

Survey on DVM students' perceptions about antimicrobial resistance and its consequences

Survey contents:

This survey is divided into five sections

- 1) Antimicrobial resistance and you
- 2) Factors influencing the development of antimicrobial resistance
- 3) The impact of antimicrobial resistance
- 4) Management of antimicrobial resistance
- 5) Demographic information

Note: The reset button on the right hand side of the survey can be used to delete your chosen option for a single question.

PARTICIPANT INFORMATION STATEMENT

(1) What is this study about?

You are invited to take part in a research study about understanding veterinary students' current perceptions of issues around antimicrobial resistance prior to formal education on this topic. As future prescribers of antimicrobial drugs, veterinary students are important stakeholders in the issue of antimicrobial resistance. This survey will highlight knowledge gaps amongst students and suggest improvements to educational strategies that your teachers can implement during your veterinary course.

You have been invited to participate in this study because you are a Year 2 DVM student about to learn about the importance of the Prudent Use of Antimicrobials. This Participant Information Statement tells you about the research study. Knowing what is involved will help you decide if you want to take part in the research. Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

Participation in this research study is voluntary.

By giving your consent to take part in this study you are telling us that you:

· Understand what you have read.

· Agree to take part in the research study as outlined below.

- Agree to the use of your personal information as described.

You will be given a copy of this Participant Information Statement to keep.

(2) Who is running the study?

The study is being carried out by the following researchers:

- Dr Merran Govendir, Associate Professor in Veterinary Pharmacology, The Sydney School of Veterinary Science, The University of Sydney

- Dr Jacqui Norris, Professor of Veterinary Microbiology & Infectious Diseases, The Sydney School of Veterinary Science, The University of Sydney

- Josh McClelland is conducting this study as the basis for Research and Enquiry 3 A & 3 B units of study for award of the DVM at The University of Sydney. This will take place under the supervision of Dr Merran Govendir, Associate Professor in Veterinary Pharmacology, The University of Sydney.

(3) What will the study involve for me?

You are asked to fill in and submit an online survey only.

(4) How much of my time will the study take?

This survey should take approximately 10 minutes to complete

(5) Who can take part in the study?

All DVM Year 2 students are invited to fill in this survey

(6) Do I have to be in the study? Can I withdraw from the study once I've started?

Being in this study is completely voluntary and you do not have to take part. Your decision whether to participate will not affect your current or future relationship with the researchers or anyone else at The University of Sydney

If you decide to take part in the study and then change your mind during taking the survey, don't submit the survey.

The researchers do not know who has completed the survey. There are no consequences for not submitting the survey.

Submitting your completed questionnaire is an indication of your consent to participate in the study. You can withdraw your responses any time before you have submitted the questionnaire. Once you have submitted it, your responses cannot be withdrawn because they are anonymous and therefore we will not be able to tell which one is yours.

(7) Are there any risks or costs associated with being in the study?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

(8) Are there any benefits associated with being in the study?

We cannot guarantee that you will receive any direct benefits from being in the study.

(9) What will happen to information about me that is collected during the study?

The data from this survey will be stored will be stored at the University of Sydney's Research Data Storage. Any hard copy material will be kept securely in Dr Govendir's office in the McMaster building room 248 (B14). The information will be kept secure for a minimum of 5 years.

The results of this study will form the basis of a DVM Year 3 Research and Enquiry Project for one student - Josh McClelland. Associate Professor Govendir and Associate Professor Jacqui Norris anticipates writing up the data as a manuscript for journal submission.

By providing your consent, you are agreeing to us collecting personal information about you for the purposes of this research study. Your information will only be used for the purposes outlined in this Participant Information Statement, unless you consent otherwise.

We will keep the information we collect for this study, and we may use it in future projects. By providing your consent you are allowing us to use your information in future projects. We don't know at this stage what these other projects will involve. We will seek ethical approval before using the information in these future projects.

