

Activities and achievements regarding the reduction in the use of antibiotics and antimicrobial resistance in veterinary medicine in Belgium in 2017



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Context

Antimicrobial resistance (AMR) is a global concern for the health of humans and animals, occupying scientists, policymakers and all stakeholders involved in human and veterinary medicine. If micro-organisms develop a resistance to antibiotics, it can become challenging, and in some cases extremely problematic, to tackle them.

Reducing the use of antibiotics in veterinary medicine is a shared responsibility of the sectors and authorities involved. To this effect, all parties involved in veterinary medicine in Belgium aim to share the efforts, so that they can take appropriate actions.

Summary

This report provides a summary of the key activities and achievements of the various stakeholders in terms of achieving a reduction in the use antibiotics in veterinary medicine, as well as the sales of veterinary antibiotics and the evolution of bacterial resistance to antibiotics in 2017.

The year 2016 can be considered a turning point in Belgium's policy on veterinary antibiotics because of several important events, such as the signing of the Antibiotics Covenant by the Federal Government and the relevant sector organizations, the publication of a Royal Decree concerning the use of critically important antibiotics, and the registration of the use of antibiotics, and finally the creation of Sanitel-Med, the Federal government's database in which the use of antibiotics has to be recorded.

The reduction in the use of antibiotics in 2017 has not only made it possible to already meet two out of three reduction targets, but to exceed these targets as well. These reduction targets were developed by AMCRA in its Vision 2020 and are also included in the Antibiotics Covenant. All of the partners involved are continuing their efforts to make sure that the actions that were taken or that still have to be taken remain successful in the years to come, so that we can continue on this path. Moreover, since 2011 the results regarding antibiotic resistance in food-producing animals point to a downward trend when it comes to the prevalence of antibiotic resistance of *Escherichia coli* (indicator bacteria).



Covenant between the Federal Government and all relevant sector partners regarding the reduction in the use of antibiotics in the animal sector

The 'Covenant between the Federal Government and all relevant sector partners regarding the reduction in the use of antibiotics in the animal sector' lists the following strategic objectives:

1. a 50% reduction in the general use of antibiotics by 2020;
2. a 75% reduction in the use of critically important antibiotics by 2020;
3. a 50% reduction in feed medicated with antibiotics by 2017.

The reference year for the reduction targets is 2011.

These objectives are aligned with AMCRA's reduction targets, as described in its “Vision 2020”.

The Covenant was signed by the Federal Government, represented by the Ministers of Public Health and Agriculture, the pharmaceutical industry (pharma.be), agricultural organizations (ABS, Boerenbond and FWA), the compound feed industry (BFA), veterinary associations (UPV and VDV), animal health associations (ARSIA and DGZ), administrators of private quality systems (Belplume, Belpork, BVK, Codiplan, IPW IKM/QFL/QMK) and AMCRA.



On 30 June 2016, the Antibiotics Covenant was signed by the representatives of the sector partners and by the Ministers of Public Health and Agriculture, Maggie De Block and Willy Borsus

Achievements related to the commitments made by member sectors as a part of the Antibiotics Covenant

The Federal Government, AMCRA and the sector partners concerned have set joint operational targets within the Antibiotics Covenant. Specific commitments have also been included in annex 4 of the Antibiotics Covenant.

This document shares a number of key achievements for each sector partner involved and for the Federal Government during the second year of the Antibiotics Covenant. For more information and a detailed description of all achievements, we refer you to the respective organizations.

Federal Government

Monitoring of antimicrobial resistance of indicator germs and zoonoses

Based on European decision 2013/652/EU, the antimicrobial resistance of commensal *E. coli*, *Salmonella* and *Campylobacter* is monitored annually among pigs, poultry and calves/cattle and on carcasses and the meat thereof. Early 2018, the FASFC's Scientific Committee has issued an opinion on the current monitoring. Suggestions for improvement will be taken into account in the programming of 2018, which will be carried out in 2019.

Using the data recorded in Sanitel-Med and the results of the monitoring of AMR in indicator bacteria and zoonoses in animals and foodstuffs conducted by the FASFC, policy measures are developed to achieve a minimal, responsible and sensible use of antibiotics.

On 1 April 2018, the merger of the Veterinary and Agrochemical Research Centre (CODA-CERVA) and the Scientific Institute of Public Health (WIV-ISP) into the new federal research centre **Sciensano** became a reality. The founding of Sciensano was inspired by the “**One-health**” concept in which human health, animal health and the environment are intrinsically connected and interact continuously. AMR is definitely one of the issues in which more progress can be made using a “one-health” approach.

Use of antibiotics –data collection & checks

The requirement for veterinarians to record the use of antibiotics in broiler chickens, laying hens, veal calves and pigs in the government's central database Sanitel-Med, entered into effect on 27 February 2017. The FAMHP manages and finances the maintenance and the further development of the database, as well as the analysis by AMCRA's Scientific Unit. In 2017, the government and AB Register also held consultations to optimize the cooperation in the context of the antibiotics data collection by AB Register and the FAMHP (Sanitel-Med) and reduce associated costs.

In 2017, both the FASFC and the FAMHP carried out specific checks on livestock farms and in veterinary practices to verify compliance with the Royal Decree of 21 July 2016, more specifically the correct registration and validation in Sanitel-Med and compliance with the conditions for the use of critically important antibiotics.

