

Guidance at a Glance – Gram Negative Bacteria

These guidelines support the delivery of care in community and social care settings. This guidance reflects best practice/national guidelines.

KEY POINTS

Gram negative bacteria cause a range of infections and there are many different types of Gram-negative bacteria. Bacteria that are normally harmless in their normal environment can cause problems if they grow in other parts of the body and can cause a range of infections with differing severity and associated mortality. One of the most serious infections Gram-negatives can cause **bloodstream infections**. Gram-negative bacteria such as *Escherichia coli*, *Klebsiella* spp. and *Pseudomonas aeruginosa* are the leading causes of healthcare associated bloodstream infections.

E.COLI

E. coli are bacteria found in the environment, foods, and intestines of people and animals. *E. coli* are a large and diverse group of bacteria. Although most strains of *E. coli* are harmless, others can make you sick. Some kinds of *E. coli* can cause diarrhoea, while others cause urinary tract infections, respiratory illness and pneumonia, and other illnesses.

PSEUDAMONAS

Pseudomonas aeruginosa is often found in soil and ground water. It can cause a wide range of infections, particularly in those with a weakened immune system e.g. newborns, people with severe burns, diabetes mellitus or cystic fibrosis. People with indwelling devices are also at risk of infections.

P. aeruginosa infections are sometimes associated with contact with contaminated water.

KLEBSIELLA

Klebsiella is a type of Gram-negative bacteria that can cause different types of infections, including pneumonia, bloodstream infections, wound or surgical site infections, and meningitis. *Klebsiella* bacteria are normally found in the human intestines (where they do not cause disease). They are also found in human stool (faeces). *Klebsiella* infections commonly occur among those who are already unwell, have indwelling or are taking long courses of certain antibiotics

AMR

Currently in the UK, the greatest and increasing threat from drug resistant organisms is from Gram-negative bacteria, named so because the cell envelope that surrounds them does not retain a staining dye. The complex chemical structure of this envelope makes it difficult for large molecules to get into bacterial cell. This makes it harder to find new antibiotics that will work against these bacteria.

The government has acknowledged the need for action and in November 2016 set out an ambitions to reduce healthcare associated Gram-negative BSIs by 50% by 2021 and reduce inappropriate antimicrobial prescribing by 50% by 2021.



- Public Health England (2017) *Health matters: preventing infections and reducing antimicrobial resistance*. Available from: <https://www.gov.uk/government/publications/health-matters-preventing-infections-and-reducing-amr/health-matters-preventing-infections-and-reducing-antimicrobial-resistance> [accessed on 01.07.2024]
- Public Health England (2018) *Pseudomonas aeruginosa: guidance, data and analysis*. Available from: <https://www.gov.uk/government/collections/pseudomonas-aeruginosa-guidance-data-and-analysis> [accessed on 01.07.2024].