Medical Microbiology

Pneumonia-I

Pneumonia is an inflammatory condition of the lungs primarily affecting the small air sacs known as alveoli

General inflammation is more accurately referred to as pneumonitis

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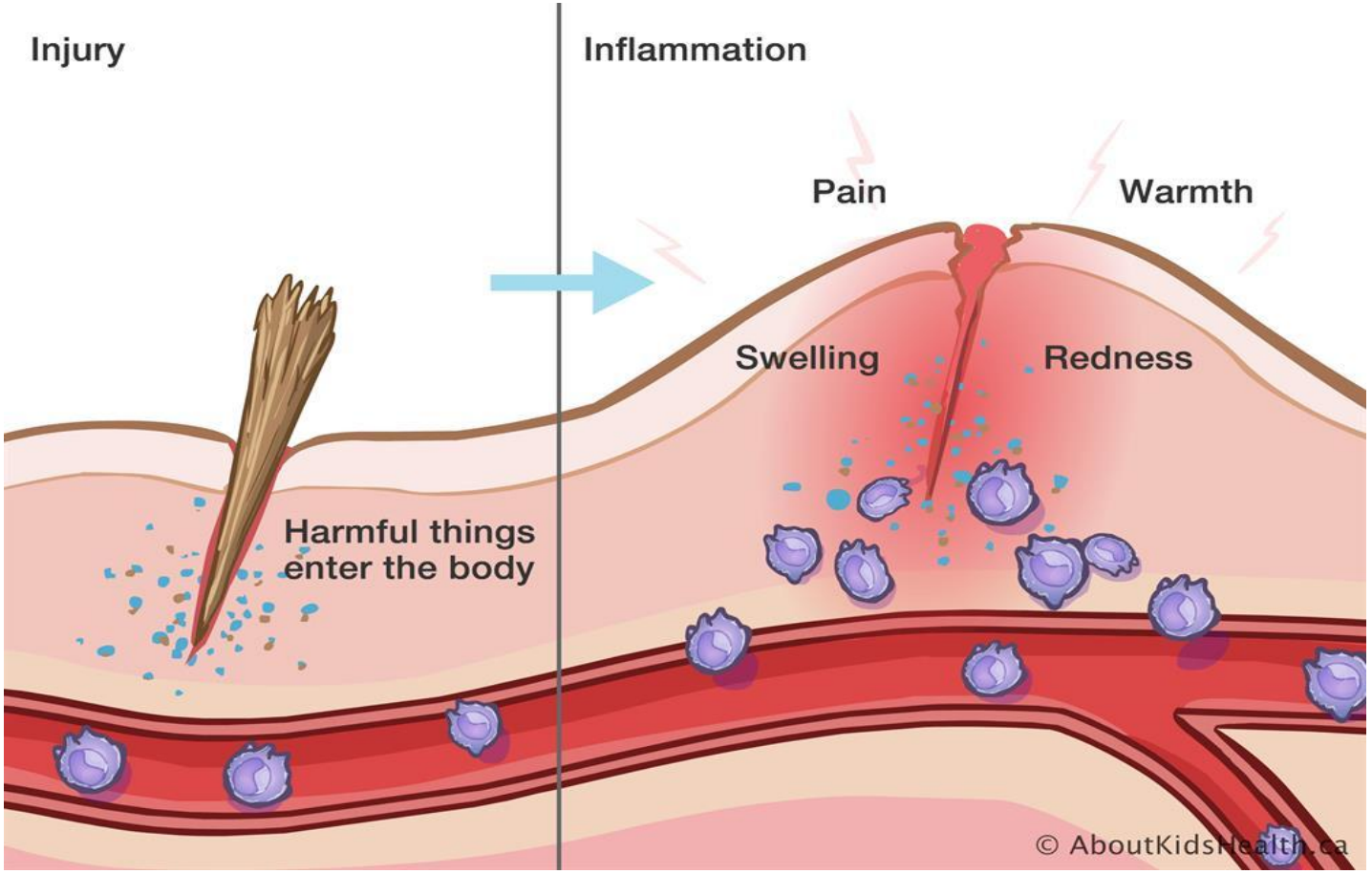
Inflammation (from Latin: *inflammatio*) is part of the complex biological response of body tissues to harmful stimuli, such as pathogens, damaged cells and is a protective response involving immune cells.