International delegations

In 2017, the government hosted a first delegation from the WHO, the OIE and the FAO for a 'Joint External Evaluation of the implementation of international health regulations', which included a component on cooperation across sectors. A second delegation from the European Commission and the "European Centre for Disease Prevention and Control" (ECDC) examined the AMR policy from a one-health perspective. The results of these delegations will help to shape future policy and will serve as a basis for a national one-health AMR action plan. The consultations with the relevant sectors regarding possible government action points started in 2018.

Pharmaceutical industry

In 2017, pharma.be continued its education and awareness-raising efforts. The pharma.be e-learning module "the responsible use of antibiotics", which was launched in 2016 for the benefit of the staff of the pharmaceutical member companies, has paid off. In 2017, pharma.be reached 90% of its target audience. Among those 90%, another 90% obtained a certificate, which means that they obtained a score of 100% on the test. Thanks to this e-learning module, the collaborators of the pharmaceutical companies that are a member of pharma.be receive training on important and current themes (promotion and publicity, deontology and the responsible use of antibiotics).

The large-scale awareness campaign "Effective antibiotics in the future? Not a pie in the sky!", which was launched late 2016, continued successfully in 2017 with 10 additional publications in the most widely-read agriculture journals. In total, the page-size ad campaign was published 28 times in professional journals in Flanders and Wallonia.

A symposium on "preventive veterinary medicine and alternatives for antibiotics in animal husbandry" was organized in Flanders in December. The programme of the symposium favoured Belgian research in order to focus as much as possible on real-life practice (bio-safety, optimizing immunity, (laboratory) diagnostics, and antibiotics stewardship in real-life practice).

Compound feed industry

The compound feed industry keeps records of the production of medicated feed for food-producing animals on the Belgian market and defines actions to stimulate a reduction in the use of antibiotics. The reduction target for the compound feed industry (a 50% reduction in the use of antibiotics by the end of 2017) was not only met late 2017, but was even exceeded with **a reduction of 66,6% in the use of feed medicated with antibiotics** (compared to the reference year 2011). This reduction was the result of very effective sector initiatives (such as the electronic prescription, which can only be obtained via the farm veterinarian, the collection of prescription data and the benchmarking vis-à-vis manufacturers in the same business sector).



Agricultural organizations

The agricultural organizations have helped to fund the development of sector-run data collection systems for all animal species, using money from the Sanitary Fund (financed by the contributions from the livestock farmers). In addition, they consult with the animal sectors in order to encourage them to register at AB Register or Bigame as soon as possible and thereby implement a detailed operational data collection for all food-producing animals. In this context, the importance of data collection and analysis to ensure a responsible use of antibiotics was explained to users and suppliers by means of communication campaigns. Auto-regulation initiatives are encouraged in consultation with the administrators of private quality schemes.

The agricultural organizations also provide training for livestock farmers regarding the responsible use of antibiotics. In addition, they also contribute to the dissemination of vaccination recommendations to livestock farmers and veterinarians for each animal sector. The agricultural organizations are also making an active contribution by participating in working groups organized by AMCRA and other organizations involved in the antibiotics issue.

Veterinary organizations

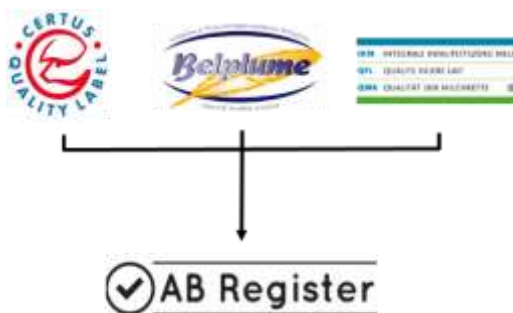


AMCRA's vademecum (a guide on the responsible therapeutic use of antibiotics) was lauded in the specialized journals for veterinarians. In addition, veterinarians also received training to help them carry out their role appropriately.

During the agricultural fair of Libramont, the AMCRA, the FASFC, CODA (currently Sciensano), ARSIA and UPV organized joint activities known as the Animal Health Cluster. The aim of these joint activities was to familiarize the general public with the actions taken against antimicrobial resistance and to raise awareness among veterinarians and livestock farmers regarding the fight against antibiotic resistance.

Administrators of private quality systems

The administrators of the private quality systems are committed to collecting data and reporting the analysis results on the use of antibiotics in animal production. In this context, they offer a personalized benchmark and analysis on top of the basic report that is provided by the relevant authority. Moreover, they also organize the transfer of data on the use of antibiotics to Sanitel-Med. The collection of sector data started in 2014 with Belpork vzw for the pig sector. In 2017, BVK and Belplume vzw implemented the data collection system for the veal calf sector and the poultry sector respectively. In March 2018, BVK made the first benchmarking reports covering the entire year 2017 available to the veal calf sector.



In 2016, Belpork vzw and Belplume started cooperating across sectors. In 2017, this cooperation was extended to the dairy cattle sector (DQA-Flanders) To make the cooperation between the three quality assurance systems even more efficient, the decision was made to create an umbrella structure that represents their joint interests regarding the use of antibiotics: AB Register vzw. This organization was officially founded in February 2017.

By raising awareness and publishing benchmarking reports, this new structure will strive towards a reduction in the use of veterinary drugs in general and antibiotics in particular in livestock farming. All of these initiatives are part of the sustainable approach to animal health and animal welfare. Moreover, these actions contribute to reducing antimicrobial resistance. AB Register vzw will carry

out the timely registration of the antibiotics administered by operators in the three sectors. To this end, the existing, constructive cooperation with the government in the context of Sanitel-Med will continue.

