



# Activities and achievements related to the reduction in antibiotics use and resistance in veterinary medicine in Belgium in 2016



## 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.

It is a common responsibility among associated sectors and authorities to reduce the use of antibiotics among animals. The aim is to spread the efforts so that all parties involved in animal medicine in Belgium take appropriate action.

## Summary

This report contains a summary of the key activities and achievements among the various players related to obtaining a reduction in antibiotics in veterinary medicine in 2016 as well as in the sales of veterinary antibiotics and in the evolution of bacterial resistance to antibiotics.

The year 2016 can be considered as a turning point in Belgian policy related to veterinary antibiotics because of the various important changes that were established, such as the signing of the covenant issued by the Federal Government and the relevant sector organisations, the publication of a Royal Decree related to the use of critically important antibiotics, the registration of the use of antibiotics and finally the creation of Sanitel-Med, the database of the Federal Government, in which such registrations must be made. The reductions achieved in the use of antibiotics in 2016 are encouraging in the light of AMCRA 2020 objectives, which must also be achieved under the convention. It is expected that actions taken so far will continue to be of benefit in the coming years. Also, the results of antibiotic resistance in food-producing animals and meat reveal a significant downward trend for the various indicator and zoonotic bacteria since 2011, this being the ultimate goal.



## Covenant between the Federal Government and all relevant sector partners regarding the reduction in the use of antibiotics in the veterinary 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 critical antibiotics by 2020;
3. a 50% reduction in feed medicated with antibiotics by 2017.

The year used as a benchmark for the reduction targets is 2011. These objectives are aligned with AMCRA's reduction targets, as described in its "Vision 2020".

The Covenant has been signed by the Federal Government, represented by the Ministers of Public Health and Agriculture, pharmaceutical industry (pharma.be), agricultural organisations (ABS, Boerenbond and FWA), compound feed industry (BEMEFA), veterinary associations (UPV and VDV), animal health associations (ARSIA and DGZ), specification managers (Belplume, Belpork, BVK, Codiplan, IPW IKM/QFL/QMK) and AMCRA.



*On 30 June 2016 the antibiotics covenant was signed by 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 part of the antibiotics covenant

The Federal Government, AMCRA and the sector partners concerned have defined common operational targets within the antibiotics covenant. Specific commitments have also been described 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, made during the first year of the antibiotics covenant. For more information and a detailed description of all achievements we refer you to the respective organisation and Federal Public Services.

### Federal Government

#### *Royal Decree of 21 July 2016 related to the conditions for use of medicines by vets and those responsible for animals*

Under the Royal Decree of 21 July 2016 the prescription, acquisition and administration of critical important antibiotics for food-producing animals as a prevention and cure is restricted to those situations in which it is demonstrated that these means alone will be effective against the pathogen. This concerns the 3<sup>rd</sup> and 4<sup>th</sup> generation cephalosporins and fluoroquinolones which are considered by the WHO and the OIE to be of critical importance and of the highest priority for human and veterinary medicine.

The implementation of the Royal Decree of 21 July 2016 aims for the timely achievement of the reduction target “75% reduction in the most critical antibiotics by 2020”. The results related to the use of these products (see further) demonstrate that this measure is achieving the desired effect.

The Royal Decree of 21 July 2016 requires vets to register antibiotics used for pigs, poultry and veal calves.

#### *Roadshows for vets*

Upon the initiative of the BFSa, 23 information sessions were organised for vets and cattle breeders between October and December 2016 in order to explain the legislation and inform them of the issues involved in the resistance to antibiotics.

#### *CREATION of Sanitel-Med, the national data collection system*

Under the Royal Decree of 21 July 2016, all vets are obliged to make a record each time they provide, administer and prescribe antibiotics and products based on zinc oxide for pigs, broilers, laying hens and veal calves in the central all-species database, Sanitel-Med. The federal agency for medicines and health products is charged with developing and maintaining Sanitel-Med. The details are used to analyse the use of such medicines by vets and those responsible for the animals. This will allow farmers and vets to be benchmarked and for feedback to be given on their use of antibiotics. Pig breeders affiliated with particular labels are currently already benchmarked thanks to the collection of details related to their use of antibiotics by AB register, which is a private system.

### *Monitoring of the antimicrobial resistance of indicator bacteria and zoonosis*

Based on the 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.

Using details recorded in Sanitel-Med and the results of AMR's monitoring of indicator bacteria and zoonosis in animals and foodstuffs, conducted by the BFSA, policy measures are developed to achieve a minimum, responsible and careful use of antibiotics and products based on zinc oxide.

