TACKLING ANTIMICROBIAL RESISTANCE: THE AMR SURVEILLANCE TOOLKIT

A RESOURCE FOR MANAGERS, TEAM LEADS AND SENIOR STAFF IN HEALTHCARE SETTINGS IN AMR SURVEILLANCE NETWORKS

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INTRODUCTION

One of the greatest global health challenges of our time is antimicrobial resistance (AMR).

The World Health Organisation (WHO) defines AMR as the ability of a microorganism (bacteria, viruses, parasites) to stop an antimicrobial (an antibiotic, antiviral or antimalarial) from working against it.[1] The subsequent transmission and spread of resistant pathogenic bacteria result in drug-resistant infections.

The increasing use of antimicrobials worldwide has been associated with a global increase in drug-resistant infections. Without effective antibiotics, routine medical procedures will be less safe in the future and even minor infections will no longer be treatable.

At present, drug-resistant infections are estimated to account for 50,000 deaths each year in Europe and the USA alone, but by 2050 it is estimated that they will account for 10 million deaths per year worldwide.[2]

The effects of AMR are predicted to be more acute in resource-limited settings such as in low- and middle-income countries (LMICs). However, no country can view itself in isolation and addressing this serious threat to public health is a global priority that requires collective action across all countries.

WHY SHOULD I USE THE TOOLKIT IN MY WORK?

As a health professional, you have a key role to play in addressing this global threat and you must be supported to develop more effective ways of working around AMR practice. However, opportunities for professional development are limited. To this end, we – a research team at The Open University, UK – asked staff in healthcare facilities involved in AMR work about the difficulties that they face in implementing effective AMR surveillance.[3] This activity took place in three LMICs (Bhutan, Ghana and Tanzania), and we found that health professionals:

- lack specific knowledge around AMR that is critical for good AMR practice, while opportunities for professional development are limited
- are not always able to use newly learned knowledge or skills in their day-to-day work because of existing ways of working and organisational structure
- do not work in a connected way where roles and teams function together and do not fully understand their role in relation to the overall AMR system or network.
- welcome opportunities to learn more about dealing with AMR data.

1   WHO 2020. Antimicrobial Resistance. World Health Organisation. Accessed February 2 2020. https://www.who.int/antimicrobial-resistance/en/.
2   O'Neill, J. (2016) Tackling Drug-Resistant Infections Globally: Final Report and Recommendations, Review on Antimicrobial Resistance, London: Wellcome Trust/HM Government [online]. Available at https://amr-review.org/sites/default/files/160525_Final%20paper_with%20cover.pdf (accessed 18 August 2021).
3   Littlejohn, A., Charitonos, K. and Kaatrakoski, H. (2019) 'The role of professional learning in addressing global challenges: tensions and innovations associated with AMR', *Frontiers in Education*, 15 October [online]. Available at https://doi.org/10.3389/feduc.2019.00112 (accessed 18 August 2021).

In response to these difficulties we developed this AMR surveillance toolkit, which will support you and your colleagues to overcome one or more of these challenges.

Here is what one health professional told us upon completing the toolkit activities with his team:

This particular toolkit is unique. We've never had something like this. [...] This [toolkit] is designed in such a way that it's optimally interactive. It is not one person talking and the rest of the people listening. [...] It is a more effective way of actually learning on the job than what we've been doing previously.

(Laboratory Manager,
Teaching Hospital in Ghana)

Figure 1 Toolkit testing in a health setting in Ghana.

WHO IS THE TOOLKIT FOR?

This toolkit is suitable for you if you are working in an animal or human health healthcare setting or a related organisation (such as the environment, or a government organisation) and you are in a management or leadership role. This means that you are in a position to influence relevant staff in your organisation by bringing together a team of people involved in AMR activities. This could be an existing team that you are managing or a newly formed team with people in roles associated with AMR work.

Facilitators of the toolkit can be in roles such as (but not limited to):

- managers and senior managers
- supervisors
- technical leads and site leaders
- heads of sections
- administrators
- Fleming Fund fellows
- policy-makers.

If you are an individual in one of these roles then you can act as a facilitator in the activities included in the toolkit.

Despite the focus on leadership roles, each of the three tools included in the toolkit are best supported when used collaboratively with a group of colleagues. This will ensure that you and your colleagues are offered an opportunity to reflect on their AMR surveillance practices and are supported to take their practices forward.

