

Chicken Meat AM Usage Appropriateness Survey 2020

Date: July 2021



Background

In 2018, the companies that produce 90% of Australian chickens agreed to submit meat chicken antibiotic usage data on a quarterly basis for a national benchmarking program that could inform progress on elements of the antimicrobial stewardship (AMS) program. Data for 2017 was collated retrospectively, and collection of usage data for ionophores (antiparasitics) was initiated in 2020. A survey of usage in breeders is conducted on an annual basis as the logistics are more complex than for meat chickens.

However, usage data is meaningless without context to inform whether the usage was 'appropriate'.

An exhaustive list of elements and associated best-practice descriptions that define 'appropriate' or 'responsible' use of antibiotics (Monnier 2018) was converted by the ACMF into a survey that could be conducted on an annual basis by ACMF members companies (90% of Australian chicken meat production). The results help clarify national AMS practices and priorities in the meat chicken industry and captures many elements of AMS that are taken for granted.

AM appropriateness of use survey

Results from the usage appropriateness survey are provided in Table 1, with descriptions of the results for each question provided below.

Table 2 Percentage of chickens produced by ACMF members covered by each response

	Always (90-100%)	Usually (40-89%)	Sometimes (<39%)	Never (0%)	Comments
1. Do you use microbiology diagnostic tools to provide diagnostic testing of samples prior to administering antibiotics for treatment?	74.10	0.00	25.90	0.00	A project has been completed identifying opportunities to improve access to diagnostic tools for companies that don't currently have viable access. Recommendations from this project are being considered for implementation.
2. Do you use undertake microbiological analysis/diagnostic testing to support the use of antimicrobials for prevention?	12.05	38.55	7.83	0.00	As above for 1.
3. Do you only prescribe antibiotics to prevent or treat infections for which antibiotic treatment provides a proven benefit?	100.00	0.00	0.00	0.00	N/A*
4. Do you take antibacterial activity into consideration when you select antibiotics for treatment and prevention?	100.00	0.00	0.00	0.00	N/A
5. Do you select antibiotics based on their antibacterial spectrum (as narrow as possible; assuming options besides broad spectrum are available)?	61.45	38.55	0.00	0.00	Further exploration of the reasons for not always selecting the narrowest spectrum is continuing, however it will be difficult to make progress given how few antibiotics are approved for use in meat chickens.
6. Do you prescribe the dose and dosing frequency of the antibiotic regimen based on pharmacokinetics /pharmacodynamics (if any information is available/do you search?)	100.00	0.00	0.00	0.00	N/A
7. Do you use the shortest possible evidence-based duration of the antibiotic regimen?	70.48	29.52	0.00	0.00	Further exploration of the reasons for not always using the shortest evidence-based duration is continuing.
8. Do you use the National Poultry prescribing guidelines to inform antibiotic selection?	100.00	0.00	0.00	0.00	

	Always (90-100%)	Usually (40-89%)	Sometimes (<39%)	Never (0%)	Comments
9. Do you administer antibiotics in a timely manner? i.e. begin disease investigations immediately on notification of possible disease and don't delay administering antibiotics if indicated?	55.42	44.58	0.00	0.00	Investigation found that where antibiotics aren't administered in a timely manner it relates to situations where disease testing results pending to inform treatment or in some instances the disease may be allowed to progress for a day or so to inform whether treatment is warranted.
10. Do you take possible interactions with other medications into consideration when you're selecting an antibiotic for prevention or treatment?	100.00	0.00	0.00	0.00	N/A
11. Do you select the antibiotic with the least toxicity possible? (if there are alternative effective antibiotic options)	100.00	0.00	0.00	0.00	N/A
12. Do you select the antibiotic with the lowest risk of secondary infections?	100.00	0.00	0.00	0.00	N/A
13. Do you fully document the antibiotic regimen including indication in the medical record?	100.00	0.00	0.00	0.00	N/A
13a. If yes, are these records paper-based or electronic? (highlight relevant answer)*	Paper 0.00	Electronic 18.07	Combination 81.93		N/A
14. Do you check compliance with application of the antibiotic prescription (feedmill, farmer)?	64.46	0.00	35.54	0.00	Investigation into this issue found that, while companies attempt to check compliance, complexities impede confirmation that application has been followed as prescribed. This is a cross-sectoral issue and discussions are continuing through the AIAS**.
15. Do you ensure access to, and routine availability of, quality antibiotics for the animals in your care?	87.95	12.05	0.00	0.00	Where access isn't routine it is because antibiotics aren't easily accessible in all situations
16. Do you take steps to minimise the emergence of antibiotic resistance due to the application of antibiotics?	93.98	6.02	0.00	0.00	N/A
17. Do you consider ways of conserving the effectiveness of antibiotics for the future?	100.00	0.00	0.00	0.00	N/A

