

On-Farm Monitoring of Antibiotic Use and Resistance in U.S. Poultry Production

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Antimicrobial resistance (AMR) continues to be a pressing public health concern. The Food and Drug Administration (FDA) began a program in cooperation with the U.S. Department of Agriculture (USDA) to monitor the level of resistance to many of the medically-important antimicrobial agents in *Salmonella* sp., *E. coli*, and *Campylobacter* sp. that were isolated from poultry in processing plants. The concern is that the isolates collected in the processing plant might not reflect the diversity of resistance present on the farm and the pressures, such as antibiotic use, that occur on the farm. Furthermore, the poultry industry is undergoing dramatic changes with respect to antibiotic usage, in part due to FDA GFI #209, #213 and the Veterinary Feed Directive, and in part due to consumer demand.

An important gap in our scientific understanding of AMR is whether antibiotic use, from hatchery to slaughter, actually contributes to changes in the prevalence of antibiotic resistance. Although the broiler industry has dramatically reduced its antibiotic use on-farm, antibiotic resistance in some bacteria has persisted. By collecting on-farm antimicrobial use and resistance data from the same farms, we can begin to close this information gap. Collecting on-farm data that include antibiotic use and resistance from the same farms is a better way to assess the relationship between the two, rather than trying to correlate national datasets.

This project, which has the support of USPOULTRY and NCC, is currently in cooperation with USDA:APHIS, but all data will remain confidential and anonymous. USDA:APHIS will only receive de-identified data, and only aggregate data will be made public. However, every participant in this project will receive reports of their farm-specific data on a quarterly basis. All raw data will be considered collected as 19 CFR 201.6 Confidential Business Information with regards to the Freedom of Information Act.

The following page of this letter contains a list of the data that need to be collected from each participating company. I will work with each participant on an individual basis to make this process as easy as possible and will customize data collection tools that are specific to your needs.

Thank you for your willingness to consider this project.

Sincerely,



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Data to be collected from each enrolled complex

- Each quarter, a minimum of 4 farms will be selected from each enrolled complex
 - Sampling will be conducted on 1 house per farm
 - Farm identity will remain anonymous to the University of Minnesota; pre-labeled sampling supplies will use a coded system to maintain farm anonymity
- Sample kits are sent from the University of Minnesota, and after sampling, samples will be shipped overnight on ice packs to the University of Minnesota
- Samples will consist of composite litter samples
- Samples will be collected between 21 days-of-age and slaughter, but sampling as close to slaughter age is ideal
- Litter samples will be cultured for *Salmonella*, *E. coli*, *Campylobacter* and *Enterococcus*
 - Each *Salmonella* isolate will be serotyped
 - Each *Campylobacter* isolate will be speciated (e.g. *jejuni* versus *coli*)
 - Each *Enterococcus* isolate will be speciated (e.g. *faecalis* versus *faecium*)
 - Antibiotic resistance profiles will be generated for all bacterial isolates recovered
- Antibiotic resistance genes will be quantified from the litter samples
- Antibiotic usage information will be collected from the sampled farms
 - These data include the use of hatchery antibiotics, ionophores, and any other antibiotics used in the feed or water
- Demographic data will be collected, including:
 - Number of birds placed
 - Date of bird placement and projected date of bird slaughter
 - Downtime from previous flock in house
 - Number of times litter has been reused
 - 7-day mortality

Reporting

- Each quarter, participating companies will receive a detailed report of results from all participating complexes and farms
 - The report will be password-protected
- After each full year of sampling, a report of all aggregated results will be prepared, and all company participants will have a chance to review and comment prior to publication and public release