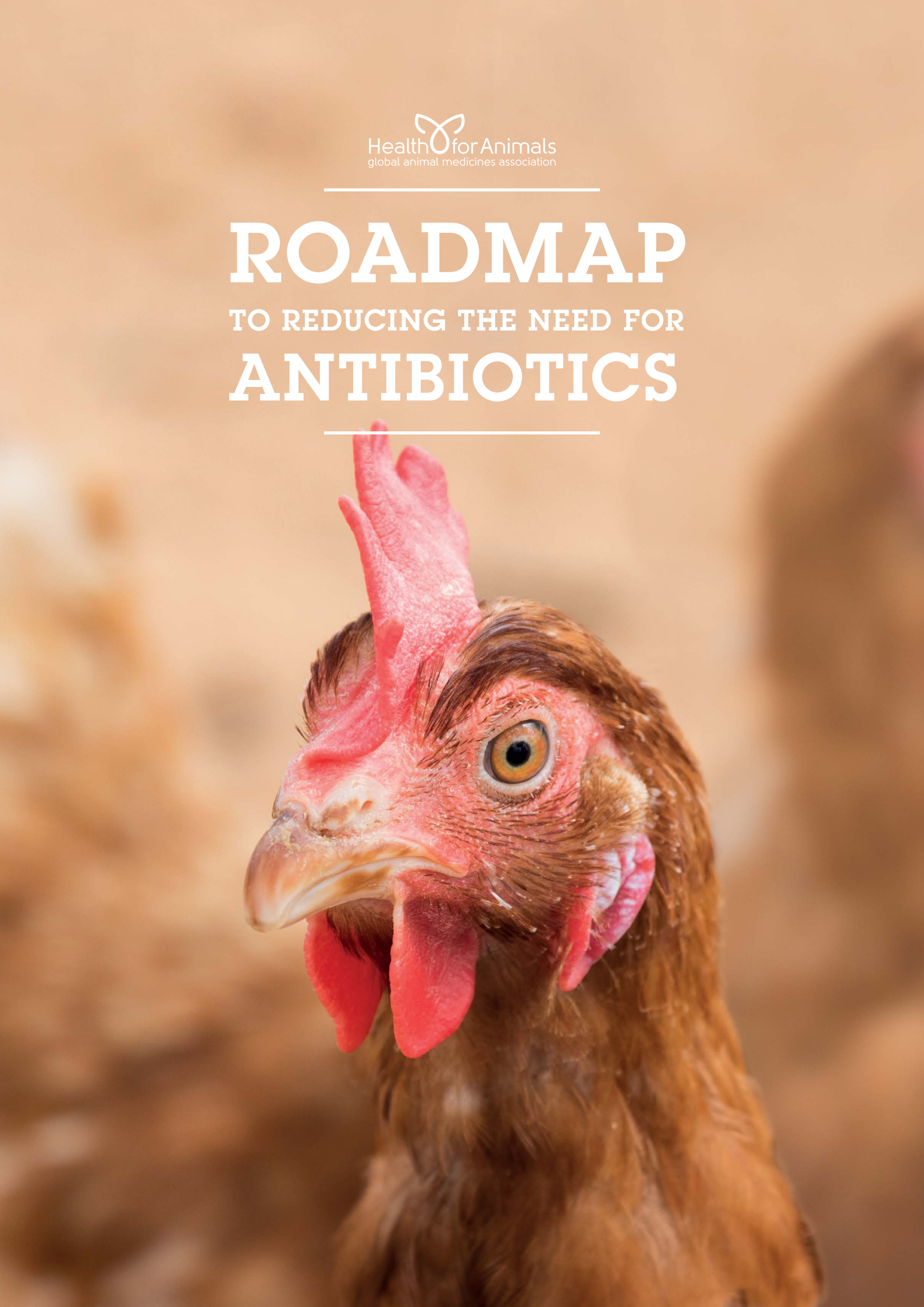
Health for Animals
global animal medicines association

ROADMAP
TO REDUCING THE NEED FOR
ANTIBIOTICS



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This document was produced by HealthforAnimals, the global animal medicines association. HealthforAnimals represents the animal health sector: manufacturers of veterinary pharmaceuticals, vaccines and other animal health products throughout the world, as well as the associations that represent companies at national and regional levels.

1. Introduction

Antibiotics are a cornerstone of modern medicine and public health.

Their importance to human and animal health cannot be understated, which is why antimicrobial resistance (AMR) is such an important global threat. When bacteria develop tolerance or resistance to antibiotics, we risk returning to a time when animals – and people – fell seriously ill or even died from simple, treatable infections.

Antibiotics are the only way to treat a bacterial disease. There is currently no alternative.

As the producers of animal medicines and other health products, our industry equips veterinarians with the tools to manage animal disease. Reducing antibiotic use without first tackling disease rates would mean sick animals go untreated, causing unnecessary suffering and mortality while increasing risk of transfer to other animals and people.

However, we can exploit the full spectrum of animal health tools to reduce the need for antibiotics.

By better protecting animals from the threat of disease, identifying health issues earlier and treating them quickly and responsibly, we can decrease disease levels and with it, the need for antibiotics. This requires maximising the long-term and preventative health benefits of tools such as vaccination, nutrition, antiparasitics, biosecurity, disease surveillance, diagnostics, husbandry and other animal health technologies.

Together, these tools can improve the prevention, detection and treatment of animal disease. This is our roadmap to reducing the need for antibiotics.

The ability to manage and control animal disease has profound consequences for human health and development, from ensuring the safety of meat, milk, fish and eggs to reducing the risk to people of bacterial animal-borne diseases. And while the relationship between using antibiotics in animals and growing levels of resistance in people remains complex and not well understood, AMR affects us all.

Our industry has worked on this challenge for many years, and our 2017 Antibiotics Commitment defined our core principles in approaching AMR. Activities we have undertaken in line with these principles can be seen in Section Five of this Roadmap. But we see more opportunities to reduce the need for antibiotics while also improving animal health.

Our Roadmap to Reducing the Need for Antibiotics offers a clear vision for improving global animal health both in the steps HealthforAnimals and our Members pledge to undertake by 2025, and in the areas where we call on others to take action and support this goal.

2. Our Vision for Reducing the Need for Antibiotics

To preserve antibiotic effectiveness, the animal health industry believes the whole animal health sector – both public and private – must devote more investment, research and energy into three priority areas:

Prevention

Detection

Treatment

Prevention

Disease prevention is our first line of defence and the best way to reduce the need for antibiotics.

Preventing disease outbreaks involves three key elements: vaccination, biosecurity, and overall health and wellbeing. Vaccines are one of the most effective forms of prevention available while biosecurity measures, such as sanitizing equipment or indoor rearing of certain species, can limit bacteria exposure. Strengthening the overall health of an animal also improves their natural resilience against infection and ability to fight off disease, reducing the need for antibiotics.

Improving prevention requires commitments to:

Vaccination

- Improve access to veterinarians and/or paraprofessionals, especially in low- and middle-income countries (LMICs), who can administer vaccinations
- Make government funds for vaccination available to farms, especially in LMICs
- Improve vaccine availability in underserved markets
- Improve the regulatory route for existing vaccines, especially in LMICs
- Enact clear regulations for new types of vaccines
- Deliver new vaccines
- Improve the acceptance of GM/biotech vaccinations
- Strengthen cold chain transportation and the availability of heat-resistant vaccines

Biosecurity

- Increase government funding for farm facilities
- Train animal handlers on good biosecurity practices
- Improve consumer understanding of biosecurity benefits
- Train animal handlers on the cost/benefit of various biosecurity measures
- Increase funding for research on biosecurity practices and adoption

Overall health and wellbeing

- Develop and improve access to in-feed nutritional products
- Develop and improve access to immunostimulants
- Increase research into animal genetics
- Increase public funding for animal nutrition research

Detection

Disease threats and veterinary access vary around the world but sharing information can help treat and contain an outbreak before it spreads.