DIFFERENCE BETWEEN COMMUNICABLE AND NON COMMUNICABLE DISEASES

COMMUNICABLE DISEASE

* They are caused by attack of pathogen.
* The diseases are brought about by external factors.
* Infectious diseases can pass from diseased person to healthy person.
* Infection occurs through direct contact and other medium

NONCOMUICABLE DISEASES

* They are caused by factors of other than living pathogen.
* The diseases are mostly brought by internal factors.
* Non communicable disease cannot pass one to another.
* Transmission is absent.

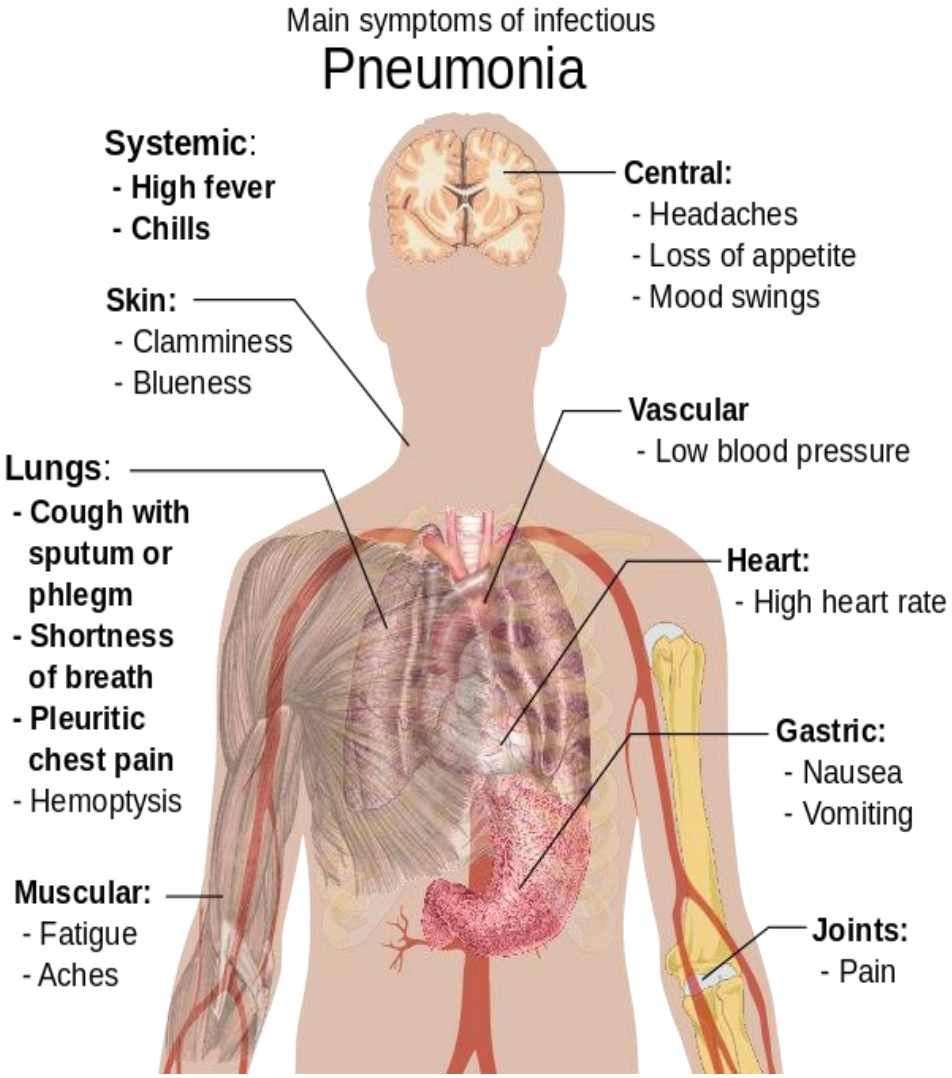
Epidemiology

Each year, pneumonia affects about 450 million people globally (7% of the population) and results in about 4 million deaths. Pneumonia often shortens the period of suffering among those already close to death and has thus been called "the old man's friend".

