

Food and Drug Administration Guidance 209 and 213 and Veterinary Feed Directive regulations regarding antibiotic use in livestock: A survey of preparation and anticipated impacts in the swine industry

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Summary

A convenience sample survey of practicing swine veterinarians was conducted to describe the ways veterinarians and their producers prepared to comply with the Veterinary Feed Directive. The survey provides a benchmark for preparedness and prospective assessment of anticipated costs and ongoing education and training needed.

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Resumen - Guía FDA 209, 213, y regulaciones VFD sobre el uso de antibióticos en ganadería: Una encuesta de preparación e impacto anticipado en la industria porcina

Se realizó una encuesta de una muestra adecuada de veterinarios especialistas en cerdos para describir la manera en que los veterinarios y sus productores se preparan para cumplir con la Directiva de Alimento Veterinario. Esta encuesta provee una comparación de la preparación y valoración prospectiva de los costos anticipados, la educación actual, y el entrenamiento necesario.

Résumé - Guides 209 et 213 et Directive sur les aliments vétérinaires du FDA concernant l'utilisation des antibiotiques chez le bétail: Sondage sur la préparation et les impacts anticipés dans l'industrie porcine

Un sondage sur un échantillon de convenance de vétérinaires en pratique porcine a été réalisé afin de décrire les façons dont les vétérinaires et leurs producteurs se préparent afin de se conformer à la Directive sur les aliments vétérinaires. Ce sondage fournit une mesure étalon de la préparation et de l'évaluation prospective des coûts anticipés et de la formation en cours et de l'entraînement requis.

The revised Veterinary Feed Directive (VFD) final rule went into effect on October 1, 2015, and label changes requested in Guidance Documents 209 and 213 took effect on January 1, 2017.¹⁻³ These guidances direct the use of medically important antibiotics (deemed to be important for human medicine) in livestock for therapeutic purposes only, thereby eliminating medically important antibiotics for growth-promotion purposes. Medically important antibiotics can continue to be used for therapeutic purposes by producers, but only under the guidance of a veterinarian with a valid veterinary-client-patient relationship (VCPR). The Food and Drug Administration

(FDA) is relying on stakeholder collaboration (drug companies, veterinarians, producers, and the feed milling sector) to cooperatively implement these new regulations.

Veterinarians will direct the use of all medically important antibiotics via the VFD for use in feed and prescriptions for use in water for prevention, control, and treatment. Much has been done to prepare for these antibiotic-use guidelines. The aim of the study presented here was to conduct a survey of practicing veterinarians and provide a synthesis of the ways veterinarians and their producers prepared and changes they anticipated needing to make in their business

operations to comply with the VFD. The survey was designed to provide a prospective view of pertinent measures such as anticipated costs and ongoing education and training needed. With this information, future research comparing expected impacts with those actually incurred could be conducted.

Materials and methods

The procedures for this survey were approved by the Iowa State University Institutional Review Board. The survey questionnaire was designed to capture data on changes in veterinary services. Specifically, the survey assessed basic information on a veterinarian's role in the industry and his or her specific practice and on how the VFD requirements will impact their business operations, including the VCPR, record keeping, education and training, costs of veterinary services, and herd-health and production-plan recommendations.

Per VFD charge and business cost information was collected as an open-ended dollar amount. If respondents provided a dollar value range, we used the midpoint

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to approximate actual dollar amount. Most other information was collected with partially close-ended questions giving respondents flexibility to choose from a relatively exhaustive list of mutually exclusive response options and (or) an “other” response with the opportunity to write in an answer.

The information was collected in a paper survey and compiled in an electronic spreadsheet (Excel 2016; Microsoft, Redmond, Washington). The subjects of the survey were practicing swine veterinarians in the United States. Surveys were distributed at the 2016 Iowa State University (ISU) James D. McKean Swine Disease Conference held in Ames, Iowa, on November 3-4, 2016. The authors attended the conference to describe the study and encourage participation. A drawing for one of three \$100 gift cards was offered as an incentive to non-ISU employees for responding to the survey.