Early detection of disease can make all the difference in treatment success, allowing for selection of the most appropriate antibiotic from the outset and reducing the risk of the illness spreading throughout herds or flocks.

This relies on two important elements: monitoring and diagnostics. Monitoring can help identify disease threats before an outbreak takes hold and track any emergence of antibiotic resistance, while swift and accurate diagnostics can help ensure appropriate treatment is given at the earliest possible opportunity.

Improving detection levels will require commitments to:

Monitoring

- Improve disease tracking and data collection
- Increase training of veterinarians and/or paraprofessionals on disease identification
- Improve access to veterinarians and/or paraprofessionals in LMICs
- Increase public funding for disease monitoring
- Continue to share antibiotic sales volume data in markets where it is required
- Monitor antibiotic use levels where appropriate
- Monitor AMR levels in food and animals
- Increase research on AMR transfer pathways and the role of the environment

Diagnostics

- Bring new diagnostics to market that can identify disease more rapidly and accurately
- Define legal requirements for farm data protection
- Increase training of veterinarians and/or paraprofessonals on diagnostics tools
- Integrate diagnostics with treatments to allow for rapid identification and care

Treatment

When an animal contracts a bacterial infection, there is currently no viable alternative to antibiotics.

For the times when antibiotic use is necessary, we must support responsible use. This means the right antibiotic, at the right time, at the right dose, administered through the right route.

Improving treatment requires commitments to:

Responsible antibiotic use

- Increase training of veterinarians and/or paraprofessionals on responsible antibiotic use
- Improve access to veterinarians and/or paraprofessionals in LMICs
- Increase veterinary supervision of antibiotic use in LMICs
- Improve understanding of the role of antibiotics in animal care
- Strict enforcement of existing antibiotic use requirements, especially in LMICs
- Foster greater dialogue across the value chain (e.g. suppliers, farmers, vets) on responsible use

Achieving progress under the three pillars of this vision will require dedicated action both by the animal medicines industry and the wider animal and public health sector, which includes governments, international authorities and the private sector.

Read on to **sections 3 and 4**, Our Commitments and Call to Action, to learn about the actions each of these groups can undertake.

3. Our Contribution

Building on our 2017 Antibiotics Commitment, which outlined five key principles to improve animal health and responsible antibiotic use, we see a way forward that addresses AMR through reducing the need for antibiotics.

This Roadmap focuses on the actions the public and private sectors can undertake to reduce the need for antibiotics in animals. This includes better prevention, earlier diagnostics, increased access to innovative treatments, and more.

In this section are the cumulative actions that HealthforAnimals and our Members, will undertake between now and 2025. HealthforAnimals will regularly survey our Members to track progress on the Roadmap and release updates.

However, we cannot achieve this alone. **Read on to section 4** to see how policymakers and international organizations can also take action that can help reduce the need for antibiotics in animals.

Our Actions

Addressing AMR is a difficult, global challenge. But we believe reducing the need for antibiotics is an essential part, and this will require strong action and accountability.

HealthforAnimals and our Members, representing more than 85 percent of the animal medicines industry, pledge to collaboratively undertake the following clear, measurable actions to improve the three areas of our vision – prevention, detection and treatment – by 2025:

Research & development

If we are to continue to maintain and improve animal health as well as reduce the need for antibiotics, we will need new innovations that help keep animals healthier, preserve welfare, diagnose disease earlier and treat illness more accurately. To help achieve this, we will:

- Invest at least $10 billion in research and development
- Deliver at least 100 new vaccines
- Deliver at least 20 new diagnostics tools
- Deliver at least 20 new nutritional enhancement products
- Deliver at least 30 other products that can reduce the need for an antimicrobial by reducing animal stress or boosting the natural immune system (ex. parasiticides, immunostimulants, anthelmintic, etc.)

One Health

In addressing issues such as AMR, we must recognize that this is not an issue limited by species or location. AMR affects animals, people and the planet, and can only be addressed through working across these disciplines. To help achieve this, we will:

- Deliver new tools that reduce the likelihood of human exposure to a resistant pathogen such as *Salmonella*, *Campylobacter*, or *E. coli*
- Conduct an AMR risk analysis for every new antibiotic brought to market

Communications

Reducing the need for antibiotics can only be possible when the importance, benefits, scientific basis, and methods are properly communicated. To help achieve this, we will:

- Strengthen communications on benefits of biosecurity, in-feed supplements, vaccinations, and products that support good animal health
- Participate in forums and public dialogues to help build understanding of risks, benefits, and actions that different stakeholders can take to improve public health outcomes in the fight against AMR
- Issue regular report(s) and/or white paper(s) identifying barriers to adoption of prevention tools (e.g. vaccination, biosecurity, etc) and how they can be addressed
- Issue Roadmap Updates in 2021 and 2023

Veterinary training & access

Veterinarians and veterinary paraprofessionals are on the frontline of the battle against AMR, using their expertise and knowledge to make a difference. They are trained to use antibiotics in a responsible manner that reduces animal suffering while limiting the emergence of resistance. Contributing to greater veterinary training and access can make all the difference in upholding animal health. To do this, we will:

- Provide clear labels on every, single product
- Make technical guidance available to all product users
- Train more than 100,000 veterinarians in responsible use of medicines
- Undertake at least 15 veterinary training partnerships
- Invest at least $5 million in veterinary education scholarships and grants
- Deliver a white paper on opportunities in telemedicine for improving access to veterinarians in high-income and low and middle income nations

Cooperation

The animal medicines industry does not work in a vacuum and we cannot address animal health alone. We will redouble efforts to build partnerships and work across disciplines to reduce the need for antibiotics. To do this, we will:

- Participate in responsible use coalitions in major markets
- Share sales data in every market where it is required
- Undertake five new partnerships that deliver products that help to reduce the need for antibiotics in underserved markets
- Conduct at least 50 audits of active ingredient suppliers to ensure they are meeting appropriate standards
- Encourage medicine users to submit efficacy reports into pharmacovigilance monitoring systems

Knowledge

Addressing AMR will be more successful with greater knowledge and understanding about its origins, development, movement and contributory factors. To support this, we will:

- Provide research grants of at least $1 million
- Publish new, scientific research within peer-reviewed publications which improves understanding of veterinary pathogens or antimicrobial resistance
- Provide data and support to help improve disease tracking to organizations such as the World Organisation for Animal Health (OIE)

HealthforAnimals and our Members commit to undertaking the above actions between now and 2025.

We will issue updates in 2021 and 2023 that evaluate our progress.

4. Call to Action

The animal medicines industry cannot reduce the need for antibiotics alone. Alongside our industry commitments, we also call upon the public sector and international organisations to join us in this effort to reduce the need for antibiotics by improving prevention, detection and treatment of animal disease.

Supportive public policies can drastically change farmer access to new treatments, preventative tools and veterinary expertise, which will allow them to improve animal health and reduce the need for antibiotics.

This will require decisive policy action across the following four areas:

Regulation

Farmers are facing continually evolving animal health threats, with new diseases spreading faster than ever due to natural disasters and global trade. As the animal medicines industry works to deliver new technologies to tackle emerging threats swiftly and effectively, the accompanying regulatory process must also adapt, otherwise the opportunity to respond to a health threat could be lost.

