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What can the AMR response learn from the COVID-19 response and vice versa?

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WMA Scientific Session
October 7th , 2021

Assignment:

"Explore and identify 'issues' arising from the COVID-19 epidemic that are relevant to ensuring a more comprehensive coordinated response to the growing threat of antimicrobial resistance"

Outline of the presentation:

1. Introduction to Antimicrobial Resistance (AMR)
   - the global situation
   - the AMR patient pathway and programmatic AMR response
   - WHO initiatives at national and global level
2. COVID-19 and AMR: differences, similarities and lessons learned

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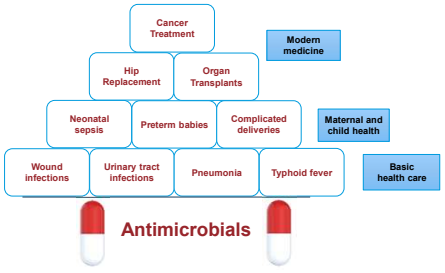
Antimicrobials: crucial for human & animal health



Source: Antimicrobial resistance – a threat to the World's Sustainable Development. Jasovsky et al. 2016. Dag Hammarskjold Foundation

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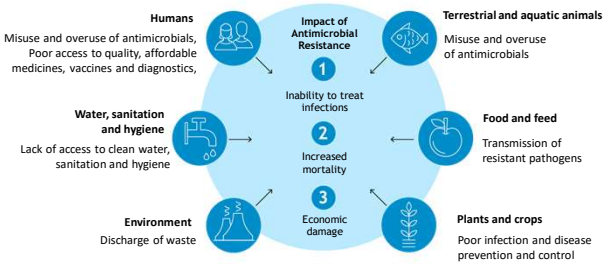
AMR demands a comprehensive multisectoral response

Drivers of Antimicrobial Resistance



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Tripartite collaboration to address AMR, plus UNEP

In 2018, WHO, FAO and OIE signed a Memorandum of Understanding (MoU) signaling their joint cooperation and strong focus on AMR in the context of the "One Health" approach. This was followed by the **establishment of a standing Tripartite Joint Secretariat** (TJS) within WHO to lead and coordinate the global response to AMR.

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Each agency works with constituencies and addresses AMR issues according to its mandate and comparative advantage, but these overlap, and the **Tripartite will address these areas where joint action is necessary and most impactful.**

AMR: the humanitarian and economic cost of inaction

- Drug-resistant infections caused by AMR are silently affecting the lives of thousands worldwide, a threat often referred to as *"the silent pandemic"*.
- Every third minute a child dies from sepsis due to antibiotic-resistant infections.
- AMR is a One Health issue, affecting and being affected by humans, animals and the environment.

If nothing is done, there will be **10 million** AMR-related deaths by 2050, **9 million** of which in low- and middle-income countries*

*Jim O' Neill (2016), Tackling Drug-Resistant Infections Globally: final report and recommendations, Review on Antimicrobial Resistance

Strategic Objectives Global AMR Action Plan (WHA 2015)

But where is the diagnostic pathway?

1. Improve **awareness and understanding** of antimicrobial resistance through effective communication, education and training
2. Strengthen the **knowledge and evidence** base through surveillance and research
3. **Reduce the incidence of infection** through effective sanitation, hygiene and infection prevention measures
4. **Optimize the use of antimicrobial medicines** in human and animal health
5. Develop the **economic case for sustainable investment** that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions

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Global Antimicrobial Resistance and Use Surveillance System (GLASS) Report

Global AMR data: progress in reporting

Reported to GLASS - AMR	2017 (22 countries)	2018 (48 countries)	2019 (66 countries)	2020 (70 countries)
Number of sites				
Hospitals	466	3,097	5,557	5,942
Outpatients clinics	139	2,358	56,818	60,239
In-out patients	N.A.	N.A.	1,998	6,351
Other institutions	124	560	424	1,089
Total	**729**	**6,015**	**64,797**	**73,621**
Number of patients with suspected infection				
Blood stream	81,920	262,265	441,794	502,584
Urinary tract	415,679	1,424,011	1,888,545	2,577,333
Gastro-intestinal	7,477	10,735	17,061	17,003
Sexually transmitted	2,847	9567	18,572	9,682
Total	**507,923**	**1,706,578**	**2,365,972**	**3,106,602**

Most reporting countries show an increase in the number of surveillance sites!

