



PROGRAMA DE PÓS GRADUAÇÃO
EM ALIMENTOS E NUTRIÇÃO
O SEMEAR DA CIÊNCIA

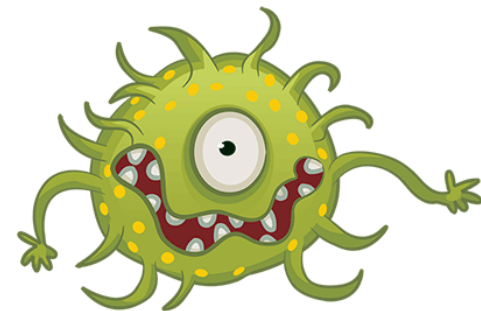
***Superbugs:* uma consequência da vida moderna.**

Orientador: Prof. Dr. Victor Augustus Marin

Juliana Wolff Salles de oliveira



Bug



Superbug

If unchecked, 10 million people a year could be dying from antibiotic-resistant superbugs by 2050—more than currently die from cancer.

MIT Technology Review

RESISTÊNCIA A ANTIBIÓTICOS

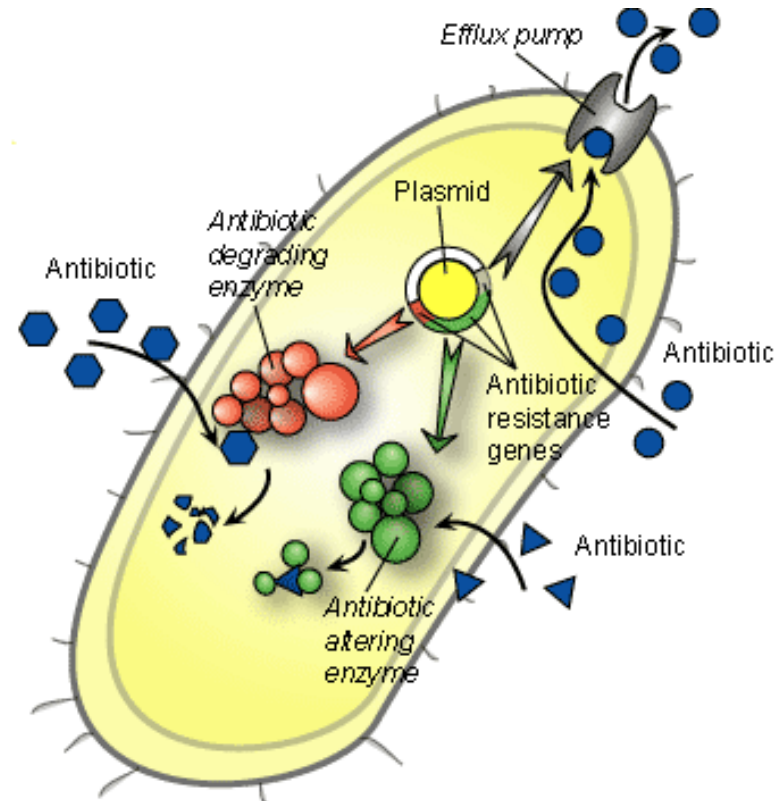
A capacidade das bactérias resistirem aos efeitos das drogas. Isso significa que seu crescimento não é interrompido.

Uso excessivo de antibióticos tem ajudado a criar bactérias que são capazes de resistir por mais tempo que as drogas usadas para tratá-los.

- Resistência aos antibióticos compromete nossa habilidade para tratar essas infecções e é uma séria ameaça à saúde pública.
- *Salmonella* e *Campylobacter*, duas das muitas bactérias comumente transmitidas através dos alimentos, causam um estimado 410.000 infecções resistentes aos antibióticos nos Estados Unidos anualmente.

ADQUIRINDO RESISTÊNCIA

- DNA
- TRANSPOSONS
- PLASMÍDEOS
- “PROMISCUIDADE”
- *BOMBA DE EFLUXO*



Deadly, Drug-Resistant 'Superbugs' Pose Huge Threat, W.H.O. Says

[Leer en español](#)

By DONALD G. McNEIL Jr. FEB. 27, 2017



O ex-diretor do Center for Disease Control and Prevention (CDC) Thomas R Frieden, classificou o surgimento dos *Superbugs* como um problema de segurança nacional tão sério quanto o terrorismo. “Uma das piores e mais sérias ameaças a saúde pública”, disse em entrevista ao NY Times.

pathogens as a national security threat equivalent to terrorism, and Dr. Thomas R. Frieden, the recently retired director of the Centers for Disease Control and Prevention, called them “one of our most serious health threats.”

Almost untreatable superbug CPE poses serious threat to patients, doctors warn

Immune to some of the last-line antibiotics available to hospitals, cases of carbapenemase-producing *Enterobacteriaceae* are on the rise, NHS data reveals

- [Read the Bureau of Investigative Journalism's report on the rise of CPE](#)





i The white circles are antibiotic discs. The culture plate on the right contains carbapenemase-producing *Enterobacteriaceae* which is able to grow near the antibiotic discs, showing its resistance to the drugs. Photograph: Science History Images/Alamy Stock Photo

Estimated minimum number of illnesses and deaths caused by antibiotic resistance*:

At least  **2,049,442** illnesses,
 **23,000** deaths

**bacteria and fungus included in this report*

Estimated minimum number of illnesses and death due to *Clostridium difficile* (*C. difficile*), a unique bacterial infection that, although not significantly resistant to the drugs used to treat it, is directly related to antibiotic use and resistance:

At least  **250,000** illnesses,
 **14,000** deaths

(<http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf#page=13>)



The challenge of global antibiotic policy: Improving access and preventing excess

Posted on February 16, 2016 by Ramanan Laxminarayan



Ramanan
Laxminarayan,
Director and Senior
Fellow, Center for
Disease Dynamics,
Economics & Policy

Antibiotic resistance has been making headlines lately, and for good reason: the [identification of new resistance genes](#) [↗], [rising resistance rates](#) [↗] and widespread [public misunderstanding of the problem](#) [↗] are all causes for concern about the growing proliferation of drug-resistant “superbugs.”

