



Antibiotics and the Australian Cattle Feedlot Sector

KEY POINTS

- The Australian feedlot industry recognises that antibiotic use in agriculture is an important issue, and acknowledges that we can play a role to reduce the potential risk of antibiotic resistance into the future.
- Antibiotics are essential to prevent and treat sick cattle.
- Antibiotic use in the Australian cattle feedlot industry is tightly regulated by legislation. For example;
 - a. Antibiotics must go through a rigorous, extensive and scientifically based evaluation and assessment process by Australian regulatory authorities before they can be registered for use by beef producers;
 - b. Strict regulations require antibiotics to be used according to label and permit requirements;
 - c. In Australia, regulations ensure that there are very few antibiotics used in both livestock production and human medicine. For example, fluoroquinolones are banned for use in livestock (they are however permitted in the US and the EU); and
 - d. All antibiotics used in the Australian cattle feedlot industry must be prescribed by and their use overseen by qualified veterinarians (in the US, veterinary prescription is not required).
- Antibiotic use and resistance in the Australian cattle feedlot sector is low, and also low when compared to human health, other livestock industries and other countries. Lot feeders also have an incentive keep resistance low so antibiotic products can continue to be effective in the prevention and treatment of sick cattle.
- The cattle feedlot industry has instigated a number of proactive measures to demonstrate how it is using antibiotics responsibly and, where possible, to limit their use over time.
- The cattle feedlot industry has proactively implemented a framework to monitor antibiotic use and resistance, and is developing a stewardship program to ensure judicious antibiotic use continues into the future.
- All treated animals must go through a strict withdrawal period before slaughter, so no traces of antibiotics can be found in beef by the time it reaches the consumer. The Federal Government's residue monitoring program shows that throughout its history, 99.99% of samples tested are compliant with Australian legislated standards.

BACKGROUND

What is the situation?

There is a misconception that antibiotic use in the Australian cattle feedlot sector is a major contributing factor to the increasing level of resistance in humans. However, a number of scientific reports, including a review by the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR)¹ in 1999, have reported that the increase in antibiotic resistance in humans is largely a result of misuse in human medicine, particularly among many third world countries where they are sold without prescription². A 2003 study for example found that 46% of patients with the common cold or non-specific upper respiratory infections received antibiotics, despite the fact that these are viral diseases for which antibiotics do not work. A more recent 2015 report determined that 30% of human prescriptions were inappropriate³. Moreover, human medicine (unlike that in animals), also uses multi antibiotic combination therapy, does not determine appropriate dose rates based on patient weight, and does not ensure that antibiotic prescriptions are completed by patients.

Antibiotics are a medication that has been used to treat or prevent infections caused by bacteria since the 1940's. The science behind antibiotic resistance is highly complex and is driven by human, animal and environmental factors. For example, it is not widely known that antibiotic resistance is a naturally occurring phenomenon that is present with or without the use of antibiotics or that it can be transferred from humans to animals as well as animals to humans. Accordingly, all antibiotic users have a responsibility to prudently use the products to prevent resistance. In Australia, antibiotics must go through a rigorous, extensive and scientifically based evaluation and assessment process by Australian regulatory authorities before they can be registered for use by beef producers.

Several Australian Government reports over the last decade have concluded that there is nil or extremely low levels of resistance to antibiotics in cattle populations⁴⁵. This is the best indicator that they are used judiciously and are not a large

¹ The Joint Expert Advisory Committee on Antibiotic Resistance (1999). *The use of antibiotics in food-producing animals: antibiotic-resistant bacteria in animals and humans*. [http://www.health.gov.au/internet/main/publishing.nsf/content/2A8435C711929352CA256F180057901E/\\$File/jetacar.pdf](http://www.health.gov.au/internet/main/publishing.nsf/content/2A8435C711929352CA256F180057901E/$File/jetacar.pdf)

² Mather, A. et al (2012). *An ecological approach to assessing the epidemiology of antimicrobial resistance in animal and human populations*, University of Glasgow.

³ Commonwealth of Australia (2015), *Responding to the threat of antimicrobial resistance*, Australia's First National Antimicrobial Resistance Strategy 2015-19.