Delivering products into smaller regional markets such as East Africa or South Asia, for example, poses a unique financial challenge. Having a medicine approved for use through the regulatory process and ensuring the infrastructure is in place to deliver it to the market often costs more than a company can recoup. This makes it financially unviable to deliver the newest technologies to many farmers in developing countries who need it the most.

At the other end of the spectrum, animal medicines are advancing faster than ever before with tools like modern vaccinations, stem cell therapies, monoclonal antibodies and more, opening up a world of new prevention and control treatments. Regulations must keep up to allow new products and technologies to be assessed and licensed in a timely manner. Delays can mean veterinarians, livestock farmers and animals must wait longer for an appropriate treatment or product, which could increase disease risk and the need for antibiotics.

Strengthening the regulatory process requires:

- **Regulatory convergence:** Policymakers should support greater regional regulatory harmonization and convergence. This could enable a company to submit a product to one, unified regulatory system and receive a market authorization for multiple countries in a region. This would significantly increase the amount of tools available to veterinarians and farmers, particularly in smaller markets.
- **Modern, flexible regulatory systems:** Ground-breaking products are in the animal medicines pipeline but some may not fit into the current regulatory framework. Regulators must prepare for these situations by offering flexible, collaborative processes that ensure product safety while avoiding unnecessary delay.
- **Controls on illegal medicines:** Policymakers and authorities must crack down on illegal medicines, including counterfeits. Illegal medicines are a $2 billion a year market that threatens farmers, veterinarians, animal safety, and even consumer safety. Actions to improve control could include strengthening enforcement agencies, improving data collection and analysis, facilitating identification of medicine authenticity, and improving general awareness.
- **Support for OIE Standards:** The World Organisation for Animal Health (OIE) offers science-based standards that countries can use to improve prevention and control of disease. Greater adoption of OIE standards can better protect the health and welfare of animals and promote responsible use of medicines.

Consumer acceptance

Consumers are increasingly interested in the provenance and production of their food. The food chain, from retailers to farmers, are working to provide more detail, but there remains a disconnect between marketing campaigns promoting sustainably sourced foods and the threat of disease risk among livestock. This creates confusion for consumers.

For example, indoor rearing of poultry as a biosecurity measure can be an effective way to limit exposure to disease, but consumers are increasingly expecting birds to be raised primarily outdoors. This can significantly increase disease risk as seen in the 2016 outbreak of bird flu in Europe, which was spread by wild birds who swiftly infected outdoor poultry. Policymakers must support public awareness and understanding of animal disease risks, and the necessary measures to prevent outbreaks.

Strengthening this awareness requires:

- **Better public education on biosecurity:** Consumers need to understand that farm conditions and husbandry play an enormous role in preventing disease outbreaks, which affect animals as well as people, their food supplies and their livelihoods.
- **Improved understanding about responsible use and the role of antibiotics in animal care:** The public must understand that, just as in humans, antibiotics are the only way to treat bacterial infections in animals. We can reduce the need for antibiotics, but, they will remain crucial to animal welfare.
- **Greater education about the safety and importance of vaccines:** Consumers should be reassured that vaccines can safely and effectively prevent disease, reducing the need for antibiotics.

Funding for livestock

Livestock contributes 40 percent of global agricultural output, according to the UN's Food and Agriculture Organisation (FAO), yet the percentage of development spending devoted to livestock is less than 0.25 percent. With 1.3 billion people worldwide relying on livestock for their livelihoods and food security, the funding available to support the health of livestock must increase.

Financial assistance is vital to encourage smallholder farmers to invest in preventative medicine such as vaccines. Effective, international disease monitoring also needs crucial funds to limit the risk of a disease emerging that requires antibiotics for treatment.

Finally, investment is also needed for research and development to allow scientists to keep up with emerging disease threats. Strengthening livestock funding requires:

- **Livestock vaccination support:** Investing in preventative medicine is the best way we can reduce the need for antibiotics. Subsidies or other farm-level support is essential for improving uptake of vaccination, especially in low- and middle-income countries.
- **Investment in research and development:** Forming public-private partnerships can be a helpful way of sharing the cost of innovation while investing in health.
- **Funding for disease monitoring across borders:** Disease knows no borders and vigilant surveillance and shared information can help countries limit an outbreak and stop it from spreading, reducing the need for subsequent treatment.
- **Best practice training of farmers:** Livestock producers are on the frontline of animal health. By investing in best practices like good nutrition, husbandry and biosecurity, we can help them reduce the likelihood of disease and the need for antibiotics.

Access to veterinary expertise

It is impossible to reduce the need for antibiotics and tackle AMR without proper access to veterinary expertise. Only with the right expertise can livestock producers improve the prevention, detection and treatment of animal disease.

However we simply do not have enough veterinarians nor veterinary paraprofessionals. This is especially acute in low- and middle-income countries where many animals will never see a veterinarian in their lifetime. This puts farmers in the challenging position where they must make medical decisions for their livestock without adequate training. Increasing access to veterinary expertise must be at the top of the global agenda.

Strengthening access to veterinary expertise requires:

- **Increasing investment in veterinary education:** Veterinarians must be equipped to respond to emerging disease threats and responsibly use antibiotics.
- **Promoting the veterinary profession:** To fill the global shortage of veterinarians, we must redouble efforts to make this an attractive, rewarding career.
- **Investing in veterinary paraprofessionals:** There are simply not enough veterinarians available. Paraprofessionals with some training can make an enormous difference to animal health.
- **Encouraging livestock farmers to seek out veterinary expertise:** This requires promoting trust in the veterinary profession and in the efficacy of animal health products.

Actions by the public sector and international organizations across these four areas can help improve prevention, detection and treatment of animal disease on a national and international scale, reducing the need for antibiotics on farms across the globe. Combined with the actions of our industry, this can make a significant impact in the fight against AMR and improve responsible antibiotic use for all our benefit.

5. Fulfilling our Commitment

Our Roadmap to Reducing the Need for Antibiotics is the product of our experiences and efforts to address AMR, improve responsible use, and bolster the health of animals.

It is also the next step in a process that began in 2017 with the release of our **'Antibiotics Commitment'**. This pledge outlined the five guiding principles for HealthforAnimals and our Members when approaching responsible use and AMR:

Principle 1:	**Protect animal health and welfare in a unified One Health approach**
Principle 2:	**Use antibiotics judiciously and responsibly**
Principle 3:	**Promote disease prevention and increased access to products and expertise**
Principle 4:	**Invest in development of products for prevention and treatment**
Principle 5:	**Increase knowledge, transparency and communication**

These principles, and the actions we have undertaken to meet them, have informed our vision and helped guide our way forward. Since our Antibiotics Commitment is the foundation of our Roadmap to Reducing the Need for Antibiotics, it's essential that we demonstrate how we embody this Commitment.

Activities in this section have been provided by HealthforAnimals Members, which includes 10 company members and associations around the world:

The activities demonstrate how our industry is fulfilling the principles of our Commitment and provided us with the learnings necessary to develop this Roadmap. This list not exhaustive, but demonstrates the wide breadth of work we undertake to address AMR and responsible use.

Principle 1:

Protect animal health and welfare in a unified One Health approach

Selection of activities by HealthforAnimals Members

Memorandum of Understanding with World Organization for Animal Health (OIE)

In 2017, HealthforAnimals officially renewed their Memorandum of Understanding with the OIE. This agreement calls for both organizations to work together towards common goals in “responsible and prudent use of antimicrobials and anthelmintics with the aim of tackling resistance,” alongside other areas including regulatory frameworks, information sharing and development of new medicines.

