



Department
of Health &
Social Care

The UK's vision for AMR by 2040 and five-year national action plan

The Department of Health and Social Care and the Department for Environment Food and Rural Affairs Veterinary Medicines Directorate.

12 March 2019

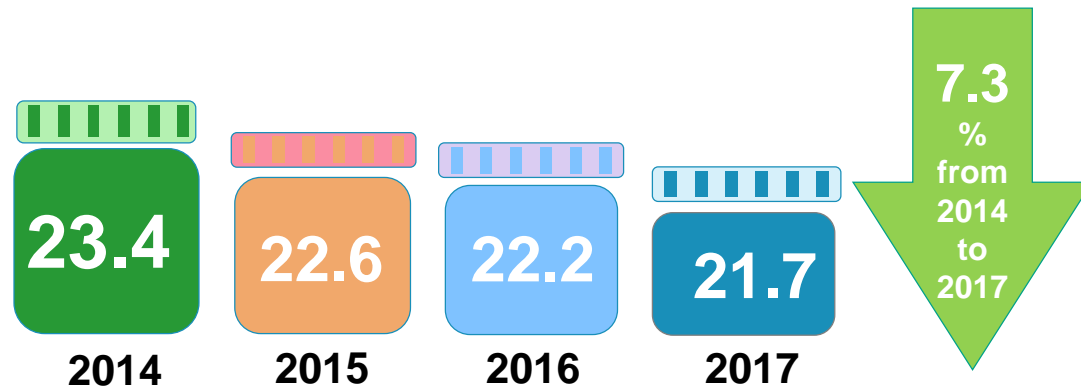
Key achievements 2013 - 2018

- Surveillance – comprehensive surveillance systems.
- AMR indicators in PHE fingertips portal providing data accessible by all.
- Research collaboration and increased investment – over £350m spent on research.
- Championed responsible use of medicines in agriculture and coordinated activity across different livestock sectors led by RUMA.
- Invested £265m in the Fleming Fund to improve capacity and capability in low income countries.
- Antimicrobial Prescribing Quality Measures, NHS incentive schemes - QP and CQUIN.
- National ambitions HAI Gram-negative BSIs, human use, and animal use with sector specific targets.
- IPC and antimicrobial stewardship framework strengthened via *Code of Practice*.
- Awareness, education and guidance- Longitude Prize, Antibiotic Guardian campaign, national awareness campaign “keep antibiotics working”, E-bug in schools; competencies, NICE guidance, tool kits, guidelines on responsible use in agriculture and other resources.

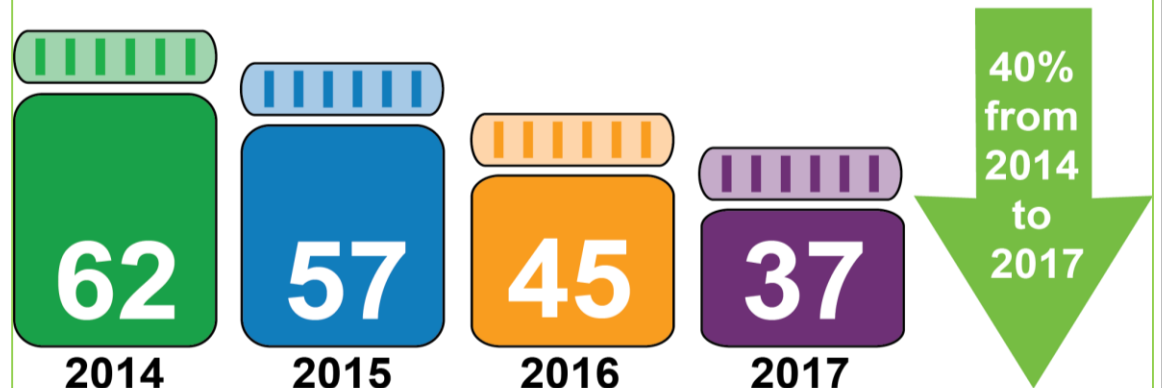


Reduced antibiotics consumed/ sold in the UK

Amount of Antibiotics consumed by humans in the UK
Defined Daily Doses per 1000 inhabitants per day



Amount of antibiotics sold for use in UK food-producing animals
milligrams of active ingredient per kilogram of bodyweight (mg/kg)



One-health activity



One-Health antimicrobial use:

A large decrease in sales of veterinary antibiotics between 2013 and 2017, ranging between 16% and 99% for each antibiotic class with 35% reduction overall.

