Effective WASH to prevent infections and reduce the emergence of AMR

WASH – One Health webinar series # 2

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The problem

What is WASH?

What does WASH have to do with AMR?

What does improving WASH require in the context of AMR and One Health?

What kind of things are being done to improve WASH?
According to the GRAM study published in the Lancet (2022), AMR is thought to be the leading cause of death globally, with low-resource settings having the highest burden.

By 2030 the GDP shortfall due to AMR could be US$3.4 trillion per year, while 24 million more people could be pushed into extreme poverty.

There is growing concern of the impacts of AMR to animal health and welfare, food security and environment.

Driven by increased resistance AND INCREASED INFECTIONS

Common infections (e.g. urinary tract infections, pneumonia, bloodstream infections) are life-threatening and becoming more resistant.
AMR in health care contexts

“Do not call it a health care facility if there is no WASH”
Where does WASH happen?

Inputs -> internal processing and management -> outputs

- **IN TO**
  - Water supply

- **INSIDE**
  - Hygiene
  - Human facilities (housing, offices, recreational)

- **OUT FROM**
  - Sanitation (wastewater)
  - Agriculture production facilities (farms)
  - Hygiene
  - Human healthcare facilities

SEI One Health – WASH Network meeting, 14th June 2022
**Target 6.1: Drinking water**

6.1.1: Population using safely managed drinking water services

Definition: Pop. using an improved drinking water source which is:

1. located on premises,
2. available when needed, and
3. free of faecal and priority chemical contamination
   
   \((E. \text{ coli}/\text{thermotolerant coliforms, arsenic, fluoride})\)

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**Target 6.2: Sanitation and hygiene**

6.2.1: Population using safely managed sanitation services including a handwashing facility with soap and water

Definition: Pop. using an improved sanitation facility which is:

- not shared
- excreta are safely disposed in situ or
- transported and treated off-site
Target 6.3 Safely treated wastewater

6.3.1 Proportion of wastewater safely treated
6.3.2 Proportion of bodies of water with good ambient water quality

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

WASH has its own Sustainable Development Goals

Shit flow diagrams
Drivers of AMR emergence

(from S. Vong, 2016)
disease-causing pathogens to humans, animals and plants requiring treatment with antimicrobial agents. Hundreds of millions of cases of diarrhoea each year in humans are treated with antimicrobials. Universal access to WASH could reduce this by 60%.

resistant microorganisms with low pathogenicity infecting vulnerable populations or transferring their genes to pathogens causing infection (14% of humans globally carry ESBL-producing E. coli in their faeces)

Pharmaceutical waste entering water without onsite treatment unknown. Up to 80% of antimicrobial agents excreted as active residues (waste water treatment often insufficient or not possible for this)
In practical terms, what does WASH cover in different contexts?

<table>
<thead>
<tr>
<th>Action area</th>
<th>Water supply</th>
<th>Sanitation</th>
<th>Hygiene</th>
<th>Waste management</th>
<th>Environmental cleaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community WASH</td>
<td>Standard of service/facilities plus drinking water source/quality</td>
<td>Standard of facilities plus on- and off-site use, collection, transport, disposal, reuse</td>
<td>Level of handwashing facilities and services</td>
<td>Solid waste on-site disposal, collection, transport, off-site disposal</td>
<td>Hygiene behaviour and maintenance schedules for community or household facilities</td>
</tr>
<tr>
<td>WASH in Health Care Facilities</td>
<td>Standard of service/facilities plus drinking water source/quality</td>
<td>Standard of facilities plus on- and off-site use, collection, transport, disposal, reuse</td>
<td>Level of handwashing facilities and services. Infection, Prevention and Control protocols for staff</td>
<td>Solid waste on-site disposal, segregation (infectious waste and sharps especially), collection, transport, off-site disposal</td>
<td>Infection Prevention and Control protocols and responsibilities for maintenance of facilities</td>
</tr>
<tr>
<td>WASH in agriculture and aquaculture</td>
<td>Irrigation/fisheries water – source/quality</td>
<td>Wastewater from livestock production and processing</td>
<td>Biosecurity measures</td>
<td>Animal remains from slaughterhouses or wet markets</td>
<td>SOPs for worker protection</td>
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</table>
Prevention and control of AMR

- **Prevention** refers to strategies and interventions to prevent emergence, transmission and spread of AMR and can refer to the *prevention of infections* overall and across One Health interfaces.

