

Antibiotic-Resistant Bacteria: A Serious Threat?

Jürg Schmid, PhD, Senior Risk Engineer, Zurich Insurance Company Ltd

11th Annual Liability Regimes Conference

Keeping the Floodgates Shut? Mastering Accumulation
and Bodily Injury Exposures in a Rapidly Changing Environment

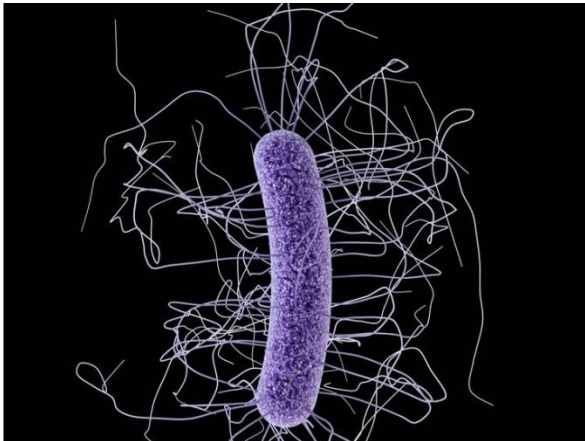
4–5 November 2015, Rüslikon

Antibiotic-Resistant Bacteria: A Serious Threat?

November 5, 2015

By Jürg Schmid, PhD, Senior Risk Engineer, Zurich Insurance Company Ltd

Annual Liability Regimes Conference

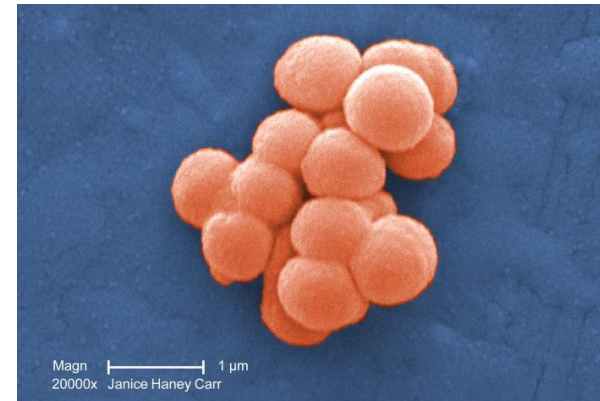


COURTESY OF ILLINOIS CORPORA



Types of resistances

- Intrinsic resistance
 - Not all bacteria species are susceptible to all types of antibiotics. In these cases where bacteria are naturally resistant against a given antibiotic one speaks of intrinsic resistance.
- Acquired resistance
 - If bacteria that normally are susceptible to a given antibiotic become resistant one speaks of acquired resistance.



Resistance strategies

- All resistance strategies are genetically encoded. A new resistance can be acquired by a mutation or through the acquisition of genetic material from other resistant bacteria. In principal, every resistance can be transferred from one bacteria species to any other one.
- Some of the resistance mechanisms are quite specific and render only resistance against a single antibiotic whereas others provide broad resistance against classes of antibiotics. Ultimately, a bacteria can acquire resistance against several classes of antibiotics.

Antibiotic-resistant bacteria

Where can such bacteria be found?

Potential hot spots:

- Humans
 - Hospitals and other health care facilities
- Farm animals
 - Poultry
 - Hogs
- Food

The New York Times

March 5, 2013

Deadly Bacteria That Resist Strongest Drugs Are Spreading

By DENISE GRADY

Deadly infections with bacteria that resist even the strongest antibiotics are on the rise in hospitals in the United States, and there is only a “limited window of opportunity” to halt their spread, health officials warned Tuesday.



Home | Programs | News | Markets | Features | Events | Weath

Features » Superbug threat on the rise through farm animals

Superbug threat on the rise through farm animals

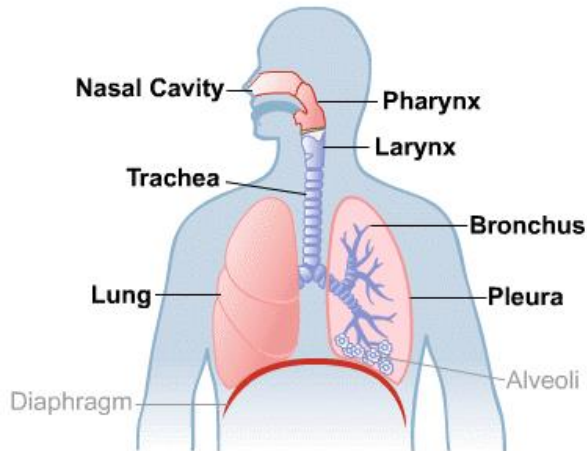
By Flint Duxfield Monday, 29 October 2012