### Pharmaceutical industry

The pharmaceutical industry is helping to fund the development of Sanitel-Med and subsequent data analysis with a six-monthly fee on veterinary antibiotics. pharma.be organised the 'Ambassadors' Day', during which field staff of member pharmaceutical companies were informed about AMCRA's operations and the importance of responsible use of antibiotics.

### Compound feed industry

The compound feed industry is charting the production of medicated feed for production animals on the Belgian market. Initiatives have therefore been taken and promoted aimed at optimising the efficiency of the data collection related to prescriptions for feed medicated with antibiotics. Since 1 October 2016 the Belgian compound feed industry has only accepted electronic prescriptions for feed medicated with antibiotics.

The compound feed industry is also the driving force behind the quality systems used for data collection and processing.

### Agricultural organisations

Agricultural organisations provide funds from the Sanitary Fund (with contributions from cattle breeders) for the development of data collection systems, managed by the sector for all types of animals. They also hold discussions to stimulate the animal sectors to quickly join the AB Register of Bigame, thus allowing the implementation of detailed operational data collection for all food-producing animals. In the context of data collection, they also explain to users and providers the importance of data collection and analysis to achieve a rational use of antibiotics. Numerous self-regulation initiatives are being encouraged in conjunction with the quality systems/labels.

Agricultural organisations are also providing training sessions for farmers about the responsible use of antibiotics and they are helping to distribute vaccination advice to farmers and vets in each animal sector. They are also making an active contribution by participating in work groups organised by AMCRA and other organisations involved in the issue of antibiotics.



### Veterinary organisations

The e-formulary and vaccination recommendations have been distributed via the various veterinary organisations. Training is also being organised for vets to help them carry out their role appropriately. Publications and reports concerning the responsible use of antibiotics are also being published in periodic vet magazines. Veterinary organisations are also making an active contribution by participating in work groups organised by AMCRA and other organisations involved in the issue of antibiotics.

### Administrators of quality/private systems

The administrators of the quality/private systems are committed to collecting data and reporting the results of analysis related to the use of antibiotics in animal production. In this context they offer a personalised benchmark and analysis on top of the basic report that is provided by the relevant authority. They are also organising the transmission of the data related to antibiotics usage to Sanitel-Med. The collection of data from the sectors was started by Belpork vzw in 2014 for the pig industry. In 2016-17 the collection of data for the veal calf sector was implemented by BVK, and by Belplume vzw (poultry sector) for the poultry sector. The collection of data on the use of antibiotics in the remaining sectors, such as the cattle sector, is under development.

## Animal health associations (DGZ – ARSIA)

Animal health associations are taking action to reinforce the relationship between company (supporting) vets and cattle breeders by developing company health plans. In addition they are actively involved in training farmers and vets, which includes running seminars and workshops for vets. DGZ and ARSIA are also playing a key role in determining the sensitivity of bacteria isolated from samples taken from animals that are clinically ill.



## AMCRA



### ACTIVITIES & REALISATIONS 2016

- DIGITAL FORMULARIUM**
  - Up-to-date
  - Accessible from PC, smartphone or tablet
  - Links to products authorized in Belgium

[www.e-formularium.be](http://www.e-formularium.be)
- COMMUNICATION**
  - 23 roadshows for veterinarians & farmers
  - 11 newsletters
  - 4 spots on TV channel PlattelandsTv
  - participation 2 fairs
  - 2 press releases and 3 articles
  - 24 presentations
- ADVICES & GUIDELINES**
  - Vaccination advices
  - Advice on Factors influencing antibiotics use
  - Health plan for swine farms : Application "Animal husbandry visit" for veterinarians
- ANTIBIOTIC-COVENANT**
  - From auto-regulation to co-regulation
  - Support and engagement of all stakeholders
- ANALYSES ON AB USE DATA**

**AB Register Swine**

  - Six month benchmark and report of 3000 swine farms
  - 3 overview reports for quality labels

**SANITEL-MED**

  - Preparation of benchmark and farm-reports for all Belgian swine-, poultry- and veal calves farms

### MISSION

- Prevent antimicrobial resistance in order to preserve public and animal health and animal welfare
- Promote a rational reduction in the use of antibiotics and a sustainable antibiotic policy in veterinary medicine in Belgium
- Analyse, communicate and increase awareness in a neutral and objective way

more info and detailed 2016 report of activities  
[www.amcra.be](http://www.amcra.be)