But in many low- and middle-income countries, millions of people lack access to antibiotics and common infections like pneumonia pose a far greater threat than any superbug. In a new *Lancet* [study](#) [↗], researchers at the Center for Disease Dynamics, Economics & Policy (CDDEP), working with collaborators in the UK and South Africa, estimated that in 101 countries, improved access to antibiotics could avert approximately three-fourths of the deaths of children under five caused by pneumonia alone each year—averting about 455,000 deaths annually.

Lack of access to antibiotics is further complicated by rising resistance rates. Overuse of these powerful drugs can lead to the development of drug-resistant bacteria, which renders certain antibiotics powerless to fight infection. Newer, effective drugs may be available, but are usually unaffordable and out of reach for poorer populations. The *Lancet* paper estimated that almost a

quarter-million neonatal deaths (214,000) each year across the globe occur due to untreatable sepsis from infections caused by drug-resistant bacteria.

Superbugs: Antibiotic Resistance Is Becoming a Major Public Health Concern

Home Health Care Management & Practice
2017, Vol. 29(2) 130–133
© The Author(s) 2016
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1084822316659285
journals.sagepub.com/home/HHC



Patricia T. Alpert, DrPH¹

Abstract

Antibiotic resistance has led to the development of so-called “superbugs” that no longer respond to the current treatment modalities. The array of antibiotics available to treat these infections is dwindling with very few antibiotics in the pipeline. This article discussed the pathogens the Centers for Disease Control and Prevention (CDC) has placed in their urgent category: (1) *Clostridium difficile*, (2) Carbapenem-resistant Enterobacteriaceae, and (3) *Neisseria gonorrhoeae*. In addition, a few suggestions for prevention of resistance are offered.

Keywords

antibiotic resistance, superinfections, CDC surveillance, prevention of superinfections, bacterial infections, antibiotics

Resistant antimicrobial pathogens, often referred to as “superbugs,” are a growing concern worldwide. Becoming more and more difficult to treat, the growing concern centers on newly emerging antibiotic-resistant bacteria and the dwindling arsenal of reliable medications for treatment. This article looks at the urgent category of superinfections that are resistant to antibiotics, and preventive strategies are offered.

What Is a Superinfection?

Superinfections also referred to as secondary infections is

noted to be resistant to many of the older antibiotics.¹ The impetus for this crisis is the overuse of antibiotics in the community and in hospitals.

Historical Perspective of Antibiotics

Fleming discovered penicillin² in 1928 at St. Mary’s Hospital in London, which prior to being available commercially was used to treat infection on allied forces in World War II. It became available for commercial consumption in 1945; being touted as the “miracle drug” brought great promise of

Superbugs 1, the World 0

By: Sharifah Sekalala, Posted on: October 18, 2016

World leaders have committed **US\$790m to fighting superbugs**. These are infectious diseases that don't respond to treatment using antibiotics – an essential defence against infections after surgery.

Segundo o MIT, o uso indiscriminado dos antibióticos e a falta de combate aos números crescentes a bactérias multi resistentes, resultará em 10 milhões de mortes anuais em 2050.

bacteria that are resistant to all antibiotics. Without urgent action, it is estimated that antimicrobial resistance will result in **10m deaths annually by 2050**.



World Health
Organization

Giving Big Pharma a fillip

One of the main reasons for the antimicrobial-resistance crisis is that pharmaceutical companies have not been investing in developing new antibiotics. As the director general of the WHO, Margaret Chan, noted, only **two new classes of antibiotics** have reached the market in the last 50 years.

Unless y
This is b
much lo
O'Neill
– comp

Segundo a W.H.O, nos últimos 50 anos apenas 2 novas classes de antibióticos surgiram no mercado. Falta de incentivo? Falta de investimento em novas pesquisas? Falta de comprometimento das indústrias farmacêuticas?

Now that there is growing resistance to antibiotics, doctors are also being **urged to avoid prescribing new antibiotics** unless they have exhausted all the other available options.

Pharmaceutical companies are therefore wary of investing in developing drugs of last resort – drugs whose **patents may expire** before they have recouped the cost of developing them.

New ways to beating superbugs

[Elsevier.com/atlas/story/people/new-ways-to-beating-superbugs](https://elsevier.com/atlas/story/people/new-ways-to-beating-superbugs)

As antibiotics become less effective, it's time to invest in alternatives

By Kendall Morgan PhD | March 2016 winner | Posted on 6 April 2016

Share story:



Each month the Elsevier Atlas Award recognizes research that could significantly impact people's lives around the world.

Alguns cuidados...

Use antibióticos somente quando necessário.

Saber quem é o maior risco para infecção: crianças, gestantes, idosos e pessoas com sistema imunológico debilitado.

- LAVE AS MÃOS E AS SUPERFÍCIES FREQUENTEMENTE.
- CONTAMINAÇÃO CRUZADA
- COZINHAR NA TEMPERATURA CERTA.
- FICA FRIO!



OBRIGADA!