How does this address AMR and responsible use?

The OIE is the premier global body for animal health and a leader on AMR and responsible antibiotic use. With 182 Member Countries, OIE’s ability to affect change across the world is unprecedented. Working with OIE is essential to tackling the global challenge of antibiotic resistance, and this cooperation agreement enables HealthforAnimals and our industry to directly contribute to their efforts.

Global responsible use coalitions

Around the world, HealthforAnimals and our Member Companies and Associations participate in value chain coalitions that work to improve responsible use of antibiotics, such as RUMA (Responsible use of Medicines in Agriculture) in the UK, EPRUMA (the European Platform the Responsible Use of Medicines in Animals) across Europe, ALIANÇA in Brazil, and others. These coalitions allow the entire value chain – from producer to medicine developer to retailer – to work together towards responsible use. Each is an essential collaborative platform that offers a unified approach to the challenge.

How does this address AMR and responsible use?

Resistance cannot be solved by just one link in the value chain. Working together means the effort of each link (whether the developer, producer, retailer, etc.) builds upon one another to become greater than the sum of their parts. In addition, close collaboration ensures the efforts of the animal health sector remain focused, working towards a common goal.

HealthforAnimals' Antibiotics Commitment

Ten of the largest animal health companies in the world are united through the global association, HealthforAnimals. Members of the Association work together on common issues affecting veterinary medicine and the wider public health sector. In 2017, HealthforAnimals and its Members agreed to an industry-wide Antibiotics Commitment, outlining the five principles that underpin their work on responsible use and AMR.

How does this address AMR and responsible use?

The Commitment publicly sets out the industry's ability and responsibility to support the responsible use of antibiotics and provides principles against which it can be measured.

Online training for farmers to support responsible use of antibiotics on UK farms

The National Office for Animal Health (NOAH), RUMA, the Veterinary Medicines Directorate (VMD), the British Retail Consortium (BRC) and leading academics developed a robust and trusted online training programme for all those working in the sheep, dairy, beef and pig sectors in the UK. The Animal Medicines Best Practice (AMBP) Programme gives farmers and vets access to new resources, enabling a coordinated and consistent approach to farmer training in the responsible use of antibiotics.

How does this address AMR and responsible use?

The programme aims to raise awareness, knowledge and understanding of AMR and helps drive best practice in a consistent manner across UK farms when it comes to using antibiotics. Training modules are available for farmers via the NOAH website or directly through an online Lantra e-learning platform. Veterinarians can also access resource materials, enabling them to deliver training directly to their farmer clients.

Participation in global veterinary associations

HealthforAnimals is an official Member of the World Veterinary Association (WVA) and World Small Animal Veterinary Association (WSAVA), which represent a combined 700,000 veterinarians in over 100 nations worldwide. The two associations set clear defined standards and guidelines for proper animal treatment, including how to use antimicrobials responsibly. HealthforAnimals is an active contributor to working groups in each association and strongly supports their efforts to encourage responsible use and improve access to veterinarians.

How does this address AMR and responsible use?

By working with global veterinary associations, we can support the efforts of veterinarians to tackle AMR and improve responsible use. HealthforAnimals has done this by offering technical expertise, forming partnerships, and participating in working groups with each association.

Training veterinarians on responsible use of antibiotics in Spain

Spanish veterinary medicines association Veterindustria hosted a web seminar on responsible use of antimicrobials for over 1000 veterinarians at the 2018 launch of their product compendium Gui@Vet. The compendium is renewed every two years and these responsible use webinars are organized for each publication.

In collaboration with the Spanish Medicines Agency and the Board of Deans of Spanish Veterinary Faculties, Veterindustria provides further training on responsible use of animal medicines at all veterinary faculties across Spain, including veterinary university hospitals.

How does this address AMR and responsible use?

Providing clear guidance for the correct use of antibiotics directly to those entrusted to use these products, the veterinarians, is one of the best ways to ensure their responsible use. Raising awareness through training sessions at student level and practicing veterinarian level, and furthering knowledge about the challenges of antibiotic resistance helps to ensure better understanding of what is at stake and what role the veterinarians play in addressing the challenge of AMR.

Surveillance of disease outbreaks

Launched on 27 January 2016, the STAR-IDAZ International Research Consortium (IRC) aims to maximize funding for coordinated animal health research strategies for at least 30 priority diseases, infections and issues. HealthforAnimals and several Members are partner members of the IRC, while AnimalhealthEurope, the association for animal medicines companies in Europe, is a secretariat member.

How does this address AMR and responsible use?

Among the outcomes of international research are candidate vaccines, diagnostics or other therapeutic health products, all of which help to prevent or better control disease and reduce the need for antibiotics.

VICH support

VICH is a trilateral (EU-Japan-USA) program aimed at harmonizing technical requirements for veterinary product registration. This makes bringing products to market more efficient and predictable, which puts innovative products that can reduce the need for antibiotics in the hands of users quicker. Through its Members, observers and outreach forum participants, VICH represents approximately 100 countries. HealthforAnimals has been an active member of VICH for many years.

How does this address AMR and responsible use?

VICH activities help products that can reduce the need for antibiotics in animals reach users in a quicker, more efficient manner. This helps tackle challenges earlier and more effectively.

Principle 2:

Use antibiotics judiciously and responsibly

Selection of activities by HealthforAnimals Members

Promoting best practices to companion animal veterinarians in Europe

Vetoquinol recently launched a campaign to educate veterinary clinics about the prudent use of antibiotics. Vetoquinol provided an electronic sales aid for all company territory managers to help explain best practices to veterinarians. Brochure and webinars outlined to veterinarians the prudent use approach in areas such as dermatology, respiratory infections and urinary tract infections.

In-clinic meetings with practising veterinarians shared methods in the field of prudent use and “lunch & learn” training sessions were organized.

How does this address AMR and responsible use?

These types of campaigns raise awareness on AMR, responsible use, and antibiotic stewardship for veterinarians and pet owners.

'Cevolution'

With increasing global concern about the impact of antibiotic resistance on health and welfare of people and animals, Ceva Santé Animale undertook an extensive, company-wide change called 'Cevolution.' Ceva’s aim was to make a wide portfolio of antibiotics available, encouraging veterinarians to make the right diagnosis, prescribe the right antibiotic, at the right time and only for individual infected animals. This includes extensive education and training program for vets and farmers. A comprehensive library of high-quality, authoritative print and online resources, produced in partnership with international opinion leaders, and a regular newsletter are freely available to veterinary practitioners.

How does this address AMR and responsible use?

‘Cevolution’ helps veterinarians to choose the most appropriate antibiotic for the diagnosed infection. Extensive education, training and information ensures vets and farmers are aware of best practice and latest developments in the control of AMR.

Eight-point antibiotic stewardship plan

Elanco Animal Health has committed to an eight-step antibiotic stewardship plan that promotes responsible use of antibiotics and greater research into new treatment technologies. One year after launching the plan, Elanco convened more than 200 global animal protein industry leaders, intergovernmental organizations, NGOs, and experts at a One Health Antibiotic Stewardship Summit to address critical challenges and establish pathways forward.

In 2018, Elanco further refined the eight-point plan with commitments in three key areas of stewardship: combating antimicrobial resistance through responsible antibiotic use, reducing the need for medically important antibiotics in livestock, and significantly investing in new research.

