



New Zealand Antimicrobial Resistance Action Plan

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Ministry for Primary Industries
Manatū Ahu Matua



Foreword

Antimicrobial resistance is a growing global issue. Calls for a coordinated effort to slow the development of antimicrobial resistance have grown over recent years. International organisations have increased their focus and leadership on the issue and, in 2016, at the United Nations General Assembly, global leaders committed to fighting antimicrobial resistance in a multisectoral way.

In New Zealand, the Ministry for Primary Industries and the Ministry of Health are working to minimise its impact on plant, animal and human health. The New Zealand Antimicrobial Resistance Action Plan was announced at the recent 70th World Health Assembly.

This action plan was developed collaboratively with stakeholders from across the human, animal and agriculture sectors in New Zealand to address areas identified as needing action. It has five key objectives, aligned with the World Health Organization Global Action Plan.

The action plan builds on the successful work already under way in New Zealand and sets out activities to be undertaken over a five-year period.

The five key objectives include improved awareness, understanding, surveillance, stewardship, as well as prevention and control measures. These efforts will reduce resistance, and keep antimicrobials available and effective to manage diseases when needed in the future.

We are grateful to the stakeholder groups that participated in developing this action plan and look forward to continued support as we implement this together.

Hon David Bennett
Minister for Food Safety



Hon Jonathan Coleman
Minister of Health



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The Antimicrobial Action Planning Group includes representatives from the following organisations and professional bodies:

- Institute for Environmental Science and Research Limited
- Health Quality & Safety Commission
- PHARMAC (Pharmaceutical Management Agency)
- New Zealand Veterinary Association
- New Zealand Hospital Pharmacists' Association
- New Zealand Microbiology Network
- Infection Prevention & Control Nurses College
- Australasian Society for Infectious Diseases
- Best Practice Advocacy Centre New Zealand
- Agcarm (Agricultural Chemical and Animal Remedy Manufacturers Association)
- Royal New Zealand College of General Practitioners.

Contents

| | |
|---|------------|
| Foreword | iii |
| Background | 1 |
| Vision of the New Zealand Antimicrobial Resistance Action Plan | 1 |
| Goals of the New Zealand Antimicrobial Resistance Action Plan | 1 |
| Objectives and priority areas for action | 2 |
| Implementing the New Zealand Antimicrobial Resistance Action Plan | 3 |
| Monitoring progress | 3 |
| Objectives | 5 |
| Objective 1: Awareness and understanding – Improve awareness and understanding of antimicrobial resistance through effective communication, education and training | 5 |
| Objective 2: Surveillance and research – Strengthen the knowledge and evidence base about antimicrobial resistance through surveillance and research | 7 |
| Objective 3: Infection prevention and control – Improve infection prevention and control measures across human health and animal care settings to prevent infection and transmission of micro-organisms | 11 |
| Objective 4: Antimicrobial stewardship – Optimise the use of antimicrobial medicines in human health, animal health and agriculture, including by maintaining and enhancing the regulation of animal and agriculture antimicrobials | 14 |
| Objective 5: Governance, collaboration and investment – Establish and support clear governance, collaboration and investment arrangements for a sustainable approach to countering antimicrobial resistance | 18 |
| References | 21 |
| Appendix | 22 |

Background

Antimicrobial resistance is a well-documented global threat to public health and animal health. Antimicrobial resistance is the term for resistance in different types of micro-organisms and includes resistance to antibacterial, antiviral, antiparasitic and antifungal medications.

Based on a 'One Health' approach,¹ the Ministry for Primary Industries and the Ministry of Health are working with key stakeholders to minimise the threat of antimicrobial resistance to humans, animals and agriculture.² As the World Health Organization (WHO), Food and Agriculture Organization (FAO) and World Organisation for Animal Health (OIE) have jointly stated:

Addressing the rising threat of antimicrobial resistance requires a holistic and multisectoral (One Health) approach because antimicrobials used to treat various infectious diseases in animals may be the same or be similar to those used in humans. Resistant bacteria arising either in humans, animals or the environment may spread from one to the other, and from one country to another. Antimicrobial resistance does not recognise geographic or human and animal borders.³

The Ministry for Primary Industries and Ministry of Health co-chaired an Antimicrobial Resistance Action Planning Group with nominated representatives from across the human health, animal health and agriculture sectors. As a first step, the group outlined the current situation of antimicrobial resistance in New Zealand and the priority areas for action (Ministry of Health and Ministry for Primary Industries 2017). The vision, goals, objectives and priority action areas defined have been used to develop this New Zealand Antimicrobial Resistance Action Plan, based on the same framework for continuity.