- **Bacterial and viral cases of pneumonia usually result in similar symptoms.**

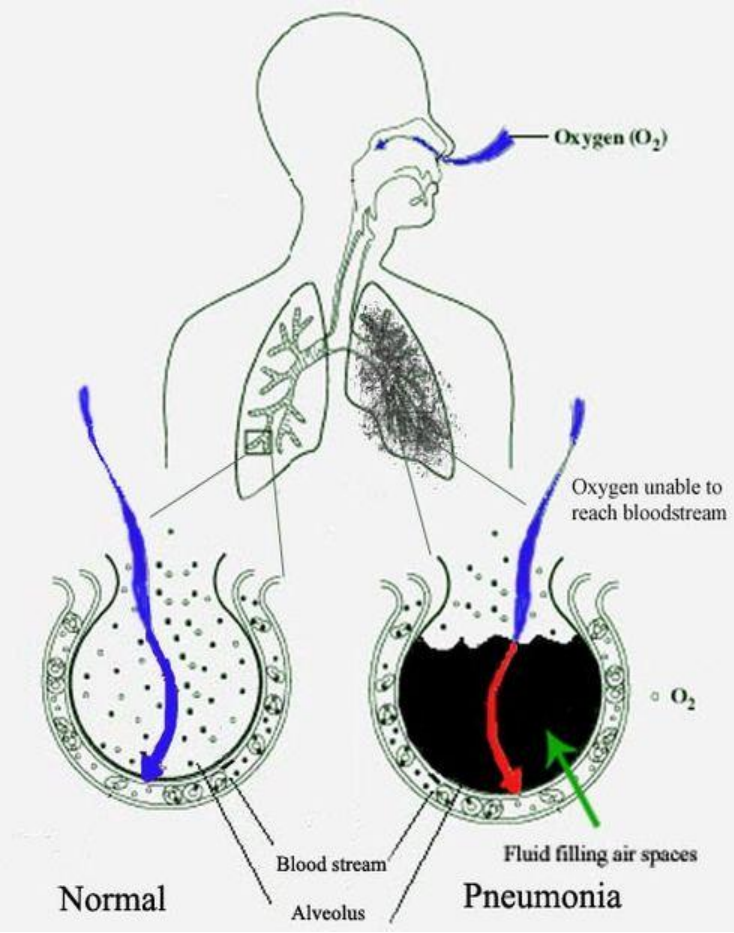
- **Pneumonia caused by *Legionella* may occur with abdominal pain, diarrhea, or confusion.**
- **Pneumonia caused by *Streptococcus pneumoniae* is associated with rusty colored sputum.**
- **Pneumonia caused by *Klebsiella* may have bloody sputum often described as "currant jelly" (hemoptysis)**
- **Pneumonia caused by *Mycoplasma pneumoniae* may occur in association with swelling of the lymph nodes in the neck, joint pain, or a middle ear infection.**

- **Viral pneumonia presents more commonly with wheezing than bacterial pneumonia.**



The disease may be classified by where it was acquired, such as community- or hospital-acquired or healthcare-associated pneumonia

Bacteria are the most common cause of community-acquired pneumonia (CAP), with *Streptococcus pneumoniae* isolated in nearly 50% of cases.
Other include *Haemophilus influenzae* in 20%, *Chlamydophila pneumoniae* in 13%, and *Mycoplasma pneumoniae* in 3% of cases
Staphylococcus aureus; *Moraxella catarrhalis*; and *Legionella pneumophila*. Drug-resistant *Streptococcus pneumoniae* (DRSP) and methicillin-resistant *Staphylococcus aureus* (MRSA)