Here are some examples of standalone use:

- If you are a senior manager/leader you could use the tools to reflect on how well your local AMR surveillance system works, and to identify next steps to strengthen the existing AMR system or introduce a new one.
- If you are the head of a unit or a supervisor you could use the tolls to reflect on and review your AMR practices, and seek opportunities to support your colleagues to apply what they already know (or any newly learned skills and knowledge) to their day-to-day-work.
- If you are a policy-maker, you could use the tools to evaluate existing AMR policies and programmes in terms of how they support good AMR surveillance practices and to consider whether any changes to policies and programmes are required.

WHO CAN BE PART OF THE TEAM USING THE TOOLKIT?

Anyone who is a member of staff in animal or human health healthcare settings or related organisations (such as environment or a government organisation) and is involved in work associated with AMR could be part of the team you are bringing together to use the toolkit.

The team could be formed by people in junior and senior positions in your organisation. They could be in roles such as (but not limited to):

- microbiologists
- laboratory scientists/technicians
- pharmacists
- physicians
- nurses
- administrators
- biostatisticians
- members of the IT team
- vets
- paravets
- field officers.

Teams could be based in a particular unit in a healthcare setting such as a microbiology lab in a veterinary clinic, clinical team in the ICU, administrators in the management team and so on. Teams could also be formed by bringing together a few representatives across units in a particular setting as long as they are involved in AMR work. If you cannot form a team within your own institution then a team could also be based across institutions, for example AMR surveillance teams across the various ministries, vets across animal health clinics in a particular district/region and so on.

WHAT DOES THE TOOLKIT INCLUDE?

The toolkit is a collection of three main tools. Each tool includes various tasks that you and your colleagues can do together and will help you develop new strategies around AMR practice to use in your day-to-day work. It gives you an opportunity to relate what you already know or learned from the Open University/Fleming Fund AMR online modules[4] to your specific work situation and needs.

We hope the toolkit facilitates team discussions around the above challenges and helps professionals like you turn them into opportunities for better and improved work practices.

The three tools are designed to be used in combination with the OU/Fleming Fund online modules. This is particularly advisable for Tool 2; specific suggestions of modules to study prior to starting Tool 2 are provided. The three tools can also be used independently from the modules.

TOOL 1: YOUR ROLE IN AN AMR SURVEILLANCE NETWORK

Problem identified in Tool 1

You and other health professionals in different job roles, settings and networks have responsibility for AMR surveillance. These could include staff in a microbiology laboratory in a regional hospital, clinicians and nurses in an intensive care unit in a teaching hospital, veterinary field officers in an animal health setting, pharmacists in community health settings, or public sector staff/policy-makers in the Ministry of Health and Ministry of Agriculture.

You all must work together to tackle the global threat of AMR; understanding each other's role in relation to the overall AMR system is key to achieve this goal. However, our research has shown that you are not always fully informed of this interworking, and how your work can impact the overall system.

What is the benefit of using Tool 1?

This tool helps you and your colleagues overcome this gap. It guides you and other professionals in a similar role (such as managers, heads of units or supervisors) to support your team members to form a better understanding of how their work connects with the work of others in the AMR system.

What does Tool 1 include?

Tool 1 includes four tasks that you and your colleagues can carry out as a team to help you reflect on your own roles and responsibilities and the roles of other people. As a team you can also identify gaps in existing roles within your own work setting (such as a local AMR network), understand the contribution of each role to the network and negotiate how you can work together more effectively. This tool will help you and your colleagues understand the importance of your work and how it relates to the overall AMR system.

TOOL 2: DEALING WITH AMR DATA

Problem identified in Tool 2

Our work with health professionals in LMICs has shown that generating good quality AMR data is key to good AMR surveillance practice and helps informed decision-making in the AMR response.[5] You and other health professionals in various roles need to know how to collect, receive, analyse, monitor or document AMR data, as well as how to interpret them as test results. These could be laboratory managers/supervisors in a veterinary hospital, heads of units in a clinical setting, a hospital director with their management team, the Chief Pharmaceutical Officer and the Chief Clinical Officer in the Ministry of Health, or a Minister's Health Advisor.

Communicating and reporting results to relevant people is equally important. The absence of any of these skills can limit effective AMR practices.[6]

What is the benefit of using Tool 2?

Tool 2 is designed to help you develop the epidemiological skills needed to participate in local and national AMR surveillance activities. It helps you understand your contribution to data collection and management within AMR surveillance systems and provides opportunities for your team to identify improvements in your workplace. By using this tool you will also have an opportunity to develop your understanding of bias and validity, and the interpretation of data from AMR studies.
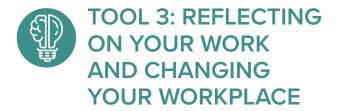
What does Tool 2 include?