How does this address AMR and responsible use?

The eight-point plan promotes responsible use practices, reducing the need for antibiotics, and development of alternatives. These actions can improve use of existing antibiotics and spur development of new treatment or prevention tools.

Promoting best practices to livestock veterinarians in Europe

Vetoquinol recently launched a communications campaign to promote best practices in antibiotic use, which included materials such as a in-depth brochure outlining the differences among the four categories of antibiotics and the varying needs for prescription.

Vetoquinol also ran workshops, in cooperation with universities, for veterinarians to explain the relevant legislation and prudent use of antibiotics.

This was supported by a farmer case study on mastitis prevention, which showed how to reduce the need for antibiotics through targeted mastitis treatments, rapid diagnostics, and sensitivity testing methods.

The company also developed sanitary audits, performed by Service Implementation Consultants, and worked with digital partners to help practices understand their current antibiotic usage and discuss appropriate usage.

Vetoquinol territory managers have also received specific training about the National Plan about Antibiotic Resistance and the company position on the topic.

How does this address AMR and responsible use?

The Vetoquinol campaign helps European users better understand and fundamentally improve their use of antibiotics in livestock. This means more effective animal care that ultimately reduces the need for antibiotics.

Guidance for the rational use of antimicrobials (GRAM)

Several years ago, Ceva Santé Animale began work to address the veterinarian's need for a pragmatic guide to rational prescribing, which can be used under the time pressure of a consultation. This resulted in the 2016-2017 launch of Ceva’s ‘Guidance for the rational use of antimicrobials’ (GRAM), a comprehensive practical and easy-to-use guide to help reduce the development of antimicrobial resistance in pets.

Since its launch, GRAM has been released in various languages and is freely available to veterinary practitioners. With over 500 pages, it was developed over six months by an independent panel of 10 experts from seven European countries, all recognised leaders in antibiotherapy.

GRAM aims to synthesise what already exists, reach consensus and simplify the material so as to provide clear, practical answers to the questions in relation to rational use of antimicrobials in canine and feline surgery and medicine. It includes 37 disease factsheets, 29 detailed recommendations and six synopses dealing with major topics, e.g. ‘key questions before initiating any antibiotherapy’.

How does this address AMR and responsible use?

GRAM emphasises proper diagnosis before treatment and the use of options other than antibiotics; e.g. use of suitable topical antiseptics as initial choices for the treatment of superficial dermatological conditions.

Digital support for treatment of BRD

In 2016, a meta-analysis comparing antibiotic options for treating bovine respiratory disease (BRD) was published in Preventative Veterinary Medicine. In 2017, Bayer Animal Health's technical veterinary team in conjunction with IT programmers began the creation of a web application to present the results of this study in a clear, concise and useable format. The goal was to support practitioners searching for data on BRD treatment options by providing them with data from this meta-analysis.

The iCOWNT web application allows practitioners to compare the relative risk of retreatment between two products and view a ranking of products based on efficacy (from highly efficacious to not efficacious) based on the published data. This assists practitioners in antimicrobial selection for BRD treatment and helps prevent them from choosing products that have a low likelihood of success.

How does this address AMR and responsible use?

Practitioners using the iCOWNT web application and underlying data to support BRD treatment protocols can reduce their retreatment rate as well as their likelihood of selection of inappropriate antimicrobials for BRD treatment. This can result in a reduction in overall antibiotic use and assist in preventing the selection of antimicrobials that could lead to the selection of resistant BRD pathogens.

Increasing veterinary supervision of use

As part of efforts to improve the responsible use of antibiotics, Elanco Animal Health has committed to new partnerships in countries with limited resources that aim to increase veterinary and professional oversight of antibiotic use.

In addition, Elanco has completed submission of 67 labels for five shared-class molecules that moves products from over-the-counter use to under the oversight of a veterinarian in all countries where over-the-counter uses remained and veterinary infrastructure exists. Unfortunately, veterinary infrastructure doesn't exist in all parts of the globe to allow for this move completely. In places where veterinarian oversight is not available, Elanco is working to educate farmers and others on the responsible use and administration of antibiotics.

How does this address AMR and responsible use?

Increasing access to veterinarians promotes preventative medicine which improves overall animal health and reduces the need for antibiotics. In situations where antibiotics are needed, veterinarians are best positioned to use antibiotics correctly and responsibly. Increasing access to their expertise promotes better use of antibiotics at the right time, in the right amount, for the right duration. Where veterinary expertise is unavailable, increasing farmer education promotes better use of antibiotics.

Individual Pig Care program

Individual Pig Care from Zoetis is an educational, in-barn training program that helps caregivers assess pig populations and support farmers antibiotic use. The program can help producers spot sickness sooner. When illness is addressed sooner, treatment success and well-being can be improved.

The program also helps personalize health protocols and reduce treatments. By using the classification system, caregivers can communicate a pig's condition to managers and veterinarians. This helps veterinarians prescribe the correct product for the pig's condition.

How does this address AMR and responsible use?

When illness is spotted and treated sooner, pigs can return to full health sooner. This reduces the need for additional antibiotic treatments and stops the illness from spreading to more animals, who may then require treatment.

Raising awareness of responsible use through non-product advertising materials

To help educate veterinarians on the implication of antimicrobial resistance and responsible use of antibiotics, Zoetis developed microsite and webinar series for veterinarians. The objective was to provide a proactive campaign to raise awareness about the responsible use of antibiotics. Over 4,000 veterinarians engaged in the campaign on sites multiple languages, including English, Dutch, French, German, Portuguese and Spanish.

How does this address AMR and responsible use?

Proactively promoting the responsible use of antibiotics as a topic under the slogan "As much as necessary, as little as possible" supports overall awareness of this topic to the wider veterinary audience and greater adoption of best practices.

Principle 3:

Promote disease prevention and increased access to products and expertise

Selection of activities by HealthforAnimals Members

Advancing accessibility of quality medicines, knowledge and education in Sub-Saharan Africa

The Zoetis ALPHA initiative, sponsored by the Bill & Melinda Gates Foundation, aims to advance livestock health and productivity in Sub-Saharan Africa through the increased availability of veterinary medicines, services and education.

Expected results include increase availability of veterinary medicines, services and education; implementation of disease diagnostics infrastructure; and development of veterinary laboratory networks and outreach services into business hubs in Ethiopia, Nigeria, Tanzania and Uganda.

How does this address AMR and responsible use?

Better access to medicines and expertise can significantly improve livestock management. Veterinarians and farmers will be able to better prevent and manage health problems, which can reduce disease risk and the need for antibiotic treatments. This is especially needed in areas of Africa that lack veterinary capacity.

CEVA Lung Program

In 2014, the Ceva Lung Program was launched in Asia and has been subsequently rolled out worldwide. The Program, which runs as a user-friendly app on Android and iPad mobile devices in multiple languages, assists in the correct diagnosis of respiratory diseases by providing a methodology and guidelines for scoring lesions at slaughter. The Program calculates the incidence, severity and impact of enzootic pneumonia and pleuropneumonia and reveals the presence of subclinical infections. The results can be used to evaluate the efficacy of control measures, including vaccination protocols, flag changes in disease dynamics and benchmark effectiveness of respiratory disease management in comparison to other farms.

Use of the Program has grown rapidly. In 2018, data was collected and analysed from more than 500,000 lungs. In addition to being useful as a strategic tool on individual farms, this unique, 'big data' set is being used to identify factors associated with high or low prevalence of respiratory disease to help design better preventive programs.