Animal health associations (DGZ – ARSIA)

The animal health associations are taking action to consolidate the relationship between farm veterinarians and livestock farmers by developing farm health plans. In addition, they are actively involved in training livestock farmers and veterinarians, which includes organizing seminars and workshops for veterinarians. DGZ and ARSIA also play a pivotal role in determining the sensitivity of bacteria isolated from samples taken from animals that are clinically ill.



“Altibiotique” is a joint initiative of the sector representatives of livestock farmers and veterinarians. The “Association Wallonne de l’Elevage”, the “Comité du Lait”, the “Fédération Wallonne de l’Agriculture” and the “Union Professionnelle Vétérinaire” have joined forces with ARSIA to launch this information and guidance tool for the benefit of the cattle farmers for whom microbial resistance to therapeutic antibiotics is an increasing concern.

“Less, better, different” was the slogan of the Altibiotique plan: using less antimicrobial substances, discussing their use, and working on the prevention of AMR regarding the health of cattle. Adhering to the adage “The pathogen is nothing and the environment is everything”, Altibiotique aims to prove that intervening in the environment provides the necessary leverage to reduce the prevalence of diseases in livestock farms and consequently also the consumption of antibiotics. By the end of the first trimester of 2018, more than 500 livestock industry professionals had participated in one or several activities organized by ARSIA.



Over the past few months, the interface BIGAME (Base Informatique de Gestion des Antibiotiques et des Médicaments en Elevage), which was developed by ARSIA in cooperation with Awé, has gained a steady foothold among livestock industry professionals (veterinarians and livestock farmers). The interface provides users with an entirely new analysis regarding the antibiotics consumption on the farm. This analysis, which is represented as a synthesis on the use of antimicrobial products by a certain company during a given period is intended to be dynamic, but mainly serves didactic purposes. The interface can be accessed for free by the livestock farmers and their farm veterinarian and as such constitutes a unique reporting tool.

By means of its Biosafety Award, DGZ-ARSIA tries to encourage livestock farmers who make efforts in terms of biosafety. Practices to ensure biosafety are indispensable if you want to build a profitable livestock farm with healthy animals and minimize the use of veterinary medicines. DGZ regularly shares biosafety tips and published more than 70 articles on biosafety in the Flemish press in 2017.



AMCRA

AMCRA has continued its efforts to raise stakeholder awareness and inform all parties involved. A new website was launched to increase the visibility of the activities, the published recommendations, the awareness-raising campaigns carried out by AMCRA, as well as the relevant legislation and Belgian and international reports on antibiotics use and antimicrobial resistance in veterinary medicine (www.amcra.be). A specific part of the website is dedicated to the analysis of the use of antibiotics on livestock farms, the reporting thereof and the activities of AMCRA's data analysis unit.



In cooperation with the provincial veterinary associations, AMCRA has organized information sessions about the responsible use of antibiotics using the e-vademecum and other practical tools that are available to the veterinarians.

In 2017, AMCRA started developing advertorials to familiarize TV watching livestock farmers with measures that can contribute to a successful reduction in the use of antibiotics. These advertorials mainly revolve around the livestock farmers' personal experiences regarding the sustainable use of antibiotics. More specifically, the livestock farmers depicted in the advertorials give tips about measures they implemented on their farm after consultation with their farm veterinarian and which helped to improve farm health.



AMCRA's data analysis unit analyzes data on the use of antibiotics from the Sanitel-Med database. This unit also aims to cooperate with the administrators of private quality systems that want to render

additional services to the users of AB Register. In 2017, AMCRA's data analysis unit became involved in the international consortium (AACTING - "Network on quantification of veterinary Antimicrobial use at herd level and Analysis, CommunicatiOn and benchmarkING to improve responsible use") which aimed to take stock of the existing systems to collect data on the use of antibiotics on livestock farms(<http://www.aacting.org>).).

Results regarding the use of antibiotics on animals in Belgium in 2017 and the evolution since 2011.

The use of antibacterial products on animals in Belgium is monitored annually in relation to the number of animals present (the biomass produced annually). The results of this monitoring are published in the BelVet-SAC report (<http://www.belvetsac.ugent.be>). It concerns data on the use of antibacterial products on farm animals and pets.

Total use

- **Reduction target for the end of 2020: -50%**
- **Reduction achieved in 2016-2017 -7.4%**
- **Reduction achieved since 2011: -25.9%**

A further reduction of -7.9% (mg substance/kg biomass) was observed in 2017 compared to 2016. This decrease can be associated with a reduction of -0.9% for pharmaceuticals and -45.9% for premixes, along with a reduction of -0.76% in biomass. The greatest reduction was recorded in quinolones (-64.2%) and 3rd and 4th generation cephalosporins, which are both considered critically important antibiotics. There was also a significant drop in the use of sulfonamides and trimethoprim (-31.8%), polymyxins (-13.3%), 1st generation cephalosporins (-6.7%) and macrolides (-4%). The results also point to an increase in the use of tetracyclines (+14.4%) and phenicols (+3%).