	Always (90-100%)	Usually (40-89%)	Sometimes (<39%)	Never (0%)	Comments
18. Do you undertake antibiotic resistance surveillance to inform antibiotic prescribing?	81.93	0.00	18.07	0.00	<i>As above for 1.</i>
19. Do you draw on available disease expertise and resources when considering the use of antibiotics (including reference documents, contacting other poultry vets/AVA)? If you had questions or were unsure would you seek expert advice?	100.00	0.00	0.00	0.00	N/A
20. Have you undertaken any specific educational programmes on antibiotic use? #	41.57	46.39	12.05		A Sydney University project has developed an online training course in AMS for Australian veterinarians. Discussions have been initiated with the project team to identify options for providing access to poultry veterinarians, including development of a poultry-specific module.
20a. Would you be interested in undertaking specific educational programmes on antibiotic use? (highlight relevant answer)	Yes 64.46	Maybe 29.52	No 6.02		
21. Do you safely dispose of unused antibiotics and waste products containing antibiotics to prevent selection in the environment?	70.48	29.52	0.00	0.00	Investigation into this issue found that, where 'safe disposal' isn't always assured it related to either uncertainty around on-farm/feedmill compliance (as above in 14) or difficulties in accessing appropriate disposal facilities.
22. Do you check compliance with safe disposal of unused antibiotics and waste products containing antibiotics by those administering antibiotics (feedmill, farmer)? If you had antibiotics leftover	58.43	6.02	29.52	0.00	<i>As above for 14.</i>

*N/A; Not applicable

**Australian Animal Industries Antimicrobial Stewardship RD&E Strategy <https://aiasrdestrategy.com.au/>

1. Do you use microbiology diagnostic tools to provide diagnostic testing of samples prior to administering antibiotics for treatment?

The majority of chickens produced (74%) are grown for companies where the veterinarians that oversee flock health have accessible, and always use, diagnostic tools to confirm bacterial infection before treatment with antibiotics is considered. However, in severe cases, and where a veterinarian considers the clinical signs clearly indicate the causal bacterial pathogen, treatment may be progressed without delay in the interests of the birds' health.

2. Do you use undertake microbiological analysis/diagnostic testing to support the use of antimicrobials for prevention?

More than half the chickens produced in Australia are grown without the preventative use of antibiotics that are used in humans, which meant this question was not relevant in these circumstances. In two thirds of the cases where antibiotics are used preventatively, microbiological analysis and diagnostic testing are used to support this use, at least sometimes.

3. Do you only prescribe antibiotics to prevent or treat infections for which antibiotic treatment provides a proven benefit?

All poultry veterinarians surveyed indicated that they only prescribe antibiotics to prevent or treat infections for which antibiotic treatment provides a proven benefit.

4. Do you take antibacterial activity into consideration when you select antibiotics for treatment and prevention?

All poultry veterinarians surveyed indicated that they always take antibacterial activity into consideration when selecting antibiotics for treatment and prevention.

5. Do you select antibiotics based on their antibacterial spectrum (as narrow as possible; assuming options besides broad spectrum are available)?

All poultry veterinarians surveyed indicated that they always, or usually, select antibiotics with as narrow a spectrum as possible, however due to the limited range of antibiotics available, there is often no choice (the choice is to use or not to use the antibiotic).

6. Do you prescribe the dose and dosing frequency of the antibiotic regimen based on pharmacokinetics/pharmacodynamics (if any information is available/do you search?)

All poultry veterinarians surveyed indicated that they always prescribe the dose and dosing frequency of the antibiotic regimen based on pharmacokinetics/pharmacodynamics where there is credible information available.

7. Do you use the shortest possible evidence-based duration of the antibiotic regimen?

All poultry veterinarians indicated that they always or usually use the shortest possible evidence-based duration of the antibiotic regimen.

8. Do you use the National Poultry prescribing guidelines to inform antibiotic selection?

While the antibiotic prescribing guidelines are relatively new, all poultry veterinarians indicated that they use them to inform antibiotic selection.

9. Do you administer antibiotics in a timely manner? i.e. begin disease investigations immediately on notification of possible disease and don't delay administering antibiotics if indicated?

