

# A Review Article on Pneumonia

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**Abstract:** *Pneumonia is a leading cause of death in the world and the sixth most common cause of death in the India. It is the number one cause of death from infectious diseases in the India. Every year in the India, there are from 5-10 million cases of CAP leading to as many as 1.1 million hospitalizations. The word is from Greek πνεῦμων (pneûmōn) meaning "lung". It is commonly caused by Streptococcus pneumonia. It can spread to others through inhalation of airborne droplets from a sneeze or cough. It can be treated by using some of antibiotics (ampicillin, amoxicillin), antifungal antiviral drugs.*

**Keywords:** Pneumonia, infectious diseases, Streptococcus pneumonia

## 1. Introduction

Pneumonia is a lung infection involving the lung alveoli (air sacs) and can be caused by microbes, including bacteria, viruses, or fungi. It is the leading infectious cause of hospitalization and death in the United States and exacts an enormous cost in economic and human terms. Healthy individuals can develop pneumonia, but susceptibility is greatly increased by a variety of personal characteristics. Pneumonia is an inflammatory condition of the lung affecting primarily the small air sacs known as alveoli. Typically symptoms include some combination of productive or dry cough chest pain, fever, and trouble breathing. It is caused by pathogenic gram negative bacterium influenza and Haemophilus influenza which is facultative anaerobic pathogenic bacterium [2].

### Classification

Pneumonia can be classified according to the organism that caused the infection.

### Types by germ

- **Bacterial pneumonia:** The most common bacteria that cause bacterial pneumonia are Streptococcus pneumonia, Clamydophila pneumonia and Legionella pneumophila [7]
- **Viral pneumonia:** Respiratory viruses are often the cause of pneumonia, especially in young children and older people. Viral pneumonia is usually not serious and lasts for a shorter time than bacterial pneumonia.
- **Mycoplasma pneumonia:** this type of pneumonia is caused in mild cases which is mostly seen in older children and young adults. Mycoplasma organisms are not viruses or bacteria,
- **Fungal pneumonia:** Fungi from soil or bird droppings can cause pneumonia in people who inhale large amounts of the organisms. They spread this pneumonia to people with chronic diseases and weakened immunity with disease like AIDS One kind of fungal pneumonia is called "Pneumocystis jirovecii" pneumonia (PCP).[7]

### Epidemiology:

**Children:** The World Health Organization estimates that one in three newborn infant (0-5YR) deaths are due to pneumonia. In 2008 pneumonia occurred in approximately 156 million children (151 million in the developing world and 5 million in the developed world). It caused in 1.6

million deaths or 28–34% of all deaths in those less than five years of age of which 95% occur in the developing world. Countries with the greatest burden of disease include: India (43 million), China (21 million) and Pakistan (10 million). [8]

**Adults:** Pneumonia (CAP) showed an increased incidence of CAP with increasing patient age; the annual incidence of pneumonia in the USA was 24.8 cases per 10,000 adults, with the highest rates among adults aged between 65 and 79 years of age (63.0 cases per 10,000 adults) and those aged 80 years or older (164.3 cases per 10,000 adults) [5].

**Symptoms:** Pneumonia symptoms can be mild to life-threatening. The most common symptoms of pneumonia can include. [6]

- Cough with phlegm
- Fever, sweating and chills
- Shortness of breath with Chest pain
- Children under 5 years of age may have fast breathing.
- Infants may vomit, lack energy, or have trouble drinking or eating.
- Older people may have a lower-than-normal body temperature.[6]

**Risk:** Children younger than 2 years and adults older than 65 years are at increased risk and weakened immune system chronic lung disease, such as COPD, asthma, or cystic fibrosis, diabetes or heart disease.

### Pathogenesis:

The invading organism causes symptoms, in part, by provoking an overly exuberant immune response in the lungs. The small blood vessels in the lungs become leaky, and protein-rich fluid seeps into the alveoli which results in less functional area for oxygen-carbon dioxide exchange.