Tool 2 includes three tasks that you and your colleagues can carry out as a team to help you understand your role in collecting, recording, analysing and reporting AMR data, and also identify opportunities for improvements in your workplace.

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4   See the collection of online modules: https://www.open.edu/openlearncreate/course/index.php?categoryid=415
5   Littlejohn, A., Charitonos, K. and Kaatrakoski, H. (2019) 'The role of professional learning in addressing global challenges: tensions and innovations associated with AMR', Frontiers in Education, 15 October [online]. Available at https://doi.org/10.3389/feduc.2019.00112 (accessed 18 August 2021).
6   Charitonos, K., Littlejohn, A., Kaatrakoski, H., Fox, A., Chaudhari, V., Seal, T. and Tegama, N. (2019) 'Technology-supported capacity building on amr surveillance: findings from the pilot phase', internal report, Milton Keynes: The Open University

TOOL 3: REFLECTING ON YOUR WORK AND CHANGING YOUR WORKPLACE

Problem identified in Tool 3

Effective AMR practice combines both the appropriate knowledge and the action taken as a result of this knowledge.

We know from our work in education and educational research that learning skills or knowledge (through Fleming Fund online modules, for example) in itself is not enough to tackle AMR.[7] There is a range of factors that can make it difficult for professionals to use what they have learned in their day-to-day work. For example, there might be some deep-rooted practices in a workplace that challenge the use of new knowledge, skill or what professionals already know or there might be some barriers such as lack of equipment or resources. Lack of monitoring or feedback might be another reason for not improving the work practices.

What is the benefit of using Tool 3?

Tool 3 encourages you and your colleagues to think critically and develop strategies to apply your newly acquired learning or what you already know to day-to-day work. It also helps you and your team to find ways to overcome barriers that delay or stop you from doing this.

What does Tool 3 include?

Tool 3 includes three tasks that you and your colleagues can carry out as a team to reflect on existing practices, organisational structures or work cultures that may challenge you in applying what you know or learn through professional development programmes in your own day-to-day job.

HOW IS THE TOOLKIT STRUCTURED?

Each tool includes three or four tasks in total. Each task consists of four sections. All tasks are designed to support you as a facilitator in leading or facilitating discussions as a team that follow a logical progression.

First, you are informed of the task objective and the problem(s) it tries to address. Instructions are then provided to help you and the team go through the tasks. Finally, some suggestions are included after each task to offer opportunities for reflection and uptake of further actions, and to ensure the long-term impact of the task.

Problem to address

Objective

Group tasks

Follow-on actions

WHAT DOES YOUR ROLE AS A FACILITATOR INVOLVE?

As a facilitator, you are asked to identify a small group of co-workers (up to five to eight people) who are involved in AMR work in your organisation and bring them together as a team.

As a team you can work through the various toolkit tasks over a specific period of time. This could be over a couple of weeks, a month or a few months. It is up to you to decide the frequency of your meetings but having regular meetings over time will be more beneficial.

It is good to set some regular meetings as a team when you can go through the toolkit tasks together. You can go through all three tools or you can choose the one(s) that are more relevant to the roles in your team or any existing issues around AMR surveillance that affect the way your team is operating. The meetings could take place face-to-face but if this is not possible, you could use digital, mobile and online tools that will allow you to meet online.

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7   Littlejohn, A., Charitonos, K. and Kaatrakoski, H. (2019) 'The role of professional learning in addressing global challenges: tensions and innovations associated with AMR', Frontiers in Education, 15 October [online]. Available at https://doi.org/10.3389/feduc.2019.00112 (accessed 18 August 2021).

Prior to your first meeting as a team, you should spend some time to go through the tool(s) you have chosen and familiarise yourself with the various tasks included. This will be important when using the toolkit with your team, as you will know what is asked from you and your colleagues to do. We have included some facilitators' notes to support you in this. We have also included examples from the two countries who have taken part in the initial study that provide concrete links with the context of AMR surveillance in LMICs.

Figure 2 Toolkit testing in a health setting in Ghana.

Your role as the facilitator is threefold:

- You must ensure that time has been allocated to members of your team to come together and go through the tasks.
- It is important to create a 'safe' space for your team; a space where your colleagues feel they can openly discuss and share their views about existing AMR practices, any challenges they face and ideas for future action. You may want to use the same physical space in your workplace for the duration of your toolkit engagement (such as a meeting room). You may also decide to set some rules for participation in advance. For example, it will be good to stress that no one will be affected negatively in the work environment by sharing ideas in this space – or that anything that is shared during your discussions will not be shared beyond the team.
- You should support your colleagues to discuss the points raised in the various group tasks, to provoke and challenge them but also listen to what they have to say.

