Dysphagia and Gastro-Oesophageal Reflux Disease (GORD) workbook
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**Dysphagia and Gastro-Oesophageal Reflux Disease (GORD) workbook**

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Training and assessment information

Welcome
Welcome to your course and Premium Health. The aim of this resource is to provide the essential knowledge and skills you require to effectively support clients affected by dysphagia and gastro-oesophageal reflux disease (GORD) with their care needs.

Helping you to succeed in your course
We believe learning should be an enjoyable and challenging process and we understand that each learner is different. A variety of methods such as class participation, group discussion, scenarios, workbook exercises and opportunities for practice will help you to achieve competency.

We select our Premium Health trainers and assessors carefully. All are nurses or paramedics with appropriate qualifications, technical expertise and experience in both education and emergency first aid and in the disability or health care sector. This enables them to provide you with quality training which is grounded in experience and knowledge of the field.

Performance outcomes
On completion of this course you will be able to:
- Describe airway and upper gastrointestinal system function
- Describe the mechanism of healthy swallowing
- Explain the causes of dysphagia and its signs and symptoms and possible complications
- Explain the causes of GORD and its signs and symptoms and possible complications
- Explain various treatments and measures for managing dysphagia and GORD
- Demonstrate how to assist a client with safer ingestion of food, beverages and medicines
- State the principles of a texture-modified and altered fluid-consistency diet

Statement of Participation
A Statement of Participation will be issued upon successful achievement of the assessment tasks in this non-accredited course.

Evaluation of the course
A student feedback form is provided at the back of the workbook. Your feedback is important to us as we use this as part of our continuous improvement cycle. Please complete the form at the end of your course.

Premium Health's customer service
We offer you an on-going service in relation to course information and invite you to call our office on 1300 72 12 92 or email us on info@premiumhealth.com.au.

For more information about Premium Health specialised health and first aid courses, products, services and policies, access our website www.premiumhealth.com.au
Dysphagia

The word dysphagia is a general term used to describe the inability to move food from the mouth to the stomach. It is commonly associated with obstructive or motor disorders of the oesophagus. Many different nerves and play a role in moving food and fluid safely from the mouth to stomach. Swallowing difficulties can result from problems with the three phases of swallowing or from disease, injury or malformation of the upper airway or the oesophagus. The underlying condition is diagnosed by barium (a radioactive dye swallowed to outline the action of the oesophagus) studies, the clinical signs and evaluation of the symptoms.

Dysphagia is a common condition. It is commonly associated with disability and becomes exacerbated as this population ages. It is estimated that 30 - 40% of elderly nursing home residents have some degree of dysphagia. Dysphagia is also a common complication of stroke and is estimated to occur in one in every two cases.

Mechanism of swallowing
Swallowing is a complex motion that involves the mouth, throat area and oesophagus. Swallowing is partly under voluntary control; however, much of swallowing is involuntary. These automatic reflexes involve nerves within the pharynx and oesophagus as well as a swallowing centre in the brain which is connected to the pharynx and oesophagus by nerve pathways. The swallowing reflexes are processed mainly by the nerves within the wall of the pharynx and oesophagus.

The three phases of swallowing are:
- Oral phase:
  - oral preparatory phase
  - oral transit phase
- Pharyngeal phase
- Oesophageal phase
Oral phase
The oral phase of swallowing is divided into 2 parts:

Oral preparatory phase
Food is first chewed in the mouth and mixed with saliva. The food is formed into a bolus or ball by the teeth and mouth muscles and is held against the hard palate by the tongue. This process requires the taste, temperature, touch, and proprioception senses to form a bolus of the right size and consistency.

Oral transit phase
This phase of the swallowing process involves moving the bolus from the middle part of the tongue and then pushing it toward the back of the pharynx with a front-to-back tongue movement. The tongue then propels the chewed food into the throat (pharynx). This triggers the pharyngeal reflex as the bolus enters the pharyngeal phase. This process requires a mouth seal to be maintained to prevent food from leaking from the mouth. There also must be buccal muscle tension to prevent food from getting into the space between the jaw and cheek. This part of the swallowing process is a voluntary phase.
Pharyngeal phase
The pharyngeal phase is a reflex action in which the bolus moves through the pharynx. It takes place in less than 1 second. The soft palate elevates to prevent the food from entering the posterior end of the nasal passages. The upper pharynx contracts and pushes the bolus into the lower pharynx. At the same time, the larynx is pulled upwards by muscles in the neck. As a result, the epiglottis bends downwards. This dual action closes off the opening to the larynx and trachea and prevents the food from entering the larynx and trachea. This action also prevents material from entering the nasal cavity.

![Pharyngeal phase of normal swallowing](image)

The bolus is pushed by the pharyngeal constrictor muscles further into the pharynx. The larynx further prevents material from entering the airway by closing at the true vocal cords, false vocal folds and epiglottis folds. The contraction of the pharynx continues as a peristaltic wave into the lower pharynx and pushes the food along. The upper oesophageal (cricopharyngeal) sphincter which circles the upper end of the oesophagus, relaxes allowing the wave to push the food from the lower pharynx and on into the oesophagus. The phase ends with the raising of the larynx which also helps in the cricopharyngeal opening by stretching that region, allowing the bolus to pass into the oesophagus.

Oesophageal phase
A peristaltic wave beginning in the pharynx pushes the bolus from the cervical oesophagus down through the oesophageal-gastric sphincter and into the stomach. The lower oesophageal sphincter relaxes so the bolus can pass into the stomach. After the bolus passes, the lower sphincter closes again to prevent stomach contents regurgitating back up into the oesophagus. It remains closed until the next bolus comes along. When there is no swallowing, the muscle of the lower sphincter is continuously contracted. This closes off the oesophagus and prevents stomach contents from being regurgitated into the oesophagus.

![Oesophageal phase of normal swallowing](image)
Types of dysphagia
There are two general classifications of dysphagia:
- Oropharyngeal or high dysphagia
- Oesophageal or low dysphagia.

Oropharyngeal or high dysphagia is where the difficulties in swallowing are due to abnormal function. Mouth or throat problems cause problems with chewing food and moving it into the back of the mouth. This is due to underlying problems with the nerves and muscles that help control the swallowing process e.g. with the physical narrowing of the pharynx or oesophagus. The pharynx and the upper third of the oesophagus contain skeletal muscle.

Oesophageal or low dysphagia is where the swallowing difficulties are due to problems with the oesophagus which causes problems in transporting food down the oesophagus into the stomach. Low dysphagia is often caused by a blockage in or irritation to the oesophagus. The lower two-thirds of the oesophagus are composed of smooth muscle.

Diseases that affect skeletal muscle or smooth muscle also can affect the pharynx and oesophagus. There also may be diseases of the muscles or the nerves that control the muscles of the pharynx and oesophagus or damage to the swallowing centre in the brain.

Dysphagia that progresses rapidly over a few weeks or months suggests a malignant tumour. Dysphagia for solid food alone suggests a physical obstruction to the passage of food, whereas dysphagia for both solid and liquid food is more likely to be caused by a disease of the smooth muscle of the oesophagus. Intermittent symptoms also are more likely to be caused by diseases of smooth muscle than obstruction of the oesophagus since muscle dysfunction often is intermittent.