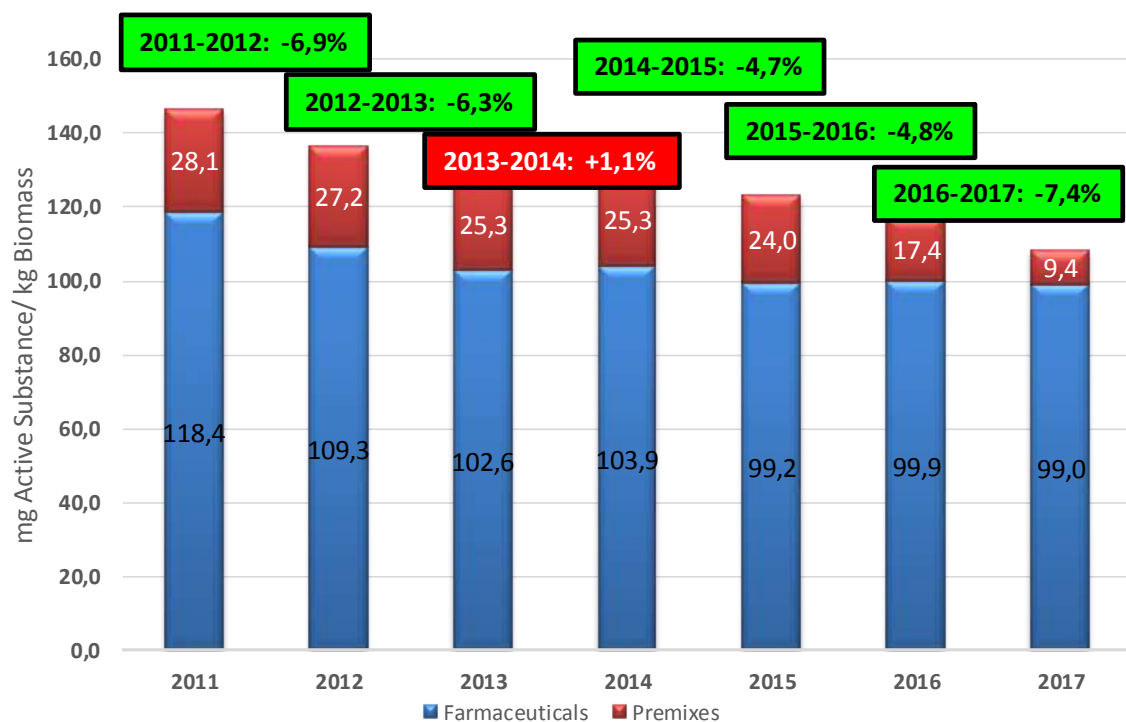


Figure 1: Evolution in the use of pharmaceuticals and animal feed medicated with antibiotics in Belgium between 2011 and 2017 (expressed as mg active substance per kg biomass).

In comparison with 2011 (the reference year) a cumulative decline of 25.9% of the total use was recorded. This consolidates the decline in the context of AMCRA's first reduction target, which aims for a 50% reduction by 2020.

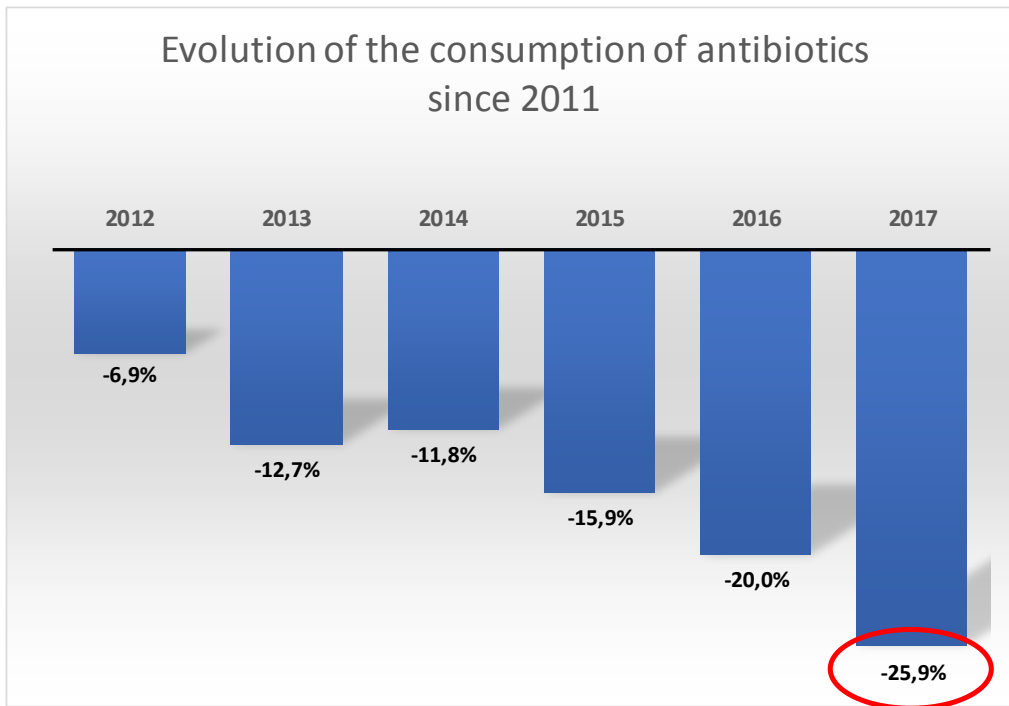


Figure 2: Evolution in the total use of antibiotics in veterinary medicine in Belgium between 2011 and 2017.

