

Klebsiella Pneumoniae: Notes for UPSC

Klebsiella Pneumoniae is a gram-negative, nonmotile, lactose-fermenting, encapsulated, facultative anaerobic, rod-shaped bacterium.

This concept is featured in the science and technology section of the UPSC Exam.

What are the symptoms?

The illness from this bacterium affects middle-aged and older men with debilitating diseases. This patient population will suffer from impaired respiratory host defenses, including persons with diabetes, alcoholism, malignancy, liver disease, and certain occupational exposures. Many of these infections are obtained when a person is in the hospital for some other reason in what is known as a nosocomial infection.

In addition to pneumonia, Klebsiella can also cause infections in the urinary tract, lower biliary tract, and recent wounds from surgical procedures. The range of clinical diseases includes pneumonia, thrombophlebitis, urinary tract infection, cholecystitis, diarrhea, upper respiratory tract infection, wound infection, osteomyelitis, meningitis, and bacteremia, and sepsis. For patients with an invasive device in their bodies, contamination of the device becomes a risk; neonatal ward devices, respiratory support equipment, and urinary catheters put patients at increased risk. Also, the use of antibiotics can be a factor that increases the risk of infection with Klebsiella bacteria. Sepsis and septic shock can follow entry of the bacteria into the blood.

To know more about the causes and effects of the Dengue Fever, visit the linked article.

The common symptom in a non-hospital environment caused by Klebsiella bacteria is pneumonia, typically in the form of bronchitis. These patients have an increased tendency to develop lung abscess, and pleural adhesions. It has a death rate around 50%, even with proper medication and antimicrobial therapy

Individuals with Klebsiella pneumonia tend to cough up the usual sputum, as well as having fever, nausea, and vomiting. Klebsiella pneumonia tends to affect people with underlying conditions, such as alcoholism.

What is the treatment and prevention for Klebsiella Pneumoniae?

Klebsiella Pneumoniae can be treated with antibiotics provided so long as the wounds are not antibiotic resistant. Infections by Klebsiella Pneumoniae can be difficult to treat because fewer antibiotics are effective against them. In such cases, a microbiology laboratory must run tests to determine which antibiotics will treat the infection. More specific treatments of Klebsiella

pneumonia are given in its section above. For urinary tract infections with multidrug-resistant *Klebsiella* species, a combination therapy with amikacin and meropenem has been suggested.

Klebsiella possesses beta-lactamase giving it resistance to ampicillin, many strains have acquired an extended-spectrum beta-lactamase with additional resistance to carbenicillin, amoxicillin, and ceftazidime. The bacteria remain susceptible to aminoglycosides and cephalosporins, varying degrees of inhibition of the beta-lactamase with clavulanic acid have been reported.

In order to prevent the spread of *Klebsiella* infections between patients, certain specific infection-control precautions must be followed, which may include strict adherence to hand hygiene (preferably using an alcohol based hand rub (60-90%) or soap and water if hands are visibly soiled. Alcohol based hand rubs are effective against these types of bacteria and wearing gowns and gloves when they enter rooms where patients with *Klebsiella*-related illnesses are housed. Healthcare facilities also must follow strict cleaning procedures to prevent the spread of *Klebsiella*.

To prevent the spread of infections, hands must be washed following the activities listed below:

- Before preparing or eating food
- Before touching their eyes, nose, or mouth
- Before and after changing wound dressings or bandages
- After using the restroom
- After blowing their nose, coughing, or sneezing
- After touching hospital surfaces such as bed rails, bedside tables, doorknobs, remote controls, or the phone.

Questions related to *Klebsiella Pneumoniae*

What disease does *Klebsiella pneumoniae* cause?

Klebsiella is a type of Gram-negative bacteria that can cause different types of healthcare-associated infections, including pneumonia, bloodstream infections, wound or surgical site infections, and meningitis.

How dangerous is *Klebsiella pneumoniae*?

Klebsiella pneumoniae can be dangerous if they get into other parts of a patient's body, especially if the initial infection has already taken place. They can turn into "superbugs" that are almost impossible to fight with common antibiotics, (also known as antimicrobial resistance) thus causing serious problems to the patient's health.

How is *Klebsiella pneumoniae* treated?

Uncomplicated cases caused by susceptible strains may be treated with most oral agents. Complicated cases may be treated with oral quinolones or with intravenous third-generation cephalosporins.

Is Klebsiella Pneumoniae contagious?

The bacteria are not airborne, so you can't contract a Klebsiella Pneumoniae infection by breathing the same air as an infected person. Instead, Klebsiella Pneumoniae is spread through direct person-to-person contact, such as when someone with contaminated hands touches a wound.