

Heart & Stroke

Improving Recognition and Management of Dysphagia in Acute Stroke

A Vision for Ontario



Finding answers. For life.



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Improving Recognition and Management of Dysphagia in Acute Stroke

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1920 Yonge St., 4th Floor
Toronto, Ontario
M4S 3E2
Telephone: 416-489-7100
Fax: 416-489-5123

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Advisory group

Adele Fedorak, MA SLP(C)

Speech-Language Pathologist
Integrated Stroke Unit
Mental Health and Neurosciences
Hamilton Health Sciences
Hamilton, Ontario

Hillel M. Finestone, MD, MDCM FRCPC

Physiatrist-in-Chief
Sisters of Charity Health Service
Associate Professor
University of Ottawa
Ottawa, Ontario

Emma Hum, MCIsc RegCASLPO

Speech-Language Pathologist
Kingston General Hospital
and Hotel Dieu Hospital
Kingston, Ontario

Heather H. Keller, RD PhD

Dietitian
Associate Professor
University of Guelph
Guelph, Ontario

Linda Kelloway, RN BScN CNN(C)

Regional Stroke Education Consultant
West GTA Stroke Network
Toronto, Ontario

Mary Lewis, BA MSW (Facilitator)

Senior Manager,
Government Relations
Heart and Stroke
Foundation of Ontario
Toronto, Ontario

Jane Little, MA RegCASLPO SLP(C)

Speech-Language Pathologist
Sunnybrook and Women's
College Health Sciences Centre
Toronto, Ontario

Debra MacGarvie, BSc RD

Dietitian
Toronto Western Hospital
University Health Network
Toronto, Ontario

Rosemary Martino, MA MSc RegCASLPO SLP(C)

Speech-Language Pathologist
Lecturer and Researcher
University Health Network
Toronto, Ontario

Jill McCaffrey, BSc OT

Occupational Therapist
Alexandra Hospital
Ingersoll, Ontario

Jerrilyn Platt, MHSc SLP(C) RegCASLPO

Speech-Language Pathologist
Clinical Leader, Speech-Language
Pathology Services
St. Peter's Health Services
Hamilton, Ontario

Jennifer Scott, BSc PT

Physiotherapist
Manager, Client Services
North York Community Care Access Centre
Toronto, Ontario

Catriona M. Steele, MHSc CCC-SLP(C) RegCASLPO

Speech-Language Pathologist

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Focus on dysphagia

Ontario is implementing a comprehensive stroke strategy with the goal of providing the best possible care to all individuals who suffer a stroke anywhere in the province. One important aspect of this strategy is improving the recognition and management of dysphagia, or difficulty swallowing.

Dysphagia is one of the most common sequelae following acute stroke, affecting as many as 50% of patients.¹ In Canada in 1994, it was estimated that dysphagia was present in 15,000–21,000 new stroke patients older than 65 years of age, and that only half of these individuals would recover within the first week, with the other half living with dysphagia for months after the stroke.² Also, as the Canadian population ages, the incidence of new stroke with dysphagia is expected to continue increasing over the next few years.

The presence of dysphagia in stroke survivors has been associated with increased mortality and with morbidities such as malnutrition, dehydration and pulmonary compromise.^{1,3-9} However, emerging evidence indicates that detecting dysphagia in acute stroke survivors improves outcomes such as pneumonia, mortality, length of hospital stay and overall healthcare expenditures.¹

The Heart and Stroke Foundation of Ontario, as part of its commitment to realizing the comprehensive stroke strategy, has convened an expert panel from across the province to create a vision for improving the recognition and management of dysphagia and to

develop best practice guidelines. This publication outlines the vision, describes an innovative strategy to realize the vision, summarizes the best practice guidelines and reviews practical information about dysphagia. It was created to assist hospitals in developing a strategy to improve the recognition and management of dysphagia, using the resources and support available within their regional stroke network.

The vision

All stroke survivors will have access to rapid and timely screening to minimize the development of complications. Stroke survivors who fail the screening will have access to a rapid and timely full dysphagia assessment. Those stroke survivors found to have dysphagia will receive appropriate individualized dysphagia and nutritional management that meets the best practice guidelines for managing dysphagia.

