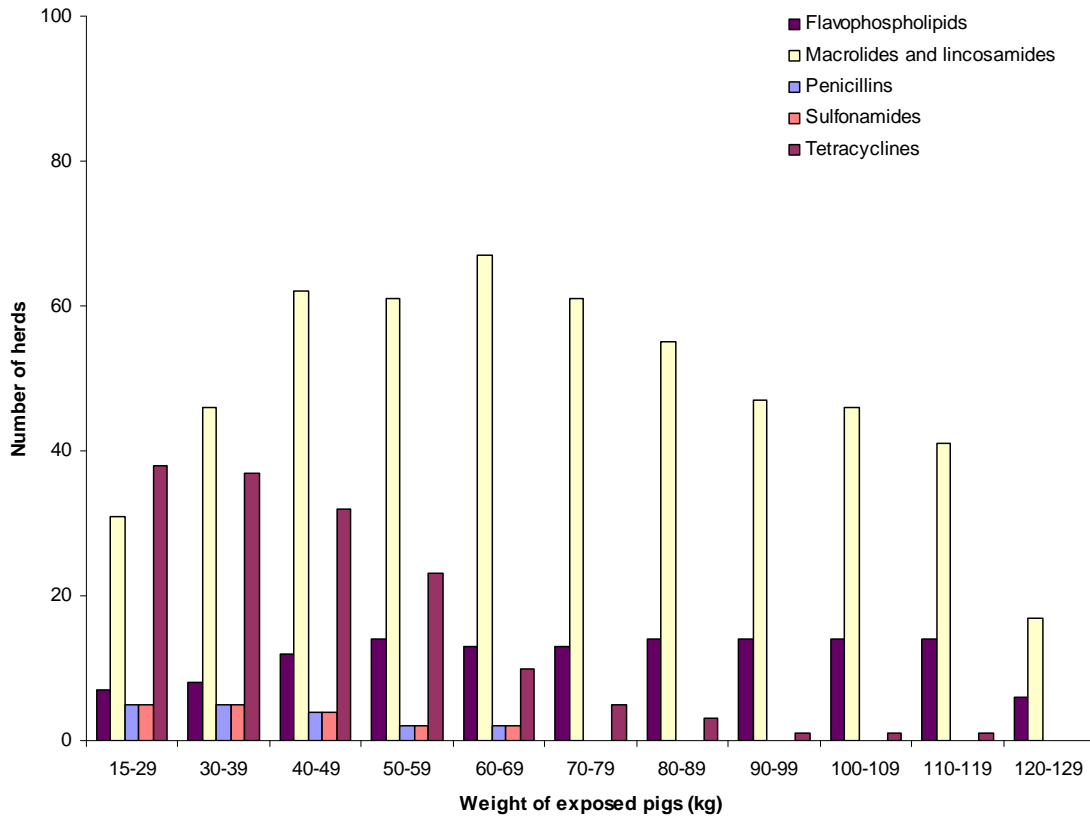
* Any route: Herds with reported use of an antimicrobial class by feed, water, injection, or any combination of these routes were counted as exposed.

Table 1. Number of sentinel swine herds with reported use of antimicrobial by administration route (n = 95); *Farm Surveillance*, 2008.

	Antimicrobial class	Antimicrobial	Administration route			
			Any route	Feed	Water	Injection
I	Extended-spectrum cephalosporins	Ceftiofur	20	0	0	20
	Streptogramins	Virginiamycin	0	0	0	0
II	Aminoglycosides	Neomycin	1	1	0	0
	Macrolides and lincosamides	Erythromycin	1	0	0	1
		Lincomycin	40	34	3	11
	Penicillins	Tiamulin	10	6	0	4
		Tulathromycin	6	0	0	6
		Tylosin	52	46	0	11
		Amoxicillin	2	0	2	0
		Ampicillin	3	0	0	3
		Penicillin G	64	5	15	52
		Phenoxymethyl penicillin	6	0	6	0
	Trimethoprim/sulfamethoxazole	Trimethoprim-sulfadoxine	13	0	3	11
Aminoglycosides	Spectinomycin	3	1	0	2	
Bacitracins	Bacitracin	1	1	0	0	
III	Phenicols	Florfenicol	6	0	0	6
	Sulfonamides	Sulfonamide (unspecified)	8	5	3	0
	Tetracyclines	Chlortetracycline	45	43	3	0
		Oxytetracycline	14	1	0	13
		Tetracycline hydrochloride	7	0	7	0
IV	Flavophospholipids	Bambermycin	7	7	0	0
	Ionophores	Salinomycin	12	12	0	0