How does this address AMR and responsible use?

By providing vets and farmers with a simple but effective tool to help them improve the management of respiratory diseases through more effective vaccination regimes, use of antibiotics can be reduced to a minimum, while enhancing productivity and welfare. This reduces the chance of AMR strains developing in the animal population.

Convenience program evaluation for poultry

The ‘Convenience Program Evaluation’ is an initiative by Merck Animal Health, known as MSD Animal Health outside the US and Canada, designed to help poultry producers

protect chickens against various diseases while achieving optimal vaccination standards, bird quality and performance goals.

Through the Convenience Program suite, producers receive vaccination support in the form of laboratory services and field visits, and also staff training and scientific seminars. These services enable them to remain highly proficient in poultry health practices.

How does this address AMR and responsible use?

This suite of services empowers poultry producers to protect their birds from disease and decrease the need for antimicrobials for disease treatment.

Disease prevention and control for profitable livestock production in Nigeria

In January 2019, the Veterinary Teaching Hospital of the University of Ibadan hosted a seminar on disease prevention and control. Several topics were discussed, ranging from biosecurity, disease symptoms, identification and also disease reporting.

The Nigeria Zoetis/ALPHA Initiative supported this seminar with writing materials and learning resources. The Initiative also officially launched a Learn & Grow microsite at the event, which provides free educational modules on livestock health and business courses on the microsite. 300 people attended, ranging from students, veterinarians from both public and private sectors, veterinary students, lecturers and paravets.

How does this address AMR and responsible use?

Veterinary oversight of antibiotics can improve responsible use. By improving access to veterinary expertise in areas like Nigeria where it is lacking, we can subsequently improve responsible use of antibiotics.

Educational scholarships

Each year, Zoetis provides USD$500,000 in educational scholarships to over 200 veterinary students around the world. These are offered to students focused on species, diseases or regions which may be underserved in animal agriculture or pet heath.

How does this address AMR and responsible use?

More veterinarians and greater access to veterinary care improves responsible use.

Farmer and veterinary training academies

Boehringer Ingelheim organizes training academies on all continents, open to both internal and external professionals to be trained on the impact of diseases and how to prevent them. These academies are developed by universities or experts in the field. These training sessions provide the knowledge and support that producers and veterinarians require to identify and understand the dynamics of diseases, minimize disease transmission and maximize immune response while still running a profitable farm.

An example is the Boehringer Ingelheim Swine Academy (BISA®), organized in collaboration with international experts, such as the Iowa State University of Science and Technology and the University of Illinois, for Boehringer Ingelheim employees and

practitioners. It provides the participants with hands-on training run by scientists and industry professionals.

For our customers in the ruminant segment, Boehringer Ingelheim organizes the Milk Quality Academy, focusing on mastitis prevention, through useful advice and guidance.

How does this address AMR and responsible use?

Increased knowledge and support for prevention helps animal health practitioners avoid diseases, which can ultimately reduce the need for antibiotics. In addition, demonstrating that prevention works without compromising on profit offers an important business case for practitioners.

Handling and treatment practices in Mexico

Bayer recently collaborated with cattle farmers in Mexico to improve on-farm handling and treatment practices. This led to a reduction in the overall rate of morbidity, mortality and improved weight gain in cattle.

How does this address AMR and responsible use?

Improvements in handling and treatment practices reduced respiratory morbidity without the need for antibiotic treatments.

Leptospirosis vaccine

In 2019, Merck Animal Health, known as MSD Animal Health outside the US and Canada, released a leptospirosis vaccine effective for dogs against four of the five known serovars that cause canine leptospirosis infection, Nobivac EDGE LEPTO4. Leptospira bacteria are widespread in the environment and are zoonotic, with up to 10 million people infected every year and a fatality rate in humans of up to five per cent. In dogs, leptospira infections cause serious damage to the liver and kidneys and can cause fever, loss of appetite, shivering, muscle pain, weakness, and urinary symptoms.

How does this address AMR and responsible use?

By limiting the spread of leptospirosis among dogs and in turn reducing the chance of human infection, the vaccine ultimately reduces the need for antimicrobials to treat leptospira infections.

Innovation in vaccination devices

Ease of administration can be a significant factor in the adoption of a vaccine by veterinarians and animal caretakers. In 2018, Merck Animal Health, known as MSD Animal Health outside the US and Canada, developed a needle-free vaccination device for pigs, the IDAL 3G.

The device aims to help professionals administer vaccinations more quickly and at greater scale because they are more easily maintained and cleaned, are capable of injecting into multiple injection sites, allow for comprehensive record-keeping, and ensure the proper dose is administered during each injection.

How does this address AMR and responsible use?

Increasing the ease of vaccination for pigs and their handlers can improve the adoption of robust vaccine protocols, allowing for more pigs to be vaccinated, and encourage more handlers to vaccinate. This can decrease the need to use antimicrobials treat disease over the lifetime of the pig, and reduce the possibility of AMR developing in swine bacteria.

Developing new vaccines and delivery systems

Phibro Animal Health has had 77 new vaccine licences granted in 18 different countries over the last three years. Examples of new products include a live virus vaccine in an effervescent tablet, sealed in sterile aluminium blister packaging. The user-friendly tablet is convenient and safe to handle so it allows vaccines to be used in locations without access to equipment or refrigeration.

Phibro has also invested in autogenous animal vaccines, which are herd-specific vaccines (also referred to as custom vaccines) and can be effective against illnesses such as BRD, Pinkeye (IBK), and enteric diseases like Salmonellosis. Animal death rates from these diseases are well documented, and the use of autogenous vaccines to combat these conditions can be effective.

How does this address AMR and responsible use?

Vaccination and herd immunity are key parts of antimicrobial stewardship and two principle ways to reduce the need for antimicrobials, reducing the chance of AMR pathogens strains developing in the population.

Prevention and diagnostic toolbox

Effective vaccination programs help keep livestock healthy and productive, which helps reduce the need for antibiotics. Availability of vaccines is not a guarantee for success though. Perfect management may not always avoid exposure to pathogens and a vaccine may not prevent every outbreak from occurring. This is why Boehringer Ingelheim offers a full suite of tools that can work alongside vaccination, such as early warning tools can help to identify the dynamics of a disease and enable initiation of the correct treatment.

For example, the ‘SoundTalks’ tool can measure coughing in a pig barn as an early indicator of Mycoplasma infections. This will be followed by an onsite diagnostics tool which can help obtain a fast detection of pathogens and diseases. This promotes quicker detection and more accurate treatment selection.

How does this address AMR and responsible use?

Prevention is key to reducing the need for antibiotics. When a bacterial disease is avoided, the need for antibiotic treatment falls. However, disease cannot always be prevented. Early detection tools can help stop bacterial disease before it spreads widely and increases the need for antibiotic treatments across a herd.

'Time to Vaccinate' Campaign

The 'Time to Vaccinate' campaign is an initiative by Merck Animal Health, known as MSD Animal Health outside the US and Canada, intended to provide farmers with information and shared experiences about vaccination as a preventive tool. 'Time to Vaccinate' connects beef and dairy farmers who want to learn about vaccination for preventable diseases with farmers who’ve already adopted a preventive approach to managing their herds. The objective is to increase awareness and ultimately vaccination rates.

Time to Vaccinate is expected to increase the number of farmers and veterinarians who implement a preventative vaccination protocol on their farm which could lead to continuous improvement in overall animal health, well-being and productivity.

How does this address AMR and responsible use?

