



100 Research report

Antimicrobials in agriculture and the environment: reducing unnecessary use and waste by J. O'Neill
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in **Significant Impact Group(s)**: AMU reduction strategies \ Legislation and incentives Government ; AMU reduction strategies

Species targeted: Pigs;Poultry;Dairy;Beef;Sheep;

Age: Not stated;

Summary: This report presents focus areas to globally reduce the use of antibiotics in agriculture and the environment:

1. Agree on targets to reduce antibiotic use in food production, to an acceptable level per kilogram of livestock and fish, together with limitations of use of antibiotics that are important for humans.
2. Agree on minimum limits for antibiotic environmental waste, which should be taken into consideration by pharmaceutical companies, healthcare buyers and regulatory agencies everywhere.
3. Improved surveillance at an international level to monitor antimicrobial use and waste, and evaluate progress towards global targets.

Interventions in agriculture that could change antibiotic use include improvements in infection control, better animal husbandry practices, greater use of vaccines and the adoption of diagnostic devices to improve veterinary prescribing practices.

This report also discusses the roles of taxation, subsidies, and regulation in reducing the risks associated with agricultural use of antibiotics and environmental contamination.

This paper proposes three broad interventions to take bold global action to substantially reduce the use of antibiotics in agriculture and the quantities being dispersed into the environment:

1. A global target to reduce antibiotic use in food production to an agreed level per kilogram of livestock and fish, along with restrictions on the use of antibiotics important for humans.
 - a. We need to reduce global levels of antibiotic use in agriculture, to an agreed limit for each country, but it should be for individual countries to decide how best to achieve this goal – a global target would make this possible. We believe an ambitious but achievable target for reducing antibiotic use in agriculture is needed, to reduce use over the next 10 years. There are countries that have advanced farming systems with very low levels of antibiotic use, particularly in Scandinavia. Denmark has combined low use with being one of the largest exporters of pork in the world. Reducing levels of use to that of Denmark for example, an average of less than 50 milligram (mg) of antibiotics used a year per kilogram (kg) of livestock in the country, may be a good starting point for such a target. We think this would be feasible without harming the health of animals or the long-term productivity of farmers. This is based on our understanding of academic literature and case studies. The exact level of a target would, however, need to be discussed and tested by experts. Low and middle-income countries may need more time to achieve such a target, while many of these countries may already be below the threshold.
 - b. As well as reducing the quantity of use, the types of antibiotics used are also important. Currently many antibiotics that are important for humans are used in animals. We believe that countries need to come together and agree to restrict, or even ban, the use of antibiotics in animals that are important for humans.
2. The rapid development of minimum standards to reduce antimicrobial manufacturing waste released into the environment. This needs to be viewed as a straightforward issue of industrial pollution, and it is the responsibility of all actors in the supply chain to ensure that industrial waste is treated properly as a matter of good manufacturing practice. The risk of drug resistance must urgently become a key environmental consideration for all pharmaceutical companies, healthcare buyers and regulatory agencies everywhere. Failing to do this does most harm to the health of populations living near the manufacturing sites who are exposed to polluted water, and are in a way are paying the price of cheap antibiotics for the rest of the world. But in the long-term, we know that resistance spreads and these strains will in time likely become a global problem.



3. Improved surveillance to monitor these problems, and progress against global targets. There remain too many knowledge gaps regarding patterns of antimicrobial use in agriculture and release during manufacturing, and what this means for resistance and, ultimately, human health. This needs to change if meaningful progress is to be made.

As with the human health aspects of AMR, these are complex issues that require concerted, coordinated action at an international level.

Drug-resistant infections know no borders and do not respect barriers between industry, regulators and buyers, or between animals, humans and their wider environment. There are encouraging signs of some governments adopting a broad 'one health' approach to tackling the issue of resistance, but it is an approach that needs to be replicated by others. We believe that success can only be achieved by considering a full range of interventions:

- In agriculture, these should take into account the key drivers of the real or perceived need for antibiotics, whether for use as therapy, prophylaxis (prevention), or growth promotion. Interventions will no doubt include improvements in infection control, better animal husbandry practices

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<https://amr-review.org/Publications.html>;

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