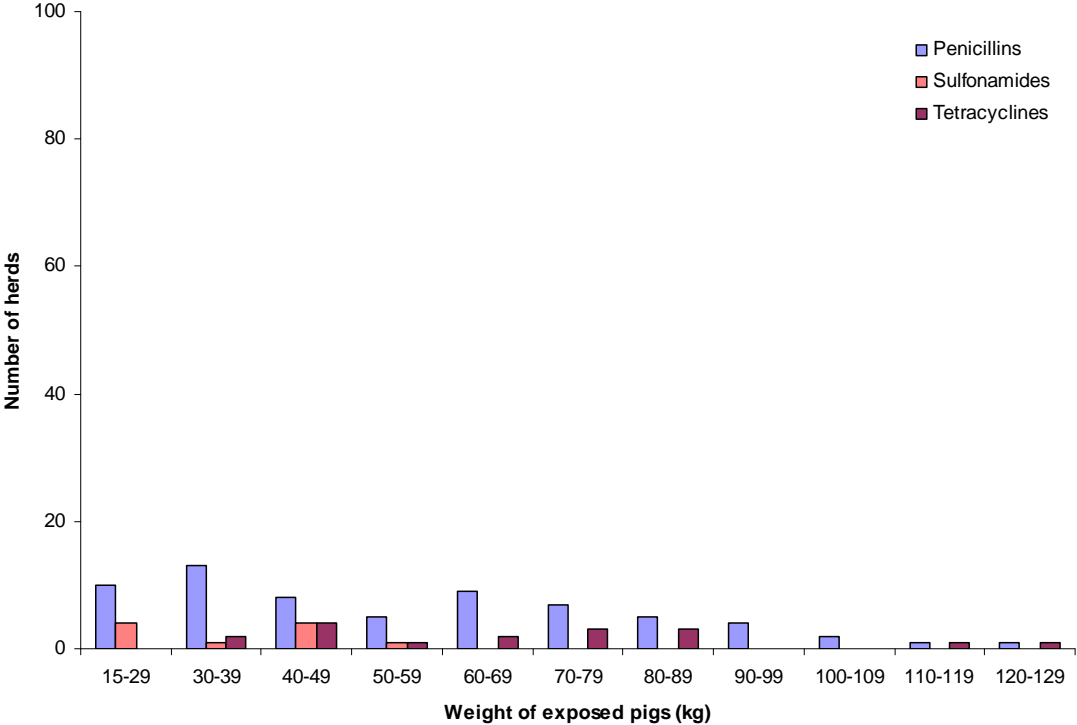
Roman numerals I to IV indicate the categories of antimicrobials based on importance in human medicine as outlined by the Veterinary Drugs Directorate. Any route: Herds with reported use of an antimicrobial class by feed, water, injection, or any combination of these routes were counted as exposed.

Figure 3. Number of sentinel swine herds with reported use of specific antimicrobial classes in feed, by weight category of pigs (n = 95); *Farm Surveillance*, 2008.



