



AMR IN THE COMMUNITY

WORKSHOP

16th March 2022

10.00 - 13.00 CET

(with a short break at 12.00 CET)

Organised jointly by the Global Health Strategy Group for Antimicrobial Resistance, an initiative of the University of Oxford, and the Working Group for Collaborations and Outreach of the ITU-WHO Focus Group on Artificial Intelligence for Health, in partnership with:



We gratefully acknowledge the financial support of the Ineos Oxford Institute for Antimicrobial Research and the ITU/WHO Focus Group on AI for Health for making this workshop and its subsequent report possible.

Link to the workshop:

<https://itu.zoom.us/j/92745514230>

No password is required

Presentations and talks will be made by the following (approx. 15 minutes per person split equally presentation and Q&A, and time at end for discussion):

10.00-12.00 CET: AMR in the Community

- **Dr Joseph Sam Kanu**, Deputy Manager, National Disease Surveillance Programme, Ministry of Health and Sanitation, Sierra Leone AMR Focal Person, Ministry of Health, Sierra Leone
- **Dr Usman Yahya Umar**, Aminu Kano Teaching Hospital, Kano, Nigeria/Nigeria Field Epidemiology & Laboratory Network
- **Prof. Heiman Wertheim**, Project leader, ABACUS consortium (Ghana, Mozambique, South Africa, Vietnam, Thailand, Bangladesh, United-Kingdom, the Netherlands), Head of Department of Medical Microbiology Radboudumc, the Netherlands
- **Dr Nga T.T. Do**, Oxford University Clinical Research Unit (OUCRU) Hanoi, Vietnam
- **Dr Shamsudin Aliyu**, Head of Department, Medical Microbiology, Ahmadu Bello University Teaching hospital, Zaria, Nigeria
- **Dr Susanne Schink**, Robert Koch Institute, Berlin, Germany
- **Dr Lanre Jimoh**, Consultant Medical Microbiologist, Ahmadu Bello University Teaching hospital, Zaria, Nigeria

12.00-12.15 CET: BREAK:

12.15-13.00 CET: Digital and AI tools and new models of antibiotic drug pricing and access

- **Dr Nada Malou**, Antibiotic project scientific lead, La Fondation MSF, Paris, France, and Driver of Topic Group “Diagnoses of bacterial infection and anti-microbial resistance (AMR) (TG-Bacteria)” of the ITU/WHO Focus Group on Artificial Intelligence for Health
- **Yann Ferrisse**, Head of Business Development and Analysis and SECURE project lead, Global Antibiotic Research & Development Partnership (GARDP), Geneva, Switzerland

Discussion and timings:

In the interests of encouraging as much debate as presentations, some attendees will be approached in advance of the workshop to be briefed on the topic areas of some speakers and asked to prepare some kick-off questions and discussion points for those speakers.

Background

Antimicrobial resistance (AMR) is a major global health threat and tackling it is an extremely high priority. According to recent estimates, infections with antibiotic resistant pathogens were responsible for 4.95 million fatalities (95% Uncertainty Interval 3.62 – 6.57).¹ Globally, the impact of AMR-related mortality varies greatly, with the burden being greatest in developing countries.

Efforts to eradicate infectious diseases on a global scale will only be viable if we have effective ways to treat them. In 2014, the World Health Organization (WHO) released its Global Action Plan (GAP) as a guide for tackling the increasing threat of AMR. Although over 100 countries have produced National Action Plans (NAPs) to combat AMR, progress and policy implementation remain slow. Without immediate bold action, humanity risks facing a post-antibiotic era, a time when common infections will be incurable and many health interventions, such as surgery, will become extremely risky.

Curation of AMR data via surveillance methods is a critical objective of the WHO GAP on AMR. Known surveillance systems, such as the WHO's Global Antimicrobial Resistance and Use Surveillance System (GLASS), are limited by the self-reported nature of data, extreme data heterogeneity, and a lack of comparability between countries as a result of varying approaches to data curation. Additionally, there are incongruences between the methods used to monitor human antimicrobial usage and those used to monitor animal antimicrobial usage.²

Problem in context: what do we know about AMR in the community?