The James D. McKean Swine Disease Conference is an annual event that attracts swine veterinarians from all types of practices (corporate, swine, and mixed-animal practices) from the upper Midwest region of the United States. This survey sample provides a representative cross section of the swine industry, with respondents being knowledgeable about the preparation for and anticipated impacts of the VFD regulations in conjunction with guidances 209 and 213.

Results

Response rate and respondent profile

Of the 275 conference attendees receiving a survey, 50 completed the survey (18.18% response rate). Not currently a practicing veterinarian (student, academia, allied industry) was the most common reason heard for non-response to the survey. Respondents' primary practices were located in states with the largest numbers of swine operations and inventories: 24 veterinarians practiced in Iowa, eight in Minnesota, and six in Illinois. Other states represented included Indiana (two), Kansas (two), Missouri (two), Montana (one), Nebraska (one), Ohio (one), South Dakota (one), Virginia (one), and Wisconsin (one). These states represent 43% of US swine operations and 73% of the US hogs and pigs inventory.⁴

Respondents had an average of 20.6 years of experience in swine veterinary practice.

The largest segment of swine clients served by these veterinarians were independent producers (57.2%), followed by contract growers or contractees (19.5%), contractors or integrators (18.3%), and other (5.0%). The largest percentage of swine clients were in farrow-to-finish production (28.4%), followed by wean-to-finish (23.8%), finishing (18.3%), breeding-farrowing (18.2%), nursery (6.3%), other (3.3%), gilt developer unit (1.3%), and boar stud (0.5%).

While veterinarians vary in the type of swine clients served and number of hogs marketed from those clients, the average hogs marketed per year were 0 (0.2% of clients), one to 4999 (22.0% of clients), 5000 to 19,999 (25.9% of clients), 20,000 to 49,999 (21.6% of clients), and 50,000 or more (30.3% of clients). Nationally, 87% of operations have annual sales of one to 4999 hogs, while 13% of operations have annual sales of 5000 or more hogs.⁴ Thus, the clients served by the veterinarians within our sample had larger operations than the overall US swine operation numbers reported in the 2012 Census of Agriculture.⁴ However, this sample does match favorably with annual sales volumes nationally. In 2012, nine percent of sales were of one to 4999 hogs, while 91% of sales were of 5000 or more hogs.⁴ Accordingly, veterinarians in our sample provide services for a representative percentage of the hogs sold annually.

Veterinary-client-patient relationship

According to the Electronic Code of Federal Regulations (21 CFR 558.6 Veterinary Feed Directive drugs⁵), in order for a VFD to be lawful, the veterinarian issuing the VFD must be licensed to practice veterinary medicine and be operating in the course of the veterinarian's professional practice and in compliance with all applicable veterinary licensing and practice requirements, including issuing the VFD in the context of a VCPR as defined by the state.

If no applicable and appropriate state VCPR requirements exist, the veterinarian must issue the VFD in the context of a valid VCPR as defined in federal regulations. Federal regulations state (21 CFR 530.3 Definitions⁶), a valid VCPR is one in which a veterinarian has assumed the responsibility for making medical judgments regarding the health of (an) animal(s) and the need for medical treatment, and the client (the owner

of the animal or animals or other caretaker) has agreed to follow the instructions of the veterinarian; there is sufficient knowledge of the animal(s) by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s); and the practicing veterinarian is readily available for follow-up in case of adverse reactions or failure of the regimen of therapy. Such a relationship can exist only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examination of the animal(s), and (or) by medically appropriate and timely visits to the premises where the animal(s) are kept.

Ninety-four percent of respondents were aware of their state's VCPR definition, 4.0% were maybe aware, and 2.0% were not aware of their state's VCPR definition (Table 1). In order to fulfil the VCPR requirement for a producer, most veterinarians (56.0%) envisioned visiting two or more sites, but not all the sites, while visiting all sites (40.0%), or one site (4.0%) were less common responses. The frequency of visiting a producer or site varied, but the largest percentage of respondents (45.7%) would fulfil the VCPR requirement for a producer through biannual visits (twice per year). Lower percentages indicated quarterly (28.3%), annually (17.4%), monthly (4.3%), and less than every 2 years (4.3%).