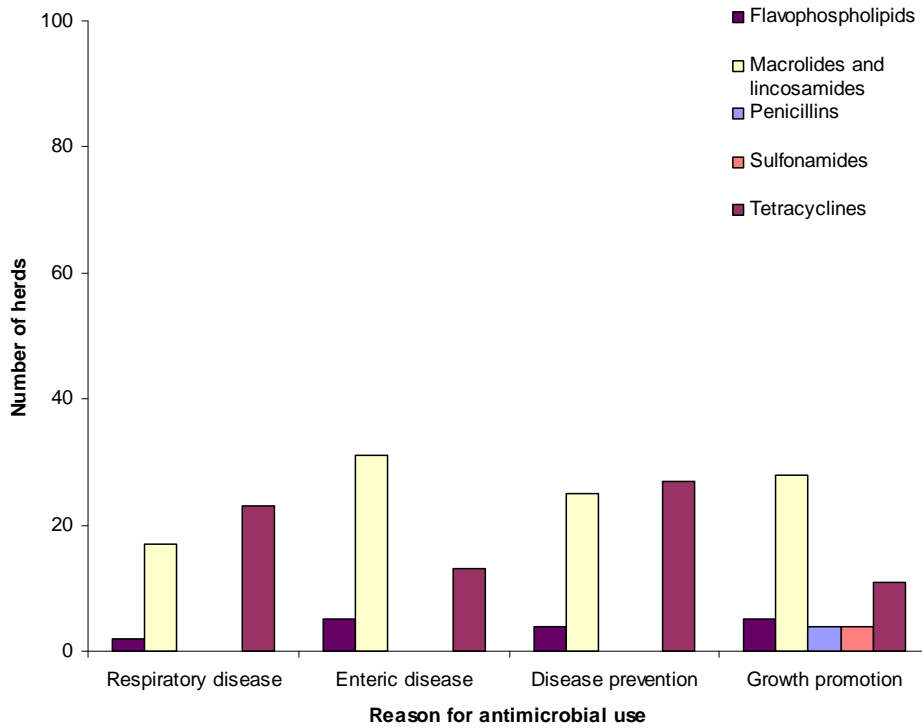
Data regarding antimicrobial classes used in feed in less than 5 herds are not presented.

Figure 4. Number of sentinel swine herds with reported use of specific antimicrobial classes in water, by weight category of pigs (n = 95); *Farm Surveillance, 2008*.



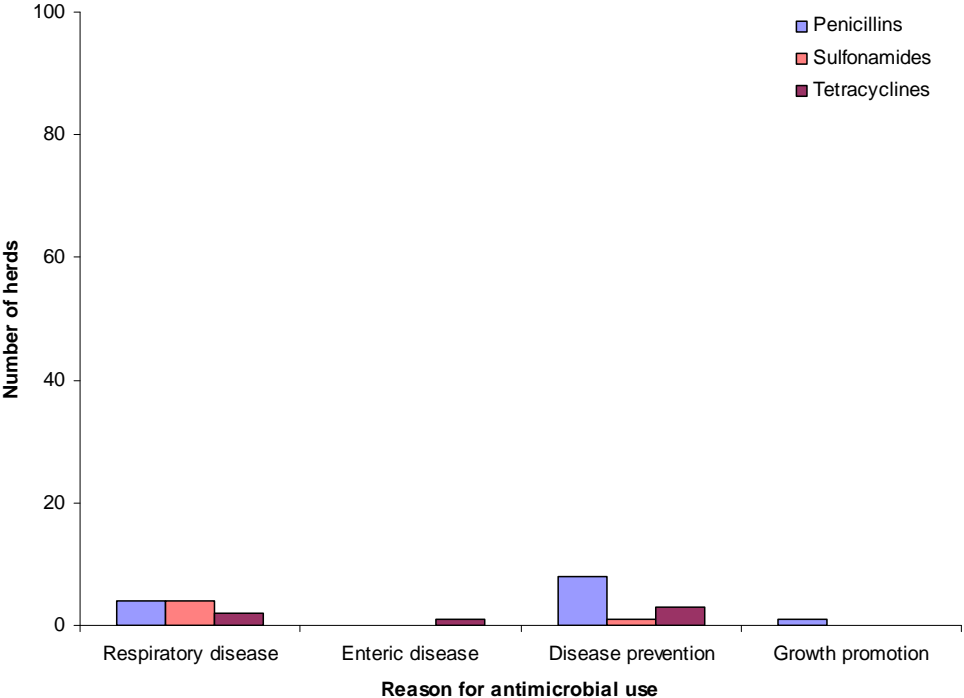
Data regarding antimicrobial classes used in water in less than 5 herds are not presented.

Figure 5. Number of sentinel swine herds with reported use of specific antimicrobial classes in feed, by reason for use (n = 95); *Farm Surveillance*, 2008.



Data regarding antimicrobial classes used in feed in less than 5 herds are not presented.

Figure 6. Number of sentinel swine herds with reported use of specific antimicrobial classes in water, by reason for use (n = 95); *Farm Surveillance, 2008.*



Data regarding antimicrobial classes used in water in less than 5 herds are not presented.