



February, 27 2021

Dr. Carrie Castille  
National Institute of Food and Agriculture  
United States Department of Agriculture  
Office of the Director  
305-A Whitten Building  
12th Street, SW, and Jefferson Drive  
Washington, DC 20250

Dear Dr. Castille,

We, the undersigned members and colleague organizations of the Keep Antibiotics Working coalition (KAW)<sup>1</sup> ask that the United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) prioritize the funding of research that reduces the need for antibiotics in cattle and swine. The latest antibiotics sales data, published by the U.S. Food and Drug Administration (FDA) in December, show that sales for these two species are the highest among all food animals.<sup>2</sup> Sales for both species have increased this last year, while sales for use in poultry continue to decrease.

We appreciate the funding provided thus far by NIFA to address the threat of antibiotic resistance. However, we are concerned that NIFA has failed to acknowledge research demonstrating that improved animal management practices provide the most effective means to maintain animal health and reduce both the need for antibiotics and associated resistant infections. The need for this type of research was recognized in the 2015 USDA Antimicrobial Resistance Action Plan, which repeatedly referred to “livestock management practices”.<sup>3</sup> Despite this recognition, there has been no increase in funding for research on the link between

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<sup>1</sup> Formed in 2001, KAW is a coalition of 18 public health, consumer, animal protection and other advocacy organizations that joined together to ensure that untreatable superbugs resulting from the overuse of antibiotics on farms do not reverse the medical advances of the past century.

<sup>2</sup> FDA CVM | Summary Report. “Antimicrobials Sold or Distributed for Use in Food-Producing Animals.” Accessed February 1, 2021. <https://www.fda.gov/media/144427/download>

<sup>3</sup> USDA Antimicrobial Resistance Action Plan. Assessed February 9, 2021. <https://www.usda.gov/sites/default/files/documents/usda-antimicrobial-resistance-action-plan.pdf>

management practices and resistance. When viewing six recent awards<sup>4</sup> in the Agriculture and Food Research Initiative's (AFRI) Mitigating Antimicrobial Resistance (AMR) across the Food Chain program, we were disappointed to find that none of the projects aimed to address antibiotic overuse in agricultural settings. Instead, all aimed to reduce resistance after it had already developed as the result of antibiotic use. This approach to reducing the threat of antimicrobial resistance is short sighted.

We ask that AFRI seek applications for research that examine the connections between rearing practices, animal health, and antibiotic use with the goal of improving animal health, reducing the need for antibiotics, and reducing the threat of antibiotic resistance to human and animal health. AFRI should prioritize research applications that identify practices that reduce the need for antibiotics over projects that attempt to improve antibiotic stewardship once animals are already ill or that attempt to stop the spread of resistance after antibiotic administration.

One of the most effective ways to prevent disease and associated antibiotic use is to alter existing management factors that contribute to disease, rather than devising mitigation strategies and interventions to control diseases and the threat of AMR after they arise. Many of the recently funded projects (e.g. studies of the risk of anthropogenically induced AMR in the agricultural environment, of the transport of resistant bacteria in flowing waters, and of the impact of manure management on resistant bacteria) all address already developed antimicrobial resistant organisms. We are keenly aware of the fact that antibiotic resistant organisms are continuing to develop, and it is important to study the movement and persistence of antibiotic resistance elements in order to assess the risks of AMR to human health. However, we would like to see more funded projects that address steps to raise healthier animals and prevent the development of AMR in the first place.

There is abundant evidence that much of the antibiotic use on farms is a default approach directly linked to practices that undermine animal health and welfare.<sup>5 6</sup> These practices include weaning pigs and calves early, high animal density, mixing animals from multiple sources, feeding inappropriate diets, routine physical alterations, use of genetically uniform herds or flocks that are bred for maximum production, and providing inadequate environmental conditions, including an absence of enrichment, while simultaneously downplaying temperature, social structuring and

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<sup>4</sup> USDA NIFA Current Research Information System (CRIS). Accessed December 5, 2020.