Record keeping

Veterinarians, clients, and distributors have always needed to be diligent in keeping records associated with VFDs and prescription antibiotic use. The new guidance policies add VFD requirements for in-feed use and prescription requirements for water medications for medically important antibiotics to be used in prevention, control, and treatment. The FDA requires that a record of every VFD be kept for a period of 2 years.³ Veterinarians plan to meet the additional record-keeping requirement by using a third-party electronic record-keeping service (66.7%), using existing staff (25.9%), and hiring new staff (7.4%) (Table 2).

Veterinarians were amenable to providing VFDs to producers in a variety of ways, including third-party electronic service (37.3%), e-mail (20.0%), hard copy (14.5%), and fax (10.9%). Ten percent of veterinarians planned to provide VFDs to producers in any form they preferred, while fewer

Table 1: Survey questions on the veterinarian-client-patient relationship*

	No. reporting	% reporting
Are you aware of your state's VCPR definition?		
Yes	47	94.0
No	1	2.0
Maybe	2	4.0
In order to fulfil the VCPR requirement for a producer how many sites do you envision visiting?		
1 site	2	4.0
2 or more sites (but not all sites)	28	56.0
All sites	20	40.0
In order to fulfil the VCPR requirement how frequently do you envision needing to visit a producer or site?		
Monthly	2	4.3
Quarterly	13	28.3
Biannually	21	45.7
Annually	8	17.4
Every 2 years	0	0.0
Less than every 2 years	2	4.3
I don't know	0	0.0

* Conference attendees at the 2016 ISU James D. McKean Swine Disease Conference were surveyed regarding their opinions of and plans for managing the VFD. Fifty practicing veterinarians (of 275) returned completed surveys. VCPR = veterinarian-client-patient relationship; VFD = Veterinary Feed Directive.

(6.4%) were willing to provide VFDs in any form the feed suppliers preferred.

Most veterinarians planned to use a pre-made VFD: either an electronic VFD service (78.8%) or a VFD provided by a drug sponsor (7.7%). Only 13.5% of veterinarians planned to create a VFD form for their clinic.

Education and training

Much has been done to prepare for these antibiotic-use guidelines. Veterinarians and staff have attended meetings (including Webinars) (40.7%), read literature (38.1%), and created information bulletins to distribute to staff (21.2%) (Table 3).

To prepare clients for the changes the VFD brought about, veterinarians sponsored in-clinic meetings (including Webinars) (24.0%), met in person with clients (35.5%), sent a notice of changes in a regular newsletter (23.1%), and created an information bulletin (15.7%). Only 1.7% of veterinarians did not do anything to prepare their swine clients.

The frequency of updated training for staff and clients varied, but the largest percentage of respondents believed updated training should occur every 6 months or at least every year.

Costs

Although a number of the veterinarians that participated in the survey provided estimates of charges for writing VFDs and business costs attributed to the VFD, non-response was likely attributed to the challenge of arriving at a reasonably accurate estimate before January 1, 2017, or after, when VFD charges have been made and costs to business operations incurred. Thus, these estimates should be viewed as only anticipated. Still, this information can help inform budget evaluators and suggest strategies and resource requirements for business operations and provide a base for comparison once annual costs are incurred.

In an effort to compare the sizes of clients' operations served with the charges for writing VFDs and business costs attributed to the VFD, the weighted average swine client marketings per year were calculated and estimates were summarized across size categories: one to 4999; 5000 to 19,999; 20,000 to 49,999. Four survey respondents had swine clientele with annual marketings of 50,000 or more, but did not report charges for writing VFDs and business costs attributed to the VFD. The primary reason for this is

likely that veterinarians who are employed directly by large swine producers are writing VFDs as part of their daily job responsibilities. One respondent did not report swine client marketings, but did include charges for writing VFDs for existing clients.