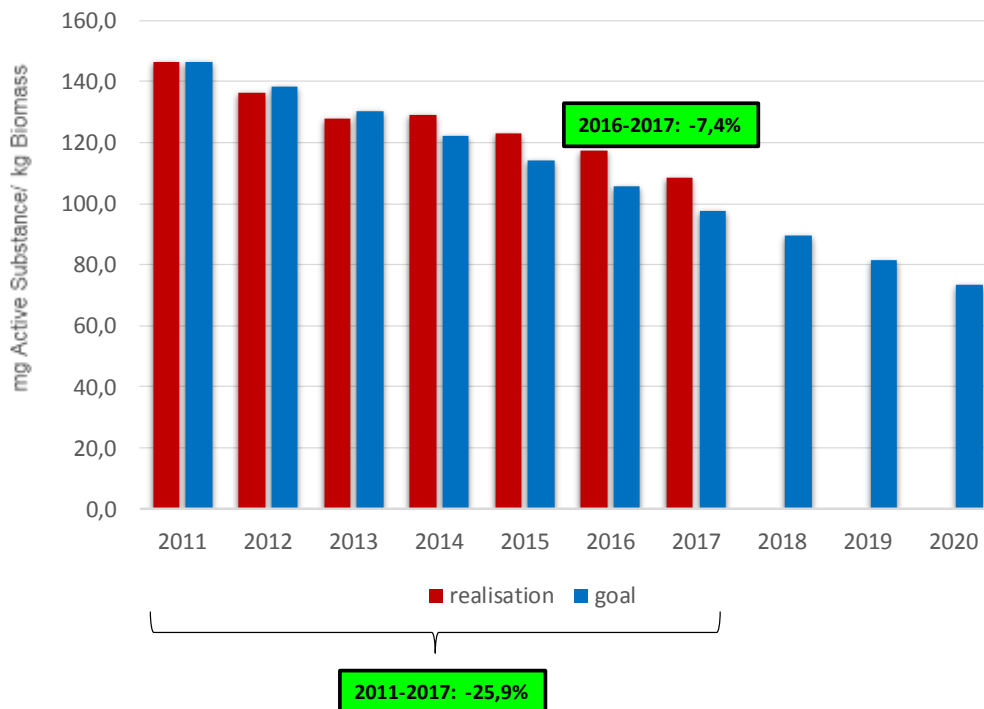


Figure 3: AMCRA's planned annual trajectory to reduce the total use of antibiotics between 2011 and 2020 (blue bars) and the actual reduction figures achieved between 2011 and 2017 (red bars).

Colistin and zinc oxide

The continuing decline in the use of polymyxins (primarily colistin) in veterinary medicine in the past 5 years is a very good result. The WHO classified colistin among the critically important antibiotics that are a top priority for public health. In 2017, a cumulative decline of 62.8% in the use of these antibiotics was observed in comparison to 2012.

The use of pharmacological doses of zinc oxide to treat weaning diarrhoea in piglets has been authorized since 2012. There has been a progressive decline of 56.7% in the use of zinc oxide in comparison to 2015.

Critically important antibiotics

- **Reduction target for the end of 2020: -75%**
- **Reduction achieved in 2016-2017 -64.6%**
- **Reduction achieved since 2011: -84%**

Regarding AMCRA's second reduction target, namely the 75% reduction in the use of critically important antibiotics by 2020 (fluoroquinolones and 3rd and 4th generation cephalosporins), the target has already been met 3 years in advance, and has even been exceeded.

More precisely, **a 84% drop was observed in comparison to 2011**. This significant accomplishment can largely be attributed to the publication of the Royal Decree of 21 July 2016 related to measures for the use of red antibiotics in food-producing animals and the efforts made by the veterinarians in this respect. Between 2015 and 2016 the decrease amounted to 53%, even though the Royal Decree did not enter into force until August 2016. Between 2016 and 2017, this reduction was consolidated with a new decrease of 64.4%, bringing the total reduction to 84% in comparison to 2011.