The patient becomes relatively oxygen deprived and breathes faster and faster, in an effort to bring in more oxygen and blow off more carbon dioxide. Mucus with blood is increased due to leaky capillaries which decreases efficiency of gas exchange in the lung.

The alveoli fill further with fluid and debris from the large number of white blood which causes lung inflammation that leads to pneumonia [8]

## 2. Diagnosis

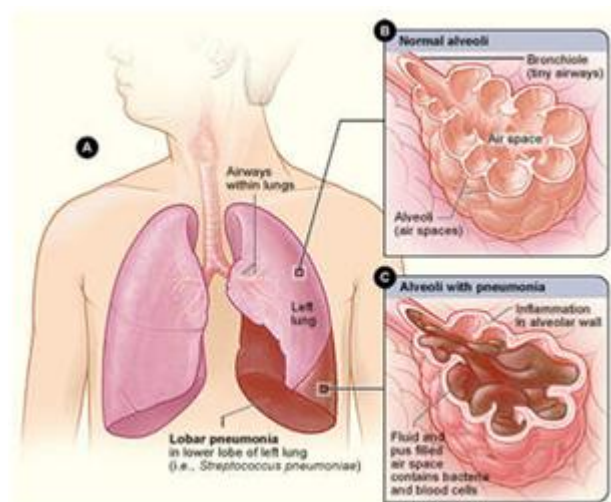
- 1) Physical exam: With the help of a stethoscope lungs may make crackling, bubbling, and rumbling sounds when you inhale. You also may be wheezing, and it may be hard to hear sounds of breathing in some areas of your chest.
- 2) Chest X-ray (suspect's pneumonia), CT scan, sputum test. [10]

Some patients may need other tests, including:

- 3) **Blood test:** To check white blood cell count and to try to know the germs may be in your blood.
- 4) Pleural fluid culture if there is fluid in the space surrounding the lungs.
- 5) To measure how much oxygen is moving through your bloodstream, done by simply attaching a small clip to your finger for a brief time.
- 6) Bronchoscopy is a procedure used to look into the lungs' airways, which would be performed if you are hospitalized and antibiotics are not working well.[4]

## 3. Treatment

Treatment for pneumonia involves curing the infection and preventing complications. People who have community-acquired pneumonia usually can be treated at home with medication. [2]



Most people can be treated at home by following these steps:

- Drink plenty of fluids to help loosen secretions and bring up phlegm.
- Avoid tobacco consumption, and other addictions (alcohol, drugs).

Specific treatments depend on the type and severity of your pneumonia, your age and your overall health. The options include:

- **Antibiotics:** These medicines are used to treat bacterial pneumonia. It may take time to identify the type of bacteria causing your pneumonia and to choose the best antibiotic to treat it.
- **Cough medicine:** This medicine may be used to calm your cough so that you can rest. Because coughing helps

loosen and move fluid from your lungs, it's a good idea not to eliminate your cough completely.

- **Fever reducers/pain relievers:** These are needed for fever and discomfort. These include drugs such as aspirin, ibuprofen (Advil, Motrin IB, others) and acetaminophen (Tylenol, others).[2]

## Vaccination

There are mainly two types of vaccines recommended by Center for Disease Control and Prevention to every person of 6 months and older for pneumonia. They are:

- 1) The **pneumococcal polysaccharide vaccine (PPV)** is for people over 65 and anyone over the age of two who's in a high-risk group. Most adults will only need to have this vaccination once in their life.
- 2) The **pneumococcal conjugate vaccine (PCV)** is given to infants by the NHS. Babies get their first dose when they're two months old.[7]

## 4. Conclusion

However, vaccines cannot be developed against every microbe. Old microbes continuously change and new ones emerge. New antibiotics alone will not be enough because microbes develop antibiotic resistance. A substantial investigative effort must be mounted to improve the understanding of lung immunity—how it functions to deal with various infections, how it is influenced by common host factors, and how it can be manipulated for therapeutic gain. To complement antibiotics, an array of immunostimulant strategies that can be intelligently applied in different types of patients is needed. Substances that stimulate immunity could also be employed to enhance the body's response to vaccination.

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