

Statistics

REGARDING ANTIBIOTIC RESISTANCE

At least
30%
of oral antibiotics
that are
prescribed are
unnecessary (1).

In the US, antibiotic
resistance causes
23,000+
deaths (2).

In the US, antibiotic
resistance causes
>2.0 m
illnesses
(2).

ANTIBIOTIC RESISTANCE IS

when bacteria develop a defense against one, or multiple antibiotic drugs. Being able to withstand the effects of antibiotics increases the survival of these detrimental bacteria, making it more difficult to get rid of them, and possibly prolonging the unwanted infection

MYTH OR FACT?

It's the body that becomes resistant to antibiotics.....

MYTH! It's not you but the bacteria within your body that become resistant to antibiotics!

Antibiotics treat ALL types of infections.....

MYTH! Antibiotics are only suitable in treating bacterial infections. This is why your doctor does not prescribe antibiotics for a cough, cold, the flu, athlete's foot, etc. Those are all viral or fungal infections.

I have never taken antibiotics, therefore I can never get a resistant infection.....

MYTH! 10% of humans carry resistant bacteria (1). They can arise spontaneously, from person to person, and through picking them up during a trip to the hospital - even if you are just visiting a patient.

WHAT IS

Antibiotic resistance

and why should you care?

VANESSA TORO

BIO370-Wednesday section

1. Katherine E. Fleming-Dutra et al., "Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011," Journal of the American Medical Association 315, no. 17 (2016): 1864-73, <https://www.ncbi.nlm.nih.gov/pubmed/27139059>.

2. <https://www.cdc.gov/drugresistance/>

1. <https://www.antibioticresearch.org.uk/about-antibiotic-resistance/bacterial-infections/myths-about-antibiotic-resistance/>

So what?

The full implications of antibiotic resistance are unknown because there is currently no system in place to track resistance globally. However, we do know that many medicines could become obsolete. In other words, common infections could turn deadly.

Antibiotic resistance leads to:

- Higher medical costs
- Prolonged hospital stays
- Increased mortality



Causes of antibiotic resistance



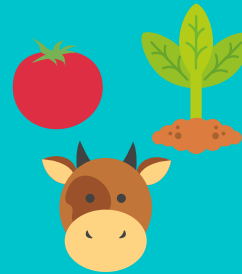
Over-prescribing of antibiotics



Overuse of antibacterial substances. Antibacterials kill all bacteria, good or bad. Regular soap won't kill healthy bacteria (2)



Patients not finishing antibiotic treatment



Overuse of antibiotics in livestock and crops



Poor hygiene and sanitation



Poor infection control in medical settings

Actions you can take to limit resistance

WHEN YOU GO TO THE DOCTOR'S OFFICE, DO NOT DEMAND ANTIBIOTICS
WHY? IF YOU DON'T HAVE A BACTERIAL INFECTION, ANTIBIOTICS WILL NOT WORK. BESIDES THAT, ANTIBIOTICS CAN MAKE SOME BACTERIAL INFECTIONS WORSE (3).

IF GIVEN ANTIBIOTICS, USE EXACTLY AS PRESCRIBED FOR THE FULL AMOUNT OF TIME (DO NOT SAVE FOR LATER USE)

WHY? SYMPTOMS MAY DISAPPEAR, BUT BACTERIA MAY STILL BE PRESENT. IF YOU STOP TREATMENT BEFORE ORIGINALLY PRESCRIBED, THE REMAINING BACTERIA WILL MULTIPLY, INCREASING LIKELIHOOD OF ABR (ANTIBIOTIC RESISTANCE).

CAREFULLY WASH ALL PRODUCE AND AVOID CONSUMING UNDERCOOKED MEAT

WHY? ANTIBIOTICS SPRAYED ON CROPS CAN LEAVE RESIDUE. AS FOR MEAT, COOKING TO PROPER TEMPERATURE CAN KILL RESISTANT BACTERIA, PREVENTING SPREAD TO YOU AND YOUR FAMILY (2).

USE ANTIBACTERIAL CLEANING PRODUCTS ONLY WHEN CARING FOR A SICK INDIVIDUAL WITH WEAKENED IMMUNE DEFENSES

WHY? BACTERIAL GENES THAT CONFER RESISTANCE TO ANTIBACTERIALS ARE SOMETIMES CARRIED ON PLASMIDS THAT ALSO BEAR ABR GENES (1). BY PROMOTING THE GROWTH OF BACTERIA BEARING SUCH PLASMIDS, ANTIBACTERIALS MAY ACTUALLY FOSTER "DOUBLE RESISTANCE—TO ANTIBIOTICS AS WELL AS ANTIBACTERIALS" (1).

1. Levy, Stuart B. "The Challenge of Antibiotic Resistance." *Scientific American*, vol. 278, no. 3, 1998, pp. 46-53. JSTOR, www.jstor.org/stable/26057703. Accessed 19 Oct. 2020.
2. "Let's Meat in the Kitchen: Preventing the Spread of Antibiotic Resistance through Safe Handling of Meat and Poultry Products." Resources, Milken Institute School of Public Health at the George Washington University, 14 Dec. 2017, onlinepublichealth.gwu.edu/resources/safe-handling-of-meat-and-poultry/
3. Wong, C S et al. "The risk of the hemolytic-uremic syndrome after antibiotic treatment of Escherichia coli O157:H7 infections." *The New England journal of medicine* vol. 342,26 (2000): 1930-6. doi:10.1056/NEJM200006293422601

1. www.who.int/drugresistance
2. Larson EL, Lin SX, Gomez-Pichardo C, Della-Latta P. Effect of antibacterial home cleaning and handwashing products on infectious disease symptoms: a randomized, double-blind trial. *Ann Intern Med*. 2004 Mar 2;140(5):321-9. doi: 10.7326/0003-4819-140-5-200403020-00007. PMID: 14996673; PMCID: PMC2082058.

1. <https://www.who.int/news-room/fact-sheets/detail/antibiotic-resistance>