We may be required to submit the information from this project to a public database for research information, so that other researchers can access it and use it in their projects. Some journals insist on the authors making the research data available to readers. Before we do so, we will take out all the identifying information so that the people we give it to won't know whose information it is. They won't know that you participated in the project and they won't be able to link you to any of the information you provided.

(10) Can I tell other people about the study?

Yes, you are welcome to tell other people about the study.

(11) What if I would like further information about the study?

When you have read this information, Dr Merran Govendir will be available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage during the study, please feel free to contact Merran Govendir merran.govendir@sydney.edu.au 93515442

(12) Will I be told the results of the study?

The investigators will provide feedback to you about the overall results of the study in a VETS6203 Research and Enquiry 2 A lecture and via a summary newsletter in semester 2 when we have had more time to analyse the results.

(13) What if I have a complaint or any concerns about the study?

Research involving humans in Australia is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this study have been approved by the HREC of the University of Sydney [Protocol number 2019-1002]. As part of this process, we have agreed to carry out the study according to the National Statement on Ethical Conduct in Human Research (2007). This statement has been developed to protect people who agree to take part in research studies.

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the university using the details outlined below. Please quote the study title and protocol number.

The Manager, Ethics Administration, University of Sydney:

· Telephone: +61 2 8627 8176 · Email: human.ethics@sydney.edu.au

· Fax: +61 2 8627 8177 (Facsimile)

This information sheet is for you to keep

Section 1: Antimicrobial resistance and you

- 1) Have you had experience with antimicrobial resistance in the past? If yes, please indicate how you were exposed to the issue. (Tick all that apply)
- Yes (through my own experience)
 - Yes (through a family member's experience)
 - Yes (through a friend's experience)
 - Yes (through a pet's experience)
 - No

- 2) What is your understanding of the phrase 'antimicrobial resistance'?
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- 3) Which of the following best describes your position on antimicrobial resistance? (Tick all that apply)
- No action is required because the evidence that antimicrobial resistance has caused major harm is minimal.
 - We must take action to minimise antimicrobial resistance because there is potential for it to cause harm.
 - Antimicrobial resistance is not my problem.
 - I would like more education on antimicrobial resistance.
 - My actions can contribute to how antimicrobial resistance is managed.
 - I have a role in educating my future patients/clients about antimicrobial resistance.
 - I do not know enough about antimicrobial resistance.
 - I do not have a position on antimicrobial resistance

Section 2: Factors influencing the development of antimicrobial resistance

In your opinion, what contribution do the following factors make to an INCREASE in antimicrobial resistance?

	Not sure	No contribution	Small contribution	Moderate contribution	Substantial contribution
4) Too many antimicrobial prescriptions in animals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Too many antimicrobial prescriptions in humans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Doctors prescribing antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Dentists prescribing antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Veterinarians prescribing antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Using an antimicrobial when benefit to the patient is uncertain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Human patients requesting antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Owners of animals requesting antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Patients (human and animal) not finishing their prescribed course of antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) Patients (human and animal) using antimicrobials from previously unfinished prescriptions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14)					

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| Transmission of antimicrobial resistance in human hospitals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15) Transmission of antimicrobial resistance in animal hospitals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16) Unnecessary use of broad spectrum antimicrobials. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17) Long durations of antimicrobial treatment. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18) Too low a dose of antimicrobials used in treatment. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 19) Pharmaceutical representatives marketing antimicrobials. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20) Slow development of new antimicrobials. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 21) Use of over-the-counter antimicrobials in humans. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 22) Use of over-the-counter antimicrobials in animals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 23) Use of antimicrobials by livestock producers to treat disease. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 24) Use of antimicrobials by livestock producers to prevent disease. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Section 3: The impact of antimicrobial resistance

Please indicate your level of disagreement or agreement with the following statements:

- | | Not sure | Strongly disagree | Disagree | Agree | Strongly agree |
|---------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 25) Resistance to antimicrobials has spread from human to human. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 26) Resistance to antimicrobials has spread from humans to animals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 27) Resistance to antimicrobials has spread from animals to humans. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 28) Emergence of antimicrobial resistance in humans will have a negative effect on animal health. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 29) | | | | | |

