



Food and Agriculture  
Organization of the  
United Nations

# Effective WASH to prevent infections and reduce the emergence of AMR

WASH – One Health webinar series # 2



**David Sutherland**

*Regional EU AMR Project Consultant*

## Contents

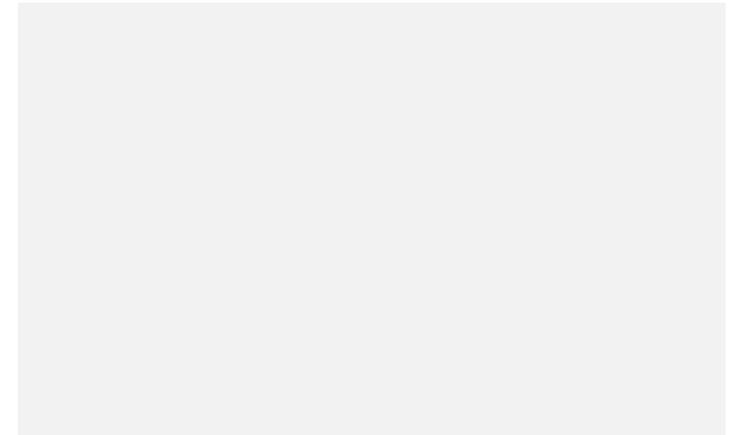
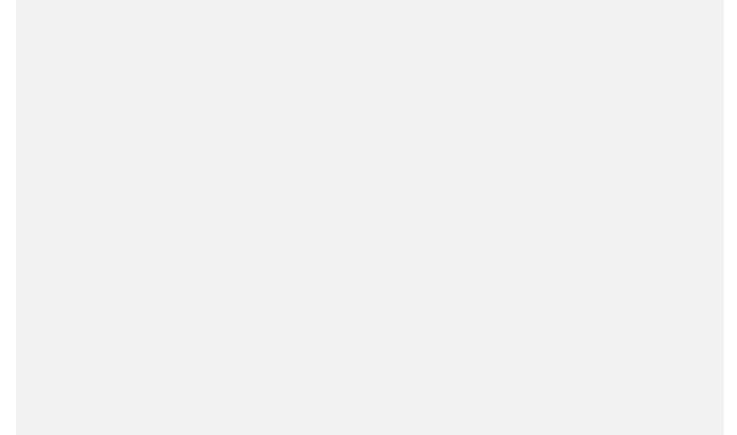
The problem

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?



## What are the causes and consequences of AMR?

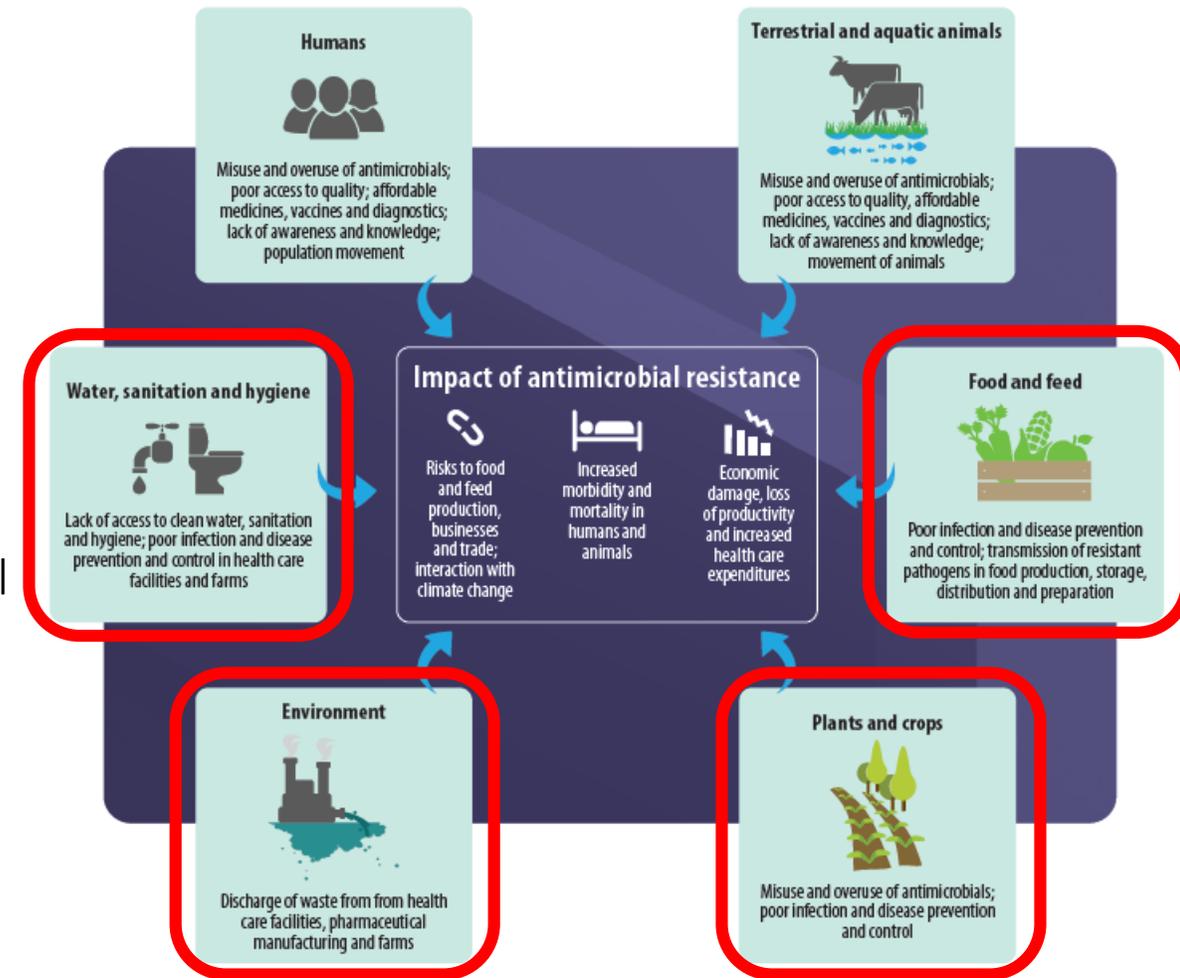
According to the GRAM study published in the Lancet (2022), AMR is thought to be the leading cause of death globally, with low-resource settings having the highest burden