Sales of HP-CIAs for use in animals were very low in 2017, and have decreased by 51% since 2013.

Prescriptions for use of antibiotics in humans also showed an overall decrease (6%), with decreases in use for most antibiotic classes.

Use of HP-CIAs is low in humans. When comparing amounts of active ingredient used for animals and for humans, the largest proportion of HP-CIAs was prescribed for use in humans in 2017.

One-Health Antibiotic stewardship:

PHE has worked in collaboration with the VMD on the Antibiotic Guardian campaign, a pledge-based behaviour change strategy.

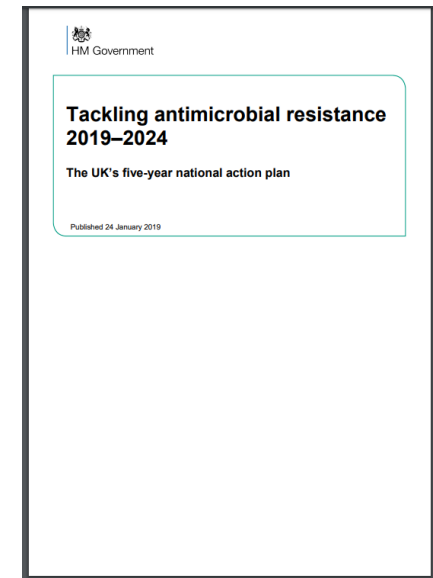
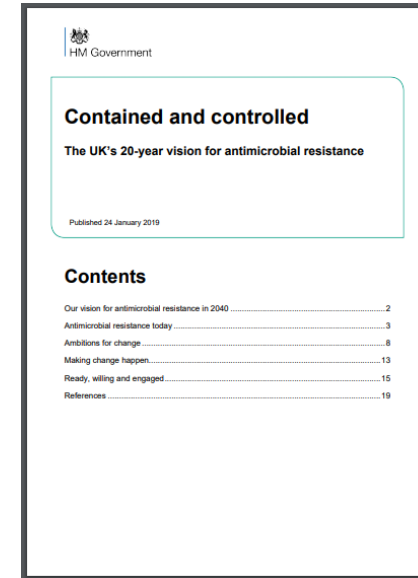
Case studies of antibiotic stewardship activities in human and animal health shortlisted for the Antibiotic Guardian Awards are available through the shared learning platform www.antibioticguardian.com/sharedlearning and include:

- Bristol Veterinary School - Agriculture and food category,
- The Responsible Use of Medicines in Agriculture Alliance (RUMA) - Community communications, prescribing and stewardship,
- NHS Sunderland CCG - Diagnostic stewardship,
- King's College London - Student of the year category.

The UK's vision for AMR by 2040 and five-year national action plan – published 24 January 2019

Coordinated by DHSC with:

NHS England; NHS Improvement; Department for Environment, Food and Rural Affairs; Veterinary Medicines Directorate, the Northern Ireland Executive; the Scottish Government; the Welsh Government; the UK Public Health Agencies; Department for International Development; Business Energy and Industrial Strategy; Office for Life Sciences; Foreign and Commonwealth Office; Food Standards Agency; Medicines and Healthcare Products Regulatory Agency; National Institute for Health and Care Excellence; Health Education England; Environment Agency; Animal and Plant Health Agency; experts from government advisory committees, academia and the Research Councils, and with input from stakeholder groups including professional bodies and industry.