Vision of the New Zealand Antimicrobial Resistance Action Plan

New Zealand is a society that manages antimicrobials as a valuable shared resource and maintains their efficacy so they can be used to treat infections in humans, as well as to manage diseases in animals and plants.

Goals of the New Zealand Antimicrobial Resistance Action Plan

1. Ensure that antimicrobials continue to be effective and available by using them in a prudent and responsible way.
2. Improve knowledge of what drives the development and spread of antimicrobial resistance, and use that knowledge to minimise its development and spread.

1 A 'One Health' approach encourages a range of different disciplines to collaborate with each other and recognises that the health of people is connected to the health of animals and the environment. URL: www.cdc.gov/onehealth (accessed 26 June 2017).

2 In this document, agriculture refers to food and non-food agricultural production, including crops and animals.

3 URL: www.who.int/foodsafety/areas_work/antimicrobial-resistance/tripartite/en (accessed 5 May 2017).

Objectives and priority areas for action

There are five objectives that address priority areas for action on AMR.

1. **Awareness and understanding:** Improve awareness and understanding of antimicrobial resistance through effective communication, education and training.
2. **Surveillance and research:** Strengthen the knowledge and evidence base about antimicrobial resistance through surveillance and research.
3. **Infection prevention and control:** Improve infection prevention and control measures across human health and animal care settings to prevent infection and the transmission of micro-organisms.
4. **Antimicrobial stewardship:** Optimise the use of antimicrobial medicines in human health, animal health and agriculture, including by maintaining and enhancing the regulation of animal and agriculture antimicrobials.
5. **Governance, collaboration and investment:** Establish and support clear governance, collaboration and investment arrangements for a sustainable approach to countering antimicrobial resistance.

Refer to the Appendix for the full list of objectives and associated priority areas for action.

Implementing the New Zealand Antimicrobial Resistance Action Plan

The New Zealand Antimicrobial Resistance Action Plan will be implemented over five years. The plan expressly recognises that some activities will be ongoing, while some will be prioritised in year one and others in later years (two to five). Implementing the activities will involve a variety of partners from across the human health, animal health and agriculture sectors.

While the Ministry for Primary Industries and Ministry of Health will jointly govern this action plan, specific activities are of particular relevance to the human health, animal health or agricultural sectors.

The Objectives section lists the activities under each priority action. However, many are inter-linked; therefore where possible, the links are specified.

The Ministry for Primary Industries and Ministry of Health will plan implementation with major partners, setting out the details of the activities, including the mechanics, responsibilities and resources needed. Both Ministries will consider equity⁴ in the implementation of all activities in the Action Plan, and will implement activities in a culturally competent⁵ manner.

This Action Plan presents an opportunity to demonstrate a dynamic ‘One Health’ approach to a significant issue that both is affected by and impacts on human health, animal health and agriculture. Success will rely on skilled leadership and collaborative partnerships working effectively.

Monitoring progress

The Ministry for Primary Industries and Ministry of Health will regularly monitor and evaluate implementation of the New Zealand Antimicrobial Resistance Action Plan and its associated activities. They will publish a report of progress and success of activities under each priority action and objective at the end of the first, third and fifth years of the Action Plan.

The Action Plan is a living document. Based on progress and available resources, in later years it may be necessary to amend some activities so the Action Plan is more likely to succeed.

4 Equity is the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically or geographically (www.who.int/healthsystems/topics/equity/en).

5 Cultural competence requires an awareness of cultural diversity and the ability to function effectively, and respectfully, when working with and treating people of different cultural backgrounds (Medical Council of New Zealand 2006).

Some surveillance and survey data on antimicrobial resistance in human health, animal health and agriculture already exists as outlined under Objective 2. Improving and coordinating surveillance is a priority area for action; however, current data will be used to establish baseline measurements against which to assess progress in human health, animal health and agriculture in the long term.

Objectives

Objective 1

Awareness and understanding – Improve awareness and understanding of antimicrobial resistance through effective communication, education and training

Increasing awareness, education and understanding of the drivers, impacts and ways of combatting antimicrobial resistance across the human health, animal health and agricultural sectors and among the community is essential to change behaviour. Activities in this area will complement other initiatives to address antimicrobial resistance such as supporting improved health literacy, informed clinical decision-making, judicious antimicrobial prescribing, and shared decision-making.

Priority action area 1

Strengthen consumer awareness to improve understanding of antimicrobial resistance and the importance of using antibiotics appropriately.

Activities

Ongoing

1. Continue to engage with the media to support accurate reporting on and advocacy for reducing antimicrobial resistance.
2. Ensure information on antimicrobial resistance on the Ministry of Health and Ministry for Primary Industries websites remains current and reliable.
3. Continue to engage with the established animal and agricultural stakeholder forum (private and public) to help stakeholders exchange information on antimicrobial resistance with consumers.

