STRENGTHENING IMPLEMENTATION OF ANTIMICROBIAL RESISTANCE NATIONAL ACTION PLANS

By: Michael Anderson and Elias Mossialos

Summary: Antimicrobial resistance is one of the major challenges of our time. Countries use national action plans as a mechanism to build engagement among stakeholders and coordinate a range of actions across human, animal, and environmental health. However, implementation of recommended policies such as stewardship of antimicrobials, infection prevention and control, and stimulating research and development of novel antimicrobials and alternatives remains inconsistent. Improving the quality of governance within antimicrobial resistance national action plans is an essential step to improving implementation. Countries must engage with a cyclical process of continuous design, implementation, monitoring and evaluation to achieve these aims.

Keywords: Antimicrobial Resistance, Antibiotic Resistance, Governance, Implementation

Introduction

Antimicrobial resistance (AMR) is driven by inter-related dynamics in the human, animal, and environmental health sectors and is one of the most significant and complex public health issues of our time. Antimicrobials encompass a broad set of agents used to treat microbial infections such as antibiotics, antifungals, and antivirals. Effective antimicrobials are responsible for several breakthroughs in modern medicine, including many surgical procedures and cancer treatments.

Drug-resistant pathogens are already a major challenge for all health care systems. Approximately 670,000 infections occurred in European Union/European Economic Area (EU/EEA) countries in 2015, leading to approximately 33,000 deaths. The health burden of infections due to bacteria resistant to antibiotics on the EU/EEA population is comparable to that of influenza, tuberculosis and HIV/AIDS combined. If not addressed, AMR is projected to cost the global economy up to €90 trillion by 2050, due to losses in international trade, livestock production and increased health care expenditure.

International and national efforts to combat AMR have grown steadily over the last two decades. Two landmark international developments include the launch of the World Health Organization (WHO) Global Action Plan on AMR in 2015, which asked all countries to develop national action plans (NAPs)
by 2017, and the United Nations (UN) General Assembly political declaration on AMR in 2016 where countries committed to work at national, regional, and global levels to develop and implement multisectoral NAPs across human, animal, and environmental health in accordance with the ‘One Health’ approach.

At the European level, the European Commission issued the “Communication on an Action Plan against the rising threats from AMR” in 2011. This was updated through the adoption of the 2017 EU One Health Action Plan against AMR, which includes the ambitions: (i) to make the EU a best practice region; (ii) boost research, development and innovation, and (iii) shape the global agenda.

There is widespread consensus that the response to AMR requires multiple actions, including improving awareness and understanding of AMR, strengthening the knowledge and evidence base through surveillance and research, reducing the incidence of infection through effective sanitation, hygiene and infection prevention measures, optimising the use of antimicrobials in human and animal health and stimulating research and development (R&D) in novel antimicrobials and alternatives.

Progress to date in implementing AMR national action plans

The UN Interagency Coordination Group on Antimicrobial Resistance (IACG) concluded that currently the greatest challenge in AMR is not designing a NAP but implementing it. The contrasting cultures, behaviours and incentives of each sector and relevant stakeholders is what makes the successful implementation of AMR NAPs so challenging. In the IACG’s final report to the Secretary-General of the UN, among other measures, the need to strengthen the implementation of One Health AMR NAPs was once again highlighted.

The Food and Agriculture Organization of the UN, the World Organisation for Animal Health, and WHO together form a tripartite body that monitors country progress in developing policies to tackle AMR. The tripartite has established a Global Database for Antimicrobial Resistance Country Self-Assessment that provides information on a broad range of national policies and actions such as the existence of a One Health NAP, surveillance systems for antibiotic use and resistance pathogens, infection, prevention and control measures, and training of veterinary and health personnel. The database exposes how the strength of implementation of AMR NAPs varies significantly across EU/EEA countries. For example, while all EU/EEA countries have an AMR NAP implemented or under development, in 23% (7/30) of cases this only involves one sector or ministry. Many AMR NAPs do not have an operational plan or any monitoring plans, and only 20% (6/30) of EU/EEA countries have a multi-sectoral AMR action plan which has funding sources identified and is currently being implemented with monitoring in place (see Figure 1).

The necessitated ‘One Health’ approach recommended for AMR NAPs requires the participation of stakeholders across the human, animal, and environmental health sectors. This is necessary during design and implementation to avoid initiatives and programmes operating in silos. A recommended approach taken by many countries is to use a national intersectoral coordinating mechanism (ICM), which offers a forum for relevant ministries and organisations to coordinate their actions. However, participation and coordination is also relevant within sectors, for example in human health across health care systems (primary, secondary and long-term care), as well as between public and private providers. Most EU/EEA countries (87%, 26/30) have at least an intersectoral working group; however, only 37% (11/30) of countries have progressed to use an integrated ‘One Health’ approach during implementation of their NAP (see Figure 2).