⁴ DAFF (2007). Pilot Surveillance Program for Antimicrobial Resistance in Bacteria of Animal Origin, Australian Government Department of Agriculture, Fisheries and Forestry, Canberra.

contributor to resistance to human medicine. There are a number of reasons why the use of antibiotics in the livestock industry is not a major contributing factor towards their resistance in human medicine:

1. The overwhelming majority of antibiotics used in the Australian cattle industry are not used in human medicine and hence don't contribute to such resistance and the development of so called 'super bugs' in humans.
2. Antibiotic use in the Australian cattle industry is low and also low when compared to other livestock industries and other countries;
3. Antibiotic resistance in the Australian cattle industry is additionally low with negligible differences in antibiotic resistance between Australian extensive and intensive beef production. Moreover, it is low compared to human health, other industries and other countries (with such results also not changing much over the last decade).
4. Antibiotics use is tightly regulated by legislation and standards and must be prescribed, and their use overseen, by qualified veterinarians. This is different to the US for example where veterinary prescription is not required.
5. Lot feeders also have an incentive to responsibly use antibiotics. Excessive antibiotic use results in resistance and such products becoming ineffective over time. It also results in the potential loss of international markets given that such markets are highly sensitive to beef residues. With two thirds of Australia's production exported this is extremely important. The responsible use of antibiotics is evidenced by the results of randomized testing within the Federal Government's National Residue Survey program which shows that throughout the history of the program, 99.99% of samples tested for antibiotics in cattle are compliant with Australian legislated standards.
6. The key path for antibiotic resistance transfer to humans is through bacteria in beef yet even if bacteria do end up in beef, (whether antibiotic resistant or not), they are more often than not killed through the normal cooking process.

Why is it an issue?

Despite evidence that the use of antibiotics in the livestock industry is not a major contributing factor to their resistance in human medicine, all antibiotic users have a responsibility continue to use them judiciously in order to minimise potential resistance into the future. A key strength of the Australian beef industry is our systems and programs that underpin our reputation as a producer of high quality, safe and disease-free beef from animals that have been treated well. It is not in the feedlot industry's interest to use antibiotics irresponsibly as resistance would lead to reduced effectiveness, increased cost and a reduction in cattle treatment options. As well, regulatory removal of antibiotics for cattle usage would deny lot feeder access to potentially lifesaving treatments, resulting in inferior animal health and welfare outcomes for cattle.

How is the industry addressing antibiotic use?

The Australian cattle feedlot industry is developing a stewardship program to ensure the judicious use of antibiotics continues. The industry has also implemented a program to quantitatively monitor antibiotic usage and resistance in the industry into the future. To minimise the risk of bacterial resistance, and to maintain access to important antibiotic products that are critical to good animal health and welfare outcomes, the feedlot industry has additionally instigated a number of proactive management practices that reduce the need for antibiotics:

- Improved cattle nutrition and animal health prior to cattle arriving at the feedlot, including vaccination.
- Adhering to biosecurity practices to reduce the introduction and spread of infection amongst cattle.
- Preventing stress in cattle, which can weaken the immune system, through use of low stress stock handling and facilities and minimising the mixing of unfamiliar cattle.

When antibiotics are required, their use is tightly regulated by legislation and standards and they must be prescribed, and their use overseen, by qualified veterinarians. Strict regulations ensure that antibiotics are used according to label and permit requirements i.e. they are used for the correct purpose, injections are undertaken in the correct place and livestock not sold until the appropriate time.

Through the feedlot industry's quality assurance program (the National Feedlot Accreditation Scheme), feedlots are annually audited to ensure that antibiotics are only administered by trained and competent staff and records are maintained to trace treated livestock.

Further information on antimicrobial resistance in the cattle industry in Australia is available [here](#).

CONTACT FOR MORE INFORMATION

Bridget Peachey
Manager, Policy and Projects,
Australian Lot Feeders' Association,
Ph: 02 9290 3700,
Email: bridget.peachey@feedlots.com.au

⁵ Department of Health and Ageing (2008) - by Robert Barlow and Kari Gobius. Pilot survey for antimicrobial resistant (AMR) bacteria in Australian food prepared for the Australian Government.