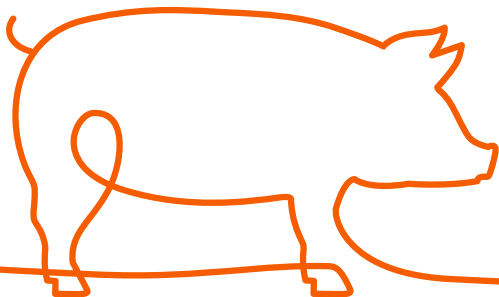


Antimicrobial resistance among swine respiratory disease pathogens remains very low

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Antimicrobials are critical to help treat and control infections in food animals, including swine. The right antibiotic intervention is vital to not only help control bacterial diseases but also minimize development of antimicrobial resistance. Surveillance of bacterial pathogens obtained from clinical specimens Zoetis receives from diagnostic laboratories in the United States and Canada provides a platform to detect any emergence of antimicrobial resistance.

Selecting an antimicrobial intervention may not mean immediately using the strongest or broadest-spectrum drug. Following responsible use principles, choosing an antimicrobial means selecting the narrowest effective option, at the correct dose, route, duration, and timing, for the specific disease situation. Using too small of a dose, stopping too early, treating the wrong condition, or using an antimicrobial when not indicated can fail to control disease and generate resistant bacteria.



Why is SRD susceptibility surveillance important?

Since 1998, Zoetis has been conducting antimicrobial susceptibility surveillance for swine respiratory disease (SRD) pathogens and bovine respiratory disease pathogens. Almost three decades of susceptibility data continues to successfully help guide veterinarians on which antibiotics are best suited to treat specific respiratory pathogens.

The Swine Respiratory Disease Susceptibility Surveillance Program has generated data from more than 28 years from clinical isolates collected from more than 25 veterinary diagnostic labs across the United States and Canada.

Zoetis receives about 800 to 1,000 isolates each year. Each isolate is processed and identified at the species level, which provides a very robust dataset.

Antimicrobial susceptibility is determined based on minimum inhibitory concentration — the lowest concentration of each antimicrobial that prevents visible growth of a bacterium. Testing is conducted with strict adherence to the Clinical and Laboratory Standards Institute (CLSI) standardized methods. CLSI has established clinical breakpoints for antimicrobials used against certain pathogens, which is the basis for the Zoetis susceptibility surveillance program.

Surveillance helps identify resistance trends and fosters an improved understanding of antimicrobial resistance. It also supports responsible antimicrobial use.

Results show low antimicrobial resistance across SRD pathogens

The most recent five-year dataset showed exactly what has been seen in previous datasets. Antimicrobial resistance among swine pathogens remains very low against almost all the antibiotics that are tested in the program.

The exception is tetracycline; we see higher levels of resistance for tetracycline with some of the key SRD pathogens. In 2025 for organisms such as *Actinobacillus pleuropneumoniae*, we saw that isolates were 100% susceptible to ceftiofur (Excenel® RTU EZ, Naxcel®, Excede® for Swine), enrofloxacin, florfenicol and tulathromycin (Draxxin®). *Pasteurella multocida* were 100% susceptible to ceftiofur, enrofloxacin, florfenicol and tulathromycin.

The 2025 study also showed very high rates of susceptibility, meaning anywhere from 95% to greater than 99%, for *A. pleuropneumoniae* to ampicillin and tilmicosin and for *P. multocida* to ampicillin and penicillin.

Streptococcus suis resistance was also very low to ceftiofur, ampicillin and florfenicol. *Bordetella bronchiseptica* susceptibility to tulathromycin remains exceptionally good, with susceptibility at 100%.

Pasteurella multocida — % resistance^{1,2}

Surveillance year (number of isolates)	Tetracycline	Tilmicosin	Tulathromycin	Ceftiofur	Enrofloxacin	Florfenicol	Ampicillin	Penicillin
2025 (n=95)	34.7	1.1	0	0	0	0	2.1	2.1
2024 (n=115)	35.7	0.8	0	0	0.8	0	0	0
2023 (n=123)	28.5	2.4	0	0	0	0	1.6	1.6
2022 (n=139)	38.2	0.7	0	0	0.7	0	0	0
2021 (n=160)	40.7	0.6	0	0	0.6	0.6	0.6	1.2
2020 (n=144)	47.9	2.1	1.4	0	0	0	2.1	2.1
2019 (n=174)	46.5	2.4	0	0	0	1.1	1.7	1.7

***Streptococcus suis* – % resistance^{1,2}**

Surveillance year (number of isolates)	Tetracycline	Ceftiofur	Enrofloxacin	Florfenicol	Ampicillin	Penicillin
2025 (n=159)	98.1	3.1	1.9	0	0.6	8.2
2024 (n=175)	100	2.3	2.8	0	0.6	7.5
2023 (n=180)	97.8	3.9	1.1	0.6	0.6	18.3
2022 (n=193)	96.4	2.1	2.1	0	1	17.6
2021 (n=238)	97.6	4.2	2.1	0.4	0.4	18.9
2020 (n=234)	97	5.1	3	0	1.7	17.6
2019 (n=238)	97.6	7.2	1.2	1.6	0.8	18.9

***Bordetella bronchiseptica* – % resistance^{1,2}**

Surveillance year (number of isolates)	Ampicillin	Tulathromycin	Florfenicol
2025 (n=59)	100	0	10.2
2024 (n=74)	100	0	21.6
2023 (n=92)	100	0	10.9
2022 (n=101)	100	0	16.5
2021 (n=109)	100	0.9	14.7
2020 (n=103)	100	0	3.9
2019 (n=112)	100	0	13.4

Bordetella bronchiseptica break points available for ampicillin, tulathromycin and florfenicol only.