AMCRA continued its efforts to create awareness and inform the relevant parties. An awareness campaign for a diverse audience (farmers, vets and pet owners) has been developed and broadcast by Plattelands-TV. The TV spots and advertorials can be viewed on the AMCRA website. In addition, AMCRA has made efforts to organise evenings to inform farmers and vets on the responsible use of antibiotics in the context of the new legislation (Royal Decrees issued by the Federal Government). The use of the e-formulary, as the guidebook for vets in choosing responsible antibiotic therapy per indication and species, has been promoted by attending veterinary and agricultural fairs. Also, new work groups have been set up to be able to formulate advice on topical themes. For more about AMCRA's activities: [www.amcra.be](http://www.amcra.be)

AMCRA's scientific division carries out the analysis of data related to the use of antibiotics collected under Sanitel-Med. The collaboration with the AB Register is also being continued and modified to suit the new needs in the sector.



## Results with regard to the use of antibiotics among animals in Belgium in 2016 and its evolution since 2011.

The use of antibacterial products among animals in Belgium is monitored on an annual basis in relation to the number of animals present (the annually produced biomass) and published in the BelVet-SAC report. It concerns data on the use of antibacterial products among both agricultural animals and pets.

### Total use

- 2015-2016: - 4.8%
- Since 2011: -20%

A further reduction of -4.8% (mg substance/kg biomass) was registered in 2016 compared to 2015. This decrease can be associated with a reduction of -1.5% for pharmaceuticals and -29.0% for premixes, along with a reduction of -2.1% in the biomass. The greatest reduction was recorded in quinolones (-57.5 %), which are considered to be critical antibiotics. There was also a significant drop in the use of tetracyclines (-15.2%), macrolides (-11.4%) and polymyxins (-9.9%). An increase was visible in the use of penicillins (+10.3%) and phenicols (+47.3%).

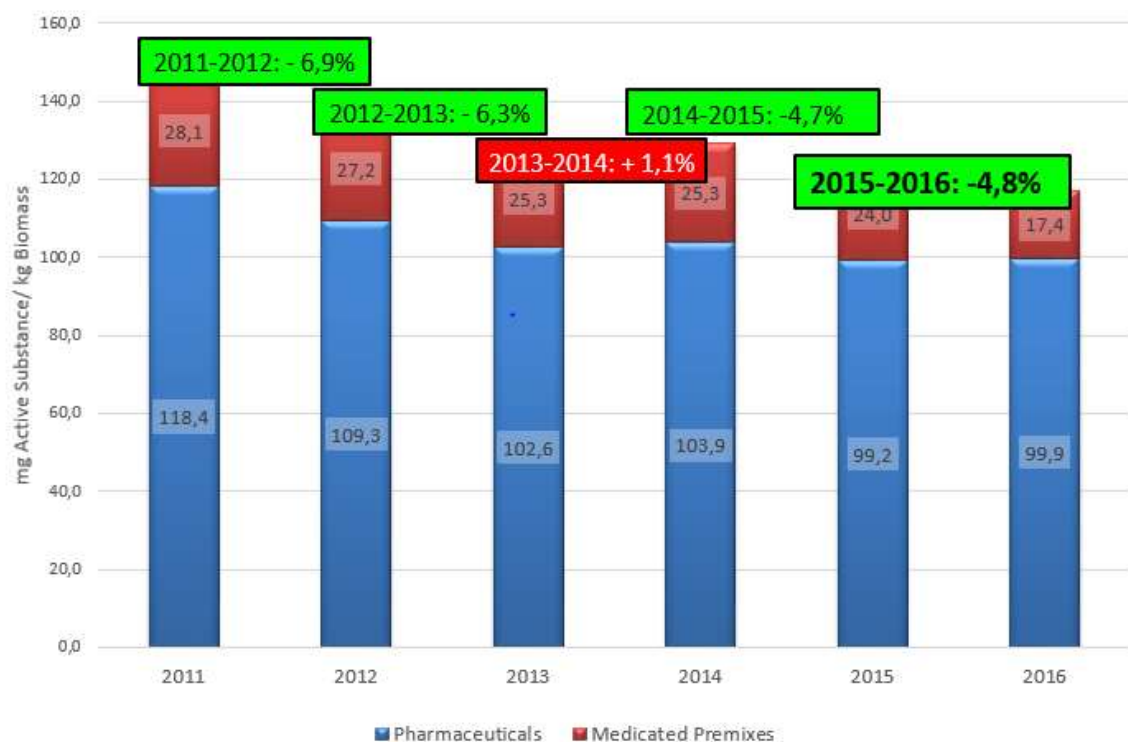


Figure 1: Evolution in the use of pharmaceuticals and animal feed medicated with antibiotics in Belgium between 2011 and 2016 expressed in mg active substance per kg biomass.