Routes of bacterial infection

Typical diseases

- Respiratory tract
 - Gastrointestinal tract
 - Genitourinary tract
 - Unnatural routes opened up by breaks in mucous membranes or skin
- Pneumonia
 - Diarrhea
 - Urinary track infections
 - Wound infections
 - Blood stream infections
 - Meningitis
 - Otitis (inflammation of the ear)



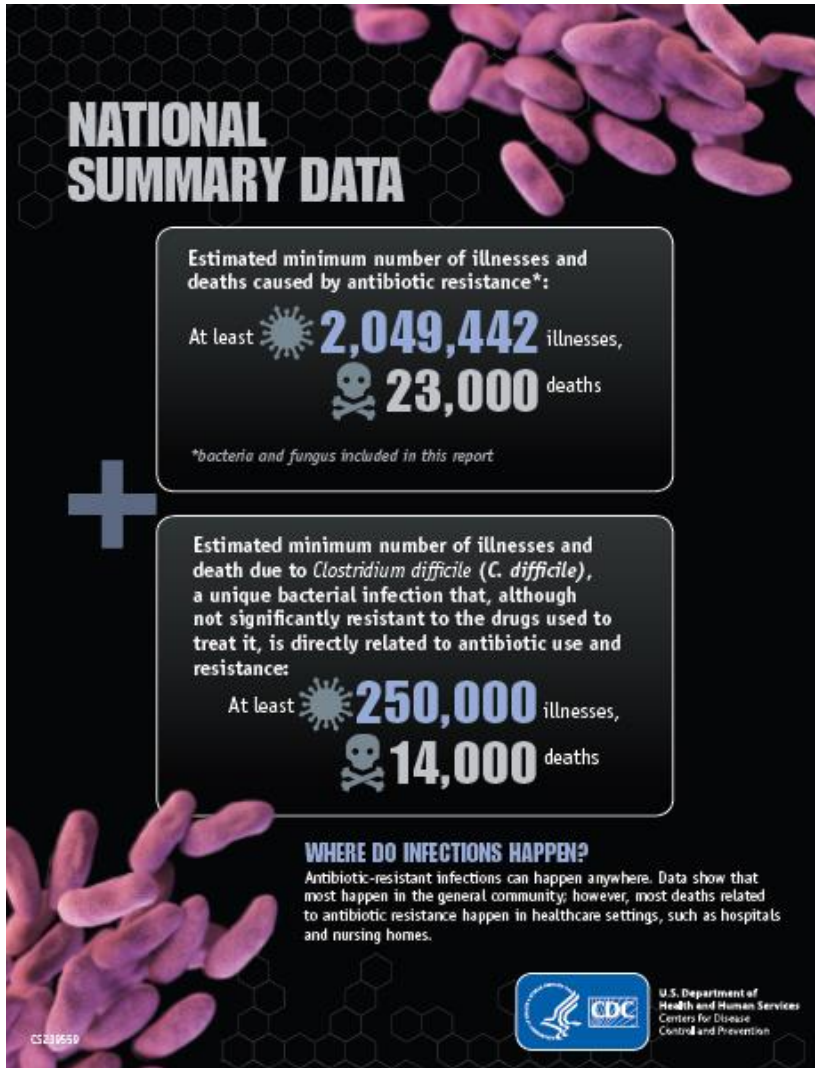
(<http://www.nlm.nih.gov/medlineplus/lungsandbreathing.html>)



(<http://www.cbsnews.com/pictures/deadly-skin-infection-12-graphic-photos-that-could-save-your-life>)

How sever is the problem?

An estimation by the US Center for Disease Control and Prevention



(<http://www.cdc.gov/drugresistance/threat-report-2013/>)

1. Situation improves

- Eradicating antibiotic-resistant bacteria will never be possible
- But one could minimize the problem by implementing certain measures
 - Very restrictive use of antibiotics
 - Thorough hygiene regimes

2. Situation stays as it is

- That the situation stays as it is today without any intervention is almost impossible

3. Situation gets worse

- Most predictions assume that the situation is getting worse than it is today
- One day we may run out of effective antibiotics