Across all respondents, the mean estimated per VFD charge for new clients was \$30.38 (Table 4). The estimated per VFD charge for new clients was predominately in the ranges of \$21 to \$30 (42.4% of respondents) and \$11 to \$20 (approximately 30.3% of respondents). For existing clients, the estimated per VFD charge was lower, with a mean of \$27.46. The estimated per VFD charges for existing clients were, again, predominately in the ranges of \$11 to \$20 (45.0% of respondents) and \$21 to \$30 (32.5% of respondents). The median estimated per VFD charge for both new and existing clients was the same at \$25.00.

Annual marketings of clientele affected the estimated per VFD charge. In general, VFD charges were expected to be less for larger clients, with the biggest difference being between clients that have one to 4999 marketings per year (mean of \$40.83 per VFD for new and existing clients) and clients with 5000 to 19,999 marketings per year (mean

Table 2: Survey questions on record keeping and VFD delivery to producers*

	No. reporting	% reporting
The FDA will require that a record of every VFD be kept for a period of 2 years. How do you plan to meet the additional record keeping requirement?†		
Use existing staff	14	25.9
Hire new staff	4	7.4
Use a third-party service (eg, GVL)	36	66.7
Other	0	0.0
How do you plan to provide VFDs to producers?†		
Whatever the producer prefers	11	10.0
Whatever the feed supplier prefers	7	6.4
Third party electronic service (eg, GVL)	41	37.3
Fax	12	10.9
E-mail	22	20.0
Hard copy	16	14.5
Other‡	1	0.9
Do you plan on using a pre-made VFD or creating your own?†		
Use electronic VFD service (eg, GVL)	41	78.8
Use VFD provided by a drug sponsor	4	7.7
Create VFD form for your clinic	7	13.5
Other	0	0.0

* Study details described in Table 1.

† Percentages may reflect multiple answers.

‡ Internal record system.

VFD = Veterinary Feed Directive; GVL = GlobalVetLINK.

of \$32.00 per VFD for new clients and \$26.45 for existing clients). The mean estimated per VFD charge for new and existing clients with 20,000 to 49,999 marketings per year were \$28.00 and \$26.90, respectively.

This suggests evidence of economies of size in issuing VFDs. Larger producers will tend to have more VFDs than smaller producers due to the probability of having more sites. Capital and labor costs per VFD would be much less for veterinary practices serving larger clients because they are able to spread fixed units of these resources over a greater number of VFDs.

Summary statistics and distribution of annual cost estimates regarding writing and delivery of VFDs, maintaining records for VFDs, educating clients and others (eg, nutritionists, feed suppliers), training staff on VFD requirements, and other components are presented in Table 5. Across all respondents, the lowest anticipated annual cost to business operations was training staff on

VFD requirements (mean of \$1840; median of \$1000). Writing and delivering VFDs was the largest anticipated annual cost with a mean value of \$8757 and a median value of \$4000. The total annual cost, calculated as the sum of the mean annual component costs, was estimated at a mean of \$23,930 and median of \$10,750.

With respect to client's annual marketings and business costs attributed to the VFD, survey results were mixed. Each component cost, except "other," was anticipated to be the smallest for the 5000 to 19,999 swine client marketings per year category. For the one to 4999 category, the cost for writing and delivery of VFDs was expected to be similar to costs of the 5000 to 19,999 category, while costs incurred for maintaining records, educating clients and others, and training staff were expected to be larger. The 20,000 to 49,999 swine client marketings per year category had the highest anticipated costs.

The variation in expected business costs attributed to the VFD was anticipated.

First, these were predicted impacts. Once costs are actually incurred and records kept, veterinarians will be able to provide more precise business cost estimates. Second, cost structures and services provided can vary considerably across veterinary practices. For example, maintenance of records, educating clients and others, and training staff can be performed in-house or through a third-party service, often dependent upon which is the lowest cost. Furthermore, veterinary practices may approach their costs for writing VFDs differently, depending on whether they are just writing VFDs for clients or if the VFD becomes part of the total veterinary services package that is offered.