The persistent reduction in the use of polymyxins in veterinary medicine over the last four consecutive years is most likely the result of the administration of zinc oxide in pharmacological doses as an alternative to colistin in the treatment of weaning diarrhoea among piglets. Colistin was recently classified as a critical antibiotic by the WHO and a top priority for public health. Therefore a decline in

its use of 54.5% since 2012 (the year that zinc oxide was authorised in pharmacological doses) is a very good result.

When compared with 2011 (benchmark year) we see a cumulative decline of 20% in the total usage in 2016. This reinforces the decline in the context of AMCRA's first objective, which aims for a 50% reduction by 2020.

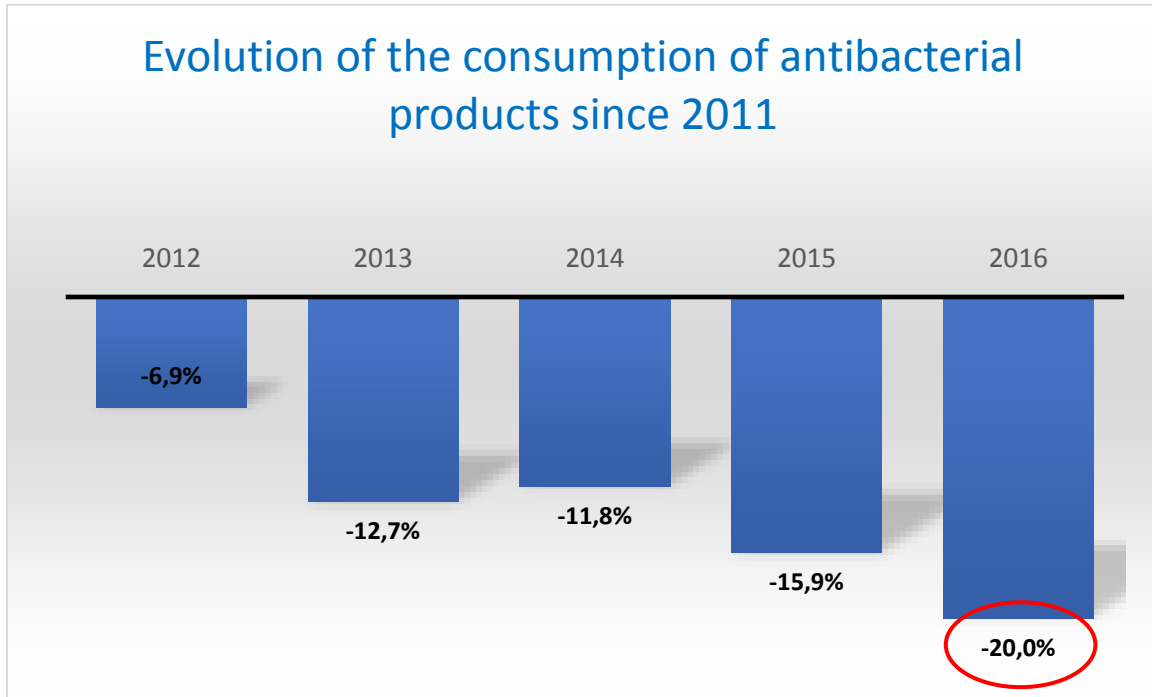


Figure 2: Evolution in the total use of antibiotics in veterinary medicine in Belgium between 2011 and 2016.

