Recurrent Pneumonia
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Definition of Pneumonia (by the Mayo Clinic)

Pneumonia is an infection that inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus, causing cough with phlegm or pus, fever, chills, and difficulty breathing. A variety of organisms, including bacteria, viruses, and fungi, can cause pneumonia.

Pneumonia can range in seriousness from mild to life-threatening. It is most serious for infants and young children, people older than age 65, and people with underlying health problems or weakened immune systems.

Antibiotics and antiviral medications can treat many common forms of pneumonia.

Pneumonia is a problem that seems to occur more commonly in people with Down syndrome (DS). There are a variety of potential reasons:

- Impaired immunity. Some degree of immune system impairment is common in people with DS (There are additional causes of impaired immunity that aren’t more common in people with DS but people with DS can have just like anyone else).
- Gastroesophageal reflux disease (GERD). In GERD, gastric contents go backwards out of the stomach into the esophagus and may go up into the throat. Particularly when sleeping, GERD can cause gastric contents to be aspirated into the lungs causing inflammation, pneumonia, or bronchospasm (wheezing, asthma symptoms). GERD is more common in people with DS. Sometimes chronic GERD can cause narrowing of the esophagus and food will not pass well into the stomach and may back up into the throat and then the lungs.
- Sleep apnea. Sleep apnea is more common in people with DS. Sleep apnea causes increased GERD.
- Swallowing problems (dysphagia). Dysphagia is more common in people with DS. It may be anatomic, physiologic, or behavioral/psychological.
  - Anatomic reasons include anything that could be blocking the normal passage of food and drink. This might include:
    - Very large tonsils
Compression on the back of the throat by a severe subluxation of the cervical (neck) vertebrae. Atlanto-axial instability is more common in people with DS. When one vertebra slips forward relative to another, a variety of symptoms can occur. A less common but problematic issue can occur when the vertebra that slips forward pushes on the back of the throat and obstructs the passage of food and drink.

Foreign bodies. We have had patients whose swallowing function was severely impaired when they swallowed a foreign body that became stuck in the pharynx/throat area. A foreign body that passes into the lungs generally won’t interrupt swallowing but can cause recurrent pneumonia.

Physiologic reasons. Swallowing involves a number of steps that must occur in proper order. If that system is impaired, aspiration into the lungs and pneumonia may occur. Causes include:

- Down syndrome itself seems to put people at higher risk for abnormal swallowing. Swallowing dysfunction seems to be more common in people with DS probably due to nervous system impairment.
- Infections, inflammation, or injuries to the throat can impair swallowing. This can be caused by strep throat, GERD (inflammation), an injury from having swallowed something sharp, or having been intubated (a breathing tube placed) due to severe illness or for surgery.
- Neurologic conditions that cause impaired function. This might include an acute situation such as having a seizure or chronic conditions such as weakness due to atlanto-axial instability or Alzheimer disease.
- Any debilitating condition that causes weakness, increased time in bed, or impaired fitness. As noted, swallowing problems seem to be more common in people with DS. If the person has a relatively minor swallowing impairment that generally doesn’t cause complications, it may be made worse by being debilitated.

Behavioral or psychological reasons.

- Many of our patients do what can be called the “one and down” – one chew and down it goes. Inadequate chewing, rapid eating, and lack of drinking between bites can contribute to swallowing problems.
- A number of our patients have had a choking episode or an illness that has resulted in throat pain and pain with swallowing. Several have then developed fear of swallowing and this can contribute to impaired swallowing.
- Similar to debility under physiologic causes, a severe change in mental health such as depression can be associated with impaired swallowing.

There are also many other reasons for recurrent pneumonia that aren’t more common in people with DS but can occur in people with DS.

What are some considerations when a person with DS has recurrent pneumonia?
• Review healthy swallowing, slowing down, putting the fork or spoon down between bites and taking a sip of liquid, and chewing each bite thoroughly.
• Good hand washing. Many respiratory infections such as influenza (the flu) can lead to pneumonia. Good hand washing, covering your mouth when sneezing or coughing, not going to work or school when ill all should reduce transmission of infections.
• Consider an annual influenza (flu) vaccine.
• Consider a pneumonia vaccine (see resource on pneumonia vaccine).
• Consider evaluation for the conditions noted above. Depending on the symptoms and the findings on the physical exam, this might include:
  o Chest x-ray
  o A swallowing evaluation (generally performed by a speech therapist and may be done in conjunction with a radiologist)
  o Lateral cervical spine x-ray in flexion, extension, and neutral positions to assess for cervical subluxation (including atlanto-axial instability)
  o CT scan of the chest to assess for a variety of lung conditions that can contribute to recurrent pneumonia
  o Assessment for GERD (possibly a barium esophagram/upper gastrointestinal x-ray)
  o Esophagogastroduodenoscopy (EGD). Under sedation/anesthesia, a scope is passed through the mouth into the esophagus, stomach, and duodenum. This can be used to assess for GERD, narrowing of the esophagus, anatomic changes, or foreign bodies in the esophagus. Generally, this is performed by a gastroenterologist (a specialist of the gastrointestinal tract).
  o A laryngoscope, a scope used to assess the back of the throat and upper airway, can look for anatomic changes, foreign bodies, and signs of GERD. Sometimes sedation is required. Generally, this is performed by an otolaryngologist (ENT physician).
  o A bronchoscopy, a scope passed under sedation/anesthesia to assess the airways including the lungs. This may be done to assess for a variety of health conditions that are associated with pneumonia and for blockage in the lungs due to a mass, foreign body, or inflammation. Generally, this is performed by a pulmonologist (lung specialist).
  o An immune system evaluation. This assessment will evaluate whether the individual’s immune system is able to fight infections and respond appropriately to immunizations. This is often done by an infectious disease specialist.
  o Assessment for a variety of health conditions as noted above should include an evaluation by your primary care provider as well as possible referrals (depending on the findings) to a pulmonologist, speech therapist, gastroenterologist, otolaryngologist, infectious disease physician, spine surgeon (orthopedics spine surgeon or neurosurgeon), physiatrist (rehabilitation physician), or neurologist.

These are general recommendations based on our experience. Consult your health care provider about your individual health care needs.