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

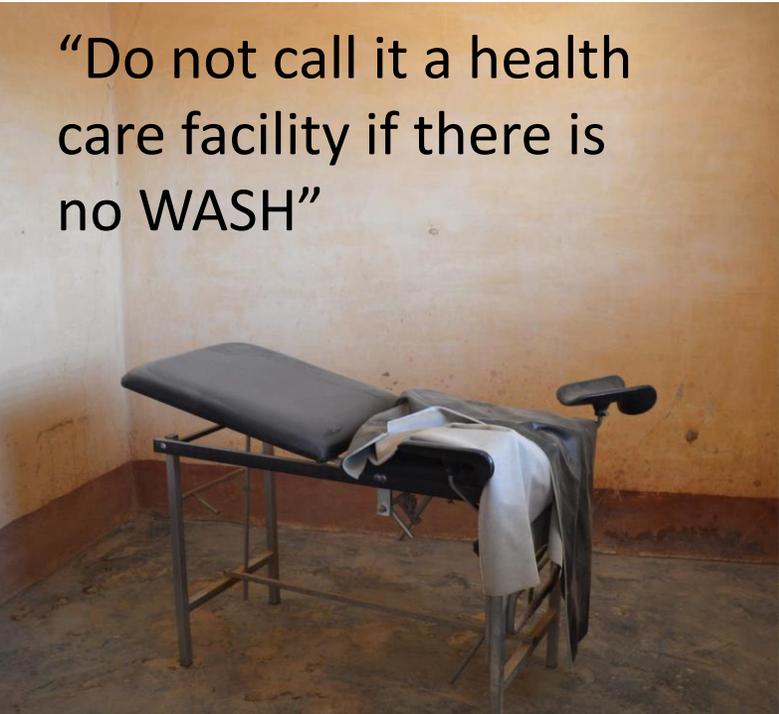
Common infections (e.g. urinary tract infections, pneumonia, bloodstream infections) are life-threatening and becoming more resistant



Source: Adapted from Inter-Agency Coordination Group (2019). No time to wait: Securing the future from drug-resistant infections. Report to the Secretary-General of the United Nations.

# AMR in health care contexts

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



The screenshot shows the WHO website with a blue navigation bar containing: World Health Organization, Health Topics ▾, Countries ▾, Newsroom ▾, Emergencies ▾, Data ▾, and About WHO ▾.

On the left, a sidebar menu lists: Hand hygiene ▾, Core components, Surgical site infection, Injection safety, IPC and AMR, Sepsis, and About ▾.

The main content area features a large image of a coronavirus particle. Below it is a link for "All technical guidance on COVID-19".

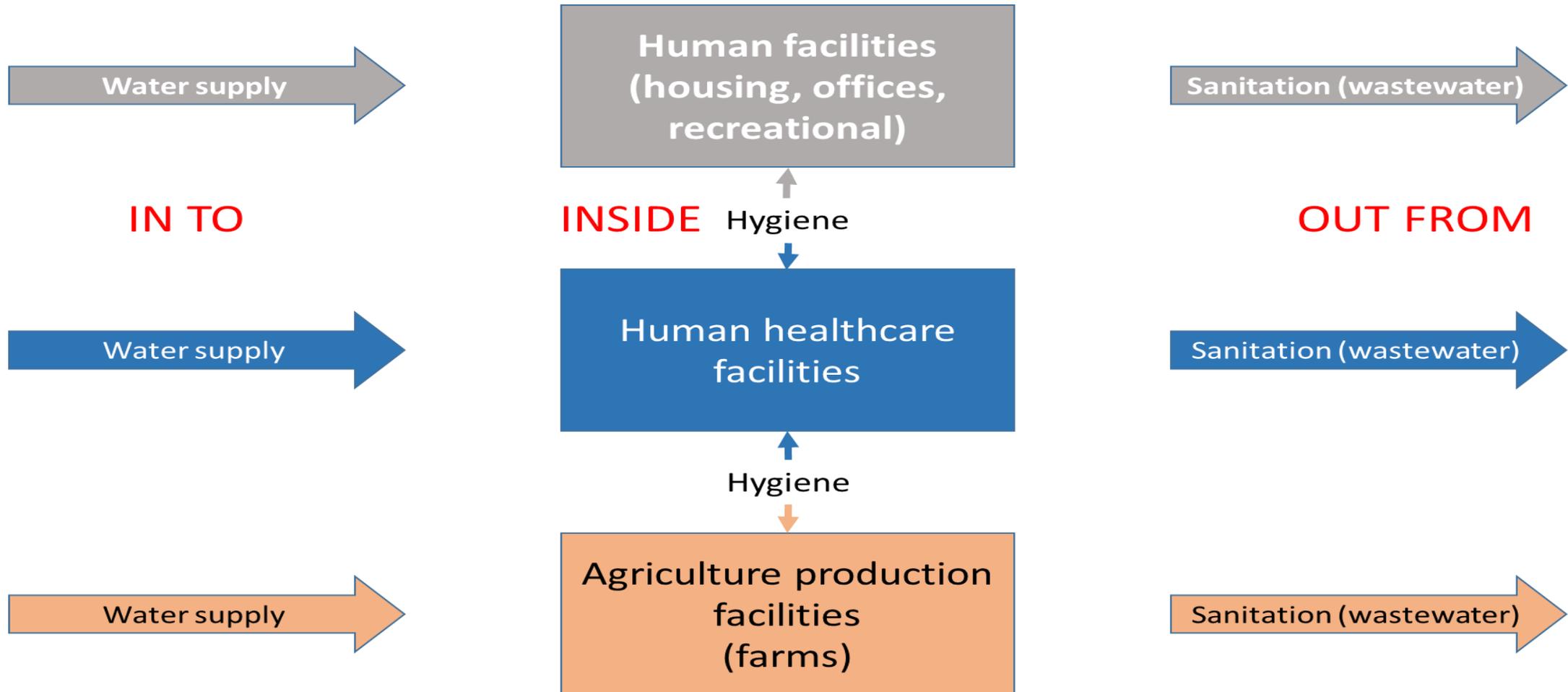
Two horizontal navigation links are present: "IPC newsletters" and "WHO IPC webinar recordings", both with right-pointing chevrons.