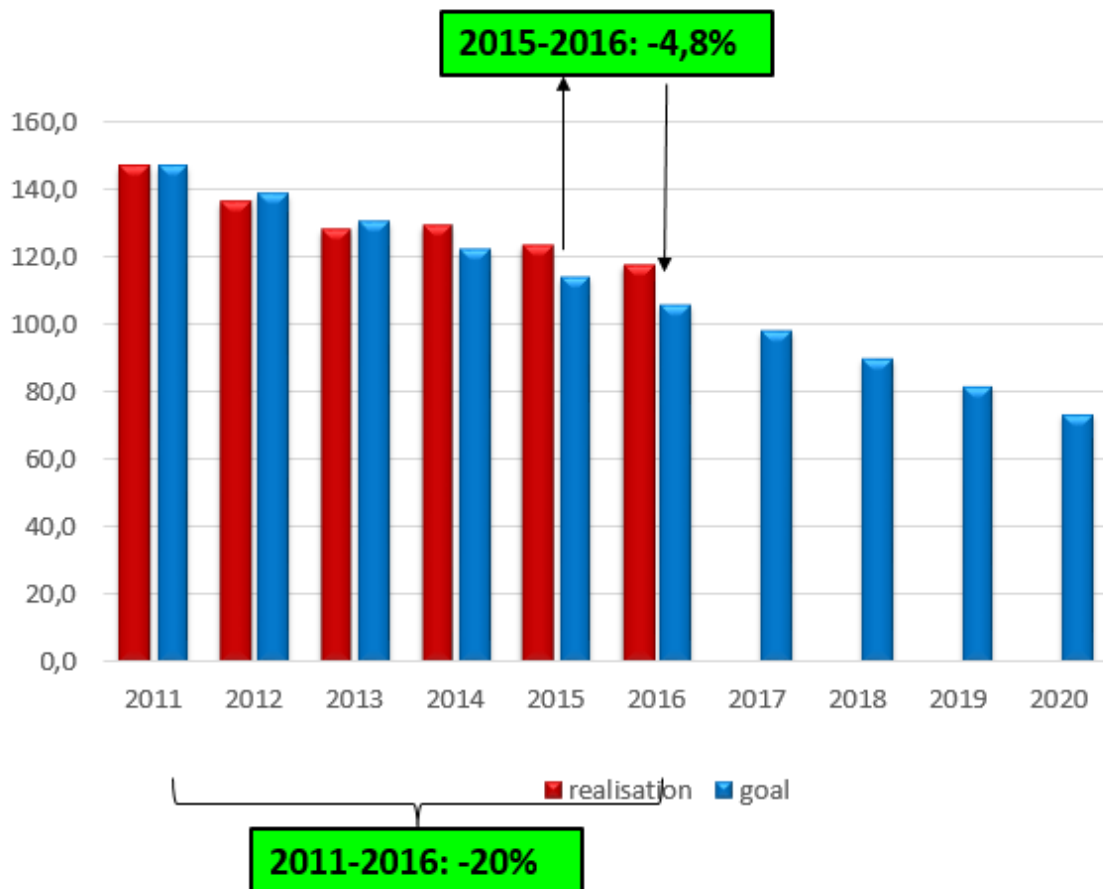


Figure 3: AM CRA's planned schedule in reducing the total use of antibiotics between 2011 and 2020 (blue bars) and the actual reduction figures achieved between 2011 and 2016 (red bars).

### Critically important antibiotics

- 2015-2016: -53%
- Since 2011: -56.1%

When it comes to AM CRA's second objective, the 75% reduction in the use of critically important antibiotics by 2020 (fluoroquinolones and cephalosporins of the 3<sup>rd</sup> and 4<sup>th</sup> generation), we see a decline of 56.1% compared to 2011. This significant accomplishment is largely due to the introduction of the Royal Decree of 21 July 2016 related to measures for the use of red antibiotics in food-producing animals. In fact, the decline between 2015 and 2016 was 53%, although the legislation only became effective in August.

