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The critical need for hygiene to prevent infections and spread of antibiotic resistance

Penicillin gave mankind the upper hand in the fight against disease-causing bacteria - but the balance has shifted. With unique photographs and powerful insights, world leading photojournalist Paul Hansen and Senior Professor Otto Cars highlight the need for raising hygiene standards to prevent infections and spread of antibiotic resistance.



The invention of penicillin enabled one of the greatest leaps forward of modern medicine. With a constant flow of new effective antibiotics, mankind was able to treat previously untreatable diseases and save millions of lives. However, an excessive use of antibiotics among humans as well as in animals combined with a shortage of truly new antibiotics entering the market has paved the way for multi-resistant bacteria. In 2014, the World Health Organization (WHO) declared antibiotic resistance a major global threat to public health, and warned we are heading toward a post-antibiotic era where common diseases, which have been easily remedied under the protective wings of antibiotics, once again will become life threatening.¹ Only four years later, statistics indicate we are already there.

Today, at least 700,000 people globally die each year in drug resistant infections.² Unless global action is taken, this figure is predicted to rise to 10 million deaths by 2050 and cause a USD 100 trillion cumulative loss in global GDP.³ To put the figure in context, there are currently 8.2 million deaths a year from cancer.

“Bacteria’s ability to withstand antibiotics has grown dramatically in recent decades, and has caused several million deaths from infections that we have previously been able to cure. The problem is greatest in low- and middle income countries. In these countries, every three minutes a newborn child dies from infection, because the antibiotics available have not worked”, says Otto Cars, Senior Professor of Infectious Diseases at Uppsala University and an expert in the UN’s group on antimicrobial resistance.

Limiting resistance with hand hygiene

In order to preserve the life-saving antibiotics for current and future generations, we need to take immediate action on a global level. Antibiotic resistance is a complex and multifaceted issue that will require coordinated efforts from a plethora of stakeholders to tackle. For instance, the scientific community, authorities and companies around the world must work together on implementing new economic models to counteract over-consumption of existing antibiotics and stimulate development of truly new ones. However, each of us can also contribute to limiting the spread of resistance, simply by maintaining proper hand hygiene. Improving hand hygiene is one of the most important and cost-effective measures to reduce the spread of bacteria - whether resistant to antibiotics or not. And by preventing infections from occurring in the first place, the need for antibiotics can effectively be reduced.

Simple handwashing with soap removes 90% of contaminants⁴



Afghanistan. Today, water and sanitation are considered two distinct human rights with equal status. This is not the reality for the 700 million people living in urban areas without toilet.

In Afghanistan, four boys stand in what appears to be a trench. They fill their buckets - one after another - with muddy brown water.

Hand to Hand >

1. <http://www.who.int/drugresistance/documents/surveillancereport/en/>
2. <https://amr-review.org/>
3. <https://amr-review.org/>
4. Essity: Participation for Progress

The connection between improved hygiene and reduced usage of antibiotics has been demonstrated numerous times, in both developed and developing countries. A study by the Review on Antimicrobial Resistance found that almost 300 million cases of diarrhea treated with antibiotics in Brazil, Indonesia, India and Nigeria each year could be prevented through universal access to improved water and sanitation.⁵ In another study, implementing accessible hygiene facilities and promoting better hand hygiene among preschoolers in a Swedish region with 1.7 million inhabitants led to 3,000 fewer prescriptions for antibiotics in only one year.⁶

Antibiotic resistance is also closely linked to healthcare-associated infections, as bacteria causing such infections are often resistant to at least one of the drugs most commonly used to treat them.⁷ Reducing healthcare-associated infections is thus an important measure against antibiotic resistance, and research has shown that up to 70% of healthcare-associated infections can be prevented⁸ by improving hygiene standards in hospitals and hand hygiene compliance among healthcare workers.⁹ However, actual adherence to proper hand hygiene is often alarmingly low, even in modern high-technological hospitals.

Highlighting the need for water and sanitation

Despite the vital role of hygiene in improving health and preventing antibiotic resistance, access to clean water and safe sanitation - necessities for hygiene - is still a luxury in many parts of the world. To highlight the alarming situation and spark a dialogue, Essity and Fotografiska invited world leading photojournalist Paul Hansen to organize the photo exhibition Hand to Hand. In a series of unique photographs and stories combined with powerful insights by Senior Professor Otto Cars, the exhibition highlights how lack of access to water and sanitation today further escalates existing inequalities around the world.



Dhaka, Bangladesh. The population of Dhaka is expected to grow to 20 million by 2020. The infrastructure is a ticking time bomb in terms of public health. Already today four million people are living in slums without access to clean water and toilets. Many are forced to use dirty well water or to buy from "water pirates" selling expensive bottled water.

Hand to Hand ►

5. www.amr-review.org

6. Essity Essentials Report 2018/2019

7. P. Stone, 'Economic burden of healthcare-associated infections: an American perspective', Expert Review of Pharmacoeconomics & Outcomes Research, vol. 9, no. 5, 2009, pp. 417-422.