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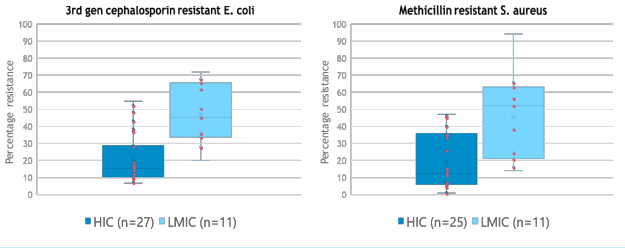
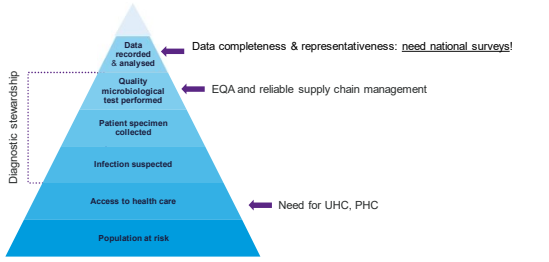
Preliminary information on SDG indicators for AMR in BSI

Low- and middle-income countries (LMICs) need urgent support and analysis of underlying causes



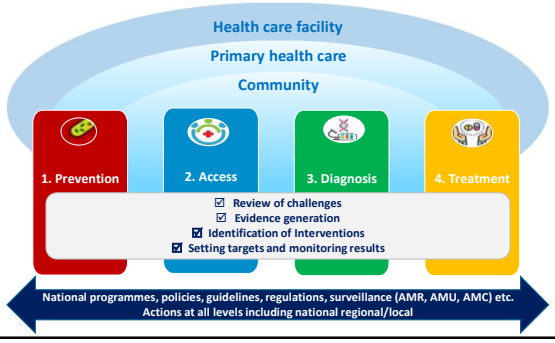
Note: 'Countries that reported < 100 isolates with antibiotic susceptibility testing results were excluded from the analysis

Routine diagnosis and surveillance require strengthening



Challenges of surveillance based on routine clinical patient sampling in referral hospitals comes with biases and may not reflect the real magnitude of the AMR problem in the population!

AMR Patient Pathway: put the patient at the center of the AMR response!



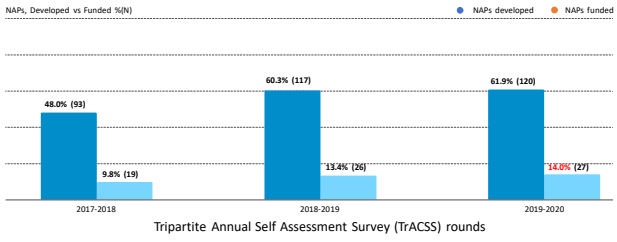
The 6 interdependent building blocks of a programmatic AMR response require strong national health systems

Political commitment & governance	Early diagnosis in EQA lab network	Access to **appropriate** treatment
Prevention of infection	Uninterrupted quality supply chain	Surveillance **&** evidence generation

Awareness – Education – Regulations

Political commitment for implementation of National Action Plans (NAPs)?

145 countries developed tripartite NAPS, but most are not costed



Tripartite Annual Self Assessment Survey (TrACSS) rounds

Note: *Data from regional offices and other alternate sources show 143 total NAPs developed as of March 4,2021- this discrepancy could be because of lower response rate due to COVID-19 for 2019-2020 TrACSS (136 responses in 2019-20 vs 159 responses in 2018-19)**Percentages are calculated from 194 total Member States

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WHO Costing and Budgeting tool for AMR National Action Plans

Purpose
- Support countries in costing and budgeting AMR national action plans

Value
- **Encourages prioritization** – development of operational plans with priority activities is a prerequisite for costing
- **Modular approach** – can be used separately by departments/ sectors and then consolidated
- Maps existing funding sources and gaps
- Based on pilots in 6 countries

Launch – 13 October 2021
- Global webinar including country experiences

Technical package:
- Costing tool and user guide
- Readiness checklist
- Consolidator tool
- Training package and country case studies
- Coming soon: e-learning module

Link to the WHO intro video: https://youtu.be/xkML_N1hx40

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National Antimicrobial Stewardship programme

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Core elements

National plan & strategies	Regulation & guidelines	Awareness, education & training	Supporting technologies & data
✓ **National Action Plan on AMR** ✓ AMS as a priority ✓ **Dedicated NAP funding** ✓ **TWG** on AMS (ToR)	✓ **National Essential Medicines List** - AWaRe classification ✓ **Clinical guidelines** ✓ **Regulate & enforce** prescription-only sales	✓ **Antibiotic Awareness Campaigns** ✓ **Pre- and in-service training** for health professionals	✓ **National AMC surveillance** ✓ **Point prevalence surveys** ✓ **National AMR surveillance** ✓ **Local evidence generation** ✓ **Digital health solutions**

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Progress: Adoption of "AWaRe" Classification into National Essential Medicines List (EML)

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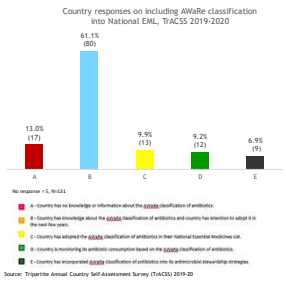
AWaRe



Access
1ST OR 2ND CHOICE FOR TREATMENT, SHOULD BE AVAILABLE AT ALL TIMES

Watch
RECOMMENDED ONLY FOR SPECIFIC, LIMITED INDICATIONS.

