

Different types of superbugs



Infection in focus



Antibiotic resistance is growing, and we are fast running out of treatment options. (1)

The **World Health Organization** has drawn up a list of the highest priority needs for new antibiotics, divided into 3 categories according to the **urgency of need for new antibiotics**: critical, high and medium priority. (1)

WHO priority pathogens list for Research & Development of new antibiotics (1)



Priority 1:
CRITICAL



Priority 2:
HIGH



Priority 3:
MEDIUM

Priority 1: **CRITICAL** ⁽¹⁾

- * *Acinetobacter baumannii*, carbapenem-resistant.
- * *Pseudomonas aeruginosa*, carbapenem-resistant.
- * *Enterobacterales**, carbapenem-resistant, ESBL-producing.

*Enterobacterales include: *Klebsiella pneumonia*, *Escherichia coli*, *Enterobacter spp.*, *Serratia spp.*, *Proteus spp.*, and *Providencia spp.*, *Morganella spp.*

The most critical group of all includes multidrug resistant bacteria that pose a particular threat in hospitals, nursing homes, and among patients whose care requires devices such as ventilators and blood catheters.

They can cause severe and often deadly infections such as bloodstream infections and pneumonia. (1)

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Acinetobacter baumannii bacteria are resistant to important antibiotics called **carbapenems**. They are highly-drug resistant and can cause a range of infections for hospitalized patients, including pneumonia, wound or blood infections. (2)

Pseudomonas aeruginosa, resistant to **carbapenems**, can cause skin rashes and ear infections in healthy people but also severe blood infections and pneumonia when contracted by sick people in the hospital. (2)

Enterobacterales, a family of bacteria (including *Klebsiella*, *E. coli*, *Serratia*, and *Proteus*) living in the human gut, are resistant to both carbapenems and cephalosporins, another class of antibiotics. (2)

The second and third tiers in the list – the high and medium priority categories – contain other increasingly drug-resistant bacteria that cause more common diseases such as **gonorrhoea** and **food poisoning** caused by *Salmonella*. (1)

Priority 2: **HIGH** ⁽¹⁾

- * ***Enterococcus faecium***, vancomycin-resistant.
- * ***Staphylococcus aureus***, methicillin-resistant, vancomycin-intermediate and resistant.
- * ***Helicobacter pylori***, clarithromycin-resistant.
- * ***Campylobacter spp.***, fluoroquinolone-resistant.
- * ***Salmonellae***, fluoroquinolone-resistant.
- * ***Neisseria gonorrhoeae***, cephalosporin-resistant, fluoroquinolone-resistant.

Methicillin-resistant *Staphylococcus aureus* (MRSA) does not respond to methicillin and other related antibiotics and **can** cause acute skin infections and, in more serious cases, pneumonia or bloodstream infections.

Many people recover from MRSA infections, but, in some cases, it can be life-threatening. (3)

Enterococci, a type of bacteria normally present in the gut and in the female genital tract, also found in the environment.



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Vancomycin is an antibiotic often used to treat infections caused by enterococci, but some of them have become resistant to vancomycin and they are called vancomycin-resistant enterococci (VRE).

Most VRE infections occur in hospitals, regarding the urinary tract, the bloodstream, wounds associated with catheters or surgical procedures, or other body sites. (4) (5)

Priority 3: **MEDIUM** ⁽¹⁾

- * *Streptococcus pneumoniae*, penicillin-non-susceptible.
- * *Haemophilus influenzae*, ampicillin-resistant.
- * *Shigella spp.*, fluoroquinolone-resistant.

Streptococcus pneumoniae (pneumococcus) is a leading cause of bacterial pneumonia and meningitis in the United States and a common cause of bloodstream, ear and sinus infections. (6)

Shigella infections have become increasingly resistant since 2013. Shigella is difficult to control because it spreads easily and rapidly between people, including through sexual activity. (6)



Sources

- 1) WHO publishes list of bacteria for which new antibiotics are urgently needed
- 2) WHO Releases List of World's Most Dangerous Superbugs
- 3) NIH News IN Health | Stop the Spread of Superbugs
- 4) VRE in Healthcare Settings | HAI
- 5) VRE Infection
- 6) 2019 AR Threats Report