Year one

4. Develop a coordinated National Antimicrobial Resistance Communications Plan with relevant stakeholders to promote understanding of antimicrobial resistance and minimise its impacts on all of the community in an equitable manner.
5. Identify drivers of antimicrobial consumption⁶ in human health and use this information to guide the review of existing resources that could influence consumer demand for antimicrobials and increase awareness of antimicrobial resistance.
6. Expand promotion of World Antibiotic Awareness Week (and other relevant initiatives) into community and primary health care settings, and the animal health and agricultural sectors, highlighting what individuals can do to use antimicrobials appropriately (in line with **Priority action area 2, activity 1**).

⁶ Antimicrobial consumption and antimicrobial use are used interchangeably throughout this document.

Years two to five

7. Implement the coordinated National Antimicrobial Resistance Communications Plan with relevant stakeholders to increase the understanding of antimicrobial resistance and minimise its impacts in an equitable manner (in line with **Priority action area 1, activity 4**).
8. Based on identified drivers of antimicrobial consumption and current resources available, update or create new resources as necessary to influence consumer demand and increase awareness of antimicrobial resistance (in line with **Priority action area 1, activity 5**).

Priority action area 2

Strengthen communication and education initiatives on antimicrobial resistance and stewardship for all prescribers, and those working in the human health, animal health and agricultural sectors.

Activities

Year one

1. Coordinate and expand promotion of World Antibiotic Awareness Week (and other relevant initiatives) to provide consistent messaging for all prescribers and those working in the human health, animal health and agricultural sectors (in line with **Priority action area 1, activity 6**).
2. Scope projects and resources that could support appropriate human health prescribing, including a focus on making optimal prescribing choices and possibilities for prescriber targets.
3. Develop mechanisms to improve access to resources and guidance on human health antimicrobial stewardship (see also **Priority action area 12, activity 5**).
4. Review currently available information and develop a step-by-step plan for increasing ‘prudent use education’⁷ for veterinarians or other animal health or agricultural sector groups that use antimicrobials.

Years two to five

5. Plan for and implement projects and resources to improve appropriate prescribing of antimicrobials in human health (in line with **Priority action area 2, activity 2**).
6. Ensure that all human health care team members have ready access to antimicrobial stewardship resources and prescribing guidance (in line with **Priority action area 2, activity 3**; and **Priority action area 12, activity 5**).
7. Review the animal, plant and human microbiology and pharmacology content of pre-registration courses and ongoing professional development requirements to ensure they are enhancing understanding of antimicrobial resistance and competence with antimicrobial stewardship.
8. Implement enhanced ‘prudent use education’ for the animal health and agricultural sectors (in line with **Priority action area 2, activity 4**; and reflecting on outcomes from **Priority action areas 3 and 4, activity 10**).

⁷ ‘Prudent use education’ provides industry sectors, professional bodies and end users with the most up-to-date information on using antimicrobials responsibly.

Objective 2

Surveillance and research – Strengthen the knowledge and evidence base about antimicrobial resistance through surveillance and research

Nationally coordinated surveillance of antimicrobial resistance and antimicrobial consumption is important to: understand the magnitude, distribution and impact of multi-drug resistant micro-organisms and antimicrobial use; identify emerging resistance and trends; and understand links between antimicrobial use and antimicrobial resistance. Surveillance data on antimicrobial resistance and antimicrobial consumption will inform the development of effective programmes, guidance and policies.

Surveillance is required at institutional, regional, national and global levels. Surveillance needs to cover all sectors and, in the long term, antimicrobial resistance surveillance and monitoring of antimicrobial usage should become integrated across the human health, animal health and agricultural sectors. Surveillance should also be regularly reviewed to ensure that the activities are appropriate for the New Zealand context.

New Zealand has some existing surveillance systems related to antimicrobial resistance and consumption and has undertaken a number of surveys in the human health, animal health and agricultural sectors (Heffernan et al 2011; Hillerton et al 2016; Williamson et al 2016).⁸ Existing systems could benefit from a coordinated approach under a structured governance framework to help identify emerging risks and trends, and to provide a more detailed picture of antimicrobial resistance and consumption in humans, animals and agriculture in New Zealand.

Priority action area 3 and Priority action area 4

Establish a coordinated national surveillance programme of antimicrobial resistance and antimicrobial use in humans, animals and agriculture.

Develop lists of priority organisms, key resistance genes and antimicrobials for national reporting.