[https://cris.nifa.usda.gov/cgi-bin/starfinder/0?path=fastlink1.txt&id=anon&pass=&search=\(AN=1024704;1025028;1024979;1025009;1024735;1024861\)&format=WEBTITLES&GIY](https://cris.nifa.usda.gov/cgi-bin/starfinder/0?path=fastlink1.txt&id=anon&pass=&search=(AN=1024704;1025028;1024979;1025009;1024735;1024861)&format=WEBTITLES&GIY)

<sup>5</sup> Bengtsson, Björn, and Christina Greko. "Antibiotic Resistance—Consequences for Animal Health, Welfare, and Food Production." *Upsala Journal of Medical Sciences* 119, no. 2 (May 2014): 96–102.

<https://doi.org/10.3109/03009734.2014.901445>.

<sup>6</sup> Honeyman, Mark S., "Demonstration of a Swedish sustainable swine production system in Iowa" (1998). Leopold Center Completed Grant Reports. 116. [http://lib.dr.iastate.edu/leopold\\_grantreports/116](http://lib.dr.iastate.edu/leopold_grantreports/116).

hygienic practices including air quality and waste management.<sup>7</sup> The European Medicines Agency and European Food Safety Agency examined the scientific evidence on reducing the need for antibiotics on farm and recommended “implementing farming practices that prevent the introduction and spread of disease”.<sup>8</sup> We ask NIFA to emphasize research that identifies farm practices that reduce the need for antibiotics.

From FDA sales data, we know that the bulk of medically important antibiotics in food animals are sold for use in cattle and swine and thus efforts to reduce the need for antibiotics should focus on these species. For cattle, USDA National Animal Health Monitoring System (NAHMS) surveys show that the two major reasons for antibiotic use are respiratory disease and liver abscess control.<sup>9</sup> Successful mitigation strategies exist that reduce the incidence and severity of these illnesses without the use of antibiotics. For respiratory disease (BRD), Mark Hilton, a clinical professor of beef production medicine in the Purdue University School of Veterinary Medicine, indicates that new drugs and vaccines may have questionable impact for control of the illness, but preconditioning of calves before arrival at a feedlot (increasing calf age of entry at the feedlot, keeping more calves on their home farm, ensuring intake of colostrum, etc.) is likely to have a significant impact.<sup>10</sup> Similarly, cattle are often given antibiotics for liver abscess prevention and control. However, simply increasing roughage in the diet results in a dramatic reduction in liver abscesses.<sup>11</sup> We support continued research on vaccines and alternatives to antibiotics, but consider these compliments to creating management systems that protect and maintain animal health.

Furthermore, antibiotics are often utilized to treat conditions such as lameness in dairy cattle. In a North American study published in 2012, researchers reported that lameness in dairy cows became so severe that a quarter of all cows were classified as lame and 33% were at risk of becoming lame.<sup>12</sup> However, lameness can be significantly reduced by simple practices such as

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<sup>7</sup> Read “The Use of Drugs in Food Animals: Benefits and Risks” at NAP.Edu. Accessed August 11, 2020. <https://doi.org/10.17226/5137>.

<sup>8</sup> EMA (European Medicines Agency) and EFSA (European Food Safety Authority). “EMA and EFSA Joint Scientific Opinion on measures to reduce the need to use antimicrobial agents in animal husbandry in the European Union, and the resulting impacts on food safety (RONAFA).” [EMA/CVMP/570771/2015]. *EFSA Journal* 15(1), no. 4666 (2017): pp. 245. doi:10.2903/j.efsa.2017.4666

<sup>9</sup> USDA APHIS | National Animal Health Monitoring System. “Current and Ongoing Projects” Accessed August 11, 2020. <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/monitoring-and-surveillance/nahms>.

<sup>10</sup> Hilton, W. Mark. “BRD in 2014: Where Have We Been, Where Are We Now, and Where Do We Want to Go?” *Animal Health Research Reviews* 15, no. 2 (December 2014): 120–22. <https://doi.org/10.1017/S1466252314000115>.

<sup>11</sup> Reinhardt, C. D., and M. E. Hubbert. “Control of Liver Abscesses in Feedlot Cattle: A Review 11 Contribution No. 10-205-J from the Kansas Agric. Exp. Stn., Manhattan 66506.” *The Professional Animal Scientist* 31, no. 2 (April 1, 2015): 101–8. <https://doi.org/10.15232/pas.2014-01364>.