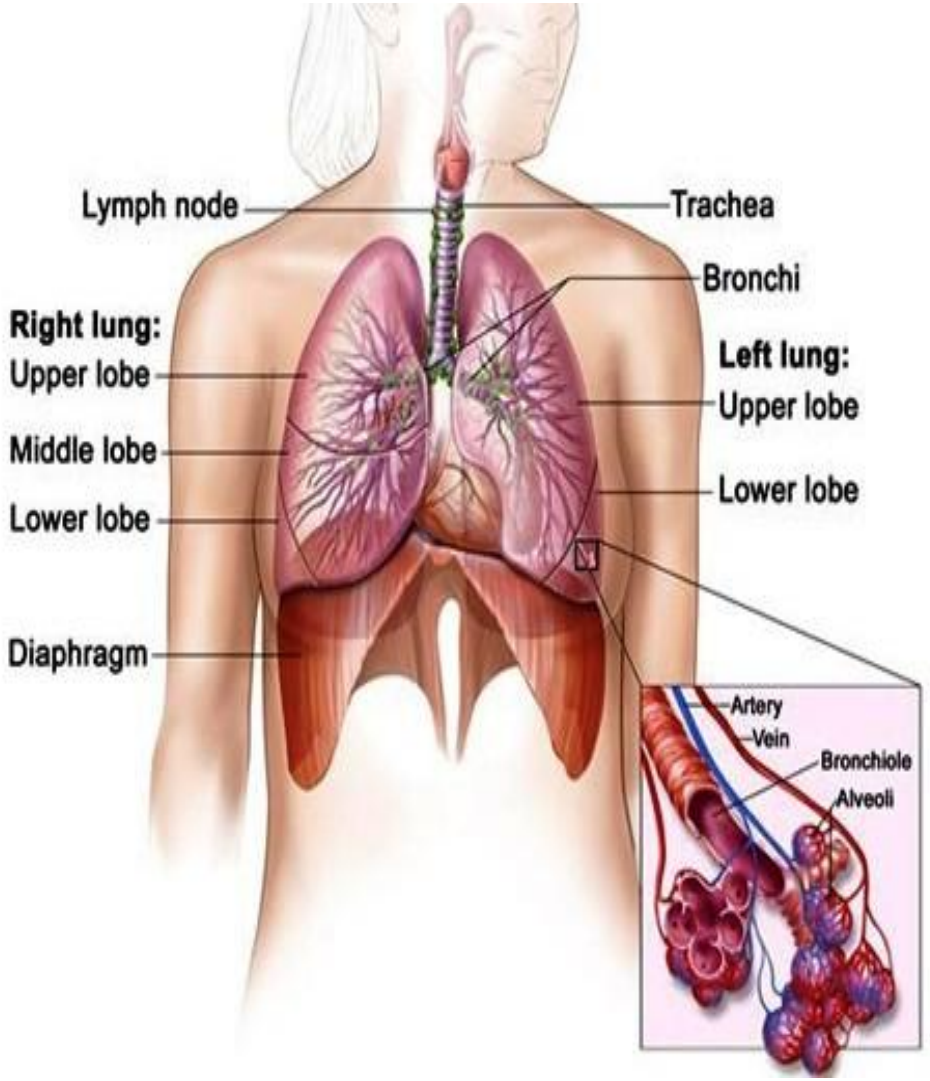


In adults, viruses account for about one third of pneumonia cases, and in children for about 15% of them. These include rhinoviruses, coronaviruses, influenza virus, respiratory syncytial virus (RSV), adenovirus, and parainfluenza

- **Once in the lungs, bacteria may invade the spaces between cells and between alveoli, where the macrophages and neutrophils attempt to inactivate the bacteria.**