Activities

Ongoing

1. Finalise and maintain⁹ the list of priority **organisms** for surveillance and reporting for human health, taking into account international guidance and the New Zealand context.
2. Finalise and maintain⁹ the list of priority **antimicrobials** for surveillance and reporting in human health care facilities¹⁰ in New Zealand, and a national methodology for measuring and reporting on antimicrobial consumption in hospitals and the community.

⁸ See also Institute of Environmental Science and Research reports on antimicrobial resistance at <https://surv.esr.cri.nz/index.php?SubsiteID=11> (accessed 26 June 2016).

⁹ Any list is likely to change over time.

¹⁰ In this document human health care facilities refers to primary and secondary care, aged residential care and dental care.

Year one

3. Analyse antimicrobial dispensing data to identify prescriber types. Report this data back to prescribers and use it to develop and target interventions to influence appropriate antimicrobial prescribing (see also **Priority action area 12, activity 2 and 12**).
4. Determine additional requirements for a standardised **antimicrobial resistance** surveillance system in human health, including an appropriate data repository or management system.
5. Determine additional requirements for a standardised surveillance system to monitor **antimicrobial prescribing** in the community and hospitals in New Zealand, including an appropriate data repository or management system.
6. Determine the requirements for a critical resistance alert system to detect and confirm pathogens with critical resistance determinants in humans in real time (including specific resistance genes).
7. Develop and implement an enhanced surveillance programme for multi-resistant gram negative micro-organisms in humans, such as carbapenemase producing *enterobacteriaceae* (CPE). This programme should include information on screening, laboratory identification, surveillance and alerts (see also **Priority action area 7, activity 3**).
8. Review the requirements and capacity for genomic analysis of outbreaks that are of public health significance, including antimicrobial resistance.
9. Review the current system of collecting data on yearly sales of antimicrobials used in animal and plants, to be consistent with the practice that the World Organization for Animal Health (OIE) recently introduced (see also **Priority action areas 3 and 4, activity 15**).
10. Consider extending the New Zealand Veterinary Association surveillance programme on antimicrobial use to include companion animals, and to inform the development of an ongoing national surveillance programme, helping to identify the drivers of good and poor antimicrobial stewardship in animal health (see also **Priority action area 2, activity 8**; and **Priority action areas 3 and 4, activity 15**).

Years two to five

11. Develop the business case and implement a standardised surveillance system for **antimicrobial resistance** in human health, including a review of workforce capacity, capability and training and an appropriate compatible data repository or data management system to address the requirements identified in **Priority action areas 3 and 4, activity 4**.
12. Develop the business case and a standardised surveillance system for monitoring **antimicrobial prescribing** in the community and in hospitals, including a review of workforce capacity, capability and training and an appropriate compatible data repository or data management system to address the requirements identified in **Priority action areas 3 and 4, activity 5**.
13. Develop the business case for the critical resistance alert system to detect and confirm pathogens with critical resistance determinants in humans in real time (including specific resistance genes) (see also **Priority action areas 3 and 4, activity 6**).
14. Develop and implement a national strategy for providing real-time genomic analysis of outbreaks that are of public health significance, including antimicrobial resistance (in line with **Priority action areas 3 and 4, activity 8**).

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15. Implement initiatives to strengthen national surveillance for antimicrobial resistance and antimicrobial consumption in animal health and agriculture production as identified in **Priority action areas 3 and 4, activities 9–10**. This should include working in partnership with livestock industries and dairy and veterinary representatives.
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16. Establish a regular programme for monitoring regulatory control (audit/verification and information transfer) of antimicrobial-based veterinary medicines.
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17. Consider integrating surveillance mechanisms to help identify emerging risks and trends of antimicrobial resistance in human, animal and agricultural settings in New Zealand and implement them, as appropriate.
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Priority action area 5

Implement national minimum standard for laboratory testing and reporting of antimicrobial susceptibility.

Activities

Ongoing

1. Human health diagnostic microbiology laboratories develop, publish and widely disseminate antibiograms annually (see also **Priority action area 5, activity 4**).

Year one

2. Establish a national antimicrobial susceptibility testing committee to provide expert guidance to laboratories and other stakeholders on all aspects of human antimicrobial susceptibility testing and reporting.
3. Standardise the methodology and reporting of antimicrobial resistance data (antibiograms, including microbes and antimicrobials) from human health laboratories (in line with **Priority action area 5, activity 1**).
4. Implement appropriate international standards for laboratory testing methods for antimicrobial susceptibility of pathogens isolated from animals and plants.
5. Establish a national system for veterinary laboratories to report on the antimicrobial susceptibility of common animal pathogens.

