The UK strategy for antimicrobial resistance (AMR) and its implications for research and development

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Annual report of the Chief Medical Officer for England, published in 2013

Chapter 1
Chief Medical Officer’s summary

Chapter 2
Epidemiological overview of infectious disease in England

Chapter 3
Health inequalities and infectious diseases

Chapter 4
Healthcare-associated infections

Chapter 5
Antimicrobial resistance

Chapter 6
Life stage: Perinatal

Chapter 7
Life stage: Child

Chapter 8
Life stage: Adolescents and young adults

Chapter 9
Life stage: Adult

Chapter 10
Life stage: Older adult

Chapter 11
Future challenges
Proportion of 3rd gen. cephalosporins Resistant (R) 
*Klebsiella pneumoniae* Isolates in Participating 
Countries in 2012
Movement of two strains of Carbapenem-resistant *Klebsiella pneumoniae* 2000 - 2008

**KPC**
- **2000:** First found in North Carolina
- **2003:** Isolates spread rapidly through New York
- **2005:** Found to be widespread throughout Israel
- **After 2005:** Spreads to Italy, Colombia and Sweden

**NDM**
- **Before 2008:** Resistance first identified in India
- **2009:** Discovered in Sweden
- **2010:** Discovered in the UK
- **2010:** Discovered in Canada

1. New-Delhi Metallobeta lactamase

Image from slides produced by McKinsey & Company, based on earlier image from Nature, 13th July 2013

Antimicrobial resistance
AMR is not only a ‘health’ problem

Diagram based on Linton (1977), as adapted by Rebecca Irwin, Health Canada (Prescott 2000) and IFT
Key aims of the UK strategy

• **Prevent** (people from being infected)

• **Preserve** (the antibiotics we have)

• **Promote** (development of new antimicrobials, new approaches, better diagnostics)

Underpinning: knowledge and understanding of AMR
Main activities

1. Improving infection prevention and control practices in human and animal health
2. Optimising prescribing practice
3. Improving professional education, training and public engagement
4. Developing new drugs, treatments and diagnostics
5. Improving use of surveillance data
6. Improving identification and prioritisation of AMR research
7. Strengthening international collaboration
How is the strategy making this happen?

A UK Antimicrobial Resistance Strategy High Level Steering Group has been set up to oversee delivery

- Implementation plan to be published (November 2014)
- Annual progress report
- Outcome measures to be published
- Promotion of global co-operation
- Research and Development
Scientific and research challenge

• New antimicrobials needed:
  – more basic research and understanding
• effective (point of care) rapid diagnostics

• Novel treatments
  – bacteriophages, the microbiome, antisepsis

• Non-human use of antimicrobials
  – better understanding of links with human health
• Clinical use
  – conservation
  – best practice
The JPIAMR Strategic Research Agenda

• The UK welcomes the JPIAMR initiative and the opportunity to discuss the Strategic Research Agenda.

• Antimicrobial resistance is a global problem with a significant impact on public health

• There are major challenges in reducing this threat

• The UK has played a major role in highlighting the urgency of the situation and the need to work nationally and internationally to secure a global approach
DH/NIHR funded AMR research
Strategic co-ordination and support is provided through:
Co-funders of the:

- UKCRC Translational Infections Research initiative and the
- Health Innovation Challenge Fund
- The National Institute for Health Research (NIHR) funds applied health research:
  - running a themed call on AMR across 8 NIHR funding streams,
  - funding two Health Protection Research Units on AMR and HCAI,
  - funds initiatives aimed at supporting new diagnostics
- AMR Research Funders Forum established to align funding decisions,
- International
Global mobilisation and co-operation

At the international level we need to:

• Raise **awareness** of the issue

• **Prevention** - collaborate to prevent the global spread of AMR (infection prevention and control, stewardship and conservation aspects),

• Research to understand **transmission**, 

• “**One health**” approach to tackling AMR and developing evidence on the AMR transmission interface between human, animal and wider environment,

• to work with WHO, UN and other key international bodies to develop innovative **financing and regulatory** (licensing) approaches which will help stimulate development of new antibiotics.
International engagement to promote alignment and coordinated action

- AMR Thought Leaders meeting at Chatham House, June 2013
- G8 Science Ministers meeting, June 2013?
- CMO England chairs WHO Strategic Technical Advisory Group (STAG),
- Keynote address at Chatham House conference “Antimicrobial Resistance - Incentivising Change towards a Global Solution” October 2013
- CMO chaired AMR session at the World Innovation Summit for Health in Doha, December 2013
- Proposed WHA resolution supported by over 50 countries, agreed at the WHO Executive Board in January and will go to WHA in May.
Key web links

- UK Five Year Antimicrobial Resistance Strategy 2013 to 2018

- NIHR – website includes information on the Health Protection Research Units and the AMR themed call - www.nihr.ac.uk

- Health Innovation Challenge Fund www.hicfund.org.uk