**Upper Respiratory Tract Infection** (URTI) is an illness caused by an acute infection, which involves the upper respiratory tract, including the nose, sinuses, pharynx, larynx.

**Causes**

The most common virus is rhinovirus. Other viruses include the influenza virus, adenovirus, enterovirus, and respiratory syncytial virus. Bacteria may cause roughly 15% of sudden onset pharyngitis presentations. The most common is S. pyogenes, a Group A streptococcus.

**Risk factors**

1- People with asthma and allergic rhinitis are more likely to develop URTI.

2- Smoking is a common risk factor for URTI

3-Immunocompromised individuals including those with cystic fibrosis, HIV, use of corticosteroids, transplantation, and post-splenectomy are at high risk for URTI

4-Anatomical anomalies including facial dysmorphic changes or nasal polyposis or septal deviation also increase the risk of UR

**Symptoms** of URTIs commonly include cough, sore throat, runny nose, nasal congestion, headache, low-grade fever, facial pressure, and sneezing.

Rhinitis affects the nasal mucosa, while rhinosinusitis or sinusitis affects the nose and paranasal sinuses, including frontal, ethmoid, maxillary, and sphenoid sinuses.

Nasopharyngitis (rhinopharyngitis or the common cold) affects the nares, pharynx, hypopharynx, uvula, and tonsils generally.

Pharyngitis inflames the pharynx, hypopharynx, uvula, and tonsils. Epiglottitis (supraglottitis) inflames the superior portion of the larynx and supraglottic area; laryngitis is in the larynx;

Diagnosis is clinical and patient may need X ray or CT for sinusitis Treatment includes simple sedation, decongestant or antibiotic

**Paranasal sinuses** are a group of four paired air-filled spaces that surround the nasal cavity, The sinuses are named according to facial bones in which they are located**.**

1. The [maxillary sinuses](https://en.wikipedia.org/wiki/Maxillary_sinus), the largest of the paranasal sinuses, are under the [eyes](https://en.wikipedia.org/wiki/Human_eye), The ostia for drainage are located high on the medial wall and open into the [semilunar hiatus](https://en.wikipedia.org/wiki/Semilunar_hiatus) of the lateral [nasal cavity](https://en.wikipedia.org/wiki/Nasal_cavity); because of the position of the ostia, gravity cannot drain the maxillary sinus contents when the head is erect.
2. The [frontal sinuses](https://en.wikipedia.org/wiki/Frontal_sinus), superior to the eyes, in the [frontal bone](https://en.wikipedia.org/wiki/Frontal_bone), which forms the hard part of the [forehead](https://en.wikipedia.org/wiki/Forehead).
3. The [ethmoidal sinuses](https://en.wikipedia.org/wiki/Ethmoid_sinus" \o "Ethmoid sinus), which are formed from several discrete air cells within the [ethmoid bone](https://en.wikipedia.org/wiki/Ethmoid_bone" \o "Ethmoid bone) between the [nose](https://en.wikipedia.org/wiki/Human_nose) and the eyes.
4. The [sphenoidal sinuses](https://en.wikipedia.org/wiki/Sphenoidal_sinus" \o "Sphenoidal sinus), in the [sphenoid bone](https://en.wikipedia.org/wiki/Sphenoid_bone)

**Inflammation**

The Para nasal sinuses are joined to the [nasal cavity](https://en.wikipedia.org/wiki/Nasal_cavity) via small orifices called [Ostia](https://en.wikipedia.org/wiki/Sinus_ostium). These become blocked easily by allergic inflammation, or by swelling in the nasal lining that occurs with a [cold](https://en.wikipedia.org/wiki/Common_cold). If this happens, normal drainage of [mucus](https://en.wikipedia.org/wiki/Mucus) within the sinuses is disrupted, and [sinusitis](https://en.wikipedia.org/wiki/Sinusitis)  occur.

These conditions may be treated with drugs such as [decongestants](https://en.wikipedia.org/wiki/Decongestant), which cause vasoconstriction in the sinuses; reducing inflammation; or by traditional techniques of [nasal irrigation](https://en.wikipedia.org/wiki/Nasal_irrigation); or by [corticosteroid](https://en.wikipedia.org/wiki/Corticosteroid).