By 2040, our vision is of a world in which antimicrobial resistance (AMR) is effectively contained, controlled and mitigated.

<https://www.gov.uk/government/collections/antimicrobial-resistance-amr-information-and-resources#strategic-publications>

In the UK, we will contribute to the global effort through

- **A lower burden of infection**, better treatment of resistant infections, and minimised transmission in communities, the National Health Service (NHS), farms, the environment and all other settings.
- **Optimal use of antimicrobials** and good stewardship across all sectors, including access to safe and effective medicines that have been manufactured responsibly for all who need them; achieving usage levels by sector as good as the best countries in the world where comparable data is available.
- **New diagnostics, therapies, vaccines and interventions** in use, and a full antimicrobial resistance research and development pipeline for antimicrobials, alternatives, diagnostics, vaccines and infection prevention across all sectors with access to new and old technologies for all.

Using the UN's IACG framework for action on AMR

Content areas

What needs to be done to tackle AMR

1. Reduce need and unintentional exposure



- Lower burden of human infection
- Clean water and sanitation
- Lower burden of animal infection
- Minimal environmental impact
- Better food safety

2. Optimise use of antimicrobials



- Optimal use in humans
- Optimal use in animals & agriculture
- Lab capacity & surveillance in humans
- Lab capacity & surveillance in animals

3. Invest in innovation, supply and access



- Basic research
- Development of new therapeutics
- Wider access to therapeutics
- Development of & access to diagnostics
- Development of & access to vaccines
- Better quality assurance

Levers

Ways of addressing content areas



1. Awareness & capacity building
2. Measurement & surveillance
3. Funding & financial incentives
4. Policy & regulation
5. Championing & piloting

Enablers

Preconditions needed to apply levers successfully



1. NAPs, systems strengthening & SDG alignment
2. Global governance & coordination
3. Coalition building & political commitment



AMR and the Sustainable Development Goals



- AMR strikes hardest on the poor; treatment of resistant infections is more expensive



- Untreatable infections in animals threatens sustainable food production for growing populations



- Antimicrobials are fundamental components of all health systems



- Clean water and effective sanitation reduces infections and antibiotic residues from multiple sources contaminate water



- Cost of AMR is predicted to be US\$100 trillion by 2050, driving an extra 28million people into poverty.



- It is crucial to balance access and conservation of antimicrobials with innovation, to contain AMR.

Source: based on World Health Organisation

Principles for developing the UK's five-year action plans



IMPACT-FOCUSED

Understanding the effectiveness of interventions and focusing on areas that offer value for money and a real opportunity to make an impact.



STEP-WISE

Using surveillance data and research to evaluate risks, monitor trends over time and understand what works to prevent and slow the spread of AMR.



EVIDENCE-BASED

Establishing a robust evidence base and building predictive models that allow us to develop the right tools to embed effective interventions.



FLEXIBLE

Using emerging information to guide investment decisions and set delivery timescales and remaining open to changes based on the latest evidence of risk.



RESPONSIVE

Learning from the experience of others, including from fields with established knowledge and expertise and from other countries' good practice.



HARMONISED

Collaborating across sectors and groups (professionals, patients and the public) in the UK, and aligning with other relevant global initiatives.

Our ambitions for change

Ambition 1: Continue to be a good global partner



working with other countries and international organisations on surveillance, capacity and capability, promoting access, supporting health systems and behaviour change

Ambition 2: Drive innovation



Continue as world class leaders in research and development; improving understanding of routes of transmission, collaborating to maintain a healthy pipeline of new drugs and alternatives

Ambition 3: Minimise infection



Achieve UK rates of infections in humans the lowest in the world and reduce infections in animals; minimise transmission in the environment, optimise use of vaccines; support disease reduction programmes

Ambition 4: Provide safe and effective care to patients



Protecting patients by optimising antimicrobial use through strong antimicrobial and diagnostic stewardship

Ambition 5: Protect animal health and welfare



Achieving antimicrobial use levels per animal industry among the best in the world without jeopardising animal health and welfare

Ambition 6: Minimise environmental spread



Minimising the potential threat of AMR and the dispersal of the drivers of resistance in the environment through effective waste treatment and environmental stewardship

Ambition 7: Support sustainable supply and access



Securing sustainable access to quality assured old and new antimicrobials for all who need them

Ambition 8: Demonstrate appropriate use of antimicrobials



Show that we only use antimicrobials where appropriate through real-time monitoring and robust data

Ambition 9: Engage the public on AMR



Developing effective societal advocacy; engaging with the public to ensure that everyone takes ownership of the issue and solutions.