Three content boxes are displayed at the bottom:

- 1 in 10 patients get an infection while receiving care**  
Health care-associated infections
- More than 50% of surgical site infections can be antibiotic-resistant**  
Surgical site infection
- Coronavirus disease**  
COVID-19 pandemic

## Where does WASH happen?

Inputs -> internal processing and management -> outputs



## 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. coli*/thermotolerant coliforms, arsenic, fluoride)

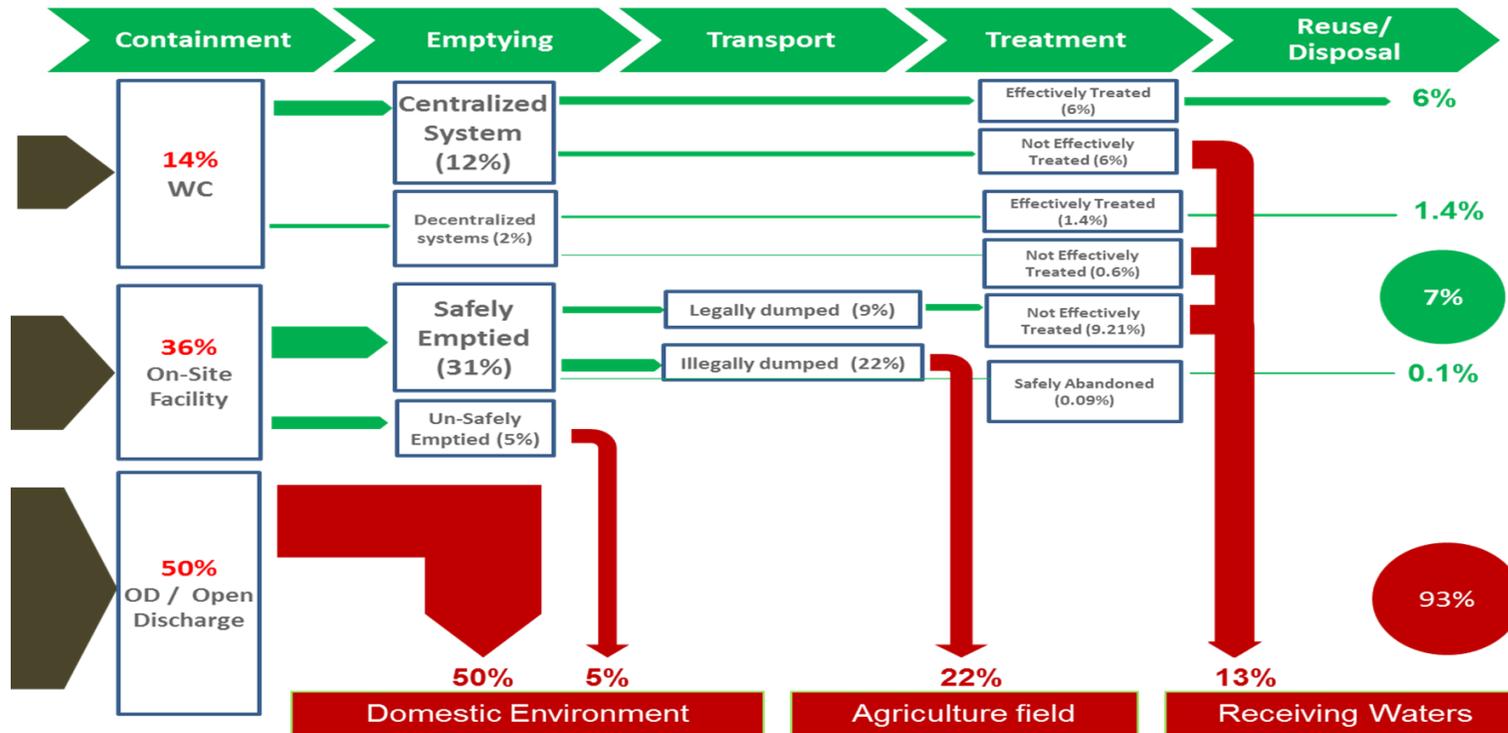
## Target 6.2: Sanitation and hygiene

### 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

# WASH has its own Sustainable Development Goals



Data Source Census 2011

## Target 6.3 Safely treated wastewater

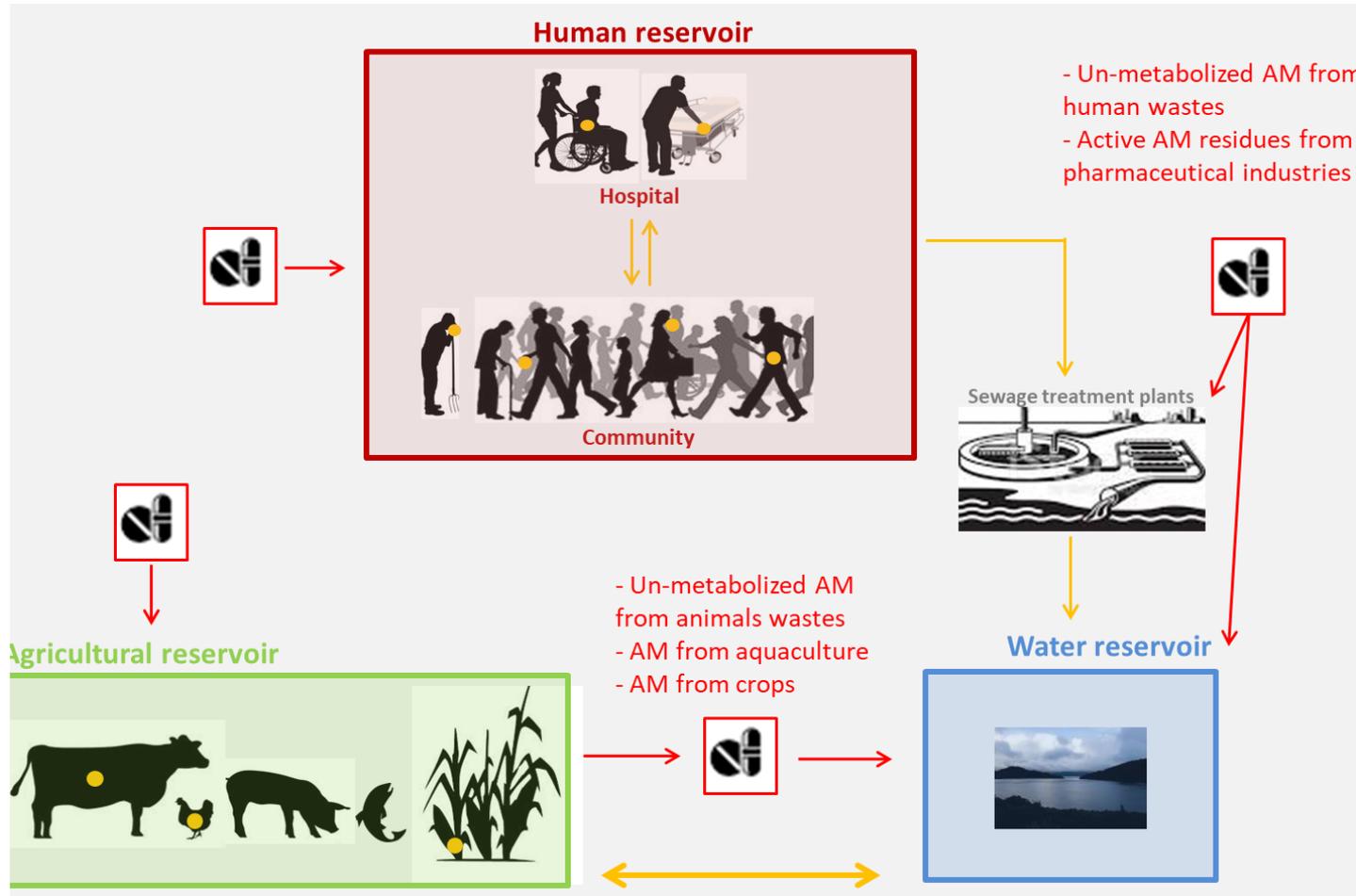
6.3.1 Proportion of wastewater safely treated