Reserve
"LAST RESORT" OR W HEN ALL OTHER ALTERNATIVES HAVE FAILED

34 countries (25%) have adopted the AWaRe classification into their National Essential Medicines List (levels C-E)

80 countries (61.1%) have knowledge about the AWaRe classification and plan to adopt it over the new few years (level B)

WHO GPW13 Target - Access Group antibiotics ≥ 60% of total national antibiotic consumption

Antimicrobial pipeline: Pharma exiting antimicrobial R&D

Limited incentives for investment

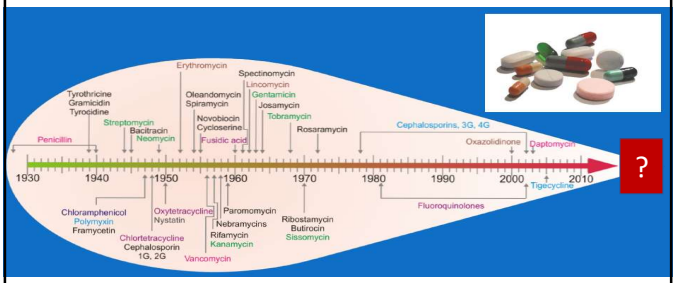
2006 Bristol-Myers Squibb
2011 Pfizer
2012 abbvie / Lilly
2016 AstraZeneca
2017 The Medicines Company
2018 SANOFI / NOVARTIS / Allergan
2019 ACHAOGEN

Achaogen files for bankruptcy protection, seeks asset sale

Source: https://www.biopharmadive.com/news/achaogen-files-for-bankruptcy-protection-seeks-asset-sale/562737/

>70% pre-clinical pipeline driven by small medium size enterprises

ANTIBIOTICS: PRECIOUS BUT DIMINISHING RESOURCE



WHO's global activities in antimicrobial R&D

GAP Objective 5: R&D

- Priority setting and pipeline
  - Priority Pathogens List
  - Clinical and Pre-Clinical Pipeline Analysis
  - Fungal Priority Pathogens List
  - One-health research agenda
- Fostering R&D
  - GARDP
  - AMR Action Fund
- Fostering access
  - SECURE

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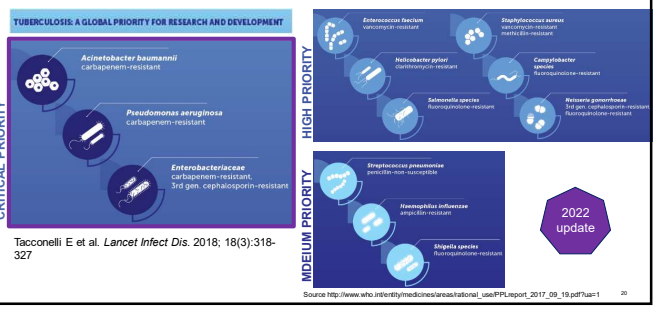
Identification of Priorities (2017)

Global Priority Pathogens List: 13 pathogens prioritized to guide R&D



Tacconelli E et al. *Lancet Infect Dis.* 2018; 18(3):318-327

Source http://www.who.int/entity/medicines/areas/rational_use/PPLreport_2017_09_19.pdf?ua=1

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SECURE: The antibiotic facility

secure

Expanding Sustainable Access to Antibiotics

SECURE will **provide countries with sustainable access to:**

(1) **new antibiotics** to address drug-resistant infections
(2) **existing antibiotics** that are not widely available or that suffer from frequent supply chain interruptions and/or shortages

- SECURE will establish a quality assured portfolio **driven by public health and clinical needs** and
- be **open to all interested countries and other eligible entities**

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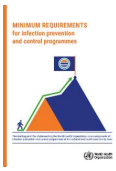
Infection, prevention and control

Stronger hygiene and infection prevention measures, including vaccination, strong hand hygiene, appropriate aseptic technique, consistent maintenance of clean, hygienic medical facilities, equipment and practices along with thoughtful and thorough surveillance, monitoring and evaluation measures **can limit the spread of resistant microorganisms and reduce antimicrobial misuse and overuse**.