Five-year ambition: infections

MEASURING SUCCESS

Target: to reduce the incidence of a specified set of drug resistant infections in humans in the UK by 10% by 2025; and halve the number of healthcare associated Gram-negative blood stream infections.



- Currently 53000 resistant infections each year in the UK – 16 pathogens *
- Over 60% of those are healthcare associated (HAI).
- Cause 2,200 deaths.
- 3 main organisms account for 75% of all Gram-negative blood stream infections – 55% of those are *E.coli*
- Cases of *E.coli* blood stream infections (BSIs) continue to increase.
- Interim ambition of 25% reduction in HAI Gram-negative BSIs by 2021/22
- With a full 50% reduction by 2023/24.

* Attributable deaths and disability-adjusted life-years caused by infections with antibiotic-resistant bacteria in the European Union and the European Economic Area in 2015: a population-level health estimate: The Lancet Infectious Diseases 5 November 2018



Five-year ambition: use in humans

MEASURING SUCCESS

Target: to reduce UK antimicrobial use in humans by 15% by 2025, including:

- a 25% reduction in antibiotic use in the community from the 2013 baseline.
- a 10% reduction in use of 'reserve' and 'watch' antibiotics in hospitals from the 2017 baseline.



- At least 20% of primary care prescribing is inappropriate.
- A third of prescriptions lack a diagnostic code.
- Variation in prescribing in community and hospital settings.
- Need for strengthened stewardship - including for diagnostics – and data linkage.

Hospital antibiotic use:

- reduce by minimum 2% and maximum 16% over three years.
- interim target of 5%, based on antibiotic duration.
- surgical prophylaxis targeted as a quality improvement initiative: more than 95% of surgical prophylaxis should be delivered for less than 1 day and 90% as a single dose.

Highlights: human health

- Add CRO Gram-negative infections to the list of notifiable diseases.
- Develop a patient level real time source of prescribing and resistance data.
- Board level leadership for IPC and antimicrobial stewardship – data driven review of progress.
- Address capability and capacity in all health and care settings.
- Translate evidence into practice, facilitating a learning culture.
- Facilities and infrastructure – use of the built environment.
- Use existing datasets to identify hot spots – implementing universal data coding.
- Enhanced role of pharmacists in primary care.
- Evidence based guidance and behaviour change interventions.