WHAT ARE THE BENEFITS FROM USING THE TOOLKIT?

The evaluation of the AMR surveillance toolkit in healthcare organisations across Ghana and Nepal has demonstrated a range of benefits for the facilitators and the teams that went through these activities. The toolkit:

- brought together a team of professionals in different job roles and ranks to discuss AMR-related work, which had never happened before in these organisations
- improved understanding of roles and responsibilities in the local AMR system
- improved understanding of the AMR system, both at the facility level but also beyond (such as communication barriers among professionals in different fields or sectors)
- enhanced staff self-worth and confidence in their work
- increased awareness of areas that require attention in their organisations, such as how laboratory test results are used in patient treatment, or inadequate communication between units
- initiated local actions within teams or at the facility level, such as the launch of new communication strategies across units
- increased awareness of the work environment itself, with the toolkit being viewed as supporting team bonding among colleagues.

Figure 3 Toolkit testing in a health setting in Nepal.

HOW WAS THE TOOLKIT DEVELOPED?

The AMR surveillance toolkit was developed as part of the Fleming Fund programme, a £265 million UK aid investment to tackle AMR in LMICs around the world. The programme is managed by the UK Department of Health and Social Care (DHSC) in partnership with Mott MacDonald, the Fleming Fund Grants Management Agent.

The toolkit is based on previous work led by Allison Littlejohn[8] (UCL Knowledge Lab, UK) to increase the impact of professional learning on work practices and processes. The AMR surveillance toolkit is written by Koula Charitonos, Fereshte Goshtasbpour, Saraswati Dawadi (The Open University, UK) and Skye Badger (Ausvet), with contributions from Allison Littlejohn (UCL Knowledge Lab, UK), Abhinav Vaidya and Santosi Giri (Nepal Public Health Research and Development Center), and Alex Owusu-Ofori (Kwame Nkrumah University of Science and Technology, Ghana).

The toolkit was developed and evaluated through participatory co-design methodology, including twelve healthcare organisations in Ghana and Nepal. The development was supported through review meetings with in-country partners in Nepal and Ghana, and two participatory co-design workshops with stakeholders who led the activities in their organisations (i.e. team leads/facilitators). The evaluation drew on data gathered through individual interviews and proformas that each of the team leads provided upon completion of the activities. Participation in the activities in each of the organisations included teams of professionals from a variety of units and roles such as clinical microbiologists, pharmacists, laboratory scientists, administrators, veterinarians, physicians and laboratory managers.

We wish to thank all the team leads for their commitment and contribution to the study. Thanks to Ms Paola De Munari, Senior Project Manager at The Open University, for her work on project management. Thanks also to Mott Macdonald and the UK Government DHSC for the support they provided in the development and evaluation of the toolkit.

Team leads and participating organisations

Nepal:

- Dr Aashish Gyawali, Animal Clinic at Shree Sayuri Bhume School
- Dr Shiva Khanal, Nepal Pet Service Center
- Dr Karishma Malla Vaidya and Dr Aasiya Rajbhandari, Paropakar Maternity and Women's Hospital
- Dr Manisha Sharma, Kathmandu Medical College
- Dr Olita Shilpakar, Bir Hospital
- Dr Sanu Krishna Shrestha, Dhulikhel Hospital

Ghana:

- Dr Mildred Adusei-Poku, Noguchi Memorial Institute for Medical Research
- Dr Mawuli Leslie Aglanu, Kumasi Centre Collaborative Research
- Dr Sylvester Dassah, Navrongo Health Research Centre
- Dr Anthony Enimil, Komfo Anokye Teaching Hospital
- Mr Emmanuel Eshun, Veterinary Services Directorate
- Dr Kennedy Osei Mensah, Tamale Teaching Hospital

The AMR surveillance toolkit forms a part of **the Fleming Fund collection** available from the Open University at the OpenLearn Create platform.

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8   Margaryan, A., Littlejohn, A. and Lukic, D. (2018) 'The development and evaluation of a learning from incidents toolkit', *Policy and Practice in Health and Safety,* 16(1), pp. 57–70 [online]. Available at https://doi.org/10.1080/14773996.2018.1465263 (accessed 18 August 2021).