Realizing the vision

Realizing the vision for improving the management of dysphagia in stroke survivors necessitates an innovative use of regional resources, as Ontario has a shortage of speech-language pathologists. With their specialized training, speech-language pathologists are the key health care professionals with the expertise to recognize, assess and manage swallowing difficulties in stroke survivors.

Videofluoroscopy

Videofluoroscopy is by far the most common instrumental method used by speech-language pathologists and radiologists to assess the swallow and is considered to be the gold standard.¹⁰

Did you know?

One such innovative proposal recommends that every hospital without a speech-language pathologist develop an interdisciplinary swallowing team, which would include a physician, nurse, occupational therapist, physiotherapist and dietitian, with a speech-language pathologist based in the region to support the team. The swallowing team members would be trained to provide initial screening of all individuals considered to be at potential risk for dysphagia and to manage low-risk dysphagia.

The swallowing team would have the following role:

- screen all conscious stroke patients for dysphagia
- refer individuals who fail screening to a speech-language pathologist
- provide interim management for individuals identified as having signs and symptoms of low-risk dysphagia*, including recommending appropriate dietary modification, implementing safe feeding practices, monitoring for the development of complications and managing oral care
- act as a contact or resource for families of stroke survivors and staff members involved in their care.

The speech-language pathologist would have the following role:

- assist individual hospitals in developing and educating swallowing teams
- assess individuals who fail the dysphagia screening
- support each team in managing

individuals with signs and symptoms of low-risk dysphagia*

- manage individuals with high-risk dysphagia.*

Establishing effective swallowing teams depends on educating interested healthcare professionals in each institution. Swallowing team members must be knowledgeable enough about swallowing, dysphagia and dysphagia management strategies to interpret findings during the screening process and to apply basic nutritional management strategies and practical feeding strategies without compromising the safety or the nutritional status of the dysphagic individual. The following topics have been proposed for a swallowing team educational program:

- swallowing
 - anatomy and physiology
- dysphagia
 - pathophysiology of dysphagia
 - signs, symptoms, risks and complications
 - dysphagia screening and referral
- dysphagia management
 - safe feeding strategies, including compensatory manoeuvres, and outcomes
 - modified diets, feeding regimens and enteral feeding
 - assistive devices and emergency procedures, including oral suctioning
 - individualizing management strategies
 - oral hygiene
 - swallowing therapy
 - evaluation.

* In the context of this document, the terms low risk and high risk refer to an individual's risk of developing dysphagia complications. This risk is determined by conducting a complete dysphagia assessment.

Establishing policies and procedures

Each hospital will need to develop the necessary procedures and policies to support a clinical process for improving dysphagia management that meets the best practice guidelines (Figure 1).

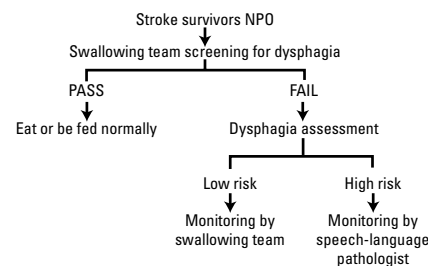


Figure 1. Clinical process for screening and assessment of stroke survivors for dysphagia.

Best practice guidelines for managing dysphagia

These best practice guidelines, developed through a consensus process, provide a benchmark against which organizations involved in stroke care can measure their progress in improving the management of dysphagia after an acute stroke.

1. Maintain all acute stroke survivors NPO until swallowing ability has been determined. NPO prohibits the administration of oral medications, water and ice chips. Intravenous fluids may be required. Regularly perform mouth-clearing or oral care

procedures, using a minimal amount of water, to prevent colonization of the mouth and upper aerodigestive tract with pathogenic bacteria.