Undoubtedly, the administrative costs associated with the writing and storage of VFDs and prescriptions are the ones that veterinarians are passing on to their clients in the form of charges for VFDs and additional site visits in order to ensure that the VCPR definition is being properly adhered to in case there is an inspection. Producers

Table 3: Survey questions on education and training for the changes the VFD entails*

	No. reporting	% reporting
What are you doing to prepare yourself and staff for the changes the VFD entails?†		
I have not done any preparation yet	0	0.0
Attend meetings to learn about the VFD	48	40.7
Read literature on the VFD	45	38.1
Create an information bulletin on the VFD to distribute to staff	25	21.2
Other	0	0.0
What are you doing to prepare your swine clients for the changes the VFD will bring about?†		
I have not done any preparation yet	2	1.7
Sponsored in-clinic meetings to present information and discuss changes	29	24.0
Meet in person with clients to discuss changes	43	35.5
Sent a notice of changes to clients in a regular newsletter	28	23.1
Create an information bulletin to distribute to clients	19	15.7
Other	0	0.0
How frequently do you think staff and clients will need to have updated training?		
Staff		
6 months	22	46.8
1 year	23	48.9
2 years	2	4.3
5 years	0	0.0
Never	0	0.0
Clients		
6 months	12	24.5
1 year	35	71.4
2 years	2	4.1
5 years	0	0.0
Never	0	0.0

* Study details described in Table 1.

† Percentages may reflect multiple answers.
VFD = Veterinary Feed Directive.

may struggle with justifying the costs of site visits, if their animals are apparently healthy, in order to fulfill the “timely visit” clause in the VCPR definition. There will most likely also be economies of scale in play that will challenge smaller clinics and producers in comparison to larger swine production systems and veterinarians, as they will be able to spread these administrative costs over more animals.

Recommendations

The reality of FDA’s antibiotic-use guidelines is that producers will have more conversations about judicious antibiotic usage with veterinarians if they want to use medically important antibiotics in feed and (or) water.

This inevitably will include changes to herd health and production plans. Veterinarians were advising clients to modify biosecurity (18.8%), increase vaccinations (20.6%), increase non-antibiotic feed additives (12.4%), modify nutrition (9.6%), modify housing (10.1%), modify animal-purchasing strategies (10.6%), modify population density (14.7%), and other (3.2%) (Table 6). Other advice included cleaner water; improving employee knowledge regarding disease recognition; hiring more veterinarians; using more phytochemicals, probiotics, and prebiotics; increasing weaning age; and management to better stabilize sow-herd health, pig flow, and disease elimination strategies.

Regarding advice on growth promotant use, most respondents (52.9%) were advising to move to non-medically important growth promotants for producers who want to continue to use antibiotics for growth-promotion purposes. Some respondents were advising clients to eliminate all uses of antibiotics for growth promotion (35.3%) or eliminate some uses of antibiotics for growth promotion (11.8%).

Most respondents believed swine producers in the United States will reduce the use of antibiotics in feed as a result of the VFD. However, the magnitude of the reduction varied. The largest percentage of surveyed veterinarians (34.7%) indicated

Table 4: Survey questions on VFD charges for new and existing clients*†

Per VFD	Observations	Mean (US\$)	Median (US\$)	SD (US\$)
1 to 4999 marketings per year				
New clients	3	40.83	30.00	30.24
Existing clients	3	40.83	30.00	30.24
5000 to 19,999 marketings per year				
New clients	10	32.00	25.00	17.35
Existing clients	11	26.45	25.00	9.07
20,000 to 49,999 marketings per year				
New clients	20	28.00	25.00	11.12
Existing clients	25	26.90	25.00	13.28
All respondents				
New clients	33	30.38	25.00	15.20
Existing clients	40	27.46	25.00	14.02
All respondents	New clients		Existing clients	
Per VFD (US\$)	No. reporting	% reporting	No. reporting	% reporting
0	0	0.0	0	0.0
1 to 10	0	0.0	0	0.0
11 to 20	10	30.3	18	45.0
21 to 30	14	42.4	13	32.5
31 to 40	5	15.2	5	12.5
41 to 50	1	3.0	2	5.0
More than 50	3	9.1	2	5.0

* Study details described in Table 1.