8. RD. Scott II, The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention, Centers for Disease Control and Prevention, 2009

9. A. Stewardson, B. Allegranzi & D. Pittet, 'Dynamics of Hand Transmission', in D. Pittet, J. Boyce & B. Allegranzi ed., Hand Hygiene: A Handbook for Medical Professionals, Wiley-Blackwell, 2017, pp. 18-27; N. Graves, 'The Economic Impact of Improved Hand Hygiene', in D. Pittet, J. Boyce & B. Allegranzi ed., Hand Hygiene: A Handbook for Medical Professionals, Wiley-Blackwell, 2017, pp. 285-293.

10. <http://www.amr-review.org>

“My profession takes me around the world, to places afflicted by humanitarian crises. Crises that are in need to be told and shown to the rest of the world. Sometimes because of war, but sometimes because people are lacking something as obvious as access to clean water and soap”, says Paul Hansen.

He has himself experienced the desperate need for antibiotics. In fact, without penicillin Paul would not be alive today.

“I almost lost my life to Staphylococcus bacteria when I lived in New York, and the only reason I’m standing here today is because I was given penicillin. To me, this thing about multi-resistant bacteria is important on so many levels.”

“The ability to take care of one’s hygiene is not something that is a given for everyone. Something that for many is an unchallenged absolute is a luxury for others. But the thing that unifies us is that the access to soap and water can save lives – regardless of where you live”, says Paul Hansen.

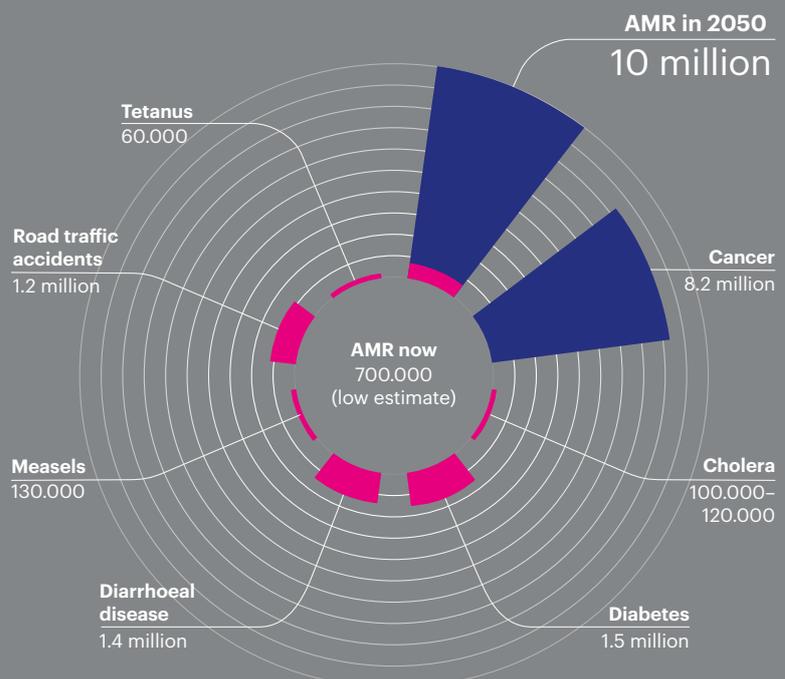


As part of the Hand to Hand exhibition, documentary photographer Åsa Sjöström has also followed a school in England participating in a hygiene project to support children’s personal hygiene and better toilet environments.

Hand to Hand ▶

Explore the digital exhibition *Hand to Hand* exhibition [here](#).

By 2050, antimicrobial resistance could lead to more deaths than cancer.¹¹



11. Review on Antimicrobial Resistance. <http://www.amr-review.org>

Healthcare-associated infections are closely linked to antibiotic resistance

7 to 10%

Of every 100 hospitalized patients, 7 in developed countries and 10 in developing countries will acquire at least one healthcare-associated infection.¹²

1 in 3

A third of patients in intensive care units (ICUs) in high-income countries are affected by at least 1 healthcare-associated infection.¹³

7 in 10

More than 70% of bacteria causing healthcare-associated infections are resistant to at least one of the drugs most commonly used to treat them.¹⁴

Water & Sanitation: Luxury or a human right?

Only 1 in 4

people in low-income countries have handwashing facilities with soap & water at home.¹⁵

2.1 billion

people globally lack safe drinking water.¹⁶

844 million

people do not have basic drinking water services.¹⁷

263 million

people spend more than 30 minutes per round trip collecting water.¹⁸

In 80%

of water-deprived households, women and girls carry the burden of water collection.¹⁹

12. http://www.who.int/gpsc/country_work/gpsc_ccisc_fact_sheet_en.pdf

13. <http://www.amr-review.org>

14. P. Stone, 'Economic burden of healthcare-associated infections: an American perspective', Expert Review of Pharmacoeconomics & Outcomes Research, vol. 9, no. 5, 2009, pp. 417-422.

15. http://www.who.int/water_sanitation_health/monitoring/coverage/hygiene2017-930px.jpg?ua=1

16. https://www.who.int/water_sanitation_health/monitoring/coverage/jmp-update-2017-graphics/en/

17. https://www.who.int/water_sanitation_health/monitoring/coverage/jmp-update-2017-graphics/en/

18. https://www.who.int/water_sanitation_health/monitoring/coverage/jmp-update-2017-graphics/en/

19. <http://www.unwomen.org/en/news/in-focus/women-and-the-sdgs/sdg-6-clean-water-sanitation>