Swallowing difficulties causes include:
- **Physical obstruction due to:**
  - Benign and malignant tumours of the pharynx and oesophagus. Most commonly these tumours are malignant.
  - Oesophageal ulceration that leaves scarring
  - Cervical spine disease,
  - Emotional or anxiety disorder
  - Oesophageal webs
- **Narrowing or strictures may be due to:**
  - Radiation, chemicals, medications, chronic inflammation or ulcers
  - Strictures are the result of GORD and usually are located in the lower oesophagus
  - Infiltrating diseases of the oesophagus. The most common infiltrative disease, eosinophilic oesophagitis, is where the wall of the oesophagus fills with eosinophils, white blood cells involved in inflammation. The wall of the oesophagus becomes stiff and cannot stretch as the bolus of food passes and results in the bolus sticking.
  - Diverticuli (bulges) of the pharynx or oesophagus expand when filled with swallowed food and can compress the pharynx or oesophagus. The diverticuli can be at the upper end of the oesophagus or, less commonly, at the middle or lower end of the oesophagus.
  - Cricopharyngeal bars affect a part of the upper oesophageal sphincter that has hypertrophied, that is, expanded. The bar does not stretch normally as the bolus passes. The cause of cricopharyngeal bars is unclear.
- **Nerve and muscle problems such as:**
  - Stroke, which affects the swallowing centre of the brain, is the most common disease affecting swallowing.
  - Brainstem tumours interfere with the transmission of nerve impulses that carry information between the oesophagus and the swallowing centre in the brain. A lesion in the cerebral cortex or the brain stem can cause swallowing disorders in the following ways:
    - Decrease in range of motion (ROM) of muscles of chewing and bolus propulsion, especially those responsible for buccal, mouth, and tongue strength and the cricopharyngeus
    - Decreased sensation
    - Delayed or absent pharyngeal swallowing and reductions in pharyngeal peristalsis
    - Delayed or absent laryngeal adduction and elevation
  - Degenerative diseases of the brain. The three most common degenerative diseases are Parkinson’s disease, multiple sclerosis (MS) and amyotrophic lateral sclerosis (ALS) or Lou Grehri’s disease.
− Degenerative diseases of the motor nerves. Motor nerves are nerves that control the contraction of skeletal muscle. Poliomyelitis is a degenerative disease of motor nerves in the brain that impairs swallowing by interfering with the control of skeletal muscle in the pharynx.

− Oesophageal spasm

• Diseases of the smooth muscle of the oesophagus

− Achalasia is a condition that affects the smooth muscle portion of the oesophagus - the lower oesophagus and the lower oesophageal sphincter. The peristaltic wave disappears and the lower sphincter does not relax. As a result, the food bolus sticks in the oesophagus. With prolonged obstruction the oesophagus dilates, causing additional problems.

− Ineffective peristalsis is where the force of the peristaltic wave is reduced. The wave is no longer strong enough to push the bolus through the oesophagus and into the stomach. It is not usually a serious problem because most meals are eaten sitting upright. The effect of gravity on the bolus provides sufficient force to push most boluses into the stomach. Severe problems only occur when a further restriction to passage of the bolus occurs such as an oesophageal stricture. Ineffective peristalsis usually occurs by itself but it can be associated with other diseases such as collagen-vascular diseases e.g. scleroderma and diabetes.

− Spastic motility disorders are a group of conditions of unknown cause in which contractions of the oesophagus are not orderly. Usually peristalsis occurs as smooth, progressive wave. In this situation, contraction of all or a large portion of the oesophagus is simultaneous (spastic). As a result, the bolus of food is not moved onwards. Other spastic disorders include peristaltic pressures that are abnormally high and spontaneous contractions of the oesophagus that are not triggered by a swallow. Spastic motility disorders may cause severe chest pain which mimics angina, occurs spontaneously and is not associated with eating.

• Non-swallowing related

Food that sticks in the oesophagus may remain there for long periods of time. This can create a sensation of the chest filling up when more food is eaten. The person may have to stop eating and to drink fluids in an attempt to wash the food down. Being unable to eat sufficient food may lead to unintended weight loss. The food in the oesophagus also may be regurgitated during sleep. The person often is woken by coughing or choking, caused by the regurgitating food. If food enters the larynx, trachea, and/or lungs, it may cause an asthma attack and may lead to lung infection and pneumonia. Occasionally, people are not woken by the regurgitation of food and find regurgitated food on their pillow in the morning.

There are some medications that are implicated in swallowing disorders and include:

− Nitrates
− Anticholinergic agents
− Calcium tablets
− Calcium channel blockers
− Aspirin
− Iron tablets
− Vitamin C
− Antipsychotics e.g. olanzapine (Zyprexa)
− Tetracycline

**Signs and symptoms**

Commonly, people complain of difficulty initiating swallowing, nasal regurgitation, tracheal aspiration followed by coughing, chest pain; the feeling of food stuck in the throat from the neck down; heaviness or pressure in the neck, upper or lower chest to just above the abdomen or behind the breastbone when eating. People who retain food in their oesophagus may complain of heartburn-like (GORD) symptoms. Their symptoms may be due to GORD but are more likely due to the retained food. They do not respond well to treatment for GORD.

The most common swallowing symptom of dysphagia is the feeling that the swallowed food is sticking, either in the lower neck or the chest. Coughing or choking with vomiting of the food may be associated with this. If food enters the larynx, more severe coughing and choking will be provoked. If the soft palate doesn’t properly seal off the nasal passages, food—particularly liquids—can regurgitate into the nose with the swallow. Sometimes, food may come back up into the mouth immediately after being swallowed.

With the spastic motility disorders, people may develop episodes of chest pain severe enough to mimic a heart attack. The cause of the pain with the spastic oesophageal disorders is unclear. It is thought that it is due to oesophageal muscle spasm.
With neurological problems, there may be difficulty initiating a swallow because the bolus cannot be propelled by the tongue into the throat. Elderly people with dentures may not chew their food well and therefore swallow large pieces of solid food that get stuck. This usually occurs when there is an additional problem within the pharynx or oesophagus such as a stricture.

The following are signs and symptoms of dysphagia:

- Difficulty in initiating swallowing
- Difficulty with chewing or weakness of muscles of chewing
- Pocking of food in the mouth
- Impairment of the gag reflex and ability to clear bolus, cough and with breathing
- Globus sensation - feeling of obstruction as if food has become stuck in the throat
- Pain in the hypopharynx
- Drooling
- Nasal regurgitation
- Voice change
- Coughing after eating
- Weight loss
- Recurrent pneumonia which can lead to serious, permanent and progressive injury to the lungs
- Other associated factors/symptoms:
  - General weakness
  - Mental status changes
  - Weight loss and malnutrition
  - Relevant past medical history, including:
    - Recent stroke
    - Neuromuscular disease
    - Hypertension
    - Diabetes mellitus
    - Thyroid disease
    - Cancer
    - Dementia
    - Traumatic brain injury

Symptoms associated with the phases of swallowing:

**Oral stage**

- Pocking of food in the mouth, leakage around the mouth and pharyngeal spill occurs with weakness and poor coordination of the lips, cheeks and tongue.
- Aspiration of food, especially during inhalation, occurs before pharyngeal swallowing due to premature pharyngeal spillage.
- Weak posterior tongue can lead to abnormal tongue thrusting.
- Cognitive deficits may affect the initiation of swallowing and increases the tendency to pocket food in the cheeks, leading to possible aspiration.

**Pharyngeal stage**

- Dysfunction or abnormalities of the soft palate and superior pharynx can lead to nasopharyngeal reflux
- Poor muscle function and reduced hyoid bone elevation can result in aspiration.
- Pharyngeal constrictor weakness leads to accumulation of food in the epiglottal folds which could be aspirated after swallowing.
- Impaired relaxation, distensibility, fibrosis, hyperplasia or hypertrophy of the cricopharyngeus can lead to improper coordination of swallowing.