Increased implementation of vaccination programs, in conjunction with other farm management best practices such as quality nutrition, biosecurity, and animal handling, will help to prevent infectious diseases from negatively impacting ruminant health and productivity. Quality implementation of vaccination protocols may result in less bacterial infectious bacterial disease on farms and enhance antimicrobial stewardship.

Developing a vaccine against ileitis in swine

Ileitis is a bacterial disease that infects the intestines of an animal. Once an animal is infected, an antibiotic is the only treatment. If untreated, ileitis can cause pain, suffering and even death for an animal.

In 2000, Boehringer Ingelheim developed a vaccine that could prevent ileitis. In the 20 years since then, more than 700 million pigs have been vaccinated against ileitis. Researchers have tracked field use of the ileitis vaccine and found evidence it reduces the need for antibiotics.

How does this address AMR and responsible use?

Vaccines against ileitis can reduce the need for antibiotic treatment in swine production by preventing the disease, while also increasing awareness of the need of preventive care.

Vaccines in Norwegian aquaculture

In the early 1990s, a vaccine against furunculosis – a salmon skin disease – was released by Pharmaq. Later it was made effective against three types of vibriosis infections in addition to furunculosis. The vaccine enabled the aquaculture industry to shift from antibiotic treatments to prevention through routine vaccination.

How does this address AMR and responsible use?

Through the introduction of predictable vaccines, the Norwegian aquaculture industry has reduced its use of antibiotics by 99.8 percent per ton of trout and salmon produced, compared to 1987 level. Norwegian aquaculture also grew from 57,000 tons in 1987 to 1.25m tons in 2012.

Principle 4:
Invest in development of products for prevention and treatment

Selection of activities by HealthforAnimals Members

Alternative topical solutions to support innate immune system in dogs

Virbac recently developed a new technology based on plant extracts, (boldo and meadowsweet) which promotes natural secretion of antimicrobial peptides (AMPs) by keratinocytes (a cell type in the skin) that can treat bacterial infections, especially in atopic dogs. These AMPs naturally produced by the body were shown to also successfully treat resistant bacteria.

How does this address AMR and responsible use?

The use of topical therapies, especially in the case of superficial skin infections, can stimulate natural defences for treatment, which reduce the need for an antibiotic.

Developing diagnostics and monitoring tools

Boehringer Ingelheim has recently introduced two platforms that give farmers and veterinarians additional information to improve preventive healthcare.

SoundTalks is technology designed to detect early symptoms of respiratory disease. The system includes devices that continuously and objectively monitor the herd via automated analysis of sound. The devices are the 'ears – continuously listening to the pigs – and algorithms are the 'brain' – interpreting what is heard.

Mobinostics is a point-of-care system that can be operated on farm, from a veterinarian's vehicle or in clinic – reducing the need to ship samples to a central testing laboratory. Mobinostics is simple to use – no need for a trained lab technician – and will allow testing of various types of samples (e.g. nasal swabs, blood, oral fluids) for targeted diseases in less than 60 minutes.

How does this address AMR and responsible use?

Earlier detection of disease and rapid diagnosis mean farmers and veterinarians can intervene sooner, enabling an improved treatment response with the potential to shorten and reduce the number of treatments, including antibiotics.

Education and Digital Tools

Bayer encourages taking a practical and holistic approach to mitigating infectious diseases. Ongoing scientific and educational outreach to livestock professionals encompasses topics such as good biosecurity and the importance of detecting diseases early. Digital tools such as BCS Cowdition and BCS SowDition smartphone applications can help simplify accuracy and tracking of body condition scores for dairy cows and sows, respectively.

How does this address AMR and responsible use?

Better livestock management improves detection, control and treatment of bacterial disease, which can lead to fewer and more targeted antibiotic treatments.

Integrated Health Ecosystems for Precision Livestock Farming

Boehringer Ingelheim has recently launched an 'Integrated Health Ecosystem' central data-management platform that integrates technologies and tools within and across swine farms into one ecosystem. This system can provide better insights and decision-ready information to veterinarians and producers enabling them to take more informed decisions that increase health, performance and profitability. This approach brings together multiple technologies that can enable more effective monitoring and detection of diseases, fast diagnosis of causative agents, and precise intervention.

How does this address AMR and responsible use?

Effective utilisation of precision livestock farming enables earlier and more precise intervention and disease prevention plans, which can reduce the need for antibiotics. It also improves responsible use through improved effectiveness and continuous accountability where antibiotic use is needed for the well-being of animals.

Investment in new prevention and treatment tools

In its 2017/22 strategic plan, Vetoquinol plans to invest up to 20 percent of its R&D pot in tools that can reduce the need for antibiotics.

This can include solutions that span across genetics, prevention, hygiene and biosafety, vaccines, immunostimulants and efficient diagnostics. This will target the use of anti-infectives still available for animal health and new targeted treatments that do not cross-react with critical antibiotics.

How does this address AMR and responsible use?

The innovations produced will either substitute or reduce the use of antibiotics.

Proteobiotic use in pigs and poultry

In 2018, Bio Agri Mix, a member of the Canadian Animal Health Institute (CAHI is an Association Member of HealthforAnimals), launched a novel proteobiotic for the Canadian livestock industry. Proteobiotics represent a new class of anti-virulent products providing an alternative to conventional antimicrobial preventative programs. More than 300,000 pigs have received preventative therapy with NUVIO to control *E. coli* K88 and the poultry sector has recorded rapid uptake for Necrotic Enteritis control.

How does this address AMR and responsible use?

Through reducing the prevalence of animal disease and providing an alternative to antimicrobial use in the Canadian livestock industry, proteobiotics can reduce the need for antimicrobial use and the chance subsequent AMR strains emerge.

Maintaining intestinal integrity in poultry flocks

With the growing consumer demand for lean protein that is produced without the use of antibiotics, Phibro Animal Health has worked to address gut health challenges in poultry raised without antibiotics. Such gut health problems are a major concern, as they often have an impact on animal welfare, product quality, and affordability.

Phibro's Magni-Phi helps maintain overall intestinal health in poultry, which may lead to a reduction in diseases and decrease the need for antibiotics. This natural product is made from quillaja extract and yucca powder and is listed by the Organic Materials Review Institute (OMRI).

How does this address AMR and responsible use?

Protecting and improving overall animal health bolsters an animal's natural defences against illness. When an animal can naturally fight off an infection, it reduces the need for animal antibiotics in the future.

Targeting improved nutritional health

In 2016, Elanco announced the creation of a nutritional health division, which focuses on functional nutrition products, including enzymes, probiotics and prebiotics, which impact animal microbiomes and other dietary factors to reduce disease incidence, improve gut health and enhance feed digestibility. The organization recently launched Correlink – a novel direct-fed microbial (probiotic) product outside the U.S – and announced a global, exclusive in-licensing agreement to launch an in-feed antibody product focused on reducing and controlling coccidiosis.

How does this address AMR and responsible use?

Improving nutrition bolsters an animal's natural defences against illness. When an animal can naturally fight off an infection, it reduces the need for animal antibiotics in the future.

Poultry immunostimulants to reduce *E. coli* incidence

Bayer's Victrio is an immunostimulant that stimulates the innate immune system in poultry, providing a rapid, nonspecific, protective response to infectious agents. This offers a non-antibiotic option to help reduce mortality associated with *E. coli* in embryonated eggs and newborn chicks. The treatment is registered in a number of countries including USA and Canada.

How does this address AMR and responsible use?

