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

2014: 23.4
2015: 22.6
2016: 22.2
2017: 21.7

7.3% from 2014 to 2017

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

2014: 62
2015: 57
2016: 45
2017: 37

40% from 2014 to 2017
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.

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

1. **No Poverty**
   - AMR strikes hardest on the poor; treatment of resistant infections is more expensive

2. **Zero Hunger**
   - Untreatable infections in animals threaten sustainable food production for growing populations

3. **Good Health and Wellbeing**
   - Antimicrobials are fundamental components of all health systems

4. **Clean Water and Sanitation**
   - Clean water and effective sanitation reduces infections and antibiotic residues from multiple sources contaminate water

5. **Decent Work and Economic Growth**
   - Cost of AMR is predicted to be US$100 trillion by 2050, driving an extra 28 million people into poverty.

6. **Responsible Consumption and Production**
   - 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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