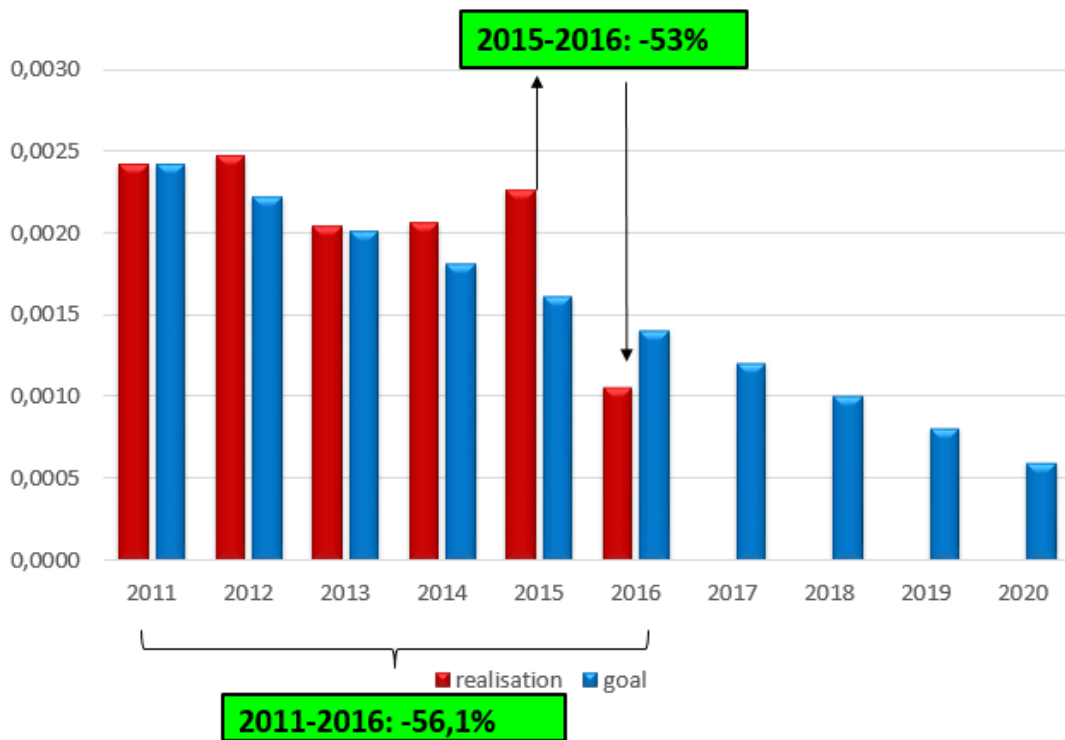


Figure 4: AMCRA's planned schedule in reducing the use of critical antibiotics between 2011 and 2020 (blue bars) and the actual reduction figures achieved between 2011 and 2016 (red bars).

### Medicated feed

- 2015-2016: -29%
- Since 2011: -38,2%

Another important result has been recorded for feed medicated with antibiotics, namely a drop of 38.2% compared to 2011. AMCRA's objective targets a reduction of 50% by 2017. This means that a reduction of 11.8% must be reached in 2017 in order for the goal to be successfully achieved.

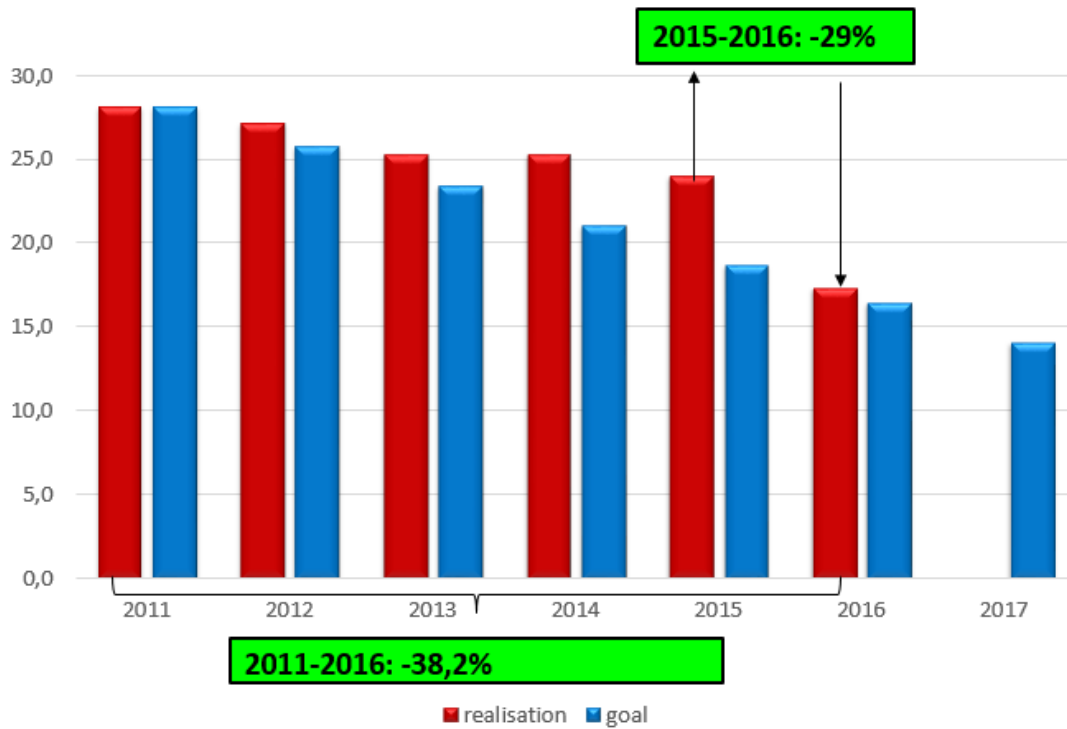


Figure 5: AM CRA's planned schedule in reducing the use of feed medicated with antibiotics between 2011 and 2020 (blue bars) and the actual reduction figures achieved between 2011 and 2016 (red bars).