**Oesophageal phase**

- Achalasia leads to reduced gastro-oesophageal junction relaxation or absent oesophageal peristalsis.
- Diverticulum leads to swallowing difficulty, with possible nocturnal aspiration.
- Other defects in the wall of the oesophagus or in the external structures e.g. oesophageal webs, rings, strictures or intraluminal obstruction from solids, leads to weak peristalsis of the bolus into the stomach.
Swallowing process

Complications

Dysphagia usually is a complication of another health condition, such as a stroke, throat and mouth cancer or gastro-oesophageal reflux disease.

Prolonged dysphagia often leads to inadequate nutrition and weight loss. As well as the risk of malnutrition and dehydration, swallowing difficulties means that there is a chance of tracheal aspiration of ingested material, oral secretions, or both.

Aspiration is the passive entry of any food item into the trachea e.g. usually during inhalation. It also refers to the inhalation of oropharyngeal or gastric contents into the larynx and lower respiratory tract. Acidic material that is breathed into the lungs can cause severe lung injury but may not necessarily lead to pneumonia. The outcome of aspiration is dependent on the amount, frequency and nature of aspirated material as well as the person’s immune response. Recurrent aspiration may eventually lead to chronic lung disease.

Aspiration pneumonia is an acute infection caused by inhaled oropharyngeal secretions colonised by bacteria. It is the most common cause of death in people with dysphagia associated with neurological disorders.

Some people are affected by silent aspiration. Silent aspiration is aspiration without key clinical signs and symptoms, that is usually without provoking a gag or cough reflex. It is found in more than 50% of people who aspirate.

Older people at risk for aspiration include those with stroke, Parkinson’s disease, dementia, reduced level of consciousness or any severe illness or disability.

Penetration refers to the active entry of any food item into the trachea e.g. during swallowing, although the term often is used to denote the entry of any bolus into the laryngeal vestibule.

Aspiration pneumonitis is a chemical reaction in the lung tissue caused by the inhalation of sterile gastric contents.
Aspiration pneumonitis and aspiration pneumonia have overlapping clinical features that may include coughing or choking on food, dyspnoea, crepitations and signs of consolidation. However, they can present with nonspecific signs such as fever or a sudden deterioration in oxygen saturation levels.

Therefore, sequelae (any abnormal bodily condition or disease related to or arising from a pre-existing disease or any complication of a disease) of aspiration commonly include:

- Lung abscess
- Inflammatory reaction – aspiration pneumonitis
- Pneumonia
- Chronic lung disease

Signs and symptoms of pneumonia include:

- Cyanosis of the skin caused by lack of oxygen
- Chest pain
- Cough with
  - Foul-smelling sputum
  - Sputum containing pus or blood
  - Greenish sputum
- Fatigue
- Fever
- Shortness of breath
- Wheezing

Other symptoms that can occur with this disease:

- Breath odour
- Excessive sweating
- Swallowing difficulty

**Diagnosis of dysphagia**

When taking the person’s history, the onset, duration, timing, any associated factors and progress of the symptoms should be reviewed. This includes whether there is difficulty swallowing solids, liquids, or both; whether food comes out the nose; whether there is drool or food spill from the mouth; and whether there is coughing or choking while eating. History and physical examination alone may not be adequate to make a diagnosis in cases of silent aspiration. Past medical history should identify known diseases that may cause dysphagia.

A physical examination should include:

- A general examination, including weight and vital signs
- A full head and neck examination including cranial nerve function, the person’s dentition, palate, tongue and pharynx
- A laryngoscopy may be needed. The neck and the thyroid should be examined. The structural integrity of the hyoid and larynx also should be checked.
- Lungs should be checked for rales /crepitations, wheezes, rhonchi, air entry and for any other abnormalities.
- A thorough neurologic examination looking at mental status and the cranial nerve function.
- An examination of muscle strength, reflexes, coordination, gait and functional status should be conducted to complete the neurologic examination.

Review of symptoms should focus on symptoms suggestive of neuromuscular, gastrointestinal and connective tissue disorders and on the presence of complications. Important symptoms include weakness and easy fatigability, gait or balance disturbance, tremor and difficulty speaking. Important GI symptoms include heartburn or other chest discomfort suggesting reflux and symptoms of connective tissue disorders such as muscle and joint pain, Raynaud’s phenomenon and skin changes e.g. rash, swelling, thickening.

Loss of weight can be a sign of either severe dysphagia or a malignant tumour. More often, people describe changes in their eating pattern—smaller bites, additional chewing needed. This pattern, if present for a prolonged period of time, suggests a non-malignant, relatively stable or slowly progressive cause for the dysphagia. Episodes of chest pain that are not due to heart disease suggest muscular diseases of the oesophagus.

Further diagnostic tests include:

- Video fluoroscopic swallowing study - This test is a modified barium swallow. The VFSS evaluates the pharyngeal phase of the swallowing process.
• Fibre-optic endoscopic evaluation of swallowing - This test is used to evaluate any structural abnormalities in the nasopharynx, laryngopharynx and hypopharynx.
• Trans nasal oesophagoscopy - This test is especially useful in cases of oesophageal diverticuli, tumour or other conditions.
• Ultrasonography - This is used to evaluate soft-tissue dynamics during the oral and pharyngeal phases of swallowing, looking at tongue function and laryngeal / hyoid elevation.
• Cervical auscultation - This permits the assessment of pharyngeal swallow by listening to typical sounds through a stethoscope.
• Blood tests, including thyroid-stimulating hormone, vitamin B-12, and creatinine kinase, especially in neurogenic dysphagia
• Other tests e.g. CT scanning, MRI of the head and neck, chest radiography, pulmonary function tests to evaluate other possible associated causal factors.

Consultations with and further evaluations by an Ear, Nose, and Throat surgeon and a speech pathologist also may be necessary.

Tests for pneumonia following aspiration include a physical examination which may reveal crackling sounds in the lungs and a rapid pulse. These tests also may help with diagnosis:
• Arterial blood gas
• Blood culture
• Bronchoscopy
• Chest x-ray
• Complete blood count
• CT scan of the chest
• Sputum culture
• Swallowing studies

Treatment of dysphagia
Treatment of dysphagia varies and is directed at the specific cause. The goals of treatment are to maintain adequate nutritional intake and to maximise airway protection.

People with oropharyngeal dysphagia may benefit from evaluation by a rehabilitation specialist. Sometimes changing head position while eating, retraining the swallowing muscles, doing exercises that improve the ability to accommodate a food bolus in the oral cavity, or doing strength and coordination exercises for the tongue is helpful. In the case of severe dysphagia and recurrent aspiration, a gastrostomy tube may be required.

Many people require a texture-modified diet and altered-consistency fluids, often because of impaired oral control. This can result from conditions such as stroke, dementia or cerebral palsy; following surgery or dental procedures; neck or head cancer; possible side effects of treatments and from degenerative conditions such as Parkinson’s disease.

One option for supporting people in the short or long term until the dysphagia resolves is the use of a feeding tube. The tube may be either a naso-gastric tube or a PEG or PEJ tube (Percutaneous endoscopic gastrostomy or jejunostomy). Once oral feeding resumes, the tube can be removed.
**Rehabilitation therapy**

Rehabilitation therapy is the mainstay of dysphagia management and allows for safer swallowing. Rehabilitation requires the cooperation of the person and the ability to understand and follow commands.