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| Emergence of antimicrobial resistance in animals will have a negative effect on human health. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30) The effectiveness of antimicrobials has decreased. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 31) Unnecessary use of antimicrobials leads to reduced future treatment choice. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 32) The world is running out of effective antimicrobials. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 33) The problem of antimicrobial resistance is overdramatised | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 34) Antimicrobials are required for routine desexing of companion animals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 35) Antimicrobials are required for routine dental procedures in companion animals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 36) Antimicrobials are required for surgeries to fix a broken bone in companion animals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 37) New antimicrobials are constantly being discovered and developed to keep up with the problem of antimicrobial resistance. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 38) Antimicrobials can affect 'good' bacteria that normally live on the skin and in the gut. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 39) Taking antimicrobials has no effect on the bacteria that naturally live in the gut. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 40) Antimicrobial resistant bacteria may last a year in a patient after a single use of an antimicrobial | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 41) Antimicrobial use in one patient may weaken its effectiveness in the same individual in the future. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 42) Antimicrobial use in one patient may weaken its effectiveness for other patients in the future. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Section 4: Management of antimicrobial resistance

How important do you think the following stakeholders are in dealing with the issue of antimicrobial resistance?

	Not sure	Not important	Slightly important	Moderately important	Very important	Extremely important
43) Myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44) Other vet students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45) My family and friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46) The community and general public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47) Pet owners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48) Farmers and producers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49) Government and policy makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50) Professional associations (e.g. Australian Veterinary Association)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
51) Animal industry organisations (e.g. Meat and Livestock Australia)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
52) Veterinarians	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53) Doctors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54) Dentists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
55) Nurses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
56) Pharmacists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
57) Scientists and microbiologists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
58) Global organisations (e.g. World Health Organisation, World Organisation for Animal Health)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
59) Human hospitals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60) Veterinary hospitals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
61) Pharmaceutical companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
62) The media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How important do you think the following ACTIONS AND MEASURES are in dealing with the issue of antimicrobial resistance? (Tick ONE only)

	Not sure	Not important	Slightly important	Moderately important	Important	Very important	Extremely important
63) Prescribing narrowest spectrum antimicrobials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
64) Reducing or restricting use of antimicrobials in livestock feed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
65) Fewer antimicrobial prescriptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
66)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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| Restricting veterinary use of antimicrobials considered to be of critical importance in human health. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 67) Using alternative treatments to antimicrobials (e.g. probiotics). | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 68) Development of new antimicrobials. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 69) Education programs to raise awareness in the community and public. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 70) Education sessions on appropriate antimicrobial prescribing for practitioners. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 71) Changing client expectations for antimicrobials. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 72) Improving existing guidelines on antimicrobial prescribing with research and evidence. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 73) Better availability of local and national guidelines and protocols. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 74) Antimicrobial use data in humans, livestock and companion animals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 75) Local and national antimicrobial resistance surveillance data. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 76) Research to examine strategies to combat antimicrobial resistance. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 77) Better hand hygiene in veterinary and human hospitals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 78) More effective cleaning in human and veterinary hospitals. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 79) Improving diagnostic methods. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Section 5: Demographic information

80) How do you define your gender identity?

81) What is your age?

82) Do you hold any previous university qualifications?

- Yes
 No

83) If yes, what is the highest level of university education you have completed?

- Undergraduate degree
 Masters degree
 PhD, Fellowship or equivalent

84) Have you had any formal education regarding antimicrobial resistance before starting your current course?

- Yes
 No

85) Which of the following best describes the area of the veterinary profession you intend to work in following graduation from the DVM?

- Small animal practice
 Large animal practice
 Mixed practice
 Other private practice (e.g. specialization, exotics)
 Government
 Research/academia
 Industry
 Laboratory

86) Have you found this survey useful in thinking about antimicrobial resistance and its consequences?

- Yes
 No