Tackling “AMR in the community” should be at the heart of any long-term strategy for dealing with the global threat of AMR but is often neglected in countries' NAPs. This is partly due to the difficulties of measuring and developing standardised, reproducible, and viable methods to assess surveillance of resistance, usage of antibiotics and their consumptions at the community level. This is a particular challenge for many short-term, siloed research, and development initiatives that must prove their worth through short-horizon impact measures.

There is a paucity of published data from community-practice settings that adequately reflect local AMR trends, particularly in Low- and Middle-Income Countries (LMICs) where there may be widespread unregulated antibiotic access and misuse; thus, there is an unknown AMR burden and a looming threat in the community. For example, methicillin-resistant *Staphylococcus aureus*

¹ Murray CJ, Ikuta KS, Sharara F, Swetschinski L, Robles Aguilar G, Gray A, et al. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet*. 2022;6736(21).

² Umair M, Mohsin M, Sönksen UW, Walsh TR, Kreienbrock L, Laxminarayan R, et al. Measuring Antimicrobial Use Needs Global Harmonization. *Glob Challenges - Wiley Online Libr* [Internet]. 2021; Available from: <https://onlinelibrary.wiley.com/doi/10.1002/gch2.202100017>

(MRSA) acquired in the community is thought to be an epidemic risk, with life-threatening implications.³

Because such a high proportion of the surveillance of AMR in LMICs takes place in hospital settings, it is believed that data are inadvertently skewed. In 2009, the WHO examined AMR in five distinct locations in India and South Africa using community-based surveillance methods.⁴ However, surveillance for AMR was primarily based on *E. coli*, while attempts were made to include *S. pneumoniae* and *H. influenzae*. Furthermore, sites with established surveillance systems were chosen and the study mainly included samples from urban regions next to 'major hospitals' — which begs the question of whether the study was truly community-based. The study lacked data on AMR in animals or the environment, which are key to include in a One Health approach to AMR.

There is an urgent need to develop standardised, reproducible, and practical surveillance methods for assessing AMR and antimicrobial use in the community in order to inform the formulation of policies and interventions at community level. It is equally important to include veterinary and environmental surveillance if a complete picture of AMR in the community or a One Health approach is to be ascertained. We already know the crucial role WASH plays in preventing AMR — be it in community or hospital-based settings (where the majority of data is from). Therefore, any surveillance method that is 'community facing' needs to be transdisciplinary, cross-sectoral, and not siloed.

A handful of initiatives, especially in wealthier countries, have been established to tackle AMR in the community such as the community antimicrobial use arm of the Antimicrobial Use and Resistance in Australia (AURA).⁵ However, such initiatives continue to face obstacles, particularly in resource-constrained settings that lack robust health systems and governance, among other things.

GARDP is on the one hand developing a public-health oriented portfolio of antibiotics (through public private partnership), including hospital-based and community-based products, and on the other hand ensuring responsible and sustainable access to antibiotic treatments, addressing the public health impact of antibiotic resistance. But combining access, appropriate use, and the right business model at the community level is one of the challenges that must be addressed quickly.

³ Bubacz MR. Community-acquired methicillin-resistant *Staphylococcus aureus*: an ever-emerging epidemic. *AAOHN J.* 2007 May;55(5):193-4. doi: 10.1177/216507990705500504. PMID: 17526296.

⁴ World Health Organization. (2009). Community-based surveillance of antimicrobial use and resistance in resource-constrained settings: report on five pilot projects. World Health Organization. <https://apps.who.int/iris/handle/10665/70036>

⁵ AURA. Community Antimicrobial Use | Australian Commission on Safety and Quality in Health Care [Internet]. [cited 2022 Feb 9]. Available from: <https://www.safetyandquality.gov.au/antimicrobial-use-and-resistance-in-australia/community-antimicrobial-use>

What are we doing in this workshop?