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

Shit flow diagrams

# Antimicrobials follow the WASH flow

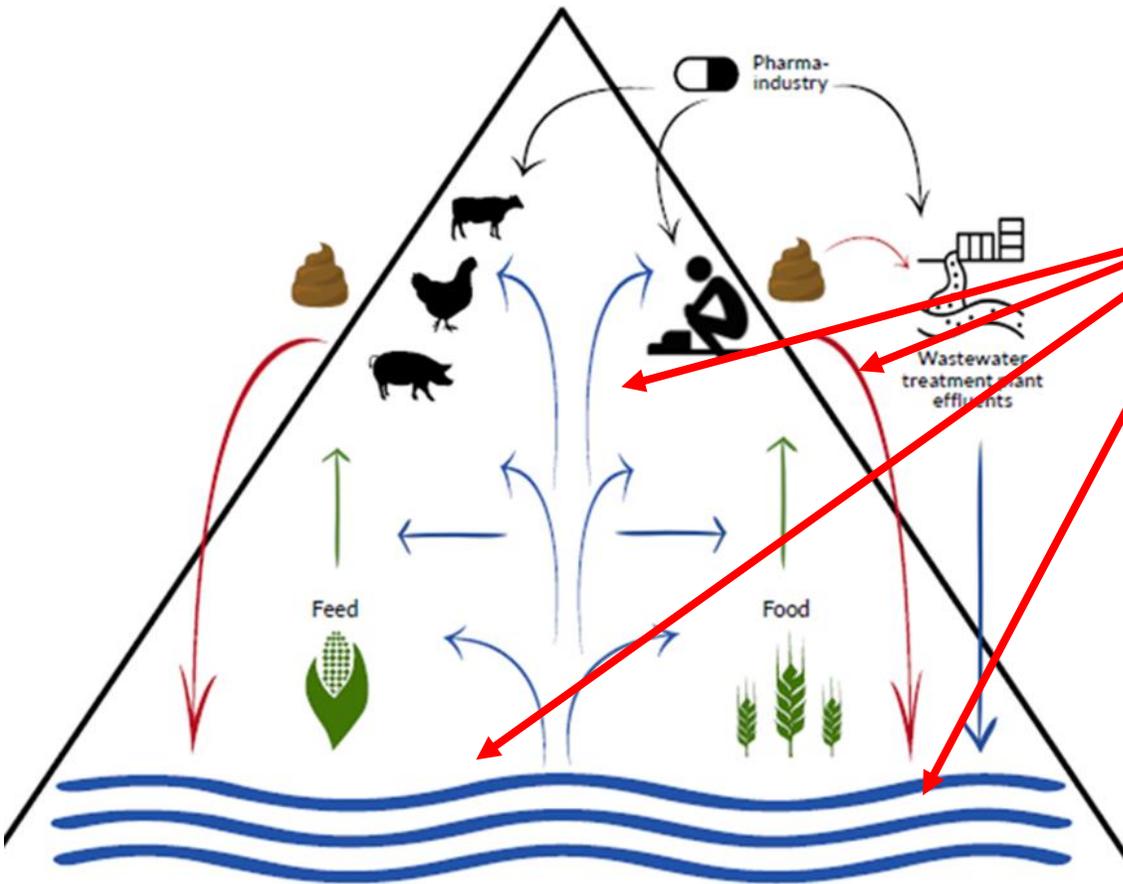


# Drivers of AMR emergence

(from S. Vong, 2016)



## WASH in the context of AMR – what does wastewater contain?



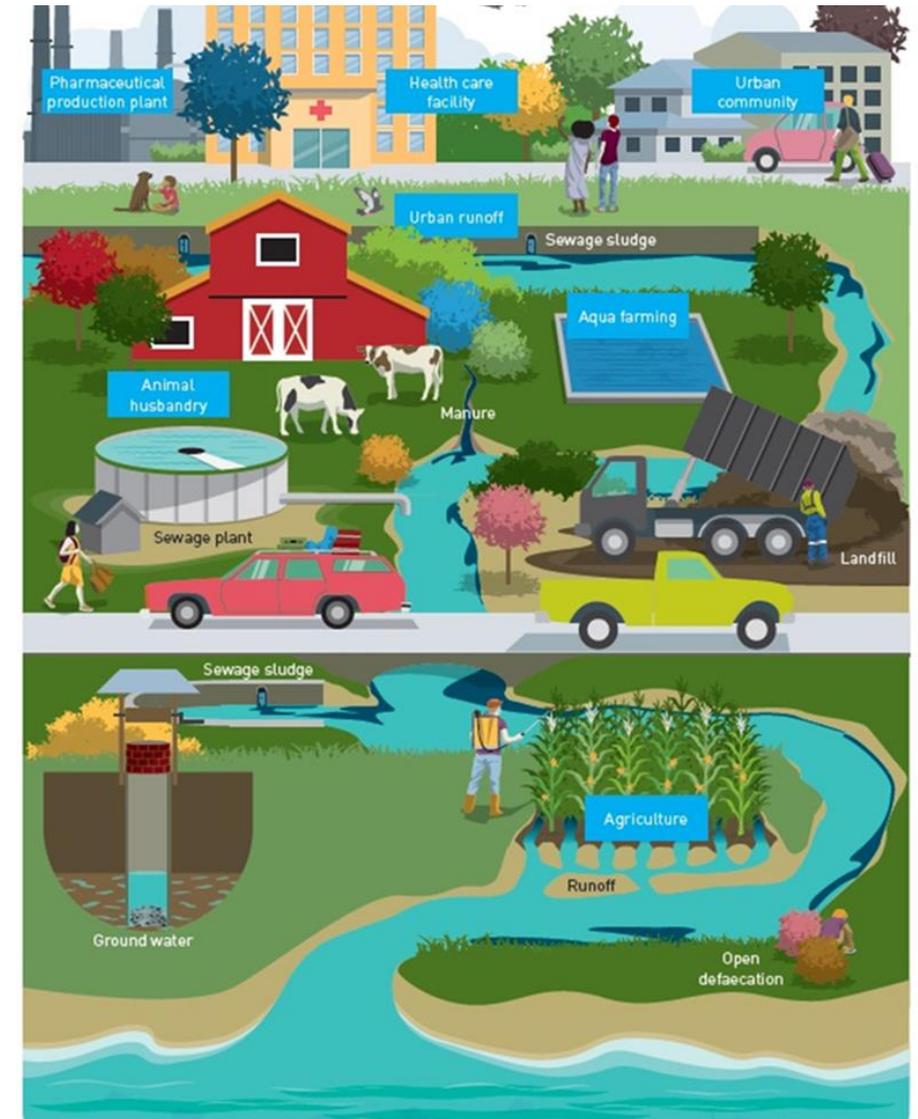
- **disease-causing pathogens** to humans, animals and plants requiring treatment with antimicrobial agents. Hundreds of millions of cases of diarrhoea each year in humans are treated with antimicrobials. Universal access to WASH could reduce this by 60%.
- **resistant microorganisms with low pathogenicity** 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?