2. Screen all stroke survivors for swallowing difficulties as soon as they are awake and alert. A registered nurse, registered practical nurse or other swallowing team member, trained to administer swallowing screening tests and interpret results should perform the screening.
3. Screen all stroke survivors for risk factors for poor nutritional status within 48 hours of admission. A registered nurse, registered practical nurse or other swallowing team member, trained to administer nutritional screening tests and interpret results, should perform the screening.
4. Assess the swallowing ability of all stroke survivors who fail the swallowing screening. The assessment includes a clinical bedside examination and, if warranted by the clinical signs, an instrumental examination. A speech-language pathologist should:
 - assess the stroke survivor's ability to swallow food, liquid and medications
 - determine the level of risk of dysphagic complications, including airway obstruction, aspiration of food and liquid and inadequate nutrition and hydration
 - identify associated factors that might interfere with adequate oral

nutrition and hydration or lead to aspiration-related complications, such as impaired motor skills, cognition or perception

- recommend appropriate individualized management, which may include changes in food or fluid consistency, feeding strategies, swallowing therapy, oral care regimens and possibly referral to other health care professionals.

In addition, the stroke survivor's physician may monitor hydration status, initiate appropriate laboratory investigations and order supplementary intravenous fluid administration.

5. Provide feeding assistance or mealtime supervision to all stroke survivors who pass the screening. An individual trained in low-risk feeding strategies should provide this assistance or supervision.
6. Assess the nutrition and hydration status of all stroke survivors who fail the screening. A dietitian should:
 - assess energy, protein and fluid needs
 - recommend alterations in diet to meet energy, protein and fluid needs
 - support alterations in food texture and fluid consistency, based on the assessment by a speech-language pathologist or swallowing team.
7. Reassess all stroke survivors receiving modified texture diets or enteral

feeding for alterations in swallowing status regularly. After the acute stroke management phase, usually the first week after the stroke, reassess patients at minimum intervals of once every 2- to -3 months during the first year after the stroke and then every 6 months thereafter. The severity of swallowing impairment and the rate of improvement may alter the reassessment schedule.

8. Explain the nature of the dysphagia and recommendations for management, follow-up and reassessment upon discharge to all stroke survivors, family members and care providers.
9. Provide the stroke survivor or substitute decision maker with sufficient information to allow informed decision making about nutritional options. Consider the wishes and values of the stroke survivor and family concerning oral and non-oral nutrition when developing a dysphagia management plan.

Recognizing and managing dysphagia

Dysphagia and normal swallowing

Dysphagia is defined as difficulty or discomfort in swallowing. Swallowing has four sequential coordinated phases: the oral preparatory phase, the oral propulsive phase, the pharyngeal phase and the esophageal phase. Depending on the neurologic injury caused by

the stroke, stroke survivors may have problems with different phases of swallowing.

Oral preparatory phase

During this phase, food in the oral cavity is manipulated and masticated in preparation for swallowing. The back of the tongue controls the position of the food, preventing it from falling into the pharynx (Figure 2).¹¹



Figure 2. Oral preparatory phase of swallowing.¹¹

Oral propulsive phase

During the oral propulsive phase, the tongue transfers the bolus of food to the pharynx, triggering the pharyngeal swallow (Figure 3).¹¹



Figure 3. Oral propulsive phase of swallowing.¹¹

Pharyngeal phase

During the pharyngeal phase, complex and coordinated movements of the tongue and pharyngeal structures propel the bolus into the esophagus, while protecting the airway (Figure 4).¹¹



Figure 4. Pharyngeal phase of swallowing.¹¹

Esophageal phase

During the esophageal phase of swallowing, coordinated contractions of the esophageal muscle move the bolus through the esophagus toward the stomach (Figure 5).¹¹



Figure 5. Esophageal phase of swallowing.¹¹

Open and closed

The airway is always open, until swallowing triggers laryngeal closing. The esophagus is always closed, until swallowing opens the upper esophageal sphincter.

Did you know?

Signs and symptoms of dysphagia⁸

- choking on food
- coughing during meals
- drooling or loss of food from mouth
- pocketing of food in cheeks
- slow, effortful eating
- difficulty swallowing pills
- avoiding foods or fluids

Did you know?

- complaining of:
 - food sticking in throat
 - problems swallowing
 - reflux or heartburn.