Years two to five

6. Human health diagnostic microbiology laboratories to update antibiograms (including microbes and antimicrobials) using the nationally agreed reporting methodology (in line with **Priority action area 5, activities 1 and 3**) and continue to publish and disseminate them annually.
7. Consider extending the national antimicrobial susceptibility testing committee (in line with **Priority action area 5, activity 2**) to include antimicrobial susceptibility testing for animal health laboratories.
8. Build capacity in animal health and industry laboratories to ensure standard laboratory work-up of key organisms and susceptibility testing according to surveillance requirements (see **Priority action area 5, activity 5**).

Priority action area 6

Support national priorities for research on antimicrobial resistance, antimicrobial consumption and stewardship in human health, animal health and agriculture.

Activities

Ongoing

1. Promote research funding for antimicrobial resistance, consumption and stewardship activities across human health, animal health and agriculture.
2. Encourage research collaborations on antimicrobial resistance, consumption and stewardship across human health, animal health and agriculture, as well as on drivers of behaviour.

Year one

3. Identify current gaps and agree on national research and development priorities for antimicrobial resistance, consumption and stewardship in humans, animals and agriculture, including how antimicrobial consumption and resistance in these sectors impact each other.

Years two to five

4. Promote research on antimicrobial resistance, consumption and stewardship to address the gaps identified in **Priority action area 6, activity 3**.

Objective 3

Infection prevention and control – Improve infection prevention and control measures across human health and animal care settings to prevent infection and transmission of micro-organisms

Preventing infection and controlling transmission of micro-organisms are essential for effectively responding to antimicrobial resistance. Reducing the need for antimicrobials reduces the opportunity for micro-organisms to develop resistance and share resistance genes.

Evidence-based infection prevention and control (IPC) strategies and vaccination programmes are required across all sectors and settings, recognising that patients in some settings, such as hospitals, and residents of age-related residential care facilities (WHO 2015) are at greater risk of colonisation and subsequent infection with multi-drug resistant organisms. Similarly, in veterinary practice, IPC and detection of disease are essential for maintaining biosecurity, the health of farmed livestock and companion animals, and the health of people by preventing zoonotic transmission.

Priority action area 7

Develop and update national guidelines and standards for IPC to achieve a nationally consistent approach, and enhance accreditation and quality assurance programmes so that more practitioners follow best-practice IPC measures across human health, animal health and agriculture.

Activities

Ongoing

1. Keep national guidelines for resistant pathogens in humans up to date; for example, guidelines on methicillin-resistant *Staphylococcus aureus* (MRSA) and multi-drug resistant organisms (MDRO).

Year one

2. Contribute to the review of the infection prevention and control component of the New Zealand Health and Disability Services Standards (Standards New Zealand 2008) and relevant animal health standards, focusing on whether they are current and in line with international best practice.
3. Develop national response plans for preventing and controlling multi-resistant gram negative micro-organisms in humans, such as carbapenemase producing *enterobacteriaceae* (CPE), linking to surveillance in **Priority action areas 3 and 4, activity 7**.
4. Review how IPC is implemented in human health care facilities, schools and other relevant community-based services, including workforce capacity, capability and training needs.
5. Review and consider the measures that could be implemented to improve IPC practices across the animal health industry (see also **Priority action area 10, activities 1–2**).

Years two to five

6. Plan for improvements in implementing IPC in identified areas of human health care facilities, schools and other relevant community-based services (in line with **Priority action area 7, activity 4**).
7. Evaluate the current human health sector accreditation and quality assurance process to identify opportunities to improve the delivery of effective IPC practices and management of antimicrobial resistant organisms.
8. Work with the accreditation sector to develop criteria for human health care facilities to carry out effective IPC practices, in line with the outcomes from **Priority action area 7, activity 7**.

Priority action area 8

Promote a cohesive and sustainable ‘one team’ approach to IPC functions in all human health care facilities.

Activities

Ongoing

1. Maintain and strengthen links with national and international initiatives (for example, the World Health Organization Patient Safety Programme) that promote multidisciplinary responses to antimicrobial resistance and prevention of health care associated infections (in line with **Priority action area 18, activities 1 and 3**).

Year one

2. Engage senior leaders and clinical champions to advocate for and promote a sustainable ‘one team’ approach to IPC functions in all human health care facilities.

Priority action area 9

Encourage continued immunisation to prevent infections.

Activities

Ongoing

1. Continue to regularly review the national human health immunisation schedule.¹¹
2. Continue work to increase immunisation coverage equitably across the general population.
3. Consider how to increase use of appropriate immunisations in animals, and implement as possible.

¹¹ URL: www.health.govt.nz/our-work/preventative-health-wellness/immunisation/new-zealand-immunisation-schedule (accessed 26 July 2017).