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

## 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.



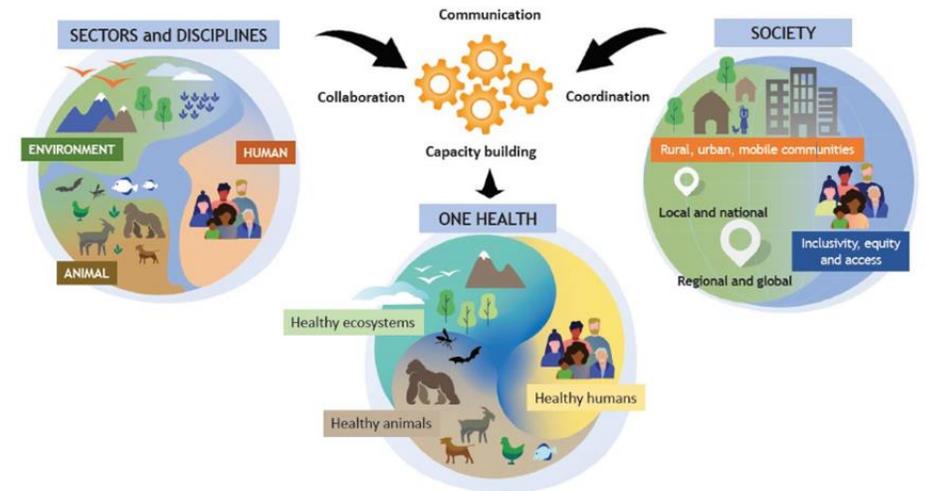
# WASH within the context of a One Health Approach

## Quadripartite perspective

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

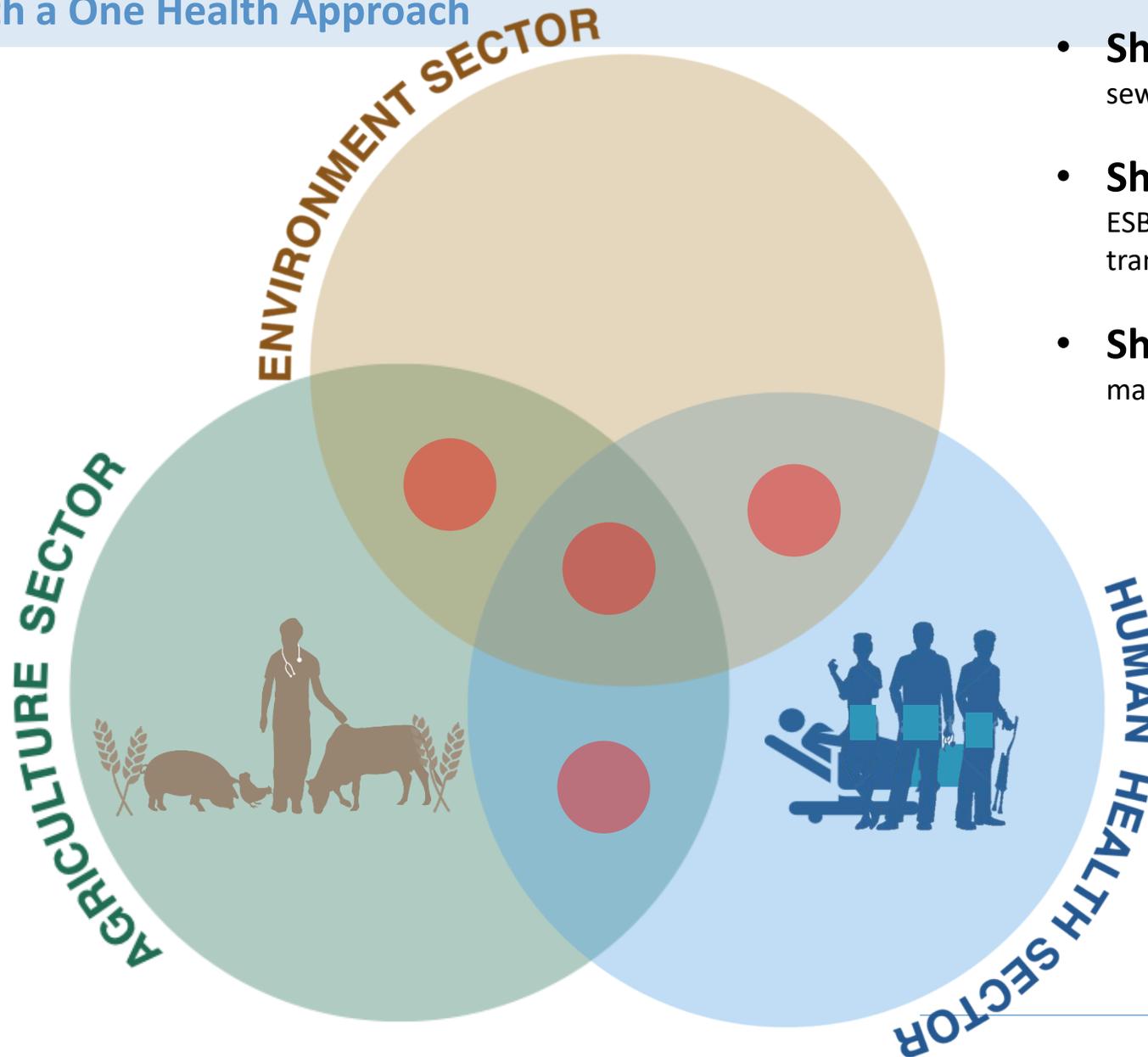
It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.

