



AMR in the environment - the impact of healthcare facilities

Erik Ruiz - Health Care Without Harm Europe

ABOUT US

We are a network of thousands of hospitals, healthcare leaders, and healthcare professionals, with members across Europe and partners across the globe.

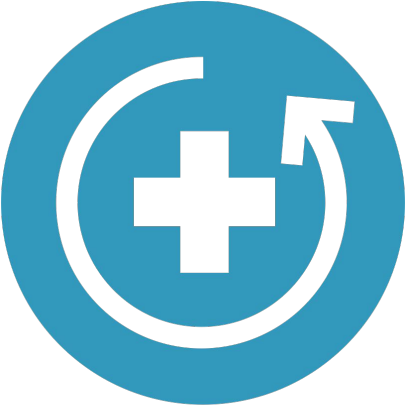
Together we prove that it's possible to deliver the highest quality of care in a way that's sustainable environmentally and financially.



OUR PROGRAMMES



CLIMATE-SMART
HEALTHCARE



CIRCULAR
HEALTHCARE



SAFER
PHARMA

SAFER PHARMA

STRATEGIC GOAL

Pharmaceutical pollution and its contribution to the development of antimicrobial resistance (AMR) is minimised.



OUR ACTION NETWORKS



GLOBAL GREEN AND HEALTHY HOSPITALS

THE HEALTHCARE
PROVIDERS AT THE HEART
OF OUR ORGANISATION



153 members in 24 countries
across the WHO Europe region

Early bird special

20%
OFF



CleanMed

Changing the climate of healthcare

Europe
2023
ONLINE

5 - 9 JUNE

REGISTER NOW

WWW.CLEANMEDEUROPE.ORG

A person wearing a white lab coat, a hairnet, and a face mask is shown from the chest up. They are holding two test tubes, one in each hand, and appear to be in a laboratory setting. The entire image is overlaid with a semi-transparent blue filter. The text is centered over the person's face and upper torso.

**WHAT'S THE MAIN CAUSE OF THE
ACCELERATION OF
ANTIMICROBIAL RESISTANCE?**

Antimicrobial resistance and the environment

The environment is key to antibiotic resistance. Bacteria in soil, rivers and seawater can develop resistance through contact with resistant bacteria, antibiotics, and disinfectant agents released by human activity. People and livestock can then be exposed to more resistant bacteria through food, water, and air.

Human antibiotic use jumped 36% in the 2000s



Up to **75% of antibiotics** used in aquaculture may be lost into the surrounding environment



70% of antibiotics are used by animals

Manure fertilizers cause antibiotic contamination in surface runoff, groundwater and drainage networks

Antimicrobial use for livestock will jump 67% by 2030

Antibiotics are increasingly used to boost animal growth in intensive farming, especially in developing countries

Antibiotics can be absorbed by plants and crops



Major waste flows including wastewater, manures and agricultural run-off contain antibiotic residues and antibiotic-resistant bacteria

Wastewater treatment plants **cannot remove** all antibiotics and resistant bacteria



Up to **80% of consumed antibiotics** are excreted through urine and faeces

30% of antibiotics are used by humans

Antibiotic resistant bacteria may be present in **raw source water** and **treated drinking water**



More than 50% of municipal solid waste ends up in landfills and open dumps. This can include unused or expired drugs.

Antimicrobial concentrations in most effluents are **too low to be lethal** to exposed bacteria, but may be sufficient to induce antimicrobial resistance

A vast array of **contaminants in municipal and industrial wastewater** increases pressure on bacteria to become resistant

Multi-drug resistant bacteria are prevalent in marine waters and sediments in close proximity to aquaculture, industrial and municipal discharges





WHAT'S THE IMPACT OF HEALTHCARE FACILITIES?

WHERE DO PHARMACEUTICALS END UP?

It is estimated that 30%-90% of orally administered pharmaceuticals are excreted into wastewater as active substances in the faeces and urine of patients (1)

Removal rates in wastewater plants range from 0%- 97% (2)

Wastewater treatment plants primarily designed to eliminate biodegradable substances and nutrients – **not able to completely remove pharmaceutical substances**

Residues discharged via effluent into surface waters – **Enter water cycle**



ENVIRONMENTAL IMPACT OF ANTIBIOTIC USE IN HOSPITALS

20%-30% of inpatients receive an antibiotic treatment during their hospital stay. (3)

High-risk point sources: The proportion of resistance genes or resistant bacteria is usually higher in hospital wastewater than in household wastewater – last resort (4)

Aarhus University Hospital in Denmark is testing peracetic acid as a tool to neutralise ciprofloxacin-resistant bacteria. (5)

3. Hocquet, D. et al. (2016) What happens in hospitals does not stay in hospitals: Antibiotic-resistant bacteria in hospital wastewater systems.