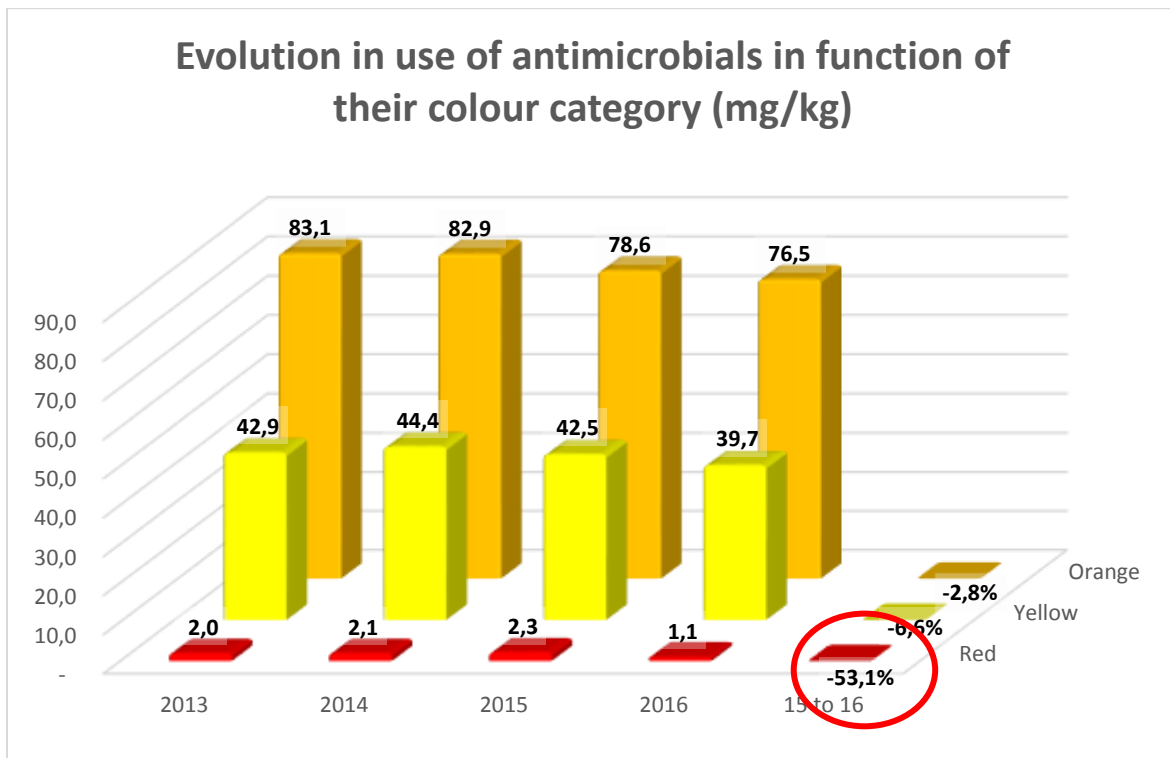


Figure 6: The proportion in use of products coded yellow, orange or red among animals in Belgium between 2013 and 2016 and evolution in percentage between 2015 and 2016.

## Evolution of bacteria's resistance to antibiotics

### Net downward trend

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

The results in monitoring carried out by the BFSA demonstrate the presence of broad spectrum beta-lactamase (ESBL) producing *E. coli* is highest in faeces samples from broiler chickens. Since 2011 there has been a drop from 19.1% to 10.2% in the number of *E. coli* strains resistant to 3<sup>rd</sup> generation cephalosporins. This decline is also visible among fattening pigs and veal calves. In 2016, 2.9% of the isolated *E. coli* strains from pigs and veal calves were still resistant to 3<sup>rd</sup> generation cephalosporins. This represents a halving in the number of ESBL-producing *E. coli* since 2011 for pigs and since 2012 for veal calves. The decline is even greater among young beef cattle. In 2011, 4.6% of the *E. coli* strains produced ESBLs, while this was just 1.1% of the strains in 2016. ESBL-producing *E. coli* more commonly show a resistance to other classes of antibiotics, but we can also confirm a decline in this area since 2011.