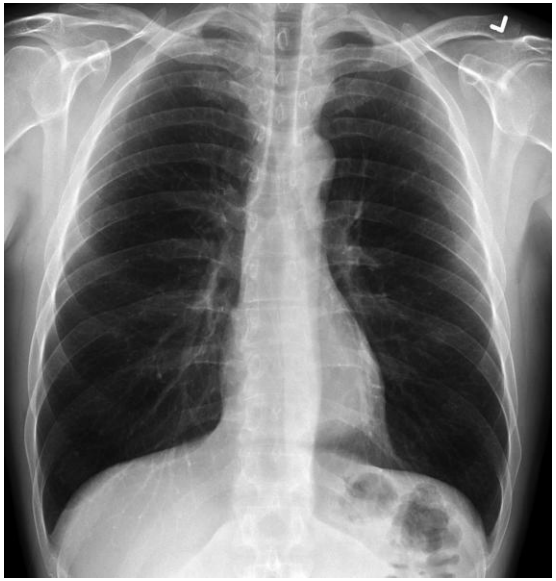
- **The neutrophils also release cytokines, causing a general activation of the immune system. This leads to the fever, chills, and fatigue**

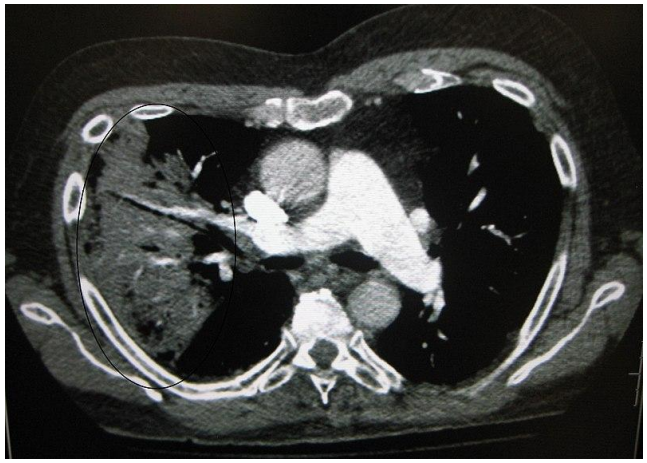
- **The neutrophils, bacteria, and fluid from surrounding blood vessels fill the alveoli, resulting in the consolidation seen on chest X-ray.**



Viruses also make the body more susceptible to bacterial infections; in this way, bacterial pneumonia can occur at the same time as viral pneumonia

Diagnosis





A computerized tomography (**CT**) **scan**

Pneumonia is typically diagnosed based on a combination of physical signs + chest X-ray.

The WHO has defined pneumonia in children clinically based on either a cough or difficulty breathing and a rapid respiratory rate.

A RRR is defined as **> 60 breaths** per minute in children under 2 m old, **> 50 breaths** per minute in children 2 m-1 y old, or **>40 breaths** per minute in children 1 to 5 y old.

Lack of wheezing and the presence of chest pain are indicator of *Mycoplasma pneumoniae* **in children with pneumonia.**

In adults, **C-reactive protein (CRP)** may help support the diagnosis. For those with CRP less than 20 mg/L without convincing evidence of pneumonia, antibiotics are not recommended.

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Pneumonia

EDITORIAL Open Access

The old man's friend

Ger T. Rijkers[1*] and Stephen I. Pelton[2]

Editorial

The term "old man's friend" is often used when referring to pneumonia. Searching for it on Google yields 16,400 results in 0.33 s for this combination. The term is attributed to William Osler, who in the first edition of his book *The Principles and Practice of Medicine* (1892) wrote: *Streptococcus pneumoniae*, as well as other representatives of micro-organisms that can cause pneumonia, were trying to get into the brains of the meeting's participants. While in this environment, Allan Cripps had the epiphany to start a new journal focused solely on pneumonia [5]. But why? As he explained in a later interview:

https://pneumonia.biomedcentral.com/articles/10.1186/s41479-018-0052-7