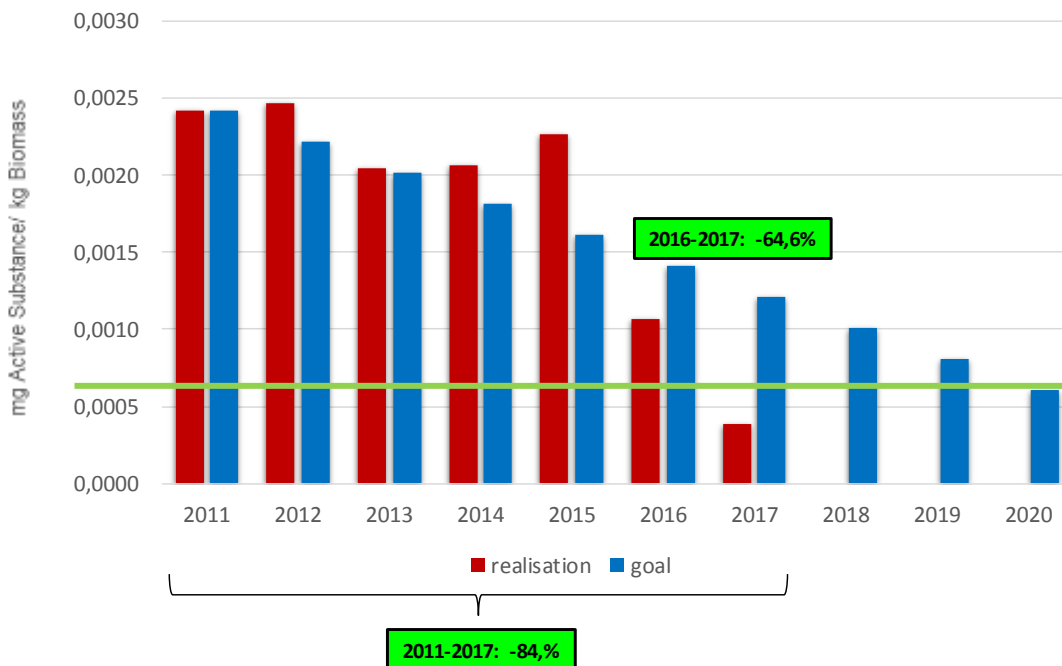


Figure 4 : AMCRA's planned annual trajectory to reduce the use of critically important antibiotics between 2011 and 2020 (blue bars) and the actual reduction figures achieved between 2011 and 2017 (red bars).

Medicated feed

- **Reduction target for the end of 2017: -50%**
- **Reduction achieved in 2016-2017: -45,9%**
- **Reduction achieved since 2011: -66,6%**

Another important result was obtained for feed medicated with antibiotics, namely a **drop of 66.6%** compared to 2011. AMCRA's target, which is also included in the Antibiotics Covenant (namely a reduction of 50% by 2017), was met and was even exceeded.

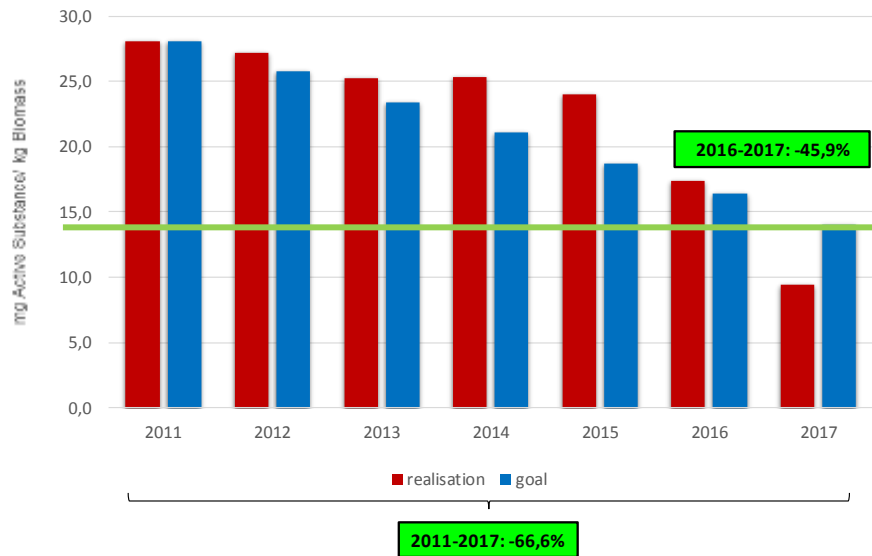


Figure 5: AMCRA's planned annual trajectory to reduce the use of feed medicated with antibiotics between 2011 and 2020 (blue bars) and the actual reduction figures achieved between 2011 and 2017 (red bars).

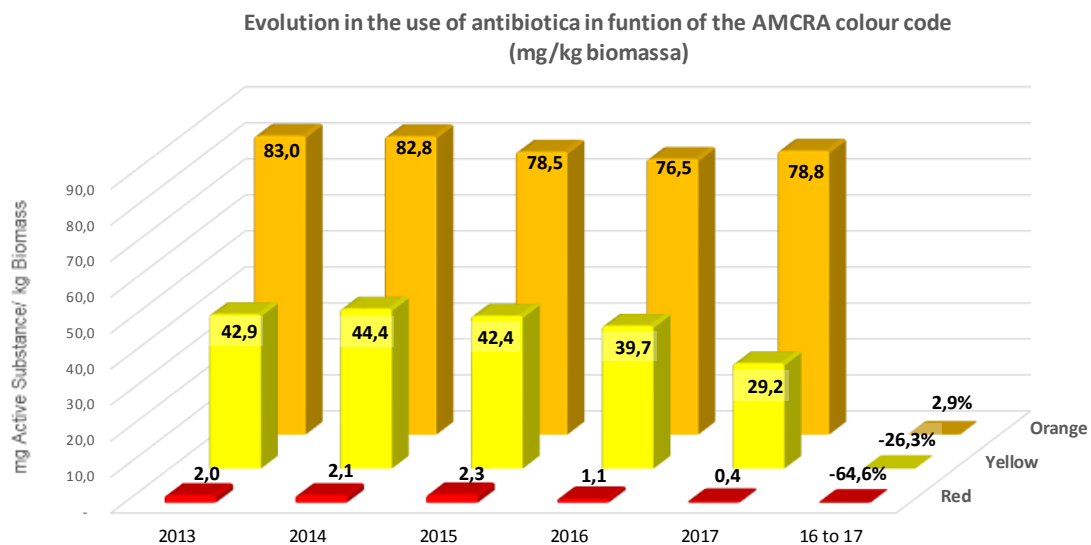


Figure 6 : The proportion in the use of products coded yellow, orange or red among animals in Belgium between 2013 and 2016 and the evolution (in percentage) between 2016 and 2017.