**Lower respiratory tract infection (LRTI)**

is a term often used to describe infection of the trachea, bronchi, bronchioles , pneumonia and lung abscess

**Acute bronchitis**

It is  [inflammation](https://en.wikipedia.org/wiki/Inflammation) of the [bronchi](https://en.wikipedia.org/wiki/Bronchus) (large and medium-sized airways) of the [lungs](https://en.wikipedia.org/wiki/Lung). In more than 90% of cases, the cause is a [viral infection](https://en.wikipedia.org/wiki/Viral_infection).

Risk factors include exposure to [tobacco smoke](https://en.wikipedia.org/wiki/Tobacco_smoke), dust, and other [air pollution](https://en.wikipedia.org/wiki/Air_pollution). A small number of cases are due to [bacteria](https://en.wikipedia.org/wiki/Bacteria) such as [Mycoplasma pneumoniae](https://en.wikipedia.org/wiki/Mycoplasma_pneumoniae) or [Bordetella pertussis](https://en.wikipedia.org/wiki/Bordetella_pertussis" \o "Bordetella pertussis),

The most common symptom is a [cough](https://en.wikipedia.org/wiki/Cough) that can be dry initially then mucous production . [wheezing](https://en.wikipedia.org/wiki/Wheezing), [shortness of breath](https://en.wikipedia.org/wiki/Shortness_of_breath), [fever](https://en.wikipedia.org/wiki/Fever), and chest discomfort. The infection may last from a few to ten days. The cough may persist for several weeks afterward with the total duration of symptoms usually around three weeks. Some have symptoms for up to six weeks.

Diagnosis is typically based on a person's signs and symptom, CXR used to exclude pneumonia.

Treatmant is with mucolytics, antibiotics, bronchdilaters, steroids and symptomatic treatment.

**Bronchiolitis** is blockage of the small airways in the lungs. Acute bronchiolitis is due to a viral infection usually affecting children younger than two years of age.

Acute bronchiolitis is usually the result of infection by respiratory syncytial virus (72% of cases) or human rhinovirus (26% of cases)

Symptoms may include fever, cough, runny nose, wheezing, and breathing difficulty.

Diagnosis is typically based on a person's signs and symptom, CXR used to exclude pneumonia CT may be used.

Treatmant is with, bronchdilaters, steroids , antibiotics and symptomatic treatment.

**Pneumonia**

It is an inflammatory condition of the lung primarily affecting the alveoli, Pneumonia is usually caused by infection with viruses , bacteria, or fungi.

Pneumonia classified into

**Community-Acquired Pneumonia (CAP)**: refers to pneumonia which is contracted outside any hospital .

**Hospital Acquired Pneumonia (HAP)**: is contracted when one visits a hospital. This can be very serious as the bacteria can be highly resistant to antibiotics

**Aspiration Pneumonia**: This type of pneumonia occurs when patient take in the bacteria through aspiration of food, drink, or saliva into lungs **or the lung injury is mediated secretions of stomach**

**Risk factors**

**Extremes of age, patients with chronic liver or renal disease, patients on immune compromised drugs ,** smokers, chronic lung diseases, heart failure,

**causes**

Typical bacterial Infections:

Streptococcus pnemonie, Haemophilus influenza, Staphylococcus aureus, Klebsiella pneumoniae

Atypical bacterial Infections: Legionella pneumophila, Mycoplasma pneumonia, Chlamydophila pneumoniae

Viral pneumonia: include rhinoviruses, coronaviruses, influenza virus, respiratory syncytial virus (RSV), adenovirus, and parainfluenza.

Pathology

Once in the lungs, bacteria may invade the spaces between cells and between alveoli, where the macrophages and neutrophils (defensive white blood cells) 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 common in bacterial pneumonia. The neutrophils, bacteria, and fluid from surrounding blood vessels fill the alveoli, resulting in the consolidation seen on chest X-ray.

**Diagnosis**

History of fever, cough, rigor , chest pain, fatigue is suggestive, Investigation with pulse oximetry, blood tests – including a complete blood count, serum electrolytes, C-reactive protein level,

chest radiography (CXR) can detect consolidation.