Priority action area 10

Promote prevention and control of zoonotic infections.

Activities

Year one

1. Support the development of guidance for IPC standards in animal health and agriculture (in line with **Priority action area 7, activity 5**).
2. Consider strategies to increase IPC awareness among veterinarians and their clients (in line with **Priority action area 7, activity 5**).

Priority action area 11

Encourage alternative approaches to reduce infection and the need for antimicrobial use in animals.

Activities

Year one

1. Review international trends in antimicrobial use in animals to identify vulnerabilities and opportunities for reducing infection and managing antimicrobial resistance in New Zealand.

Years two to five

2. Consider implementing alternative approaches to reducing infection and the need for antimicrobial use in animals based on vulnerabilities and opportunities identified in **Priority action area 11, activity 1**.
3. Foster the development of new therapeutics to reduce the need for antimicrobial use in animal health.

Objective 4

Antimicrobial stewardship – Optimise the use of antimicrobial medicines in human health, animal health and agriculture, including by maintaining and enhancing the regulation of animal and agriculture antimicrobials

Antimicrobial stewardship (AMS) involves taking coordinated actions to promote the appropriate use of antimicrobials that will help to conserve their effectiveness. AMS programmes help to optimise the prevention and treatment of infections while minimising the adverse events associated with antimicrobial use such as: the emergence and spread of antimicrobial resistance, disruption of the ecology of the normal microbiome (which may have various adverse consequences, including *Clostridium difficile* infection), adverse drug reactions and monetary cost.

International guidelines recommend some core components of effective AMS programmes in human health (Duguid and Cruickshank 2011; Barlam et al 2016). While many hospitals in New Zealand and elsewhere have had AMS programmes for some time, there is less experience with community AMS programmes (for example, in primary care or aged residential care). However, it can be expected that coordinated community AMS efforts would produce a similar pattern of benefits to that achieved in hospitals.

AMS programmes covering antibiotic use in animals and food production may also have significant public health value in preventing the emergence of resistant strains and their spread to humans.

Having the appropriate level of regulatory oversight of antibiotics for animals and plants is important to manage and minimise antimicrobial resistance. For this reason, the Ministry for Primary Industry's regulatory oversight of antimicrobials used for animals and plants draws on the most up-to-date policies, information requirements and standards based on current science, industry practices and government policies. Its approach is in line with the approach of major overseas regulators in the United States of America, European Union, Australia and Canada.

Priority action area 12

Develop a national programme or standard for AMS in all sectors of human health, including resources and/or targets for use in all sectors.

Activities

Ongoing

1. Continue to consider antimicrobial stewardship under PHARMAC's *Factors for Consideration*¹² in antimicrobial funding decisions and continue to consult with relevant stakeholders when considering funding of antimicrobial agents.
2. Continue to regularly provide data on how various prescriber types contribute to community antimicrobial consumption, to help improve community prescribing (see also **Priority action areas 3 and 4, activity 3**).
3. Continue work to develop regional (Northern, Midland, Central and Southern) antimicrobial treatment guidance and then consider developing national antimicrobial treatment guidance.

Year one

4. Investigate any inequities in antimicrobial prescribing in community and hospital settings.
5. Consider options and resource requirements for increasing access to antimicrobial treatment and stewardship guidance; for example, by using applications for mobile devices (in line with **Priority action area 2, activities 3 and 6**).
6. Consider options to improve access to antimicrobial stewardship services, advice and support in hospitals and communities.
7. Encourage hospitals and aged residential care facilities to use a standardised system, for example: Australian Commission on Quality and Safety in Health Care 2016 for measuring the appropriateness of their antimicrobial consumption (linked to **Priority action area 12, activity 11**).
8. Contribute to the review of the infection prevention and control component of the Health and Disability Services Standards (Standards New Zealand 2008) as they relate to antimicrobial stewardship.

Years two to five

9. Based on information from **Priority action area 12, activities 2 and 4**, consider and, if appropriate, implement relevant national benchmarks for the short (one-year) and medium (three-year) term on reducing antimicrobial consumption and increasing appropriate prescribing.
10. Develop national antimicrobial treatment guidance, as appropriate, and implement initiatives to increase access to antimicrobial treatment guidance (in line with **Priority action area 12, activities 3 and 5**).