Therapy programs involve the following:
- Oral feeding with fluid consistency and texture modifications
- Compensatory strategies to reduce the risk of aspiration
- Exercise and facilitation techniques
- Medical interventions
- Endoscopic and surgical interventions
- Non-oral feeding

**Oral feeding with fluid consistency and texture modifications**

Difficulty swallowing means that it takes more time and effort to move food and liquid from the mouth to the stomach. A person with dysphagia may need to swallow several times after each bite. Thickened fluids increase oropharyngeal control, while texture modified foods decreases difficulties with chewing. As a result, a texture modified diet and modified or thickened fluids make swallowing easier and safer, minimises the risk of choking and of food particles being aspirated and entering the airway. It also decreases fatigue during meals as it reduces the amount of effort required for chewing and may reduce pain on swallowing during chemotherapy or radiotherapy.

The texture-modified diet should be balanced and include a variety of foods. All food groups should be represented as per the guidelines of the Healthy Eating Pyramid. Healthy snacks should be provided between meals and an adequate daily fluid intake should be maintained. This will avoid dehydration and prevent constipation from developing.

A texture modified diet and fluids often are required for people with disabilities with a soft diet being the most commonly recommended. Staff should understand what constitutes a texture-modified diet and prepare food which meets these standards.

**Food and beverage classification scale**

A Speech Pathologist will assess a person’s swallowing ability and order food & beverage requirements to enable safer swallowing and adequate nutrition.

Beverages are thickened with a commercial preparation. The product will indicate on the side of the container, how much product will need to be added to a volume of fluid to achieve the correct consistency. Generally the beverage will have to stand for a while to achieve correct consistency. Two commonly used beverage thickeners are Guarcol made by Orion Laboratories Australia and Resource Thicken-up made by Nestle.

Food & beverage thickness & consistency are described by the following terminology.

<table>
<thead>
<tr>
<th>BEVERAGE THICKNESS LEVELS</th>
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<tbody>
<tr>
<td>Thin / Regular fluids</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Level 150: Nectar</td>
</tr>
<tr>
<td>Mildly thick fluids</td>
</tr>
<tr>
<td>Level 400: Honey</td>
</tr>
<tr>
<td>Moderately thick fluids</td>
</tr>
<tr>
<td>Level 900: Pudding</td>
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<tr>
<td>Extremely thick</td>
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FOOD TEXTURE MODIFICATION GRADING SCALE

<table>
<thead>
<tr>
<th>Regular / Unmodified diet</th>
<th>Regular foods</th>
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<tbody>
<tr>
<td></td>
<td>All food textures can be included.</td>
</tr>
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<table>
<thead>
<tr>
<th>Texture A:</th>
<th>Naturally soft food e.g. ripe banana</th>
</tr>
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<tbody>
<tr>
<td>Soft</td>
<td>Can be chewed but not necessarily bitten</td>
</tr>
<tr>
<td></td>
<td>Minimal cutting required</td>
</tr>
<tr>
<td></td>
<td>May include a thick puree with obvious lumps which are soft and rounded</td>
</tr>
<tr>
<td></td>
<td>Moist and served with a sauce or a gravy</td>
</tr>
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<table>
<thead>
<tr>
<th>Texture B:</th>
<th>Easily mashed with a fork</th>
</tr>
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<tbody>
<tr>
<td>Minced &amp; moist</td>
<td>Should easily form into a ball</td>
</tr>
<tr>
<td></td>
<td>Person uses their tongue rather than their teeth to eat it</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Texture C:</th>
<th>Food is smooth and lump-free</th>
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<tbody>
<tr>
<td>Puree / vitamised</td>
<td>May have a grainy quality but no lumps</td>
</tr>
<tr>
<td></td>
<td>Moist &amp; cohesive enough to hold its shape on a spoon</td>
</tr>
</tbody>
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A soft diet consists of foods that are soft, small and tender, that are broken up easily with a fork, that don’t require extensive chewing and are moist or dry foods that can be easily moistened by using gravy, sauce, cream or yoghurt.

Examples include:
- Mashed or porridge-like cereals e.g. oatmeal, cream of wheat
- Cereals that are easily softened with milk e.g. Special K, Cornflakes, Weet Bix
- Soft breads and muffins
- Well cooked pasta
- Potatoes and sweet potatoes without skin
- Skinless vegetable cooked to a soft consistency
- Well-cooked legumes with soft skin e.g. baked beans
- Soft fruits like banana and melon; Avocado
- Pureed berries strained to remove seeds and skin
- Cooked fruits without seeds or skin
- Fruit and vegetable juices
- Soft fish de-boned
- Canned tuna or chicken
- Scrambled or soft boiled egg
- Tender or well cooked meats
- Tofu, Yoghurt, Cottage/ ricotta cheese, finely grated/ melted cheese, ice cream, pudding or custard

In a texture modified diet, certain foods should be avoided as they can compromise a person’s airway, be difficult to chew or swallow and cause coughing fits and increase the risk of aspiration. Specific examples of foods to be avoided are those that require a moderate to large amount of effort to chew and swallow, namely:

Avoid foods that:
- Have a coarse or stringy texture e.g. celery, pineapple, whole-grain crackers
- Are too sticky e.g. rice flour dumplings
- Crumble easily e.g. egg rolls, pastries
- Are hard in texture e.g. nuts, walnut cake

Examples include:
- Chewy breads with seeds or grains, raisins
- Raw or cooked vegetables that can’t be easily mashed
- Meat products in a casing e.g. hot dogs, sausages, bratwurst; tough and stringy meats or those which require some chewing e.g. chicken breast, steaks
− Bagels or English muffins
− Chips, crisps or popcorn; corn and peas
− Rice, legumes e.g. black and kidney beans
− Dried fruits, fruits with seeds or skins, pineapple or raw apple or sliced or cubed cheese

Other things to remember when assisting a person who has swallowing difficulties include:

• Make sure the person is sitting up as straight as possible
• Encourage small mouthfuls
• Always make sure the person has swallowed before giving another mouthful
• Encourage the person to stay seated upright for a short time after eating and drinking to allow them to gradually swallow any food or drink that may have gathered in the mouth
• Make sure that dentures are worn and fit well.

Compensatory strategies to reduce the risk of aspiration

These include:

• Chin tuck - The person holds his/her chin down, increasing the epiglottic angles and pushes the anterior laryngeal wall backward, thereby decreasing the airway diameter.
• Head rotation - The ipsilateral (same side) pharynx is closed, forcing the food bolus to the contralateral (opposite side) pharynx while cricopharyngeal pressure is decreased.
• Slight forward head tilt - This technique uses gravity to guide the bolus to the ipsilateral pharynx.
• Supraglottic swallow - This technique involves simultaneous swallowing and breath-holding, closing the vocal cords and protecting the airway. The person thereafter can cough to expel any residue in the laryngeal vestibule. The Valsalva manoeuvre may be used to maximise vocal cord closing. These techniques will be taught by a speech pathologist or rehabilitation therapist.

− Valsalva manoeuvre: A manoeuvre in which a person tries to exhale forcibly with a closed glottis / windpipe so that no air exits through the mouth or nose. The Valsalva manoeuvre impedes the return of venous blood to the heart. This is named for Antonio Maria Valsalva, an Italian anatomist, pathologist, physician, and surgeon (1666-1723) who first described the manoeuvre.