**Lobar Pneumonia** is characterized by inflammatory exudate resulting in consolidation that affects a large and continuous area of the lobe of a lung.it is more likely community acquired.

**Bronchopneumonia** is usually a [bacterial pneumonia](https://en.wikipedia.org/wiki/Bacterial_pneumonia) rather than being caused by [viral disease](https://en.wikipedia.org/wiki/Viral_disease). It is more commonly a [hospital-acquired pneumonia](https://en.wikipedia.org/wiki/Hospital-acquired_pneumonia) , infection of part of the lobes extends to the bronchus.

It is associated mainly with : [Staphylococcus aureus](https://en.wikipedia.org/wiki/Staphylococcus_aureus), [Klebsiella](https://en.wikipedia.org/wiki/Klebsiella" \o "Klebsiella), [E. coli](https://en.wikipedia.org/wiki/Escherichia_coli) and [Pseudomonas](https://en.wikipedia.org/wiki/Pseudomonas).

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| --- | --- |
| [**CURB-65**](https://en.wikipedia.org/wiki/CURB-65) | |
| **Symptom** | **Points** |
| **C**onfusion | 1 |
| **U**rea>7 mmol/l | 1 |
| **R**espiratory rate>30 | 1 |
| [S**B**P](https://en.wikipedia.org/wiki/Blood_pressure)<90mmHg, D**B**P<60mmHg | 1 |
| Age>=**65** | 1 |

Management

Pneumonia can be classified into

Mild, moderate or severe according to score known as CURB-65 score

The CURB-65 score is useful for determining the need for admission in adults. If the score is 0 or 1, people can typically be managed at home; if it is 2, a close follow-up is needed; if it is 3–5, hospitalization is needed.

For mild cases Antibiotics by mouth, rest, simple analgesics, and fluids usually suffice for complete resolution.

those with other medical conditions, the elderly, or those with significant trouble breathing may require more advanced care. If the symptoms worsen, the pneumonia does not improve with home treatment, or complications occur, hospitalization is required.

**Complication**

1. Respiratory failure
2. Acute Respiratory Distress Syndrome.
3. Lung abscess
4. Empyema
5. Septicemia and DIC
6. Organ failure, eg. Renal failure.

**Treatment :** is with iv antibiotics, iv fluid.

**Coronavirus Disease** (COVID-19)

is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019. since That disease spread worldwide, leading to an ongoing pandemic.

Symptoms of COVID‑19 are variable, but often include fever, cough, headache, fatigue, breathing difficulties, and loss of smell and taste abdominal symptoms like nausea vomiting and diarrhea.

14% develop severe symptoms (dyspnea, hypoxia, or more than 50% lung involvement on imaging), and 5% suffer critical symptoms (respiratory failure, shock, or multiorgan dysfunction)

COVID‑19 transmits when people breathe in **air contaminated** by the virus. The risk of breathing these is highest when people are in close proximity Transmission can also with contaminated fluids in the eyes, nose or mouth, and, rarely, via contaminated surfaces. People remain contagious for up to 20 days, and can spread the virus even if they do not develop symptoms

The standard diagnostic method is by detection of the virus's nucleic acid by real-time reverse transcription polymerase chain reaction (rRT-PCR)

Chest CT scans may be helpful to diagnose COVID‑19 in individuals with a high clinical suspicion of infection but are not recommended for routine screening. Bilateral multilobar **Ground-Glass Opacities GGO** with a peripheral, asymmetric, and posterior distribution

**Prevention**

1. Vaccination.
2. Physical or social distancing,
3. Quarantining,
4. hand washing, and keeping unwashed hands away from the face.
5. The use of face masks or coverings to minimize the risk of transmissions.

Treatment mainly is symptomatic with antipyretics and fluid , The antiviral remdesivir was approved in many countries, in severe cases admission is needed for respiratory support.

**Complication**

1. Respiratory failure
2. Acute Respiratory Distress Syndrome.
3. Organ failure, eg. Renal failure.
4. Myocarditis
5. Pulmonary embolism