† The survey instrument collected swine-client marketings per year using categorical variables, ie, the percentage that would fall into each size category: 0; 1 to 4999; 5000 to 19,999; 20,000 to 49,999; 50,000 or more. For this analysis, the midpoint of each category (and end-point of the upper and lower bound category) was used to calculate the weighted average marketings per year. One survey respondent did not report swine client marketings per year but did report VFD charges for existing clients; this response is included in "all respondents." Four survey respondents had swine clients with 50,000 or more marketings per year but did not report VFD charges for new and existing clients.

VFD = Veterinary Feed Directive; SD = standard deviation.

an estimated 21% to 30% reduction in the use of antibiotics in feed as a result of the VFD. About 20% of respondents expected a 51% to 100% reduction, while the remaining 80% expected the reduction to be 50% or less.

Discussion

The FDA published the final versions of Guidance Documents 209 and 213 and the VFD in late 2013. Livestock producers and their veterinarians had approximately 3 years to prepare for the implementation of these regulations. While veterinarians have a good feel for the requirements of the VCPR, there is still quite a bit unknown about how veterinarians will satisfy the "timely visit to the premises" requirement.

While there is federal language that must be included in each state's VCPR requirements, the interpretation of "timely visits" will ultimately fall within each state's board of animal health. Some states have already publically stated that they consider annual visits to each premises as satisfying the "timely visit" requirement, while others have left this vague.

There are biosecurity and financial concerns about veterinarians needing to make annual (or more frequent) visits to every site when there may not be any on-going disease issues in order to fulfill the VCPR requirement and the costs associated with it. Certainly, these costs are being passed on to producers in the form of charges for writing VFDs and additional site visits. The charges associated

with writing a VFD, incurred as a cost by a producer, was anticipated to be in the \$11 to \$30 range. These will assuredly be continually re-evaluated as the market gets established. Over time, the costs would be expected to merge toward the cost of providing the service.

One of the key requirements of the new regulations is that the producer, veterinarian, and feed distributor will all have to keep copies of the VFD for 2 years. Also, with all the information that the veterinarian is legally responsible for, most veterinarians are likely going to use an online VFD generation tool (eg, GlobalVetLINK) to ensure that a proper and legal VFD is generated. The primary advantage of systems like these are that they have smart engine technology that

Table 5: Survey questions on anticipated per year costs to veterinary business operations*†

Per year	Observations	Mean (US\$)	Median (US\$)	SD (US\$)
1 to 4999 marketings per year				
Writing and delivering VFDs	2	3375	3375	2298
Maintaining records for VFDs	2	2750	2750	3182
Educating clients and others on VFD requirements	1	2500	2500	ND
Training staff on VFD requirements	1	2000	2000	ND
Other‡	1	1500	1500	ND
5000 to 19,999 marketings per year				
Writing and delivering VFDs	9	3244	1000	4806
Maintaining records for VFDs	8	684	400	777
Educating clients and others on VFD requirements	8	1275	650	1434
Training staff on VFD requirements	7	414	500	322
Other§	1	2500	2500	ND
20,000 to 49,999 marketings per year				
Writing and delivering VFDs	18	12,111	4500	14,569
Maintaining records for VFDs	16	3025	2000	3227
Educating clients and others on VFD requirements	15	6700	2500	9397
Training staff on VFD requirements	16	2453	2000	2487
Other¶	1	15,000	15,000	ND
All respondents				
Writing and delivering VFDs	29	8757	4000	12,439
Maintaining records for VFDs	26	2283	1000	2830
Educating clients and others on VFD requirements	24	4717	2250	7828
Training staff on VFD requirements	24	1840	1000	2223
Other‡§¶	3	6333	2500	7522

* Study details described in Table 1.