12 URL: www.pharmac.govt.nz/medicines/how-medicines-are-funded/factors-for-consideration (accessed 26 June 2017)

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11. Provide support for all hospitals and aged residential care facilities to use a standardised system¹³ for measuring the appropriateness of antimicrobial consumption (see also **Priority action area 12, activities 7 and 9**).
 12. Review and establish mechanisms to feed back overviews, benchmarking reports and analysed data on antimicrobial dispensing to all prescribers and antimicrobial stewardship teams (see also **Priority action areas 3 and 4, activity 3**).
 13. Implement initiatives identified in **Priority action area 6, activity 12** to ensure that antimicrobial stewardship services, advice and support are accessible both in hospitals and in the community.
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Priority action area 13

Develop a national programme or standard for AMS in animal health.

Activities

Year one

1. Develop a prudent use directive document for antimicrobials that set expectations for the regulator and the diverse range of sectors within primary industries that can be used to develop specific prudent use guidance documents for their sector.
2. Update current industry judicious use guidelines drawing on information from the current surveillance programme (in line with **Priority action areas 3 and 4, activities 9–10**).

Years two to five

3. Use available surveillance information (in line with **Priority action areas 3 and 4, activity 15**) to identify the drivers of antimicrobial stewardship and develop a national programme for antimicrobial stewardship in animal health.
4. Review the Veterinary Council of New Zealand's veterinary medicines section of the Code of Professional Conduct to include a new section on prescribing and dispensing of antibiotics.

Priority action area 14

Establish a programme of regularly monitoring the controls on antimicrobial veterinary medicines.

Activities

Year one

1. Establish an ongoing reassessment programme for antimicrobials used in veterinary medicine.

Activity: Years two to five

2. Develop a regular monitoring programme of veterinary authorisation of antibiotics.

13 National Antimicrobial Prescribing Survey. URL: www.naps.org.au (accessed 26 July 2017).

Priority action area 15

Review the controls (conditions of registration), labelling and advertising of antimicrobial-based trade name products to ensure they are fit for purpose.

Activities

Ongoing

1. Review the appropriateness of the regulations that limit pharmaceutical advertising (including direct to consumer and to health care professionals) of human health antimicrobial agents and, as needed, put forward amendments to them.

Year one

2. Review guidance information for those applying to register antimicrobials to ensure it is appropriate for determining the level of regulatory oversight of human health, animal health and agricultural antimicrobials, and update it as necessary.
3. Review the current controls and labelling on human health, animal health and agricultural antimicrobials to ensure they are appropriate to manage antimicrobial resistance, and update them as necessary.

Years two to five

4. Review any changes to guidance information, controls and labelling of human health, animal health and agricultural antimicrobials to identify their impact.
5. Review approval processes for registering human health antimicrobials.

Objective 5

Governance, collaboration and investment – Establish and support clear governance, collaboration and investment arrangements for a sustainable approach to countering antimicrobial resistance

The New Zealand Government is committed to tackling antimicrobial resistance and working with all relevant stakeholders to deliver this Action Plan. The ongoing success of this work will require strong governance, partnerships, coordination, leadership, accountability and appropriate resourcing. National action plans of other countries have identified the need for strong governance. WHO, OIE and FAO have also reinforced the need for engaging the whole of society and taking a ‘One Health’ approach to antimicrobial resistance.

Combatting AMR requires national and international collaboration to promote awareness, surveillance, knowledge sharing and behaviour change. Collaboration will also be essential in developing new antimicrobials and diagnostic approaches, stewardship initiatives and improved infection prevention and control practices.

While it is clear that investment in developing new antimicrobials, diagnostic tools and immunisations is important on the global scale, New Zealand is a relatively small player in this area. In this context, New Zealand’s main role is likely to be to support research and international collaboration.

Priority action area 16

Establish a sustainable national governance structure to coordinate all efforts to minimise antimicrobial resistance.

Activities

Ongoing

1. Continue the Primary Industries AMR Coordination Group of both private and public sectors as a forum to exchange information and provide advice and updated information on antimicrobial resistance activities in the animal and agricultural sectors. (This group includes a health representative.)

Year one

2. Establish a Health AMR Coordination Group to exchange information and provide advice and updated information on human health-related antimicrobial resistance activities, including (but not limited to) equity, stewardship, surveillance, IPC and communications. (This group will include a representative from primary industries.)
3. Establish Ministry of Health and Ministry for Primary Industries leads for Objectives 1 to 4 of the New Zealand AMR Action Plan. These leads will be responsible for working with the Primary Industries and Health AMR coordination groups, and other relevant stakeholders, to plan and coordinate implementation, and then for reporting progress for activities under their objective.