Evolution of bacterial resistance to antibiotics

A net downward trend

Results with regard to the prevention of antibiotic resistance in the indicator bacteria *Escherichia coli* in food-producing animals and the evolution since 2011

The Federal Agency for the Safety of the Food Chain carries out an annual monitoring of the prevalence of acquired antimicrobial resistance in *Escherichia coli* (*E. Coli*) found in a variety of food-producing animal species (fattening pigs, veal calves, young beef cattle and broiler chickens). The bacteria concerned are commensal bacteria isolated from clinically healthy animals. This monitoring is aimed at keeping track of the evolution regarding the prevalence of antibiotics resistance in the respective animal species in Belgium.

Broad spectrum beta-lactamase (ESBL) producing *Escherichia coli*

The results for 2017 show that the prevalence of broad spectrum beta-lactamase (ESBL) producing *E. coli* is the highest in stool samples from broiler chickens. Since the monitoring started in 2011, there has not been an increase in the number of ESBL-producing *E. coli* strains in broiler chickens. The increase in the number of *E. coli* strains resistant to 3rd generation cephalosporins observed over the past two years, is not significant (Figure 7). In veal calves and young beef cattle the prevalence of ESBL-producing *E. coli* strains has also remained low (<10%) since 2013. In 2017, a first increase was observed in pigs. However, taking into account the low prevalence since 2011, this increase is not significant.

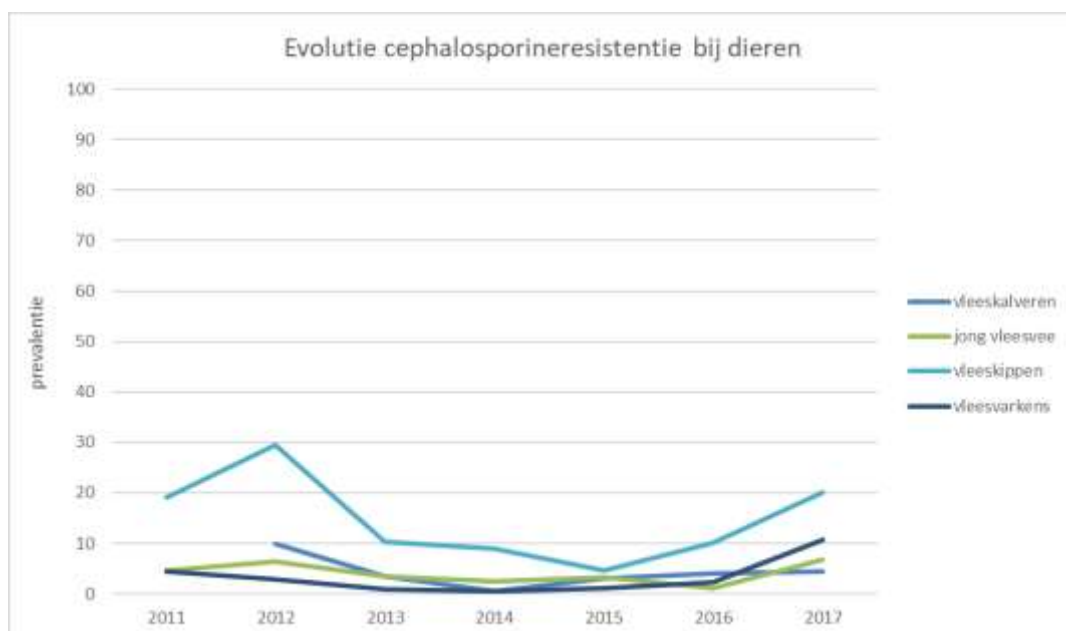


Figure 7: Evolution of the resistance to cefotaxim in food-producing animals in Belgium between 2011 and 2017.

Antimicrobial resistance to fluoroquinolones

The prevalence of antibiotic resistance to fluoroquinolones in different animal species is represented in Figure 8. Resistance to fluoroquinolones is the highest in broiler chickens (57.9% in 2017), but has slightly dropped since 2011 (62.9%). Resistance to fluoroquinolones was also high in veal calves in 2017, with 21.6% of the strains being resistant to ciprofloxacin. However, there has been a marked drop in resistance compared to the start of the monitoring in 2011 (in 2011 the prevalence was 41.2%). Resistance to fluoroquinolones is clearly lower in pigs (9.6%) and young beef cattle (12.5%).