This proposed workshop is the first step in what is hoped will be a major long-term collaboration aimed at sharing lessons and developing community-based solutions to AMR. Without reinventing the wheel, we will bring together researchers, scientists, global health experts, public health officials, and clinicians from around the world to facilitate discussion and shared learning about “AMR in the community.” We hope to provoke conversation around some of the following:

- How exactly do we define “community”? Hospitals have four walls; what are the boundaries of the concept of “community”?
- How do we quantify AMR in the community? How is, or should, data be collected? What are the data protocols? How do we avoid bias? How do we establish cause and effect? How do we allow for vastly different local conditions?
- What intervention studies have been done, what were the lessons, and what are future possible such studies?
- How many infections outside of hospitals give rise to infections inside hospitals and vice versa? How do we synergise ‘community-based’ and ‘hospital-based’ studies?
- What are the key risk-factors driving AMR in the community? How are community behaviours linked to AMR?
- How do we manage stewardship and appropriate use of antibiotics at the community level, as specified in the WHO Model Lists of Essential Medicines 2021 (categorised into AWaRE categories, <https://aware.essentialmeds.org/groups>)?
- Which measures should be deployed to guarantee a quality-assured portfolio of antimicrobials driven by public health and clinical needs, and avoid counterfeit products?
- What digital and AI tools might strengthen community efforts to improve reliable access to antimicrobials and to tackle AMR, including by improving existing supply chains and surveillance? Who will pay?
- What economic model should be proposed to ensure sustainable access to antibiotics at the community level?
- When is One Health useful and when is it less so?
- How do we support the efforts of young people, such as Students Against Superbugs, to tackle AMR in their communities, and build future young leaders in the field of AMR?
- What would make for smart AMR investments from a community perspective?

Longer term, we intend to use established relationships with key players in global health to expand the network and foster a culture of collaborative learning and collective action to improve accountability in healthcare across a broader range of situations. This event will feature distinguished speakers from the Sierra Leone Ministry of Health and Sanitation, including representatives from the AMR Forum, Nigeria, Southeast Asia, the Global Antibiotic Research & Development Partnership (GARDP), Robert Koch Institute and the University of Oxford.

Key outputs

- Generate potential research topics informed by local needs and general feasibility
- Identify suitable funders for a potential research collaborative project/One Health approach project.
- Issue a call to action, calling for representative and standardised surveillance methods
- Publish a monograph on ‘AMR in the community’ and a shorter opinion piece.

Potential outcomes

- Through skill and knowledge development, the workshop will strengthen international collaboration that will benefit individual researchers and all partners.
- Facilitate a network of key stakeholders engaged in the issues of “AMR in the community” with a focus on action.

Anticipated impacts

- Individual impact: strengthened capacity for leading collaborative global health projects as well as acquisition of more transferable skills in stakeholder engagement.
- Societal Impact: Raising awareness and boosting action planning amongst local policymakers about pressing concerns within the medical community, thereby offering wide-reaching benefits at low-cost.
- Strengthening of an integrated network of global health experts and policymakers offering a ready resource for future research projects in the area of “AMR in the community”.
- Raise awareness of the need for a new and different economic model for LMICs, and initiate consultations with financial and economic experts to propose new solutions from an LMIC perspective.
- Initiate outreach activities to communities (AMR and irrational use of antimicrobial has still not touched the conscious of many people in the communities).

Funding opportunities

- We are happy to coordinate groups to meet to explore joint funding opportunities, such as the Diagnostics and Surveillance call (<https://www.jpiamr.eu/calls/network-call-2022>, deadline 14th June 2022) of the Joint Programming Initiative on Antimicrobial Resistance (JPIAMR).
- We are happy to circulate other opportunities or requests to cooperate on joint projects.