All poultry veterinarians indicated that they always or usually administer antibiotics in a timely manner. Any delay is where results of disease testing are pending to inform treatment; however, in some instances the disease may be allowed to progress for a day or so to inform whether treatment is warranted. In severe cases treatment may be progressed before results are available.

10. Do you take possible interactions with other medications into consideration when you're selecting an antibiotic for prevention or treatment?

All poultry veterinarians indicated that they always take possible interactions with other medications into consideration when selecting an antibiotic for prevention or treatment; however due to the limited range of antibiotics available, there is often little scope to take possible interactions into consideration.

11. Do you select the antibiotic with the least toxicity possible? (if there are alternative effective antibiotic options)

All poultry veterinarians indicated that they always select the antibiotic with the least toxicity possible when selecting an antibiotic for prevention or treatment.

12. Do you select the antibiotic with the lowest risk of secondary infections?

All poultry veterinarians indicated that they always select the antibiotic with the lowest risk of secondary infections; however due to the limited range of antibiotics available, there is often little scope to take this into consideration.

13. Do you fully document the antibiotic regimen including indication in the medical record?

All antibiotic regimens are fully documented and most of these are a combination of electronic and paper-based systems.

14. Do you check compliance with application of the antibiotic prescription (feedmill, farmer)?

64% of chickens in Australia are grown in companies that check compliance with application of the antibiotic prescription at both the feedmill and farmer levels. The remaining chickens are grown in companies that rely on feedmill QA systems to manage this compliance. While there are challenges in ensuring farmer compliance with veterinary directions, the use of antibiotic products that are administered at the farm level is minimal.

15. Do you ensure access to, and routine availability of, quality antibiotics for the animals in your care?

All poultry veterinarians indicated that they always, or usually, ensure access to, and routine availability of, quality

antibiotics for the birds in their care. If antibiotics are rarely used (including ionophores) then they are only ordered when needed which may result in a delay in application.

16. Do you take steps to minimise the emergence of antibiotic resistance due to the application of antibiotics?

All poultry veterinarians indicated they always, or usually, take steps to specifically minimise the emergence of antibiotic resistance due to the application of antibiotics, although this often relates more to AMR of importance to animal health than human health as antibiotics of importance in human medicine are not used frequently.

17. Do you consider ways of conserving the effectiveness of antibiotics for the future?

All poultry veterinarians always consider ways of conserving the effectiveness of antibiotics for the future.

18. Do you undertake antibiotic resistance surveillance to inform antibiotic prescribing?

82% of chickens are grown in companies where the veterinarian always undertakes AMR surveillance to inform prescribing. In the remaining cases this surveillance is sometimes used, but limited availability of affordable technologies impedes regular use.

19. Do you draw on available disease expertise and resources when considering the use of antibiotics (including reference documents, contacting other poultry veterinarians /AVA)? If you had questions or were unsure would you seek expert advice?

All poultry veterinarians surveyed always draw on available disease expertise and resources when they have questions regarding disease treatment and/or antibiotic appropriateness.

20. Have you undertaken any specific educational programmes on antibiotic use?

All poultry veterinarians were provided with specific education on antibiotic use as a part of their veterinary training. Training external to this that is relevant to Australian poultry veterinarians does not currently exist, however there is a high level of interest in completely further training if it was available.

21. Do you safely dispose of unused antibiotics and waste products containing antibiotics to prevent selection in the environment?

All companies always, or usually, safely dispose of unused antibiotics and waste products containing antibiotics to prevent selection in the environment. Those antibiotics under direct veterinary control are appropriately disposed of, however gaps remain in terms of ensuring farmers and feedmills dispose of packaging and any residual product appropriately. In some instances, residual antibiotics are returned to the supplier for disposal.

22. Do you check compliance with safe disposal of unused antibiotics and waste products containing antibiotics by those administering antibiotics (feedmill, farmer)?

The poultry veterinarians surveyed rely on feedmill QA systems to manage compliance with safe disposal of antibiotics and waste products containing antibiotics, and in almost two thirds of cases they always check this compliance. It can be difficult to check farmer compliance but attempts are made. In some cases, unused antibiotics are returned to the vet or supplier for safe disposal.

References

Monnier, A. A., Eisenstein, B. I., Hulscher, M. E., Gyssens, I. C., & DRIVE-AB WP1 group (2018). Towards a global definition of responsible antibiotic use: results of an international multidisciplinary consensus procedure. *The Journal of antimicrobial chemotherapy*, 73(suppl_6), vi3–vi16. <https://doi.org/10.1093/jac/dky114>

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