The Review on Antimicrobial Resistance

The global challenge of drug-resistant infections

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@ReviewonAMR
Background to the independent Review on AMR

• Established by UK Prime Minister David Cameron in 2014
• Chaired by Jim O’Neill
• Co-sponsored by the UK Government and Wellcome Trust
• Tasked to:
  • Look globally at the problem rising drug-resistant infections, through the lens of economics and policy-making
  • Help build an international consensus for comprehensive action
AMR as an economic problem

Key role was to define the future human and economic burdens of AMR to raise the issue’s profile with policy-makers.

Our modelling estimated that if no action taken, by 2050:

- 10 million deaths annually
- $100 trillion lost from GDP
- A threat to development and global prosperity

Number of deaths per year today
A ten-point plan for action

• Eight interim reports over 18 months.
• Final report in May 2016 recommended specific actions on ten fronts.
• Argues for comprehensive, global action to reduce unnecessary demand for antimicrobials, as well as stimulating the supply of new ones.
Stimulating the discovery and development of new antimicrobials
Which antimicrobials? What are the priorities?

- Our report said:

<table>
<thead>
<tr>
<th>Urgent need and current funding structures inadequate</th>
<th>Urgent need but current funding structures largely adequate</th>
<th>Need will arise and require future consideration</th>
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</thead>
<tbody>
<tr>
<td>TB treatment regimen</td>
<td>New malaria treatments</td>
<td>HIV/AIDS drugs</td>
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<tr>
<td>Antibiotics</td>
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<tr>
<td>Antifungal medicines</td>
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- Urgent work needed to set national and global priorities. Public funding and new commercial incentives should focus on highest needs. This work now started by WHO.
- Our economic modelling focused mostly on antibiotics and TB.
The antibiotics pipeline remains too weak

The commercial challenges of antibiotic development are by now well documented – and the pipeline of new products is extraordinarily thin.

Need to ‘shift the supply curve’ for new antibiotics:

• ‘Push’ funding to channel more money into early research
• Novel ‘pull’ funding mechanisms to correct the antibiotics market
Stimulating antibiotic development – ‘push’

Improved **global innovation funding** to provide new public funding opportunities for researchers:

- Proposed that we need an extra $2bn over five years
- Governments are already acting on this – more than £600m in new government funding globally announced in past two years, with UK and US leading the way

*Source: NIH*
Stimulating antibiotic development – ‘pull’

Also need new funding to ensure a proper market ‘pull’ for new products – via new market models that ‘de-link’ the profitability of an antibiotic from the volume sold.

- Globally-administered market entry rewards of $1-1.3bn for antibiotics meeting most urgent unmet needs, pegged to objective criteria of ‘value’
- Conditions attached for global access and stewardship
- Supporting 15 new drugs over a decade would cost approx. $16bn.
Reducing unnecessary demand for antimicrobials
The potential of new diagnostics

Significant volumes of antibiotics are prescribed unnecessarily.

Rapid diagnostics that could change this are under-used and innovation slowed by a market failure: benefits of better tests accrue to society, not the individual doctor or patient whose preference is often to take an antibiotic ‘just in case’.
The role of vaccines

Need greater focus on preventive measures – like vaccines, or improved sanitation – in reducing the development and spread of drug-resistant infections.

Novel and existing vaccines have significant potential to:

- Reduce demand for antibiotics associated with vaccine-preventable bacterial infections (e.g. *S. pneumoniae*)
- Reduce *unnecessary* demand for antibiotics associated with preventable viral infections (e.g. influenza)

The importance of water and sanitation

Countries cannot sidestep public infrastructure investment and use drugs instead of prevention.

Improved sanitation reduces the development of all infections, including drug-resistant infections, and reduces the need for antimicrobials.
## Cost of the global interventions we recommended

<table>
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<tr>
<th>INTERVENTION</th>
<th>COST (USD)</th>
<th>TIME PERIOD</th>
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<tr>
<td>Promote the development of new antimicrobials including making better use of existing ones – includes cost of new antibiotics and TB regimen</td>
<td>16 billion</td>
<td>Over 10 years</td>
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<tr>
<td>Global Innovation Fund supporting basic and non-commercial research in drugs, vaccines, diagnostics</td>
<td>2 billion</td>
<td>Over 5 years</td>
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<tr>
<td>Rolling out existing and new diagnostics and vaccines</td>
<td>1 to 2 billion</td>
<td>Per year</td>
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<tr>
<td>Global public awareness campaign <em>(depends on size of campaign)</em></td>
<td>40 to 100 million*</td>
<td>Per year</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>UP TO 40 BILLION USD PER DECADE</strong></td>
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- Cost of up to $4 billion a year investment is affordable at a global level.
- Today AMR costs the US alone $20 billion per year in extra healthcare costs.
- The cost of AMR is hitting and will hit governments – it’s a question of when.
- We have proposed four different options for funding:
  - Reallocate from current health, R&D and development aid budgets
  - Antibiotics investment charge levied on pharma industry
  - A tax on antibiotics use
  - Exchangeable ‘vouchers’ that would reward AMR innovators
Potential impact - the example of TB

Better diagnostics and treatment for TB could save 770,000 lives over the next ten years
Towards implementation
Major steps forward in 2016

Commitment by G20 leaders in September – now initiating work by the OECD, WHO and others to address market failures (e.g. for antibiotics.)

UN General Assembly High-Level Meeting on AMR saw 193 countries agree to act – and will establish new mechanisms to lead work by WHO and other UN agencies.

Davos Declaration and subsequent industry ‘roadmap’ provide framework for continued collaboration with private sector – something that must incorporate as broad a range of companies as possible.

The Review is now closing down – but handing over its activities back into Government and Wellcome Trust.
Thank you

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