Stroke morbidity and mortality associated with dysphagia

Dysphagia is a significant contributor to stroke morbidity and mortality, primarily because of aspiration-related complications, malnutrition and the risks associated with enteral feeding.¹² A recent study found that the number of swallowing difficulties observed in stroke survivors was significantly associated with length of hospitalization.¹³ Up to 20% of individuals with stroke-related dysphagia die during the first year after a stroke from aspiration pneumonia, and mortality rates up to 62% have been reported.^{14,15} One Canadian study found 47% of stroke patients discharged from acute care to rehabilitation had dysphagia, 49% were clinically malnourished, and persistent malnutrition was noted in 19% at 6-month follow-up.⁵

Screening and assessing stroke survivors for dysphagia

Screening identifies the presence or absence of dysphagia. Assessment describes the problem in detail, determines the severity of the swallowing problem and identifies optimal management strategies.

Stroke survivors should be screened for dysphagia as soon as possible after acute stroke has been diagnosed and emergency treatment has been given and before any oral intake is allowed. Ideally, screening should take place as soon as a stroke survivor is awake

and alert. Stroke survivors who pass the screening are unlikely to have significant swallowing difficulties and have a minimal risk of dysphagic complications. These individuals can eat or be fed a normal diet.

Individuals who fail the screen are maintained NPO until they can be assessed, preferably before the third day after the stroke. Assessment includes a clinical bedside examination and, if warranted by the clinical signs, an instrumental examination, such as videofluoroscopy. After the assessment, decisions as to modified diet or enteral feeding are made.

Management strategies for dysphagia

A well coordinated care plan can minimize the development of dysphagic complications, reduce length of stay in acute-care facilities and expedite access to specialized rehabilitation centres. Dysphagia management has the following goals:

- meeting the nutrition and hydration requirements of the stroke survivor
- preventing aspiration-related complications
- maintaining and promoting swallowing function as much as possible.

Dysphagia management strategies include the following:

- modifying food and fluid textures to increase the safety of oral intake
- using low-risk feeding practices and compensatory strategies to prevent

complications, such as aspiration and choking

- monitoring oral intake to prevent dehydration
- supplementing the diet to maintain adequate nutrition
- using enteral feeding for individuals who are unable to swallow
- implementing swallowing therapy to rehabilitate specific physiological swallowing impairments.

A speech-language pathologist should regularly monitor the status of individuals with dysphagia to ensure that the management strategies employed remain appropriate.

Low-risk feeding strategies for dysphagia

Stroke survivors should be encouraged and assisted to feed themselves, if at all possible, as self-feeding is safer than being fed. Individuals with dysphagia who are fed are approximately 20 times more likely to develop pneumonia than those who feed themselves.¹⁶ Therefore, if dysphagic individuals cannot feed themselves independently, hand-over-hand support should be provided from an eye-level position. If full feeding assistance is necessary, it should be provided using low-risk feeding strategies.¹⁷

Routine use of low-risk feeding strategies can prevent serious health problems and improve the quality of the experience for the person being fed. All health care professionals involved in feeding dysphagic

individuals should also be able to deal with emergencies, such as choking, which may occur during feeding. Guidelines for low-risk feeding practices are summarized below.

- Ensure that the environment is calm during meals and minimize distractions.
- Check the food tray to ensure the correct diet type has been provided.
- Position the stroke survivor with the torso at a 90° angle to the seating plane, aligned in mid-position with the neck slightly flexed.
- Support the stroke survivor with pillows if necessary.
- Perform mouth care before each meal to remove bacteria that have accumulated on the oral mucosa.
- Feed from a seated position, so that you are at eye level with the stroke survivor.
- Do not use tablespoons. Use metal teaspoons, never plastic, for feeding individuals with bite reflexes.
- Use a slow rate of feeding and offer a level teaspoon each time.
- Encourage safe swallowing of liquids by providing them in a wide-mouth cup or glass or in a cut-down nose cup, which helps prevent the head from flexing backward and reduces the risk of aspiration. Some individuals may benefit from drinking through a straw.
- Ensure that swallowing has taken place before offering any additional food or liquid.
- Observe the stroke survivor for any signs or symptoms of swallowing

Cough reflex

The cough reflex can be impaired or absent in individuals with dysphagia, so silent aspiration may occur.