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 AMR 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 increase wastewater and sludge treatment and safe reuse in accordance with SDG6

**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 ARGs 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



**Water and Sanitation for Health Facility Improvement Tool (WASH FIT)**  
A practical guide for improving quality of care through water, sanitation and hygiene in health care facilities

**WATER, SANITATION, AND HYGIENE IN HEALTH CARE FACILITIES**  
PRACTICAL STEPS TO ACHIEVE UNIVERSAL ACCESS TO QUALITY CARE

**ANTIMICROBIAL RESISTANCE AND THE CLIMATE CRISIS**  
Information note of the Global Leaders Group on Antimicrobial Resistance, October 2021.

**GLOBAL LEADERS GROUP ON ANTIMICROBIAL RESISTANCE**

**KEY MESSAGES**

- The climate crisis and antimicrobial resistance - the ability of microbes to resist the drugs designed to inhibit or kill them - are two of the greatest and most complex threats currently facing the world. Both have been exacerbated by, and can be mitigated with, human action.
- The climate crisis is impacting human health, animal health, food, plant and environment eco-systems in numerous ways, and many of these impacts could affect antimicrobial resistance.
- Evidence suggests that changes occurring in the natural environment due to the climate crisis are increasing the spread of infectious diseases, including drug-resistant infections.
- High usage of antimicrobial drugs across sectors exacerbates antimicrobial resistance. The increasingly severe impacts of the climate crisis, such as more frequent and severe extreme weather events, will likely result in an increased use of antimicrobial drugs in humans, animals and plants.
- As these two crises continue to grow, the impacts on economies, lives, and livelihoods are expected to be significant and devastating, particularly for low- and middle-income countries and small island developing states.
- More financing, political advocacy and coordinated global action are needed to better understand and respond to the converging threats of antimicrobial resistance and the climate crisis before it is too late.
- The links between antimicrobial resistance and the climate crisis have been neglected and require significantly more attention, including in national action plans on antimicrobial resistance. There is currently no global initiative focused specifically on the intersection of these two crises.

**UN environment programme** 50 1972-2022

**Environmental Dimensions of Antimicrobial Resistance**  
Summary for Policymakers

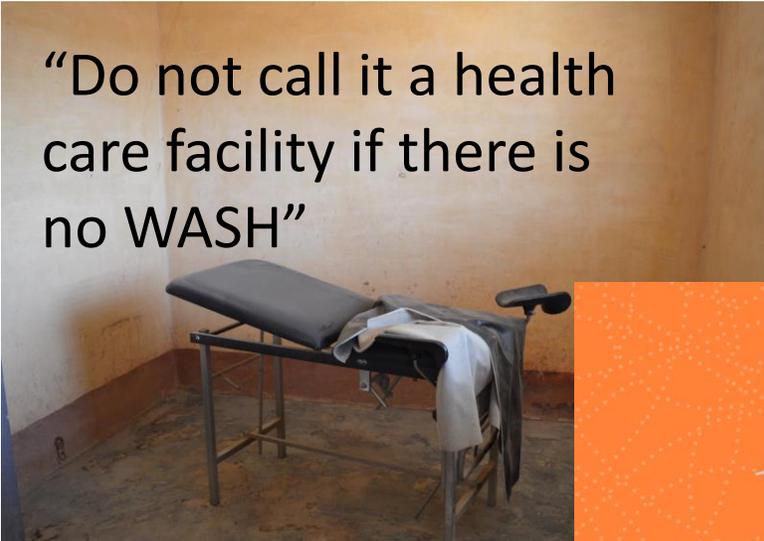
**Joint FAO/WHO Expert Meeting in collaboration with OIE on Foodborne Antimicrobial Resistance: Role of the Environment, Crops and Biocides**  
MEETING REPORT

34 MICROBIOLOGICAL RISK ASSESSMENT SERIES

**METHODOLOGY TO ANALYSE AMR-RELEVANT LEGISLATION IN THE FOOD AND AGRICULTURE SECTOR**  
GUIDANCE DOCUMENT FOR REGULATORS  
DRAFT FOR PUBLIC REVIEW

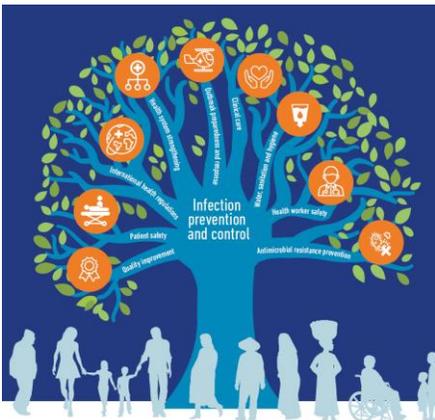
# Resources available for improving IPC in health care contexts