Curricula for health facility cleaning staff to improve IPC and environmental cleaning (finalization phase)

- Poor basic cleanliness is a major cause of perinatal morbidity and mortality
- Cleaners are a neglected HCW group with limited access to sufficient cleaning supplies and adequate training on IPC
- WHO updated a training curriculum for cleaning staff in collaboration with WHO IPC hub, WHO Health Workforce and WASH, and London School of Hygiene and Tropical Medicine

Next steps

- develop a facilitators guide to standardize training approach
- implementation pilot in 4 countries
- Global dissemination


The first global level training resource aimed at those who clean health care facilities, building on the tried & tested TEACH CLEAN package

DEVELOPMENT OF A TRAINING RESOURCE FOCUSED ON THOSE WHO CLEAN HEALTH CARE FACILITIES

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Global AMR research agenda – Concept note 2021

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Problem: limited AMR evidence base, especially in LMICs

- Knowledge gaps related to the **burden** and **factors** associated with AMR?
- New /improved **interventions** for AMR prevention, diagnosis, care and treatment?
- Best way to **deliver** these interventions?

Objectives

1. **Identify** and **prioritize** research questions
2. **Catalyse investment** and **scientific interest** among researchers, donors, health professionals and private sector
3. Guide the **translation of research into action**

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COVID-19 and AMR: similarities and differences

Shared issues

- Governance / coordination/ regulations
- Both poor and rich communities affected
- Diagnostic capacity and IPC
- Rational use of medicines
- Human resource capacity
- Supply chain management
- National surveillance and evidence generation

Differences

- Awareness, visibility and advocacy
- Immediate vs longer term economic threat
- R&D funding, capacity and pace
- Market dynamics
- Use of digital health solutions
- Prioritization of HR capacity
- Trust in social media and science

AMR and COVID-19

Literature

Bacterial and Fungal Coinfection in Individuals With Coronavirus: A Rapid Review To Support COVID-19 Antimicrobial Prescribing

Timothy M Rawson, Luke S P Moore, Nina Zhu, Nishanthy Ranganathan, Keira Skolimowska, Mark Gilchrist, Giovanni Satta, Graham Cooke, Alison Holmes

Clinical Infectious Diseases, ciaa530, https://doi.org/10.1093/cid/ciaa530

Published: 02 May 2020 **Article history**

Contents lists available at ScienceDirect

Journal of Infection

journal homepage: www.elsevier.com/locate/jinf

Co-infections in people with COVID-19: a systematic review and meta-analysis

Louise Lansbury, Benjamin Lim, Vadsala Baskaran, Wei Shen Lim

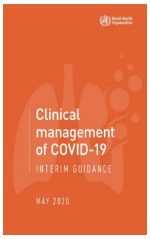
7-8% hospitalized COVID-19 patients had secondary co-infections:

- higher proportion of ICU patients
- most common: *Mycoplasma pneumonia, Pseudomonas aeruginosa, Haemophilus influenzae*

72% received antibiotic therapy - broad-spectrum antibiotics

AMS and COVID-19

WHO clinical management of COVID-19 interim guidance



Source: https://www.who.int/publications/i/item/clinical-management-of-covid-19

☒ For suspected or confirmed **mild** COVID-19 – recommend **against antibiotic therapy** or prophylaxis

☒ For suspected or confirmed **moderate** COVID-19 – recommend that **antibiotics should not be prescribed** unless there is clinical suspicion of a bacterial infection

☑ For suspected or confirmed **severe** COVID-19 – recommend the **use of empiric antimicrobials to treat all likely pathogens**, based on clinical judgement, patient host factors and local epidemiology and this be done as soon as possible, ideally with **blood cultures** obtained first. **Antimicrobial therapy should be assessed daily for de-escalation**

COVID-19 lessons relevant to the AMR response

New(er) lessons

- Impressive global R&D and FDA response, both pace and quality, is possible
- Weak pandemic response everywhere
- Societal mistrust (science & governance)
- Role of social media
- Potential of digital health
- Preaching equity / practicing 'nation first'

Very old lessons

- No equitable global distribution
- Most public health systems are weak
  - Governance, operations and $$
  - human resource capacity
  - supply chain management
  - laboratory capacity, IPC
  - vulnerable groups suffer
  - market dynamics prevail

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Antimicrobials, vaccines and IPC were game changers .....

Penicillin increased survival from 10% to 90% among patients with pneumonia & BSI

The cost of inaction is too high!

Join us in the World Antimicrobial Awareness Week 2021 18-24 November!

HANDLE ANTIMICROBIALS WITH CARE

Antibiotics
Antivirals
Antifungals
Antiparasitics