- **Control** refers to *minimizing transmission and spread* of AMR within and across species and/or the environment.

- **Source control** relates to strategies and interventions designed to prevent potentially harmful pollutants entering wastewater systems and waterways at the source.

- In the case for AMR this can include, for example, strategies to prevent the disposal of unused antibiotics into wastewater systems, including sewerage.
Quadripartite perspective

**One Health** is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.

It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.

The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.
Addressing AMR with a One Health Approach

- **Specific settings** (e.g., farm, etc.)
- **Specific issues** (e.g., mastitis, parasite resistance)
- **Specific concerns** (e.g., prudent use in animals; access to vet services)

- **Shared settings** (e.g., community, sewage, environment, market)
- **Shared issues** (e.g., MRSA, VRE, ESBL, potential for Horizontal gene transfer)
- **Shared concerns** (e.g., waste management, uncontrolled spill-over)

- **Specific settings** (e.g., hospitals, health facilities, homes)
- **Specific issues** (e.g., MDR-TB, resistance to antiviral drugs)
- **Specific concerns** (e.g., abuse and misuse, quality, access to medical services)
WASH and One Health

WASH is a ‘sector’ extremely used to inter-sectoral working – there is no Ministry for WASH:

- Water supply – local government, private, domestic
- Hygiene – facility management, line ministry (health, industry, agriculture)
- Water and waste management – local government (often different from water supply), private, domestic
- A sector ready and willing to engage
Resources available for improving WASH in the various contexts

Action Area 1: Coordination and leadership
Ensure WASH and wastewater management is included in national and sectoral policies and plans and promote action in all sectors

Action Area 2: Households and communities
Ensure universal access to safely managed water and sanitation services and to safe wastewater and sludge treatment and safe reuse in accordance with WHO

Action Area 3: Health care facilities
Ensure universal access to safe water supply and sanitation, proper hygiene practices and health care waste management in health care facilities to support infection prevention and control

Action Area 4: Animal and plant production
Improve hygiene and wastewater and sludge management in food production

Action Area 5: Manufacturing of antimicrobials
Reduce release of antimicrobials and their derivatives into waterways from antimicrobial manufacturing

Action Area 6: Surveillance and research
Advance knowledge on WASH and wastewater drivers of AMR through a One Health lens to inform risk-based priorities
Resources available for improving IPC in health care contexts

“Do not call it a health care facility if there is no WASH”
Key improvements required

- Increase access to clean water, sanitation and hygiene and improve disease prevention and control practices in health care facilities and farms
- Treat discharge of waste from health care facilities, pharmaceutical manufacturing and farms
- Improve infection and disease prevention and control and reduce transmission of resistant pathogens in food production, storage, distribution and preparation
Examples of improvements – health care facilities

Examples of progress

- **Embedding WASH standards in national quality efforts** (Cambodia, Ethiopia, Kenya, Ghana, India, Tanzania)

- **Risk-based WASH improvements** (Bangladesh (Cox’s Bazaar), Liberia, India, Indonesia, Lao PDR, Philippines, Madagascar, Zambia)

- **Monitoring and reviewing data** (Bhutan, Egypt, Ghana, Hungary, India, Indonesia, Lebanon, Mali, Uganda, Serbia)

- **Engage communities** (Ethiopia, Ghana, Mali)

GLOBAL PROGRESS REPORT ON WASH IN HEALTH CARE FACILITIES
Fundamentals first, WHO 2020
Examples from poultry industry
(Fleming Fund and AMR Multi-purpose Trust Fund)

- Indonesia – FAORAP drafted and GoI finedessed assessment tool (merger of WHO’s Infection Prevention and Control Assessment Framework (IPCAF) and FAO’s Layer Farm Assessment Tools (LFAT)) for use as starting point for national certification

- Kenya – farm biosecurity guidelines for diary, poultry and pig value chains with veterinarians and paraprofessionals trained on their use with instructions and guidance given on how to further disseminate the guidelines to stakeholders in their respective networks

- In Zimbabwe Farmer Field Schools used to promote adoption of good animal husbandry practices to improve biosecurity and hygiene standards in the broiler value chain as a tool for disease prevention and control
Protecting people, animals, and the environment every day

Drawings: FAO/Chiara Caproni