<sup>12</sup> Keyserlingk, M. a. G. von, A. Barrientos, K. Ito, E. Galo, and D. M. Weary. “Benchmarking Cow Comfort on North American Freestall Dairies: Lameness, Leg Injuries, Lying Time, Facility Design, and Management for HighProducing Holstein Dairy Cows.” *Journal of Dairy Science* 95, no. 12 (December 2012): 7399–7408. <https://doi.org/10.3168/jds.2012-5807>.

utilizing pasture-based systems rather than freestall barns and making use of sand bedding rather than straw, as well as ensuring that dairy cows are sent to slaughter while they are still in fit condition rather than emaciated and weak.<sup>13</sup>

In pigs, the other major species that receives the bulk of medically important antibiotics as indicated by FDA sales data, recent research shows that increasing weaning age by less than a week leads to a more than 50% reduction in the need for antibiotic injections.<sup>14</sup> Phasing out certain physical procedures for piglets effectively reduces antibiotic use as well. In some studies, up to 90% of antibiotics were administered in the first 10 weeks of pigs' lives and associated with painful mutilations (especially surgical castration) and related gut and respiratory infections.<sup>15</sup> In Finland, Sweden, Denmark, The Netherlands and Thailand, ending tail docking of piglets has allowed for significantly reduced antibiotic use.<sup>16</sup>

These are just a few of the many welfare and management practices that, if implemented, could drastically improve the health of U.S. livestock. It is important however, that NIFA focus on methods to reduce antibiotic use, but not eliminate it altogether. Antibiotics should be reserved to treat sick individual animals after disease is clinically diagnosed. Participation in “raised without antibiotics” marketing programs can act as a disincentive for farmers to treat sick animals and resolve underlying issues, this is not in the interest of animal welfare and should not be a focus of research for NIFA.

One of the most effective ways to prevent disease and associated antibiotic use is to alter existing management factors that contribute to disease, rather than devising novel technologies to control diseases and resistant organisms after they arise. NIFA should fund more AMR research that focuses on these enhanced husbandry practices and mitigates the development of AMR in agricultural settings.

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<sup>13</sup> Adams, A. E., J. E. Lombard, C. P. Fossler, I. N. Román-Muñiz, and C. A. Koprak. “Associations between Housing and Management Practices and the Prevalence of Lameness, Hock Lesions, and Thin Cows on US Dairy Operations.” *Journal of Dairy Science* 100, no. 3 (March 1, 2017): 2119–36. <https://doi.org/10.3168/jds.2016-11517>; Grandin, Temple. “Pro-active activism.” *Meat and Poultry*, Aug 1991, p. 29. Op-ed.

<sup>14</sup> National Hog Farmer. “Weaning Age and Antibiotic Use for Pigs Evaluated,” July 9, 2020. <https://www.nationalhogfarmer.com/animal-health/weaning-age-and-antibiotic-use-pigs-evaluated>. ; Sjölund, M., M. Postma, L. Collineau, S. Lösken, A. Backhans, C. Belloc, U. Emanuelson, et al. “Quantitative and Qualitative Antimicrobial Usage Patterns in Farrow-to-Finish Pig Herds in Belgium, France, Germany and Sweden.” *Preventive Veterinary Medicine* 130 (August 1, 2016): 41–50. <https://doi.org/10.1016/j.prevetmed.2016.06.003>.

<sup>15</sup> Lekagul, Angkana, Viroj Tangcharoensathien, and Shunmay Yeung. “Patterns of Antibiotic Use in Global Pig Production: A Systematic Review.” *Veterinary and Animal Science* 7 (June 1, 2019): 100058. <https://doi.org/10.1016/j.vas.2019.100058>.

<sup>16</sup> Stygar, A. H., I. Chantziaras, I. Toppari, D. Maes, and J. K. Niemi. “High Biosecurity and Welfare Standards in Fattening Pig Farms Are Associated with Reduced Antimicrobial Use.” *Animal*, undefined/ed, 1–9. <https://doi.org/10.1017/S1751731120000828>.

Sincerely,

American Society for the Prevention of Cruelty to Animals  
Antibiotic Resistance Action Center, George Washington University  
Center for Biological Diversity  
Center for Food Safety  
Consumer Federation of America  
Consumer Reports  
Earthjustice  
Food and Water Watch  
Food Animal Concerns Trust  
Health Care Without Harm  
Interfaith Center on Corporate Responsibility  
Johns Hopkins Center for a Livable Future  
Natural Resources Defense Council  
Society of Infectious Diseases Pharmacists