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



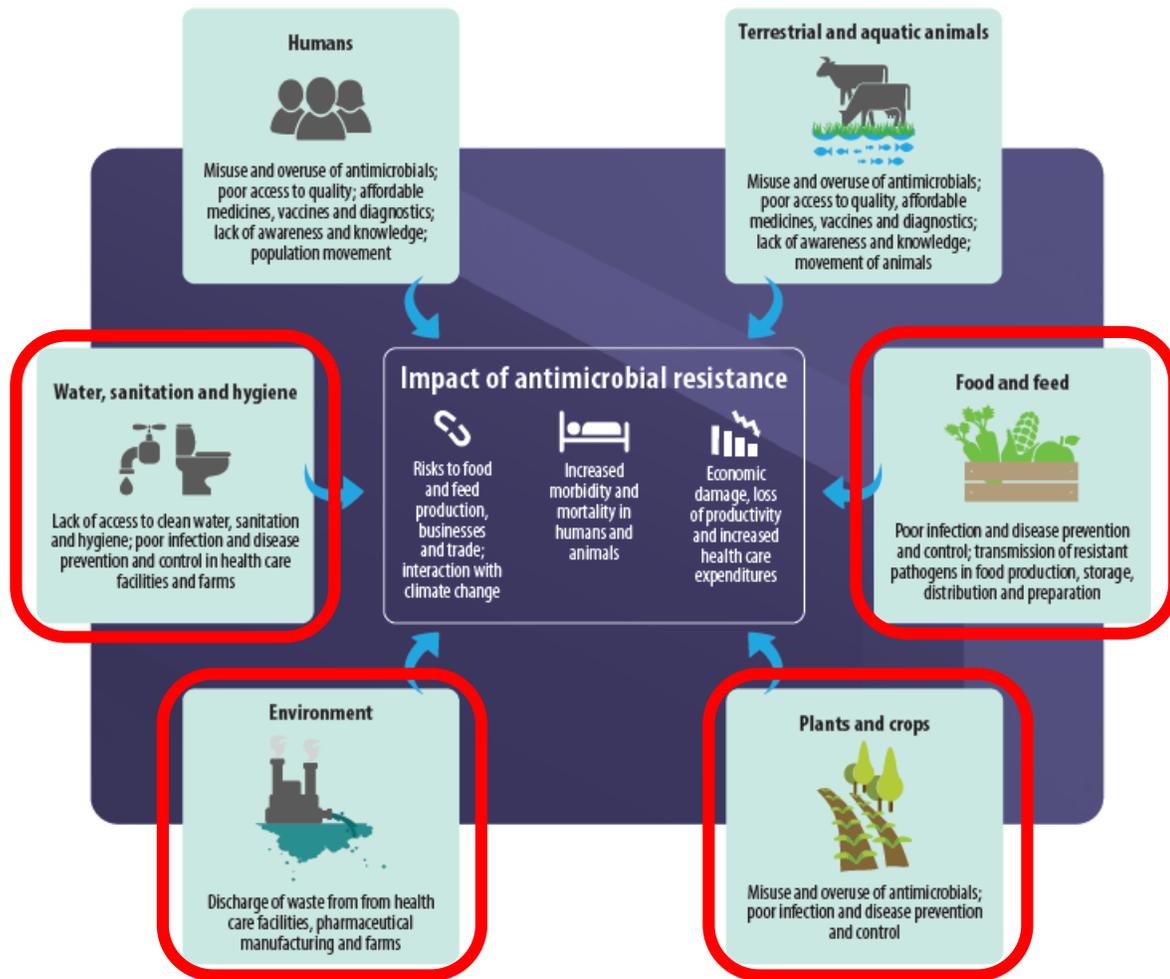
The screenshot shows the WHO website interface. At the top, there are navigation menus: 'World Health Organization', 'Health Topics', 'Countries', 'Newsroom', 'Emergencies', 'Data', and 'About WHO'. A search bar is visible with 'Hand hygiene' entered. Below the search bar, there are dropdown menus for 'Core components' and 'All technical guidance on COVID-19'. On the right side, there is a featured article titled 'No one should catch an infection while receiving health care...' with a red and white virus icon. Below this, there are links for 'IPC newsletters' and 'WHO IPC webinar recordings'. At the bottom right, there are three summary cards: '1 in 10 patients get an infection while receiving care', 'More than 50% of surgical site infections can be antibiotic-resistant', and 'Coronavirus disease COVID-19 pandemic'.

The cover of the WHO report features an orange background with a white world map. Inside the map, there are images of health workers in various settings. A dark blue banner at the bottom contains the title: 'Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level'. The WHO logo is in the bottom right corner.



Global report on infection prevention and control





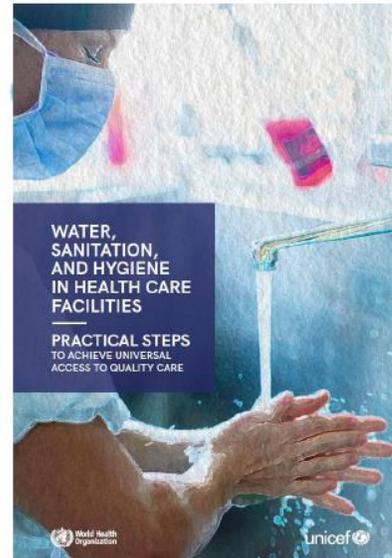
## Key improvements required

- 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

Source: Adapted from Inter-Agency Coordination Group (2019). No time to wait: Securing the future from drug-resistant infections. Report to the Secretary-General of the United Nations.

## Examples of improvements – health care facilities

### Practical steps for improving and sustaining services – WASH and IPC



### 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 of improvements in agriculture



### Examples from poultry industry (Fleming Fund and AMR Multi-purpose Trust Fund)

- Indonesia – FAORAP drafted and GoI finessed 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 dairy, 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*