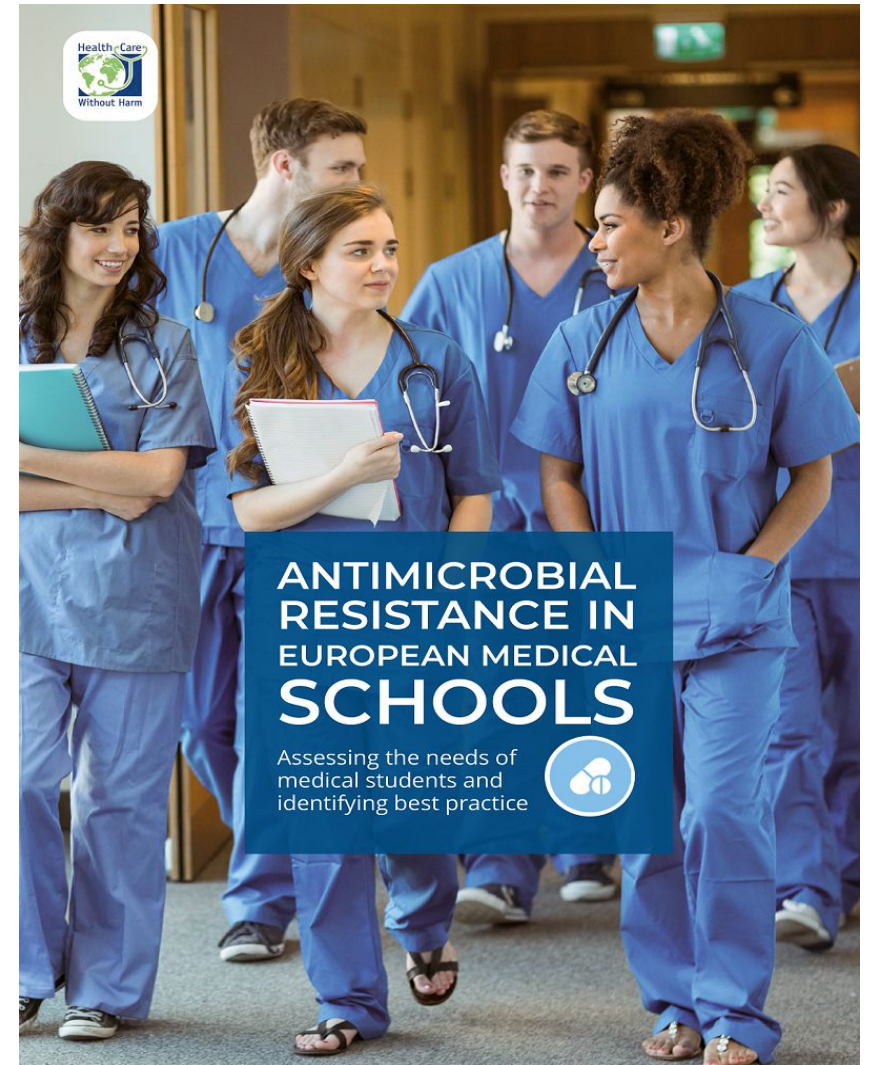
4. Paulus, G. K. et al. (2019) The impact of on-site hospital wastewater treatment on the downstream communal wastewater system in terms of antibiotics and antibiotic resistance genes.

5. Stenuick, J. (2021) PHARMACEUTICAL RESIDUES IN HOSPITAL WASTEWATER. Five case studies from european hospitals



DO HEALTH PROFESSIONALS KNOW?

Only 22% of the respondents had in their curricula the links between human health, animal health and the environment



357 medical students studying at 83 medical schools or universities across 28 countries

MEASURES TO REDUCE ENVIRONMENTAL IMPACT OF AMC

No easy fix...

1 Improve antibiotic prescription: Canisius-Wilhelmina Hospital in Nijmegen, The Netherlands reduced prescriptions of last-resort antibiotics by 25% and saved €40,000 in costs one year after introducing an antibiotic stewardship programme.

2 Green procurement practices.

3 Establish protocols to safely dispose pharmaceutical waste... and follow them

4 We need dedicated guidance for healthcare professionals on their impact on environmental health.





**WHAT ARE WE DOING TO
ADDRESS THIS?**

TRAININGS FOR HEALTHCARE PROFESSIONALS

- +4,000 health professionals trained in 7 EU countries
- Training on antimicrobial prescription, antimicrobial waste and patient empowerment
- Videos, app, podcasts...



AMR EDUCare

RECOMMENDATIONS TO PROCURERS OF PHARMACEUTICALS

5 cases studies

1. Environmental requirements for pharmaceuticals (Norway)
2. Sustainability criteria for medicinal products (Sweden)
3. Carbon footprinting health products (France)
4. Sustainable Procurement Index for Health (UNDP)
5. Responsible Antibiotics Manufacturing Platform (RAMP)





NO HARM

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