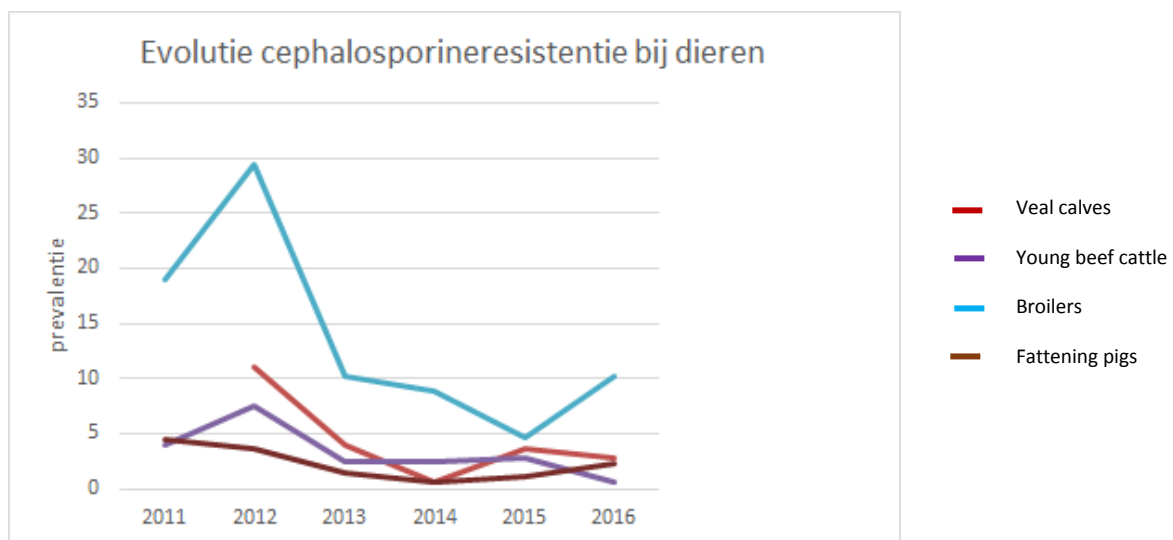


Figure 7: Evolution of the resistance to cefotaxime among food-producing animals in Belgium between 2011 and 2016.

Resistance to fluoroquinolones is highest among broiler chickens (57.5%), but has slightly declined since 2011 (62.9%). The resistance to fluoroquinolones is also high among veal calves, whereby 19.5% of the strains are resistant to ciprofloxacin. However, a clear reduction has been apparent since 2011 (41.2% in 2011). Resistance to fluoroquinolone is clearly lower among pigs and young beef cattle (5.7%), and has also been in decline since 2011 (14.1% and 11.0% respectively for pigs and beef cattle).

Resistance to colistin is low among the various species (0.6% among pigs and beef cattle, 1.7% among veal calves and 0% among broiler chickens). In 2017 colistin was classified by the World Health Organisation (WHO) as a critically important antibiotic of the highest priority.

Resistance to other classes of antibiotics (sulfonamides, tetracyclines, trimethoprim, aminopenicillins) show a significantly downward trend since 2011 among the various animals. The number of multi-resistant *E. coli* strains also demonstrates a decline.

### *Results with regard to the prevention of antibiotic resistance in indicator bacteria and zoonotic bacteria in meat from food-producing animals and the evolution since 2011.*

In 2011 Belgium faced negative findings on the presence of broad spectrum beta-lactamase (ESBL) producing *E. coli* in poultry meat. Thanks to years of monitoring poultry meat we are able to establish that the presence of ESBL *E. coli* is in decline. In 2011, 87.2% of poultry meat samples were contaminated with more than 10 colony-forming units per gram which evolved to a figure of 34.2% for 2015, meaning a decline of 53%. Figures in 2016 also established a decline in the general resistance of poultry meat to other tested antibiotics within this ESBL *E. coli* group.

A further decline in the presence of ESBL-producing *E. coli* is also visible in meat from cattle and pigs. For cattle this declined from 18.75% in 2014 to 6.3% in 2016, for pigs from 16.95% in 2014 to 14% in 2016.

The trends in antibiotics resistance have been evaluated for the period 2012-2016 for *Campylobacter jejuni* in poultry. The clone resistant to Nalidixine, Ciprofloxacin and Tetracycline continues spreading. The number of strains that are sensitive to all tested antibiotics has fluctuated from 38% in 2012 to 43.5% in 2013 and dropped back down to 30% in 2015 to increase again to 35% in 2016.

When it comes to *Salmonella* isolated from swabs from pigs' carcasses, a downward trend was recorded for the percentage resistance for the various antibiotics tested in data from 2014 and 2016. The resistance to colistin has also clearly declined, reaching below 3% in 2016 for *Salmonella* isolated in poultry.

## Conclusion

The results show the effectiveness of the current strategy and of the collaboration between AMCRA, the authorities and all organisations who subscribed to the covenant on 30 June 2016.

The efforts in the fight against resistance to antibiotics must actively be continued and certainly if we are to reach the “2020” objectives, to which all parties concerned are committed.