Infection prevention and control (IPC) is a major component of any AMR NAP. Within human health, IPC involves a combination of actions such as hygiene measures (i.e. hand disinfection), the isolation of infected patients, screening of incoming patients, and environmental

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**Figure 1: Progress of EU/EEA countries in developing and implementing national action plans on AMR**

<table>
<thead>
<tr>
<th>Number of countries</th>
<th>A – No national AMR action plan</th>
<th>B – National AMR action plan under development or plan involves only one sector or ministry</th>
<th>C – National AMR action plan developed that addresses human health, animal health and other sectors</th>
<th>D – Multi-sectoral AMR action plan approved that reflects Global Action Plan objectives, with an operational plan and monitoring arrangements</th>
<th>E – Multi-sectoral AMR action plan has funding sources identified, is being implemented and has monitoring in place</th>
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Notes:
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Source: Eurohealth

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**Notes:**
(i) To make the EU a best practice region; (ii) Boost research, development and innovation; and (iii) Shape the global agenda.
cleaning. IPC activities are typically supported by a multidisciplinary team including specialist infection control nurses and infectious disease physicians, and should take place across the whole health care system including hospitals, community and long-term care facilities. While 90% (27/30) of EU/EEA countries have a national IPC policy available, the degree of implementation, monitoring and evaluation of national IPC policy varies significantly (see Figure 2). Notably, compliance and effectiveness of IPC policies are only regularly evaluated and published in 33% (10/30) of countries.

A new approach to governance for AMR

By reviewing a few select examples from the WHO/FAO/OIE AMR tripartite database, it is clear that implementation of AMR NAPs is inconsistent. To overcome this, a key strategy is to improve governance. When defining governance, it is important to state it is not synonymous with government, but instead governance is concerned with actions by a broad range of societal organisations, how they relate to the public, and how decisions are taken. One commonly used governance framework, albeit from a health system perspective, dissects governance into five dimensions: Transparency, Accountability, Participation, Integrity and Capacity (TAPIC). The London School of Economics and Political Science (LSE), in conjunction with colleagues from European Centre for Disease Prevention and Control (ECDC) have developed a...
A governance framework, specific to AMR policy which draws upon similar principles (see Figure 4).

The framework consists of 18 domains with 52 indicators that are contained within three governance areas: policy design; implementation tools; and monitoring and evaluation. To consider the dynamic nature of AMR, the framework is conceptualised as a cyclical process, which is responsive to the context and allows for continuous improvement and adaptation of NAPs on AMR.

Policy design contains many fundamental governance principles seen in previous health system governance frameworks such as strategic vision and strong leadership, wide participation by relevant stakeholders in the development of NAPs, and coordination across multiple sectors and levels of service delivery (at national and sub-national levels). Other domains contained within policy design include transparency regarding the development, participation and progress of AMR NAPs, sustainability in funding and planning of actions, equity implications of AMR policies, and determining who is ultimately accountable for achieving the objectives of the NAP.

Implementation tools consist of essential interventions outlined within international guidance from WHO, the Food and Agriculture Organization, the World Organisation for Animal Health, and the European Commission. These include domains on surveillance, antimicrobial stewardship programmes, infection prevention and control measures, education of relevant professionals, public awareness activities, and medicines regulation. The indicators within these domains reflect how they should be implemented across the human, animal, and environmental health sectors. The final domain within this governance area covers whether there are appropriate policies and incentives in place to encourage R&D of novel antimicrobials and alternatives. More detail and evidence on effective implementation tools to tackle AMR is available in a book recently published by the European Observatory on Health Systems and Policies and the Organisation for Economic Co-operation and Development, and summarised in an associated policy brief.

Monitoring and evaluation encompasses reporting and feedback mechanisms that allow for regular review and evaluation of AMR NAPs such as the publication of annual progress reports, and the feedback of surveillance data to health care and veterinary professionals. Other domains within monitoring and evaluation include ensuring mechanisms to evaluate the effectiveness and cost-effectiveness of AMR policies and interventions are in place, as well as ensuring there is a national multidisciplinary ‘One Health’ research agenda that aims to understand the drivers of and potential strategies to tackle AMR.

The framework has many benefits. First, it offers practical guidance to policymakers involved in the design, implementation, monitoring and evaluation of AMR NAPs, as well as providing a tool to allow independent assessment of the quality of governance of pre-existing AMR NAPs to increase accountability and stimulate the strength of implementation of AMR national actions is heavily reliant upon effective governance.
debate. Second, it emphasises the need for a ‘One Health’ approach throughout by highlighting the importance of coordination and participation across the human and animal health sectors. Thirdly, the cyclical nature of the framework ensures it is equally applicable to AMR NAPs at different stages of development, and facilitates continuous improvement. Finally, it succinctly and effectively summarises evidence from a broad range of sources including a review of health system governance frameworks, published guidance by international organisations such as WHO, FAO, OIE and the European Commission, and the input of 25 experts from other international organisations, government ministries, policy institutes, and academic institutions.

Conclusions

As well as a concerted global effort, there is a need for consistent and effective action at the national level to tackle AMR. To date, implementation of national policies to tackle AMR by countries has been inconsistent. To address this, improving the quality of governance within AMR NAPs that take a ‘One Health’ approach is essential. Countries should aim to engage with a cyclical process of continuous design, implementation, monitoring and evaluation that remains responsive to changing resistance patterns, behaviours and incentives of stakeholders, and technological developments.

References

Challenges to Tackling Antimicrobial Resistance: Economic and Policy Responses

Edited by: Michael Anderson, Michele Cecchini and Elias Mossialos


Produced with the financial assistance of the European Union

Available at: https://tinyurl.com/TacklingAMR

By bringing together in one place the latest evidence and analysing the different facets of the complex problem of tackling AMR, this book offers an accessible summary for policymakers, academics and students on the big questions around AMR policy. It provides:

- A comprehensive, multidisciplinary overview of policy areas relating to AMR
- An accessible summary of the latest scientific evidence available on effective policies to tackle AMR
- A summary of the economic challenges and responses relevant to AMR, such as quantifying the economic impact of AMR, encouraging the research and development of novel antimicrobials and diagnostics, and promoting the role of vaccines in combating AMR.