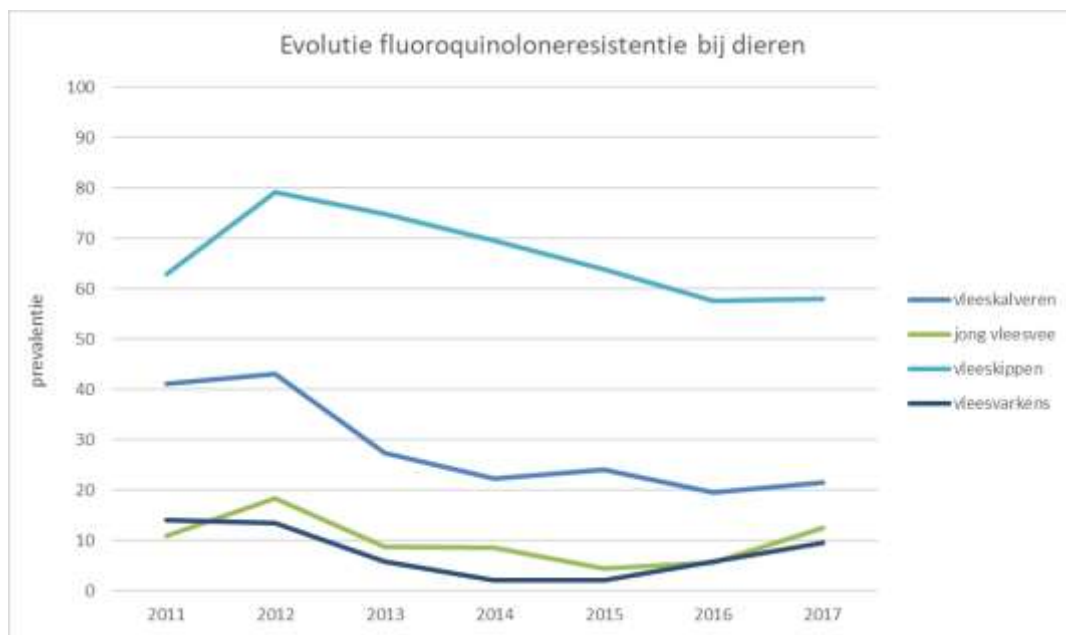


Figure 8: Evolution of the resistance to ciprofloxacin in food-producing animals in Belgium between 2011 and 2017.

The effect of the measures that were taken to curb the use of 3rd and 4th generation cephalosporins and fluoroquinolones (Royal Decree of 21 July 2016) will become clear from the results of the monitoring in the years to come.

Resistance to colistin

In 2017, the World Health Organization (WHO) classified colistin as a top priority critically important antibiotic. Resistance to colistin is low in the different animal species (2017: 0% in broiler chickens and young beef cattle, 1.1% in veal calves and pigs) (Figure 9).

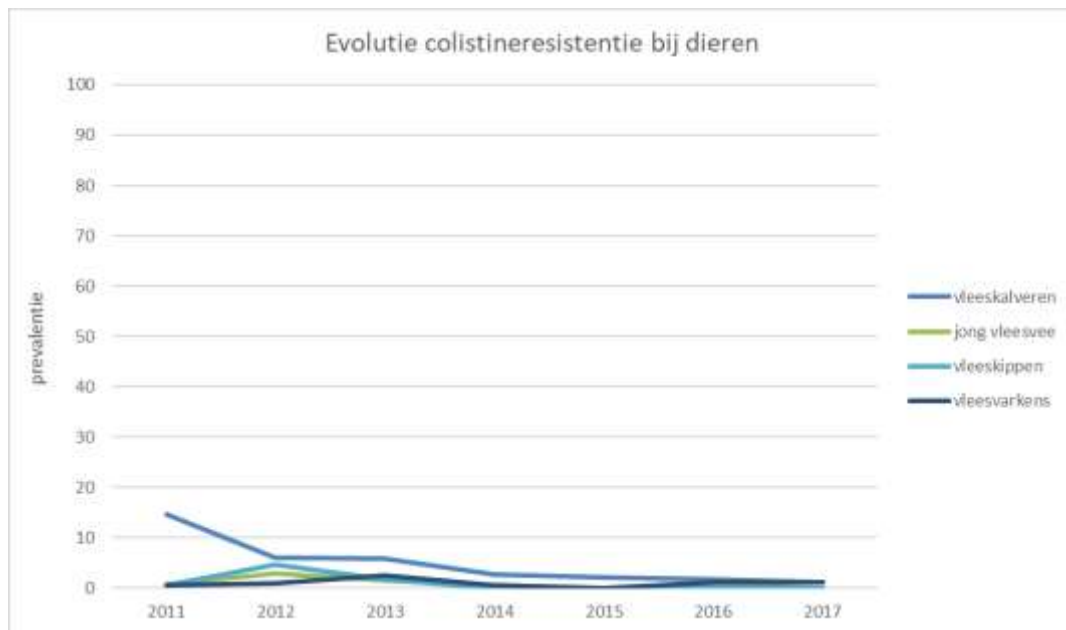


Figure 9 : Evolution of the resistance to colistin in food-producing animals in Belgium between 2011 and 2017.

Resistance to other types of antibiotics

For the various animal species, there has been a significant decrease in the antimicrobial resistance of *E.coli* to other antibacterial product groups (sulfonamides, tetracyclines, trimethoprim, aminopenicillins) since 2011. There is also a downward trend in the number of multi-resistant *E. coli* strains.

Conclusion

The results show the effectiveness of the current strategy and the cooperation between AMCRA, the authorities and all organizations who subscribed to the Antibiotics Covenant of 30 June 2016. Moreover, **two out of three reduction targets were met in 2017, more precisely the reduction in the use of critically important antibiotics and the reduction in the use of feed medicated with antibiotics.** These are very significant and encouraging results that prove the efficacy of the actions taken.

The continuing decrease in the use of colistin and zinc oxide observed in the past few years, is an encouraging result that shows that the sector is implementing prophylactic measures and alternatives to antibiotics to control health issues on the farm.

Notwithstanding these accomplishments, the efforts to fight antimicrobial resistance must continue in order to consolidate the observed downward trend in the years to come and eventually reach the total reduction target, to which all parties involved are committed.