† The survey instrument collected swine-client marketings per year using categorical variables, ie, the percentage that would fall into each size category: 0; 1 to 4999; 5000 to 19,999; 20,000 to 49,999; 50,000 or more. For this analysis, the midpoint of each category (and end-point of the upper and lower bound category) was used to calculate the weighted average marketings per year. Four survey respondents had swine clients with 50,000 or more marketings per year but did not report anticipated costs to veterinary business operations.

‡ "Other" was not listed.

§ "Other" was travel to and from farms for VCPR requirements.

¶ "Other" was additional staff.

ND = not done, standard deviation (SD) is not meaningful for N of 1; VFD = Veterinary Feed Directive; VCPR = veterinary-client-patient relationship.

Table 6: Survey questions on recommendations for dealing with antibiotic regulations and growth promotant use*

	No. reporting	% reporting
How do you plan to advise clients to deal with potential new antibiotic regulations?†		
Modify biosecurity	41	18.8
Increase vaccinations	45	20.6
Increase non-antibiotic feed additives	27	12.4
Modify nutrition	21	9.6
Modify housing	22	10.1
Modify animal purchase strategies	23	10.6
Modify population density	32	14.7
Other‡	7	3.2
How do you plan to advise clients on growth promotant use?†		
Eliminate all uses of antibiotics for growth promotion	18	35.3
Eliminate some uses of antibiotics for growth promotion	6	11.8
Move to non-medically important growth promotants	27	52.9
Other	0	0.0
What percentage (%) do you expect swine producers in the United States to reduce the use of antibiotics in feed as a result of the VFD?		
0	1	2.0
1 to 10	5	10.2
11 to 20	9	18.4
21 to 30	17	34.7
31 to 40	4	8.2
41 to 50	3	6.1
51 to 60	5	10.2
61 to 70	2	4.1
71 to 80	1	2.0
81 to 90	1	2.0
91 to 100	1	2.0

* Study details described in Table 1.

† Percentages may reflect multiple answers.

‡ "Other" included cleaner water; improve employee knowledge regarding disease recognition; hire more veterinarians; use more phyto-genetics, probiotics, and prebiotics; increase weaning age; management to better stabilize sow-herd health; pig flow; and disease elimina-tion strategies.

VFD = Veterinary Feed Directive.

makes it virtually impossible to write a VFD that is not in legal compliance. Several precautionary statements must be included on a VFD, and these online tools allow the VFD to be automatically populated with precautionary statements to ensure legal compliance. Another advantage of these services is that they can automatically e-mail copies to the producer and feed distributor once the VFD is generated. These tools also allow for easy retrieval of a specific VFD upon request, such as for an FDA inspection.

These antibiotic-use guidelines are designed to change the way medically important antibiotics are to be used in livestock production. Producers and veterinarians will be encouraged to look at implementing other strategies, such as adjusting stocking density and using antibiotic alternatives and vaccines as methods to decrease antibiotic usage. These regulations will also force veterinarians and producers to have timely discussions about the need for antibiotics, whereas in the past the producer could just procure these items for in-feed or in-water use without veterinary authorization.

The FDA continues to state that during the initial implementation of these guidelines, the compliance officers are going to focus on education during visits, so collectively the industry is learning together. It is clear that the VFD regulations have increased the number of on-site visits; therefore, veterinarians are working with their producers to get these scheduled. When inspectors come on site, they have been looking for evidence of any VFDs that would have been written over the past 2 years, as well as the evidence of feeding records that tie back to the VFD. This will help ensure that the medically important antibiotics are being fed for the prescribed

duration and to the approximate number of animals listed, and that the feed was fed while the VFD was still valid (ie, not expired). While on the site, inspectors may also want to see evidence of current and complete treatment records and view the inventory of antibiotics that are on site and check their storage conditions as well as expiration dates.

Implications

- Practitioners can use this information to perform a benchmark assessment of their individual preparedness and anticipated impacts.
- Preliminary evidence suggests the industry will go beyond simply complying with the federal guidance for judicious use of antibiotics by collectively implementing more completely and stringently suggested herd-health and production plans.

Conflict of interest

None reported.

Disclaimer

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