Five-year ambition: use in animals

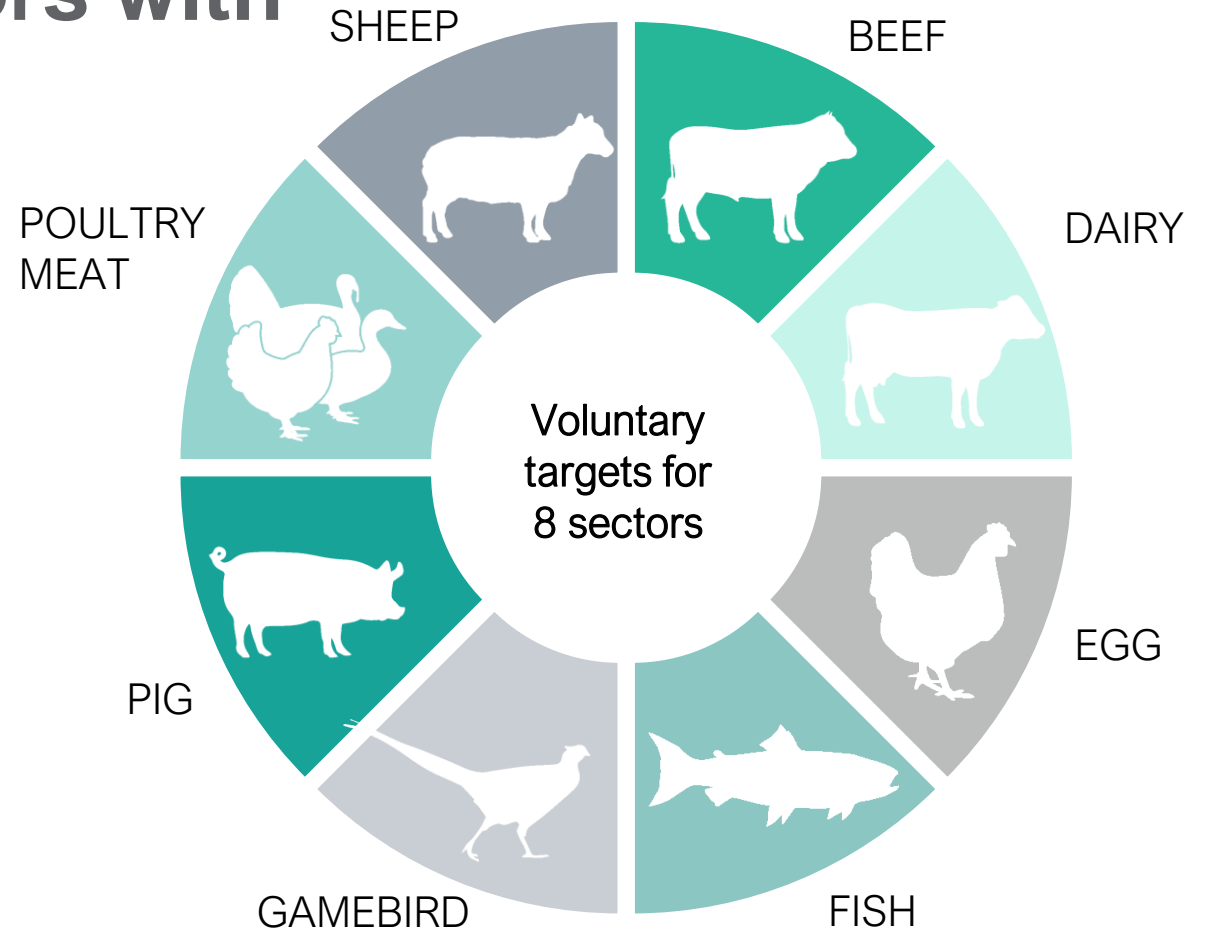
MEASURING SUCCESS

Target: to reduce UK antibiotic use in food-producing animals by 25% between 2016 and 2020; and define new objectives for individual animal sectors by 2021.



- Setting targets to encourage the responsible use of antibiotics in animals and agriculture.
- Voluntary targets in eight food producing animal sectors will deliver the 25% reduction 2016 – 2020.
- Current sales have reduced to 37mg/kg compared to the 2016 European average of 125mg/kg.
- Assess prescribing practice for further progress.
- Improve data and develop rapid and reliable diagnostic tools.

The eight livestock sectors with voluntary targets



Sector-Specific targets for the **Reduction, Refinement or Replacement** of antibiotics in food-producing animals. Available here - <http://www.ruma.org.uk/targets-task-force/>

Highlights: animals, food and the environment

- Best practice IPC for livestock, pets and horses.
- Improve livestock data and refine reduction targets.
- Improve understanding of use in companion animals and horses.
- Improve animal health and address endemic disease – vaccination, best practice, awareness.
- Develop fast, reliable diagnostic tools and promote uptake
- Further develop harmonised One-Health surveillance.
- Research routes of transmission including the impact of the environment and food.
- Environment – reduce evidence gaps, responsible procurement and stewardship, raised awareness.
- Food – improve the evidence base, surveillance, practice among food handlers and consumers.

