Respiratory System
Virology

Common Cold:

Rhinitis.

A benign self limited syndrome caused by several families of viruses.
The most frequent acute illness in industrialized world.
Mild URT illness involving:
Sneezing
Nasal congestion.
Discharge.
Sore throat.
Cough.
Low grade fever.
Headache.
Malaise.

Separate enitity from influenza, pharyngitis, etc.

200 subtypes of viruses are known (9 families).
More viruses are to be discovered.

Most common cause of common cold: Rhinovirus (<100 serotypes exist), account for 30-50% of cases..
Coronavirus (10-15%).
Influenza virus 5-15%.
RSV 5%.
Parainfluenza virus 5%.
Unknown 20-30%.

Influenza and common cold are different.

Coronairus: Taj shaped receptors are the reason for the nomenclature.

Adenoviruses and enteroviruses can cause common cold.
Advenovirus: pharyngitis and fever more than cold symptoms.
Outbreaks and epidemics of pneumonias in military and crowded areas (because it's highly infectious).
Also causes severe pneumonia in immunocompromised patients.

Enterovirus:
A large group.
Echoviruses and Coxsackie viruses cause common cold.
Usually asymptomatic.
Undifferentiated febrile illness.

Can you know the virus from the syndrome?
No it's impossible.
Respiratory viruses are capable of re-infection: subsequent infections are usually milder.

Variation of the viruses and the same virus → reinfection, and no long-lasting immunity.

Epidemiology:
Incidence:
Children: 5-7 episodes per year until 6 years, then becomes less frequent.
Adults: 2-3 episodes per year.

Seasonal Patterns:
Rhinovirus causes all year round, but especially in..
Coronaviruses: in winter.
Enteroviruses: usually in the summer.
Adenoviruses: not seasonal but outbreaks may occur in military facilities, daycare centers, and hospital wards.

Transmission:
1. Droplet infection: small or large droplets, but usually large droplets.

   Note: Large droplets can travel a larger distance.
   Small droplets don't travel a long distance.

2. Direct contact: hand-hand transmission is the most common route.
3. Fomites.
4.

Rhinovirus may survive on environmental surfaces for several house.

Notes:
Viruses remain viable on human skin for up to 2 hours.
Hand to hand is the most important mode of transmission.
Risk of person-person transfer is dependent upon:
…

Infectivity:
Viral shedding: 1 day before appearance of symtoms, peaks at 3rd symptomatic day, then goes down.

Risk Factors:
Exposure to children in day care settings.
Psychological stress.
Moderate physical exercise decreases the risk.
Less sleep and preexisting sleep disturbances: this is controversial.
Cold climate doesn't increase the incidence.

Risk factors that increase severity of URT:
Underlying chronic disease: heart failure, diabetes, etc.
Congenital immunodeficiency disorders.
Malnutrition.
Smokers.

Clinical Features:
The clinical features are due to the immune response to the virus.
They're variable from patient to patient.
Most important symptoms: Rhinitis.
Others:
Sore throat, cough, malaise.
Fever.
Conjunctivitis.
…

Nasal obstruction and rhinorrhea.
..
Cough becomes troublesome by 2-3rd day.
Nasal discharge may be purulent: but this doesn't indicate bacterial infection.
Secretions are usually clear.
Purulent discharge: may occur in common cold or secondary viral or bacteria sinusitis.

Incubation Period:
Usually: 1-3 days.
Disease course: 3-10 days.
25% of people: may last as long as 2 weeks.

Diagnosis:
Clinical diagnosis: rhinitis, malaise, cough, etc.
Physical examination: conjunctivis, nasal mucosal swelling, pharyngeal erythema,.. adenopathy is uncommon.
Lung exam is usually normal.

No need for chest x-ray or CT scan.

X-ray is indicated in pneumonia suspicion.

Ultimate diagnosis: viral culture of nasal swabs or washings.

Differential Diagnosis:
Allergic or seasonal rhinitis.
Bacterial pharyngitis or tonsillitis.
Acute bacterial rhinosinisitis.
Influenza.
Pertusis.

How?
Bacterial tonsillitis: follicles on the tonsils + no runny nose.
Sinusitis: facial pain and purulent congestion. Clasically: URT → no symptoms → facial pain + purulent discharge.

Influenza: fever, headache, malaise, less runny nose, arthralgia, myalgia, etc.

Pertusis: dry cough is pronounced, vomiting, etc.

Complications:
Acute Rhinosinusitis:
Sinusitis is very rare.

Lower Respiratory Tract Disease:
Asthma attacks.
Cough: may last up to 1 month. Due to postnasal drip, or reactive airway disease.

RSV → LRT diseases in children.

Acute Otitis media:
Due to the presence of Eustachian tube.

Treatment:
Supportive.
Antibiotics are not indicated:
_ antibiotics are the major source of abuse.
_antibiotics are indicated for sinusitis or..
Anti-histamine.
Rest.

Prevention:
Hand washing.

Summary:

Rhinovirus:
Picornaviridae family.
Small virus.
Single RNA.
> 100 subtypes.
Infants > children > adult.
All year round, esp in fall + spring.

Children:
Bronchitis.
Bronchiolitis
Bronchopneumonia.

Pathology:
Receptors: ICAM-1 (90%) + LDLR (10%).
Attachment.
Endocytosis.
Inflammation.
Inflammatory cells.
Common cold.