− Mendelsohn manoeuvre - This manoeuvre is a form of supraglottic swallow in which the person mimics the upward movement of the larynx by voluntarily holding the larynx at its maximum height to increase the duration of the cricopharyngeal opening.

Exercise and facilitation techniques:

Exercises are used to increase muscle tone and augment pharyngeal swallow. These techniques are geared towards range of movement, coordination and the strengthening of muscles of the jaw, lips, cheek, tongue, soft palate and vocal cords.

Medical interventions

Botulinum toxin type A is injected endoscopically into the gastro-oesophageal sphincter and upper oesophagus to decrease tone. This may be very useful where cricopharyngeal spasms cause dysphagia.

Some medications such as Diltiazem can help in oesophageal contractions and motility.

Endoscopic and surgical interventions

• Oesophageal dilatation in achalasia, strictures and webs
• Cervical osteophyte resection
• Cricopharyngeal myotomy for upper esophageal spasm
• Oesophageal resection and re-anastomosis

For paralysed vocal cords, Teflon injection or reversible vocal cord medialisation can be performed. In recurrent pneumonia, cuffed tracheostomy may protect the airway.

Laryngectomy or laryngotraechal diversion also may be indicated and often is performed as a permanent palliative measure when all else has failed.
Non-oral feeding

- Parenteral nutrition and intravenous fluid replacement should meet caloric and fluid daily requirements.
- Oesophageostomy can help in the control of pharyngeal secretions.
- Naso-gastric tubes can be used in the short term, but complications, including regurgitation, irritation, bleeding and discomfort occur. H2-blocker or proton-pump inhibitors should be given as prophylaxis to prevent some of the above complications.
- Percutaneous Endoscopic Gastrostomy can be used, allowing for continuous or bolus feedings. Reflux can be prevented by feeding the person in a vertical position and by using drugs to decrease gastric pH, to facilitate gastric emptying and to decrease gastro-oesophageal reflux.
- Percutaneous Endoscopic Jejunostomy may be indicated in people with known reflux and aspiration and involves continuous or bolus feeds.

Management of dysphagia by causative factors

Management of dysphagia can also be reviewed by classification of the presenting signs and symptoms.

Physical obstruction of the pharynx or oesophagus

Treatment for obstruction of the pharynx or oesophagus requires removal of the obstruction. If complete obstruction occurs, emergent upper endoscopy is essential. If a stricture, ring or web is found, careful endoscopic dilation is performed. Tumours usually are removed surgically or occasionally can be removed endoscopically. Radiation therapy and chemotherapy also may be used for malignant tumours of the pharynx and its surrounding tissues. If malignant tumours of the oesophagus cannot be easily removed or the tumour has spread and the prognosis is limited, swallowing can be improved by placing stents within the oesophagus across the area of obstruction. Occasionally, obstructing tumours can be dilated the same way as strictures.

Diseases of the brain

Stroke is the most common brain disease to cause dysphagia. Dysphagia usually is at its worst immediately after the stroke. It often improves with time and even may disappear. If it does not resolve, swallowing is evaluated, usually with a video swallowing study. The abnormality is identified and different procedures trialed to see whether they counter the effects of the dysfunction. In some people it is possible to prevent aspiration by turning the head to the side when swallowing, or by drinking thickened fluids since thin fluids is most likely to be aspirated.

Brain tumours can be surgically removed but this is unlikely to reverse the dysphagia. Parkinson’s disease and multiple sclerosis can be treated with drugs and may be useful in patients with dysphagia.

Diseases of smooth muscle of the oesophagus

Achalasia is treated with dilation, usually with a balloon. Another option is surgical treatment in which the muscle of the lower oesophageal sphincter is cut (a myotomy) in order to reduce the pressure and obstruction caused by the non-relaxing sphincter. Drugs that relax the sphincter usually have little effect.

People who are a high surgery or balloon dilation risk may have botulinum toxin (Botox) injected into the sphincter. The effects are transient and repeated injections usually are necessary. Treating achalasia early is best before the obstruction causes the oesophagus to dilate as this will lead to further problems such as food collecting above the sphincter with regurgitation and aspiration.

In other spastic motility disorders, several drugs may be tried, including anti-cholinergic medications, peppermint, nitroglycerin, and calcium channel blockers. The effectiveness of these drugs is not clear and studies with them are nonexistent or limited.

For people with severe and uncontrollable symptoms of pain and/or dysphagia, a long myotomy may be performed. It is similar to the surgical treatment for achalasia but the incision in the muscle is extended up along the length of the oesophagus for a varying distance in an attempt to reduce pressures and obstruction to the bolus.

There is no treatment for ineffective peristalsis and people must change their eating habits. Ineffective peristalsis rarely causes severe dysphagia by itself. When moderate or severe dysphagia is associated with ineffective peristalsis, it is important to identify that there is no additional obstruction of the oesophagus, such as a stricture due to GORD, which makes dysphagia worse. Most causes of obstruction can be treated.

Miscellaneous diseases

Diseases that reduce the production of saliva can be treated with artificial saliva or over-the-counter and prescription drugs that stimulate the production of saliva. There is no treatment for Alzheimer’s disease.
Client information

Chewing, swallowing, tasting, and communicating require intact, coordinated neuromuscular function in the mouth, face and neck. Oral motor function in particular declines significantly with ageing, even in healthy people.

Oropharyngeal dysphagia is the most common form of dysphagia in older people and neurological disorders such as stroke, Parkinson’s disease and dementia are the most common causes. Oropharyngeal dysphagia typically is difficulty with initiation of swallowing and the impaired transfer of food from the oral cavity to the oesophagus. It also causes increased morbidity and mortality through dehydration, malnutrition and aspiration pneumonia and may be associated with depression and deterioration in quality of life.

Causes of oesophageal dysphagia include motility disorders, medication, inflammatory causes e.g. reflux oesophagitis, infection e.g. candidiasis and obstructions e.g. oesophageal cancer.

Functional decline includes:

- Reduction in masticatory muscle strength and coordination which is common, especially in people with partial or complete dentures. It may lead to a tendency to swallow larger food particles which increases the risk of choking or aspiration.

- Drooping of the lower face and lips caused by decreased circumoral muscle tone and, in people without teeth there is reduced bone support, which can lead to drooling, spilling of food and liquids and difficulty closing the lips while eating, sleeping or resting. Sialorrhea (saliva leakage) is often the first symptom. Swallowing difficulties increase. It takes longer to move food from mouth to oropharynx which increases the likelihood of aspiration.

- After age-related changes, the most common causes of oral motor disorders are neuromuscular disorders e.g. cranial neuropathies from diabetes, stroke, Parkinson’s disease, amyotrophic lateral sclerosis, multiple sclerosis. Drugs e.g. anticholinergics, diuretics, radiation therapy to the head and neck, and chemotherapy can greatly impair saliva production. Hyposalivation is a major cause of delayed and impaired swallowing.

In clients with dysphagia, the risk of aspiration can be reduced by:

- Minimising sedative and narcotic use e.g. related to dementia, cerebrovascular accident
- Oral hygiene to reduce risk of aspiration pneumonia
- Dietary modification e.g. thickened fluids
- Education and/or supervision of client with respect to safe swallowing methods e.g. upright posture, chin tucked, slow swallowing
- Education of relatives not to give inappropriate food or drink
- Manoeuvres to achieve improved swallowing e.g. supraglottic swallow
- Speech therapy referral for more detailed clinical swallow assessment to guide therapy
- Dietician referral to optimise nutritional intake.