Five-year ambition: diagnostic tools and tests

MEASURING SUCCESS

Target: to be able to report on the percentage of prescriptions supported by use of a diagnostics test or decision support tool by 2024, with improvement targets set by 2025.



- A third of prescriptions do not have an associated diagnosis.
- Use of NICE syndrome specific guidance.
- All infection consultations to have a diagnostic code and subject to audit.
- Accelerate use of electronic prescribing in secondary care – link data sets.
- Use data to give healthcare providers feedback on guidance compliance and prescribing rates.
- Promote good diagnostic stewardship.

Internationally

- Work with global partners to build regulatory capacity in low and middle income countries (LMICs).
- Continue to use UK Aid to support countries efforts and strengthen health systems in LMICs.
- Use UK aid to reduce the global burden of infection - promote WASH programmes.
- Ensure AMR remains a global priority – through G7, G20 and other international fora and as a major supporter of the UN system.
- Hold the UN family to account for their collective efforts and increase links to delivery of the SDGs.
- Support internationally agreed solutions including those that promote equitable access.
- Support research and innovation – including into the diseases of poverty and develop affordable tools to tackle AMR across the One-Health agenda.

International Reference Centre for AMR Surveillance

- The AMR Reference Centre is funded by Defra and the Fleming Fund
- It will harness the expertise of Defra agencies to:
 - support partners in low and middle income countries
 - develop capacity for surveillance of AMR and AMU, particularly to those countries receiving support through the Fleming Fund Grants programme,
 - raise awareness of AMR and support implementation of national action plans
 - facilitate international engagement and cooperation.
- The support offered will align with AMR action plans and strategies.



Defra agencies:

- **The Centre of Environment Fisheries and Aquaculture Science - Cefas** specialises in AMR in aquatic animals and the environment: it is an OIE Collaborating Centre for Information on Aquatic Animal Diseases.
- **Veterinary Medicines Directorate** has expertise in monitoring antimicrobial usage (AMU) and development of policy surrounding AMR and AMU.
- **The Animal and Plant Health Agency - APHA** focuses on AMR in farmed animals, their environment and food is an OIE Reference Laboratory for AMR

Invest in innovation, supply and access – highlights

- Use multi-disciplinary networks and promote collaboration between industry and UK researchers.
- Use predictive analysis to inform interventions across sectors.
- Continue to invest in research for new products and intervention strategies.
- Promote and support a coordinated global system to incentivise new therapies.
- Support global health initiatives that accelerate access – new treatments and vaccinations.
- Test a new model for national purchasing arrangements – using a NICE led HTA.
- Determine economic models of optimal pricing for generic antibiotics.
- Streamline process for new diagnostics and address barriers to adoption.
- Assess extent of on-line purchasing and illegal sales of antimicrobials in the UK.



Changing how we pay for our antimicrobials

- Pharmaceutical companies continue to pull out of the antimicrobials market.
- The UK is leading the way, testing solutions that address the failure of companies to invest.
- Will pay companies for antimicrobials based primarily on a health technology assessment of their value to the NHS as opposed to the volumes used.
- Value estimated by NICE through an adapted health technology assessment and used in commercial negotiations.
- Forecasting the value of health benefits at the time of launch and supporting good stewardship.
- Led by NICE and NHS England, working with the Association of British Pharmaceutical Industries.
- Unlikely to have a “one size fits all” model.
- Project launch within six months.
- Needs a critical mass of countries working in parallel to reactivate the pipeline.



A collaborative future

In our vision for AMR in 2040, the UK is working with partners across all sectors and levels, including:

- professionals and professional bodies,
- society, across communities with patients, the public, consumers and animal owners,
- the private sector, industry, investors, manufacturers and retailers,
- the research community and academia,
- the United Nations family, the European Union, multilateral and international organisations,
- other governments bilaterally, with G7 and G20 partners and others internationally.



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