Did you know?

Gag reflex

The absence of a gag reflex does not indicate the presence of dysphagia nor does the presence of a gag reflex exclude the possibility of dysphagia.

Did you know?

problems during and for 30 minutes after the meal.

- Perform mouth care after each meal to ensure that all food debris is cleared from the mouth.
- Position the patient comfortably upright for at least 30 minutes after each meal to promote esophageal clearance and gastric emptying and to reduce reflux.
- Monitor the oral intake of the stroke survivor with dysphagia: note any food items that are not consumed and ensure that intake is adequate, especially important in individuals receiving a thickened-liquid diet.
- Document the patient's intake, any changes in swallowing status and any self-feeding problems.

Dietary modifications for dysphagia

No single dysphagia diet exists. Diets for individuals with dysphagia typically include modified food and liquid textures.^{18,19} Most often, a complete dysphagia assessment determines the appropriate dietary modifications.

Diet texture modification, however, can reduce an individual's enjoyment of food, resulting in decreased oral intake. This can rapidly lead to dehydration and eventually to malnutrition. Also, the use of starch-based fluid thickeners increases carbohydrate intake, which may produce a nutritional imbalance if the diet is not carefully monitored. Controlling dietary carbohydrates is especially important in individuals with diabetes.

It is therefore critical to consult a dietitian, to ensure that the modified

diet is nutritionally adequate and appropriate, and to consult the stroke survivor or substitute decision-maker, to ensure that the modified diet is as appealing as possible. It may be possible to manipulate the texture of some favourite foods to make them safe for dysphagic individuals. Common food texture modifications for individuals with dysphagia are described below.

Pureed foods

This diet includes mashed or blenderized foods with a dense, smooth consistency, such as yogurt, applesauce or mashed potatoes. Pureed foods should never be lumpy or runny.

Minced or ground foods

This food texture refers to soft or very soft foods that have been chopped to pea-sized particles and are moist enough to form a cohesive and easy-to-chew bolus. Typical foods in this category include shepherd's pie and cottage cheese.

No dry particulates

Dry particulates are difficult for individuals with dysphagia to form into a bolus and control in the mouth. Dry particulates include dry, crumbly cheeses; raw fruit and vegetables; vegetables, such as corn, peas and coleslaw; rice and noodles; cookies, crackers, pastries and dry cakes; dry cereal and snacks; dried foods, such as raisins, nuts and seeds; hard candies;

and peanut butter. Dry particulates, such as rice and corn, may be included in the diet if the preparation method moistens them and binds them together, for example, in dishes such as puddings or casseroles.

No bread products

Gummy bread products and foods made from these products, which can stick in the throat, include fresh bread and rolls, muffins, cookies, cakes, pastries, toast, french toast, sandwiches and pancakes. In some situations, bread products can be lubricated with sauces, butter, oil or cream, so that they form a relatively safe bolus. For example, adding liberal amounts of butter or margarine prevents fresh bread from sticking in the throat, and removing dry crusts facilitates swallowing. In this way, individuals with dysphagia can enjoy well-buttered crustless sandwiches with soft moist fillings, such as egg salad.

No mixed consistencies

Foods with mixed consistency, which combine liquids and solids, can be difficult for individuals with dysphagia to control in the mouth, because they must first separate the different consistencies and then manage them

separately. Foods with mixed consistency include canned fruit with syrup, cereal with milk, some soups, and pills given with water. However, fruit with syrup and soups can be pureed for the dysphagic individual.

No thin fluids

Thin fluids, which can enter the pharynx prematurely and leak into the airway, are difficult for the individual with dysphagia to control. Thin fluids include water, juice, milk, tea, coffee, broth, creamed or strained soups, soft drinks, commercial supplements and cold or frozen food items that liquefy at body temperature, such as ice cream, ice cubes and gelatin. However, an individual with dysphagia who is receiving adequate mouth care can usually tolerate water taken in small amounts, unless respiratory complications are present.