Oral motor dysfunction is best managed with a multidisciplinary approach. Coordinated referrals to specialists in prosthetic dentistry, rehabilitative medicine, speech pathology, otolaryngology and gastroenterology may be needed.

Aspiration pneumonitis and minor degrees of aspiration pneumonia generally do not require antibiotic treatment; however this must be under the close supervision and advice of a doctor. Pain relief may help people with chest pain to cough and clear secretions. Enteral feeding can provide nutritional support, but this has not been shown to improve or prevent aspiration.

Nasogastric and gastrostomy tube feeding may be used as a short term measure for nutritional support. It is important that the benefits and adverse effects of longer term gastrostomy feeding are carefully considered and reviewed periodically, particularly when there is a significant change in health status. If enteral feeding is being considered, the person, their GP and relatives / carers should be involved in decision making about commencement, including its purpose, type and duration. Ideally the issues would be discussed as part of Advance Care Planning and take into account medical indications, client preferences and quality of life.
Gastro-oesophageal reflux disease (GORD)

GORD is a general term used to describe acid reflux, with or without oesophagitis. It is a chronic condition and is a more serious form of gastro-oesophageal reflux (GOR), which is common. GOR occurs when the lower oesophageal sphincter opens spontaneously, for varying periods of time, or does not close properly. The stomach contents leak backwards from the stomach into the oesophagus. This irritates the oesophagus, causing heartburn and other symptoms. GOR is also called acid reflux or acid regurgitation. Occasional GOR is common and does not necessarily mean one has GORD. Persistent reflux that occurs more than twice a week is considered GORD. It can eventually lead to more serious health problems. People of all ages can have GORD.

People with more severe GORD may have food regurgitate from the stomach into the oesophagus or mouth, particularly when activities increase pressure in the abdomen, for example, with coughing and bending. Regurgitation also may occur at night while persons with GORD are sleeping.

People with a history of GORD are more likely to have oesophageal strictures as the cause of their dysphagia. Before the onset of dysphagia occurs, about 20% of people with strictures have minimal or no symptoms of GORD. It is believed that reflux that occurs at night causes more damage to the oesophagus. There also is a higher risk of oesophageal cancer among individuals with long-standing GORD.

GORD also has been linked to a variety of respiratory and laryngeal complaints such as laryngitis, chronic cough, pulmonary fibrosis, earache, and asthma, even when not clinically apparent. These atypical manifestations of GORD are commonly referred to as laryngopharyngeal reflux or as extra oesophageal reflux disease.

Factors that have been linked with GORD but not conclusively include obstructive sleep apnea and gallstones, which can impede the flow of bile into the duodenum, and therefore affect the ability to neutralise gastric acid;

In healthy people, the Angle of His — the angle at which the oesophagus enters the stomach — creates a valve that prevents duodenal bile, enzymes and stomach acid from traveling back into the oesophagus where they can cause burning and inflammation of the oesophageal.

Symptoms of GORD

In adults, the most common symptoms of GORD are:

- Heartburn - a burning feeling which rises from the upper abdomen or lower chest up towards the neck
- Regurgitation sometimes with an acid taste in the mouth

These symptoms tend to come and go, and tend to be worse after a meal. Heartburn is increased by bending, stooping, lying down, or eating; more likely or worse at night and relieved by antacids.

Less-common symptoms include:
- Dysphagia
- Pain with swallowing
- Nausea after eating
- Hiccups
- Cough or wheezing
- Bloating or belching
- Burning pain when hot drinks are swallowed
- Excessive salivation is common during heartburn. It is the body's natural response to heartburn. Saliva is slightly alkaline and acts like an antacid.

When they are accompanied by oesophageal injury, several other atypical symptoms are associated with GORD. These symptoms can make the diagnosis difficult as these symptoms can mimic other conditions.

For example:
- Laryngitis - hoarseness, throat clearing, sore throat or change in voice
- A persistent or chronic cough, particularly at night sometimes occurs. This is due to the refluxed acid irritating the trachea.
- Asthma symptoms of cough and wheeze can sometimes be due to acid reflux.
- Other mouth and throat symptoms sometimes occur such as gum problems, bad breath and a feeling of a lump in the throat.
- Severe chest pain develops in some cases and may be mistaken for a heart attack
- Erosion of dental enamel and damaged teeth
- Dental hypersensitivity
- Sinusitis

In infants and children, distinguishing between normal, physiologic reflux and GORD may be difficult. Symptoms may vary from typical adult symptoms. GORD may cause repeated vomiting, effortless spitting up, coughing and other respiratory problems. Inconsolable crying, failure to gain adequate weight, refusing food, bad breath and belching or burping is also common. Children may have one symptom or several symptoms. There is not one symptom of GORD which is universal in all children who have GORD. Reflux that continues past 1 year of age can be considered to be GORD.

Studies show GORD is common and may be overlooked in infants and children.

Common symptoms of paediatric reflux include:
- Irritability and pain, sometimes screaming suddenly when asleep. Constant or sudden crying or colic-like symptoms. Babies can be inconsolable especially when laid down flat.
- Poor sleep habits typically with arching their necks and back during or after feeding
- Excessive vomiting (possetting) after feeds
- Frequent burping or frequent hiccups
- Excessive dribbling or running nose
- Swallowing problems, gagging and choking
- Frequent ear infections or sinus congestion
- Being very windy and extremely difficult to “burp” after feeds
- Refusing feeds or frequent feeds for comfort
- Night time coughing
- Extreme cases of acid reflux can cause apnoea and respiratory problems such as asthma, bronchitis and pneumonia if stomach contents are inhaled.
- Bad breath
- Offensive / acid smelling nappies with loose stools. Babies can be either constipated or have frequent stools.

Possetting after a feed is quite normal with most infants. Babies gain weight, feed well and have no other symptoms. As the child gets older, the lower oesophageal sphincter becomes more competent so the vomiting shows signs of improvement and eventually stops. Babies usually outgrow GOR by their first birthday. Some babies suffer more with reflux and about 60% of these babies with persistent reflux may have weight gain issues.

Some babies have silent reflux. They do not vomit and the acidic stomach contents go up the throat and back down again, causing twice the pain and damage. There is no clear relationship between symptoms and the severity of reflux. Most children under 12 years with GORD, and some adults, have GORD without heartburn. Instead, they may experience a dry cough, asthma symptoms or trouble swallowing.
Causes and risk factors of GORD
The sphincter at the base of the oesophagus normally prevents acid reflux. Problems occur if the sphincter does not work well. In some cases the pressure in the stomach rises higher than the sphincter can withstand.

The reason some people develop GORD is still unclear. Research shows that in people with GORD, the lower oesophageal sphincter relaxes while the rest of the oesophagus is working. Anatomical abnormalities such as a hiatus hernia may also contribute to GORD. A hiatus hernia occurs when the upper part of the stomach and the lower oesophageal sphincter move above the diaphragm. Normally, the diaphragm helps the lower oesophageal sphincter keep acid from rising into the oesophagus. When a hiatus hernia is present, acid reflux can occur more easily. Hiatus hernia can occur in people of any age and is most often a normal finding in otherwise healthy people over age 50. Generally, a hiatus hernia produces no symptoms.

Most people have heartburn at some time, perhaps after a large meal. However, about 1 in 3 adults have some heartburn every few days, and nearly 1 in 10 adults have heartburn at least once a day. Regular heartburn is more common in smokers, pregnant women, heavy drinkers, the overweight and those aged between 35 and 64.

