

# Preventing Aspiration: A Common and Dangerous Problem for Patients With Cancer

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Aspiration is the inhalation of oropharyngeal or gastric contents into the lower airways, which can lead to pneumonitis or pneumonia (Swaminathan & Naderi, 2008). As a result of the cancer disease process and cancer treatments, individuals with cancer often are at high risk for the condition. Efforts to prevent aspiration are imperative for patient safety in this vulnerable population.

## Mechanisms and Sequelae of Aspiration

Swallowing is divided into four distinct phases involving five cranial nerves and 26 muscles and requires coordination of motor, neural, cognitive, and behavioral processes (Lee-Chiong, 1998; Mikita & Callahan, 2008). An abnormality in any of the nerves, muscles, or processes can result in ineffective swallowing or gastroesophageal reflux. As a result, saliva and ingested materials (e.g., food, medications, oropharyngeal bacteria, other infectious agents) can be aspirated. Aspiration occurs in as many as 45% of healthy individuals, but the aspirate is cleared from the pulmonary tree by intact cough and gag reflexes and does not result in aspiration syndrome (Marom, McAdams, Erasmus, & Goodman, 1999).

Aspiration can result in aspiration pneumonitis or aspiration pneumonia (Swaminathan & Naderi, 2008). Aspiration pneumonitis is an acute, chemical injury caused by inhalation of gastric contents. It occurs most often in people with acute changes in levels of consciousness from conditions such as seizures, central

nervous system tumors, drug or alcohol intoxication, and anesthesia during surgery. The amount of damage caused is related to the amount and pH of fluid aspirated: High volumes and acidic pH increase the extent of damage (Asia, 2004; Marom et al., 1999). Infection usually does not occur during the early stages of pneumonitis because of the relative sterility of gastric contents. Exceptions include patients with bowel obstruction or gastroparesis and those taking proton pump inhibitor medications. Infection can occur later in the process.

Aspiration pneumonia is the development of pulmonary infiltrate from chronic inhalation of small amounts of colonized oropharyngeal secretions, which can lead to infection. Patients who develop aspiration pneumonia often have impaired airway defense mechanisms that prevent them from removing bacteria and other infectious material from the lower airways. Poor mechanical airway defense mechanisms include impaired gag and swallow reflexes and impaired respiratory ciliary movement (e.g., smoking induced). Immunosuppression can further contribute to the development of infection. Poor dentition and oral hygiene predispose people to the aspiration of oropharyngeal bacteria and thus aspiration pneumonia and lung abscess (Terpenning et al., 2001).

Causes of aspiration, including cancer-related risk factors, are outlined in Figure 1. They include conditions that impair consciousness, affect the swallow and gag reflexes, and cause gastroesophageal reflux. Aspiration of gastric contents resulting from gastroesophageal reflux is related to metabolic abnormalities or abnormalities of the esophagus, stomach, pyloric valve, celiac plexus, lungs, abdomen, or nervous system. The risk of aspiration in older adults is believed to be related to the increased incidence of dysphagia, gastroesophageal reflux, and stroke, as well as poor oral care in this age group (Marik, 2001). Treatments, such as tube feedings and artificial airways, also can increase risk.

## Detecting Aspiration

Symptoms of aspiration include gagging with oral intake, coughing, hoarseness, sore throat, wheezing, and shortness of breath. Aspiration also can be “silent,” with no overt symptoms.

When pneumonia results, hypoxia, fever, night sweats, purulent sputa, abnormal breath sounds, and respiratory distress can occur (Swaminathan & Naderi, 2008). Pneumonitis causes dyspnea and hypoxia, which can progress quickly to respiratory failure (Mikita & Callahan, 2008).

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