No reflux-promoting foods

Foods that can cause gastroesophageal reflux can produce respiratory complications in some dysphagic individuals. These foods include highly spicy and acidic foods, peppermint, spearmint, fried foods, coffee, tea, chocolate and cola.

Silent aspiration

Silent aspiration is common in individuals with dysphagia. The cough reflex may be absent when food or fluid enters the airway, so it is important to know the other signs and symptoms of dysphagia.

Did you know?

Dangerous practices

The following practices may have significant clinical consequences, including aspiration or dehydration, for individuals with dysphagia:

- feeding someone who is not fully alert
- syringe feeding
- feeding in a fully or partially recumbent position
- giving pills with water to individuals on a 'no thin fluids' diet
- unnecessarily restricting diet to thickened fluids and puree
- feeding with a tablespoon rather than a teaspoon
- giving anything not approved in the diet: tell the family, other staff members and visitors to check if specific food items are allowed before bringing them.

Thickened fluids

The recommended thickness of thickened fluids varies from that of honey to pudding, and it is determined individually.²⁰ It is important to note that the thickness of a liquid is often temperature dependent. For example, ice cream is a thin liquid at body temperature.

Enteral feeding and dysphagia

Enteral feeding is recommended if a swallowing assessment indicates high-risk dysphagia or an inability to meet nutritional needs orally. Enteral feeding should be considered after a stroke survivor has been NPO for 48 hours and implemented within 3–4 days. Consultation with a physician and speech-language pathologist can help determine the potential duration of tube feeding and whether a nasogastric tube is suitable. If dysphagia is severe and expected to last for more than 6 weeks, a gastrostomy or jejunostomy tube may be indicated. A radiologist, gastroenterologist or surgeon would insert a gastrostomy or jejunostomy tube.

Enteral feeding tubes have been shown to deliver adequate nutrition and hydration to stroke survivors, but their use is also associated with medical complications.^{5,21-23} Considerations that enter into the decision to initiate enteral feeding should include the prognosis, the wishes and values of the stroke survivor, the impact of tube feeding on

quality of life, and the risks and benefits of tube feeding.²⁴ It is essential that the entire team, including the attending physician, collaborate with the stroke survivor and family in making these decisions.

Mouth care and dysphagia

Appropriate mouth care assists in maintaining comfort and oral hygiene in dysphagic individuals. Recommended mouth care procedures are listed below.

- Remove and clean dentures and store them in clean water in a denture cup.
- Every morning and at bedtime, clean the mouth with a toothbrush and toothpaste. If possible, use a toothbrush with a suction attachment and low-foam toothpaste for individuals who cannot spit or manage fluids without aspiration.
- Swab the oral cavity with an alcohol-free antiseptic, to reduce colonization by bacteria associated with aspiration pneumonia.
- Perform mouth care before each meal to remove bacteria that have accumulated on the oral mucosa. If antibacterial mouthwash is used, wait 20 minutes after mouth care before feeding. Alternatively, use water or saline. A clean mouth reduces bacterial colonization and improves the taste of food, an important consideration in encouraging adequate nutritional intake.

- Perform mouth care after every meal, using an oral swab to remove any food debris. Use an oral rinse for individuals without teeth.
- Consider using an oral moisturizer after mouth care for individuals who are NPO and have dry mouth. The

use of oral moisturizers, however, may be problematic in individuals with severe dysphagia. In some severe cases, these products may pool in the pharynx and dry into a sticky mass. In this situation, plain water may be a better choice.

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Risks of tube feeding

Potential risks associated with nasogastric, nasojejunal, nasoduodenal and gastrostomy tubes include aspiration due to delayed gastric emptying and gastroesophageal reflux, tube displacement and tube removal. Potential risks associated with jejunostomy tubes include clogging of small-bore tubes and infections due to poor stoma care. Mouth care is critical in individuals receiving tube feeding, because substantial volumes of secretions can accumulate, harbouring considerable numbers of pneumonia-causing bacteria.