Risk factors for GORD include:
- Hiatus hernia, which increases the likelihood of GORD due to mechanical and motility factors
- Pregnancy
- Physical position e.g. when bending forward
- Smoking
- Alcohol
- Obesity: increasing body mass index is associated with more severe GORD
- Zollinger-Ellison syndrome, which can be present with increased gastric acidity due to gastrin production
- Hypercalcaemia, which can increase gastrin production, leading to increased acidity
- Scleroderma and systemic sclerosis, in which oesophageal dysmotility occurs
- Use of certain medicines such as:
  - Prednisolone
  - Anticholinergics e.g. for seasickness
  - Beta-blockers for high blood pressure or heart disease
  - Bronchodilators for asthma
  - Calcium channel blockers for high blood pressure
  - Dopamine-active drugs for Parkinson's disease
  - Progestin for abnormal menstrual bleeding or birth control
  - Sedatives for insomnia or anxiety
  - Tricyclic antidepressants
- Visceroptosis or Glénard syndrome, in which the stomach has sunk in the abdomen upsetting the motility and acid secretion of the stomach.

Complications
GORD can cause injury of the oesophagus including:
- Reflux oesophagitis—Inflammation of the oesophagus and necrosis of oesophageal epithelium causing ulcers near the junction of the stomach and oesophagus.
- Oesophageal strictures—the persistent narrowing of the oesophagus caused by reflux-induced inflammation and scarring. This is uncommon.
- Barrett’s oesophagus—intestinal metaplasia of the distal oesophagus. This change in the lining of the oesophagus can increase the risk of cancer. About 1 or 2 people in 100 with Barrett’s oesophagus develop cancer of the oesophagus
- Oesophageal adenocarcinoma—a rare form of cancer. The risk of developing cancer of the oesophagus is slightly increased compared to the normal risk if there is long-term acid reflux.
- Bronchospasm due to acid
- Dental problems
- Oesophageal ulcer

Studies have shown that GORD may worsen or contribute to asthma, chronic cough and pulmonary fibrosis.
A doctor should be contacted if symptoms worsen or do not improve with lifestyle changes or medicines or for any of the following symptoms:

- Bleeding
- Choking, coughing, shortness of breath
- Feeling filled up quickly when eating
- Frequent vomiting
- Hoarseness
- Loss of appetite
- Dysphagia or pain with swallowing (odynophagia)
- Weight loss

**Tests and investigations**

Tests may be advised if symptoms are severe, do not improve with treatment or are not typical of GORD. If symptoms are severe or return after treatment, one or more tests may help diagnose reflux or any complications.

One diagnostic practice of GORD is a short-term treatment with proton pump inhibitors. Improvement in symptoms suggests a positive diagnosis. Short-term treatment with proton pump inhibitors may help predict abnormal 24-hr pH monitoring results among patients with symptoms suggestive of GORD.

Continuous oesophageal pH monitoring is the most objective test to diagnose the reflux disease. It is a method for determining whether or not there is reflux of acid from the stomach and into the oesophagus, a cause of the most common oesophageal problem leading to dysphagia, oesophageal stricture. It also allows monitoring GORD patients in regards of their response to medical or surgical treatment.

For acid testing, a thin catheter is inserted through the nose, down the throat and into the oesophagus. The tip of the catheter is placed just above the junction of the oesophagus with the stomach. There is an acid-sensing probe. The catheter is attached to a recorder. Each time acid regurgitates from the stomach and into the oesophagus it reaches the probe, and the reflux of acid is recorded by the recorder. After 24 hours, the catheter is removed and the recorder information is downloaded into a computer for analysis. Most people have a small amount of reflux of acid, but individuals with GORD have more. Thus, acid testing can determine if GORD is likely to be the cause of the oesophageal problem such as a stricture, as well as if treatment of GORD is adequate by showing that the amount of acid that refluxes during treatment is normal.

Endoscopy is a common test. Oesophago-gastro-duodenoscopy is often used to identify the cause and examine the oesophagus for damage. In general, an oesophago-gastro-duodenoscopy is done when the patient either does not respond well to treatment or has alarm symptoms including dysphagia, anaemia, blood in the stool detected chemically, wheezing, weight loss or voice changes. Some gastroenterologists advocate once-in-a-lifetime or 5-10-yearly endoscopy for patients with longstanding GORD, to evaluate the possible presence of dysplasia or Barrett’s oesophagus, a precursor lesion for oesophageal adenocarcinoma.

An endoscope is inserted through the mouth and throat and passed into the oesophagus, stomach and small intestine. The endoscope views the internal surfaces of the oesophagus, stomach and duodenum. Upper endoscopy is more accurate than a barium swallow radiograph. The endoscope allows the doctor to see the surface of the oesophagus and to search for abnormalities. If there are moderate to severe symptoms and this procedure reveals injury to the oesophagus, usually no other tests are needed to confirm GORD.

Biopsies can be performed during gastroscopy and these may show:

- Oedema and basal hyperplasia (non-specific inflammatory changes)
- Lymphocytic inflammation (non-specific)
- Neutrophilic inflammation (usually due to reflux or Helicobacter gastritis)
- Eosinophilic inflammation (usually due to reflux). The presence of intraepithelial eosinophils may suggest a diagnosis of eosinophilic oesophagitis if eosinophils are present in high enough numbers.
- Goblet cell intestinal metaplasia or Barrett’s oesophagus
- Elongation of the papillae
- Thinning of the squamous cell layer
- Dysplasia or pre-cancer
- Carcinoma
- Reflux changes may be non-erosive in nature, leading to the entity "non-erosive reflux disease".

Barium swallow x-rays help in identifying abnormalities such as a hiatus hernia and other structural or anatomical problems of the oesophagus. The test will not detect mild irritation, although strictures and ulcers can be observed.
Oesophageal manometry and oesophageal impedance testing utilises catheters similar to those used for oesophageal manometry. Impedance testing senses the flow of the bolus through the oesophagus. Thus, it is possible to determine how well the bolus is traversing the oesophagus and correlate the movement with the oesophageal pressures recorded by manometry. It also can be used to sense reflux of stomach contents into the oesophagus among patients with GORD.

A positive stool occult blood test may diagnose bleeding from the irritation in the oesophagus. Other tests such as ECG, chest X-ray etc., may be done to rule out other conditions if the symptoms are not typical.

Symptom treatment or management

Three types of treatments exist for GORD: lifestyle modifications, medicines and surgery.

Lifestyle modifications

Evidence for most dietary interventions is anecdotal. A randomised study showed benefit by avoiding eating two hours before bedtime. There is strong evidence for reducing the symptoms of acid reflux found in behavioural changes such as eating less, weight loss and elevating the head of the bed while sleeping.