***Actinobacillus pleuropneumoniae* – % resistance^{1,2}**

Surveillance year (number of isolates)	Tetracycline	Tilmicosin	Enrofloxacin	Florfenicol	Ceftiofur	Tulathromycin	Ampicillin
2025 (n=20)	84.4	0	0	0	0	0	5
2024 (n=10)	85.7	0	0	0	0	0	0
2023 (n=19)	89.5	0	5.3	0	0	0	11.1
2022 (n=35)	91.4	2.9	2.9	0	0	0	11.4
2021 (n=32)	87.5	0	3.1	0	0	0	12.5
2020 (n=41)	75.7	0	0	0	0	0	2.4
2019 (n=48)	70.8	2.1	0	0	0	0	2.1

Bottom line: The above results are really good news for the swine industry. It shows that judicious use practices are being followed when antibiotic products are used.

Veterinarians are doing a good job taking susceptibility or resistance data from diagnostic labs, interpreting it correctly and then prescribing the antibiotics according to the susceptibility profiles and expected efficacy.

Surveillance also contributes to a sustainable industry. If a drug shows high resistance to an organism, veterinarians wouldn't want to prescribe that drug, because it would not be effective in treating the bacterial infection.

At Zoetis, we strongly believe in the judicious use of antibiotics, as they are precious commodities. That's why Zoetis wants to continue sharing this data with veterinarians in North America and globally. We want to protect the antimicrobial products veterinarians have available to them so when respiratory disease hits the herd, using the right treatment will get the herd back to a healthy, productive status faster.

Practical tips and best management practices to prevent antimicrobial resistance

Some best practices when choosing antimicrobial products include:

- Using antimicrobial products correctly. Follow label directions for storage, handling and dosing. Some products, such as Excenel® RTU EZ (*ceftiofur hydrochloride*) Sterile Suspension, should be shaken well before administering to ensure the active ingredient is properly suspended, which helps ensure the correct dose is administered.
- Working with a veterinarian on antimicrobial use protocols, including surveillance and withdrawals. Your veterinarian can help ensure antimicrobial products are labeled for the pathogen present in a herd and provide guidance on administration and withdrawal times.
- Controlling disease quickly and humanely so fewer animals are affected and avoiding unnecessary treatment when antimicrobials are not indicated. This means using the most appropriate drug rather than defaulting to broad-spectrum options.

Contact your Zoetis representative to learn more.

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Michael Sweeney is a senior principal scientist who has worked at Zoetis for 28 years in the area of veterinary microbiology. He is located at the Veterinary Medicine Research and Development facility in Kalamazoo, Michigan, where he works within the global therapeutics group on the research and development of new anti-infective agents for livestock animals. He is also the lead contact for the Zoetis North American antimicrobial resistance surveillance program for pigs and cattle. He also represents Zoetis on the veterinary antimicrobial susceptibility testing subcommittee of the Clinical and Laboratory Standards Institute, where he has served as chairperson for the development of multiple standardized documents that are used by veterinary diagnostic laboratories around the world. He has served as subcommittee voting member and is currently serving as chairperson for the veterinary antimicrobial susceptibility testing (VAST) subcommittee.

IMPORTANT SAFETY INFORMATION FOR DRAXXIN/DRAXXIN 25: Withdraw Draxxin/Draxxin 25 five (5) days prior to slaughter in swine. Do not use in animals known to be hypersensitive to the product. See full prescribing information for <http://www.draxxinpork.com/pi20> or www.draxxin25.com/pi.

IMPORTANT SAFETY INFORMATION FOR EXCEDE FOR SWINE: People with known hypersensitivity to penicillin or cephalosporins should avoid exposure to Excede for Swine. Do not use in swine found to be hypersensitive to the product. Pre-slaughter withdrawal time is 14 days following the last dose. See full Prescribing Information here, https://www.zoetisus.com/content/_assets/docs/vmips/package-inserts/excede-for-swine-prescribing-information.pdf.

IMPORTANT SAFETY INFORMATION FOR EXCENEL RTU EZ: People with known hypersensitivity to penicillin or cephalosporins should avoid exposure to Excenel RTU EZ. Do not use in swine found to be hypersensitive. Withdraw 6 days prior to slaughter when injection site volumes are greater than 5 mL up to 15 mL per injection site and 4 days prior to slaughter when injection site volumes are less than or equal to 5 mL per injection site. See full Prescribing Information, https://www.zoetisus.com/content/_assets/docs/vmips/package-inserts/excenel-rtu-ez-prescribing-information.pdf.

IMPORTANT SAFETY INFORMATION FOR NAXCEL: People with known hypersensitivity to penicillin or cephalosporins should avoid exposure to Naxcel. Naxcel has a pre-slaughter withdrawal time of four days. Do not use in animals found to be hypersensitive to the product. See full Prescribing Information, https://www.zoetisus.com/content/_assets/docs/vmips/package-inserts/naxcel-prescribing-information.pdf.

¹ Data on file. Additional Study No. A671Z-US-25-240 Preliminary Study, Zoetis Inc.

² Sweeney M. Swine Respiratory Disease Susceptibility Surveillance Program 2001-2022 Overview. Zoetis Inc.