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4. Establish national governance arrangements to oversee efforts to minimise antimicrobial resistance, co-chaired by the Ministry of Health and the Ministry for Primary Industries. This group will be accountable for the success of the plan and therefore for monitoring progress against the plan's activities.
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Years two to five

5. Review the effectiveness of the governance arrangements in line with **Priority action area 16, activity 4** and revise them as necessary.
 6. Review the role and effectiveness of the Health and Primary Industry AMR coordination groups, in line with **Priority action area 16, activities 1 and 2**, in exchanging information and providing advice and updated information on AMR activities, and revise as necessary.
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Priority action area 17

Ensure that there is sustainable investment in initiatives to minimise the impacts of antimicrobial resistance. This includes ongoing investment in surveillance, communication, stewardship and infection prevention and control.

Ongoing

1. Explore and use any funding opportunities in the public and private sectors to minimise the impact of antimicrobial resistance, including through communication, surveillance, stewardship and infection prevention and control across human health, animal health and agriculture.
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Year one

2. Develop the business cases required to support implementation of all five objectives of the New Zealand AMR Action Plan, including communication, surveillance, stewardship, infection prevention and control and governance across human health, animal health and agriculture.
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Priority action area 18

Establish the necessary national and international links and collaborations to implement the AMR Action Plan effectively.

Activities

Year one

1. Identify opportunities for international collaborations and engagement with other governments and international partners on antimicrobial resistance across the human health, animal health and agricultural sectors, and support international governance arrangements.
 2. Work with overseas regulatory partners and with international organisations such as WHO, International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH), Organisation for Economic Co-operation and Development, FAO and OIE to harmonise international data requirements and reporting on antimicrobial resistance.
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Years two to five

3. Based on opportunities identified in **Priority action area 18, activities 1 and 2**, plan and implement strategic collaborations and engagement with other governments and international partners on antimicrobial resistance across human health, animal health and agricultural sectors.
4. Establish closer ties with other countries to promote the quality, safety and efficacy of antimicrobials; for example, by strengthening veterinary medicine supply chains.

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Appendix

Objectives and priority action areas

Objective 1: Awareness and understanding – Improve awareness and understanding of antimicrobial resistance through effective communication, education and training

Priority action area 1: Strengthen consumer awareness to improve understanding of antimicrobial resistance and the importance of using antibiotics appropriately.

Priority action area 2: Strengthen communication and education initiatives on antimicrobial resistance and stewardship for all prescribers, and those working in the human health, animal health and agricultural sectors.

Objective 2: Surveillance and research – Strengthen the knowledge and evidence base about antimicrobial resistance through surveillance and research

Priority action area 3: Establish a coordinated national surveillance programme of antimicrobial resistance and antimicrobial use in humans, animals and agriculture.

Priority action area 4: Develop lists of priority organisms, key resistance genes and antimicrobials for national reporting.

Priority action area 5: Implement national minimum standard for laboratory testing and reporting of antimicrobial susceptibility.

Priority action area 6: Support national priorities for research on antimicrobial resistance, antimicrobial consumption and stewardship in human health, animal health and agriculture.

Objective 3: Infection prevention and control – Improve infection prevention and control measures across human health and animal care settings to prevent infection and transmission of micro-organisms

Priority action area 7: Develop and update national guidelines and standards for IPC to achieve a nationally consistent approach, and enhance accreditation and quality assurance programmes so that more practitioners follow best-practice IPC measures across human health, animal health and agriculture.

Priority action area 8: Promote a cohesive and sustainable ‘one team’ approach to IPC functions in all human health care facilities.

Priority action area 9: Encourage continued immunisation to prevent infections.

Priority action area 10: Promote prevention and control of zoonotic infections.

Priority action area 11: Encourage alternative approaches to reduce infection and the need for antimicrobial use in animals.

Objective 4: Antimicrobial stewardship – Optimise the use of antimicrobial medicines for human health, animal health and agriculture, including by maintaining and enhancing the regulation of animal and agriculture antimicrobials

Priority action area 12: Develop a national programme or standard for AMS in all sectors of human health, including resources and/or targets for use in all sectors.

Priority action area 13: Develop a national programme or standard for AMS in animal health.

Priority action area 14: Establish a programme of regularly monitoring the controls on antimicrobial veterinary medicines.

Priority action area 15: Review the controls (conditions of registration), labelling and advertising of antimicrobial-based trade name products to ensure they are fit for purpose.

Objective 5: Governance, collaboration and investment – Establish and support clear governance, collaboration and investment arrangements to for a sustainable approach to countering antimicrobial resistance

Priority action area 16: Establish a sustainable national governance structure to coordinate all efforts to minimise antimicrobial resistance.

Priority action area 17: Ensure that there is sustainable investment in initiatives to minimise the impacts of antimicrobial resistance. This includes ongoing investment in surveillance, communication, stewardship and infection prevention and control.

Priority action area 18: Establish the necessary national and international links and collaborations to implement the AMR Action Plan effectively.

New Zealand Government

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