The following lifestyle modifications are commonly advised:

- **Stop smoking.** The chemicals from cigarettes reduce lower oesophageal sphincter (LES) competence and make acid reflux more likely.
- **Lose weight.** Being overweight puts extra pressure on the stomach and encourages acid reflux.
- **Tight clothing around the abdomen** can also increase the risk of heartburn because it puts pressure on the stomach, which can cause the food and acids in the stomach to reflux.
- **Some foods and drinks may relax** the oesophago-gastro-duodenoscopy and allow more acid reflux. Foods and drinks that are suspected of making symptoms worse in some people, especially shortly before bedtime, include:
  - peppermint and spearmint,
  - tomatoes and tomato sauces,
  - citrus fruits and juices,
  - chocolate,
  - spicy or fatty foods,
  - garlic and onions,
  - full-fat dairy products,
  - hot drinks, coffee, alcohol and carbonated beverages.
- **Eating a large volume meal** causes excess stomach acid production. Attacks can be minimised by eating small frequent meals, especially for dinner.
- **Posture.** Lying down or bending forward a lot during the day encourages reflux. Sitting hunched or exercising just after eating may put extra pressure on the stomach which may make any reflux worse.
- **Bedtime.** If symptoms recur most nights, the following may help:
  - Relief is often found by raising the head of the bed by 15 - 20 cms to prevent the backflow of gastric fluids. Raise the upper body by using a wedge, not extra pillows as this increases abdominal pressure, or sleeping sitting up. This helps gravity to keep acid from refluxing into the oesophagus.
  - Avoid pillows that raise the head only, as this does little for heartburn and places continuous strain on the neck.
  - Go to bed with an empty, dry stomach by not eating in the last three hours before bedtime, and not drinking in the last two hours before bedtime.
  - Do not lie down flat with a full stomach.
  - Sleeping on the left side has been shown to reduce night time reflux episodes.
- **Reduce stress.**
- **Some drugs** may make symptoms worse. They may irritate the oesophagus, or relax the oesophago-gastro-duodenoscopy and make acid reflux more likely. The most commonly implicated drugs are:
  - anti-inflammatory painkillers such as ibuprofen or aspirin
  - diazepam
  - theophylline
  - nitrates
  - calcium channel blockers such as nifedipine.
Medicines
A number of drugs are approved to treat GORD, and are among the most prescribed medicine in Western countries.

- **Acid-suppressing drugs:** They work in different ways but both suppress the amount of acid that the stomach makes. In general, a proton pump inhibitor is used first as these drugs tend to work better than H2 blockers. Some people need long-term daily acid suppressing treatment as without medication, the symptoms return quickly.
  - Proton pump inhibitors such as omeprazole, esomeprazole, pantoprazole, lansoprazole, and rabeprazole, are the most effective in reducing gastric acid secretion. These drugs stop acid secretion at the source of acid production, i.e. the proton pump.
  - Gastric H2 receptor blockers include cimetidine, famotidine, nizatidine and ranitidine and can reduce gastric secretion of acid. These drugs are technically antihistamines. They relieve complaints in about 50% of all GORD patients.

- **Antacids before meals or after symptoms begin can reduce gastric acidity by increasing the pH.** Antacids, such as Alka-Seltzer, Gastrogel and Mylanta, are usually the first drugs recommended to relieve heartburn and other mild GORD symptoms.

- **Antacid side effects:** Magnesium salt can lead to diarrhoea, and aluminum salt may cause constipation. Calcium carbonate antacids, such as Tums, Titralac, and Alka-2, can also be a supplemental source of calcium and can cause constipation.

- **Alginic acid, Gaviscon, may coat the mucosa as well as increase pH and decrease reflux.** Trials suggest alginic acid may be the most effective of non-prescription treatments.

- **Prokinetics strengthen the lower oesophageal sphincter and speed up gastric emptying.** They include domperidone and metoclopramide. They are not commonly used but help in some cases, particularly if there are marked bloating or belching symptoms.

- **Sucralfate is also useful as an adjunct in helping to heal and prevent oesophageal damage caused by GORD, however it must be taken several times daily and at least two (2) hours apart from meals and medicines.** Because drugs work in different ways, combinations of medications may help control symptoms. For example, in people who get heartburn after eating, taking both antacids and H2 blockers may work effectively. The antacids first to neutralise the acid in the stomach, and then the H2 blockers act on acid production. By the time the antacid stops working, the H2 blocker will have stopped acid production.

**Surgery**
Surgery is an option when medicine and lifestyle changes do not help to manage GORD symptoms. Surgery may also be a reasonable alternative to a lifetime of drugs and discomfort.

An anti-reflux operation, Nissen fundoplication, is where the upper part of the stomach is wrapped around the lower oesophageal sphincter to strengthen the sphincter and prevent acid reflux and to repair a hiatus hernia. Its aim is to prevent acid leaking up from the stomach. Heartburn and other symptoms should improve after surgery.

Another treatment is transoral incisionless fundoplication (TIF). It allows doctors to rebuild the valve between the stomach and the diaphragm by going through the oesophagus.

Follow-up measures will include:

- Heartburn prevention techniques
- Endoscopic examination of the oesophagus and obtaining a sample of oesophagus tissue for examination (oesophagoscopy with biopsy) may be recommended to diagnose Barrett’s oesophagus.
- Follow-up endoscopy to look for dysplasia or cancer is often advised.

In babies and small children, the following measures are recommended:

- Simple strategies for avoiding reflux, such as burping the infant several times during feeding
- Keeping the infant in an upright position for 30 minutes after feeding.
- If the child is older, have the child eat small, frequent meals
- Avoid the following foods:
  - carbonated drinks that contain caffeine
  - chocolate
- peppermint
- spicy foods
- acidic foods like oranges, tomatoes and pizza
- fried and fatty foods

- Avoiding food 2 to 3 hours before bed may help
- Raising the head of the child’s bed with wood blocks secured under the bedposts. Using extra pillows will not help.

If these changes do not work, the doctor may prescribe medicine. In rare cases, a child may need surgery.

Conclusion
Frequent heartburn is the most common symptom of GORD in adults. Anyone experiencing heartburn twice a week or more may have GORD. However, GORD can occur without having heartburn. Symptoms could include a dry cough, asthma symptoms or trouble swallowing.

Most babies with GOR are healthy even though they may frequently posset or vomit. GOR is usually outgrown by their first birthday. The persistence of GOR along with other symptoms—arching and irritability in infants, or abdominal and chest pain in older children—is GORD. GORD is the outcome of frequent and persistent GOR in infants and children and may cause repeated vomiting, coughing, and respiratory problems.

If people have been using antacids for more than 2 weeks, they should see a doctor. Most doctors can treat GORD or make a gastroenterology referral.

Doctors usually recommend lifestyle and dietary changes to relieve symptoms of GORD. Most people respond to these nonsurgical measures, with lifestyle and dietary changes and medicines. However, many patients need to continue taking drugs to control their symptoms. Surgery may be considered as a treatment option.
Dysphagia and GORD bibliography and resources

Department of Health, Victoria
Home Page: Keyword search: Dysphagia, GORD
www.health.vic.gov.au

Department of Human Services, Victoria
Home Page: Keyword search: Well for Life, Dysphagia, GORD

Better Health Channel, Victoria
Home Page: Swallowing difficulties, More about food and nutrition etc.

Nutrition Australia
http://www.nutritionaustralia.org/

Dietitians Association of Australia
Smart eating for you

Royal Children’s Hospital, Melbourne
Dysphagia; Children and GOR
http://www.rch.org.au

Department of Education and Early Childhood Development
Home Page keyword search: Nutrition

HealthInsite

Nestle
Resource Food and beverage thickener
http://www.nestlenutritionstore.com/dysphagia-instantthickeners.asp

CSIRO

Joanna Briggs Institute


Dyspepsia - proven gastro-oesophageal reflux disease, Clinical Knowledge Summaries (June 2008)

The management of dyspepsia in primary care, MeReC Briefing, No 32, 2006


Nestle Resource Thicken-up www.youtube.com/watch?v=OCiSx7mh-5A

Activity: http://www.nlm.nih.gov/medlineplus/ency/article/003115.htm Watch the video about swallowing