As a non-antibiotic option, Victrio can help poultry producers reduce the need for antibiotics when addressing the challenge of mortality associated with *E. coli*, especially in the early stages of life when chicks are highly susceptible to *E. coli* infections. Reducing antibiotic use at hatchery is an important step in reducing AMR in chickens.

R&D into new treatment options

In 2018, Elanco Animal Health announced it was investing at least half of its food animal research and development budget in projects dedicated to developing alternatives to shared-class antibiotics. This builds off Elanco's 2015 'Eight-Point Antibiotic Stewardship Plan,' which restructured its work in this area, creating two new research and development teams focused on advancing antibiotic alternatives.

How does this address AMR and responsible use?

Providing alternative treatment options for farmers can help limit development of resistance in existing antibiotic treatments.

Principle 5:
Increase knowledge, transparency and communication

Selection of activities by HealthforAnimals Members

Educating consumers with ExploreAnimalHealth.org

Created by Phibro Animal Health, ExploreAnimalHealth.org is a website intended for consumers that delivers clear, credible and easily understood information about animal antibiotic use, vaccines, nutritional products and the One Health approach. The site features shareable content for use on websites and social media channels, infographics, blogs, resource links, and a video library.

How does this address AMR and responsible use?

Improving consumer understanding of animal antibiotic use and the challenges we face in tackling AMR helps them become advocates for responsible use.

Horizontal AMR transfer research

In 2018, Bio Agri Mix, a member of the Canadian Animal Health Institute (CAHI is an Association Member of HealthforAnimals), completed an initial AMR gene study in litter samples from 10 poultry production systems. Results are being used in follow-up research to further develop AMR gene PCR panels and create a pilot study in conjunction with the Chicken Farmers of Canada (CFC). While the project is still underway, initial results provided encouraging signs that the final research could assist veterinarians in making prudent antimicrobial decisions.

How does this address AMR and responsible use?

Monitoring AMR and transfer genes will enable veterinarians to make prudent antimicrobial use decisions without hampering animal welfare, thus reducing the potential for AMR strains developing in animals.

Monitoring antibiotic sensitivity in New Zealand

In 2017, Bayer introduced DairyAntibiogram, an antibiotic sensitivity test for mastitis bacteria on dairy farms, in New Zealand. The test is performed on bulk milk samples obtained directly from the milk processors. Armed with results of the DairyAntibiogram, dairy professionals have knowledge of the antibiotic resistance status of a herd, enabling them to better select the most effective, responsible and sustainable antibiotic treatment. The test now includes 10 antibiotics and a website for enhanced tracking and results management.

How does this address AMR and responsible use?

DairyAntibiogram equips dairy professionals with knowledge of the antibiotic sensitivity status of a herd and enables them to better select effective, responsible and sustainable antibiotic treatment for mastitis. This helps veterinarians ensure that they are using antibiotics in the most responsible and effective way possible, when needed. This subsequently reduces the risk of new AMR strains emerging in the animal population.

'One Health Antibiotic Stewardship Summit'

In 2016, Elanco organized a 'One Health Antibiotic Stewardship Summit', convening more than 200 global animal protein industry leaders, including company chief executives and livestock owners, intergovernmental organizations, NGOs, and experts to discuss critical challenges. Topics included increasing global veterinary training and capacity, enhancing metrics and monitoring of responsible use globally increasing incentives for innovation and working to enhance predictability of regulatory pathways.

How does this address AMR and responsible use

Building momentum for One Health approaches to responsible use and AMR helps promote long-term, sustainable solutions. These issues cannot be solved by one sector, it requires communication across the full livestock value chain as well as with human health.

One Health education series on AMR

In 2018, Merck Animal Health, known as MSD Animal Health outside the US and Canada, in partnership with the National Institute for Animal Agriculture (NIAA), initiated the One Health educational series. This is a video series that explores AMR and the collaborative efforts between ranchers, animal health and human health experts to address the issue. The series continues in 2019.

How does this address AMR and responsible use?

Through education and increased understanding of the challenges producers face related to the prevention and treatment of animals, the proper use of antibiotics can be better implemented.

Pradofloxacin sensitivity discs

Since 2015, Bayer Inc. has provided Pradofloxacin sensitivity discs free of charge to any Canadian diagnostic laboratory or veterinary clinic conducting culture and sensitivity testing.

How does this address AMR and responsible use?

Accurate culture and sensitivity testing helps ensure the selection of the most effective antimicrobial for the pathogen being tested. This improves treatment outcomes, reduces the chance of relapses and reduces the potential for selecting resistant bacteria.

PROHEALTH Consortium

The PROHEALTH Consortium was a collaboration between 22 academic, industry and private enterprise organisations – including HealthforAnimals Members – from 11 countries to explore new ways to ensure the sustainability of modern animal production.

The project focused on disease threats associated with the intensity of production in swine herds and poultry flocks. It recommended innovative prediction, prevention and detection solutions to improve animal health and increase productivity, while limiting environmental impact and preserving profitability for livestock farmers.

The project presented scientific evidence about the multifactorial dimension of animal pathologies linked to modern farming.

The findings of PROHEALTH's research addressed these issues and provided the foundations for practical guidelines to help farmers.

How does this address AMR and responsible use?

Through comprehensive research on pressing issues pertaining to farming practices, antimicrobial usage, and AMR, the PROHEALTH Consortium provided steps that policymakers, researchers, and farmers could undertake to mitigate the development of AMR strains and promote responsible use of antimicrobials.

Research antibiotic treatments in canines

Otitis externa is an inflammation of the ear canal and/or pinnae, and can represent up to 20 percent of consultations in dogs. Acute otitis externa management is often handled through topical treatments which comprise a mixture of corticosteroids, antibiotics and antifungal molecules.

Frequent recurrences and use of antibiotics to treat it may lead to resistance, so, identification of the underlying cause is key to decrease frequencies of flare ups.

Virbac has collaborated with ONIRIS veterinary school to gather recent epidemiologic data regarding microbial identification and their sensitivity to antibiotics in otitis externa cases. This will result in academic papers and clinical studies, which will explore if an ear cleanser – either alone or coupled with the right antimicrobia – could better treat, cure and prevent recurrence of otitis with *Pseudomanas* spp.

How does this address AMR and responsible use?

Reducing the recurrence of chronic otitis externa may decrease the use of antibiotics to treat those otitis cases, which is cases frequently associated with resistant Pseudomonas aeruginosa

Monitoring antibiotic susceptibility of pathogens in livestock.

The antibiotic susceptibility monitoring programs of CEESA are an ongoing collaboration among veterinary pharmaceutical companies for twenty years.

CEESA conducts two types of monitoring: the EASSA program, which collects zoonotic and commensal bacteria at slaughter from healthy food-producing animals, and the target pathogen programs (VetPath, MycoPath and ComPath), which collect bacterial isolates from diseased animals prior to antibiotic treatment.

The latter programs are the only long-standing pan-European projects in veterinary medicine where antibiotic susceptibility data for a large variety of target pathogens are generated.

Through valuable support by external laboratories and veterinary practitioners, CEESA has meanwhile generated a collection of more than 55,000 non-duplicate bacterial isolates.

How does this address AMR and responsible use?

Understanding the evolution of pathogens and their susceptibility to treatment is essential to the long term efficacy of antibiotics. It allows veterinarians, farmers and medicine manufacturers to adapt protocols to limit resistance development.

The list of activities in this section are only a selection of the work by HealthforAnimals members.

To discover more materials, such as our Antibiotics Commitment, or request information about a specific activity listed above visit **HealthforAnimals.org** or contact us at **info@HealthforAnimals.org**


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