

# Texture Modification in Dysphagia Management

A multidisciplinary approach



**Christina Connelly**, Stroke Unit Clinical Manager, Registered Dietitian, Northwick Park Hospital & **Danielle Welsh**, Clinical Lead Speech and Language Therapist, Greenwich Neurorehabilitation Team

Dysphagia describes difficulties swallowing and can be transient, persistent or deteriorating, depending on the underlying pathology, which may be neurological, surgical, mechanical or psychological.<sup>1</sup> A fundamental aspect of dysphagia management is the modification of the texture of foods and fluids that may be used to support patients in managing risks associated with swallowing and to support adequate nutrition and hydration.<sup>2</sup> Where possible, texture modification should be a short-term strategy in the management of dysphagia. Dysphagia and texture modification are associated with malnutrition<sup>3,4</sup> and dehydration.<sup>5</sup> Therefore, it is important that patients with dysphagia have their nutritional needs assessed and a multidisciplinary team (MDT) management plan is made that considers patient and caregiver abilities and wishes.

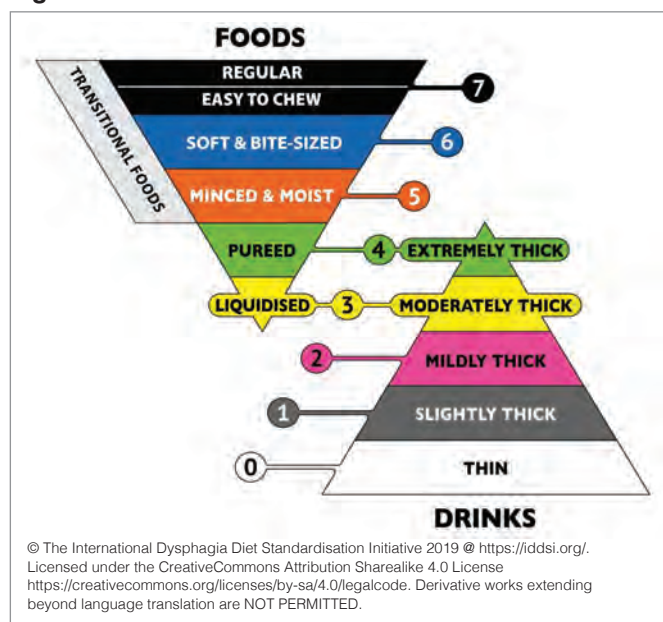
## IDDSI

The International Dysphagia Diet Standardisation Initiative (IDDSI) was created to provide standardised descriptions of foods and fluids from the point of view of a person with swallowing difficulties. Its mission is to facilitate the safe consumption and enjoyment of food and fluids, by providing testing methods that can be used to determine the level of consistency of any food or fluid.<sup>6</sup> The IDDSI Framework is broken down into 8 categories, with fluids being measured from Levels 0-4, and foods being measured from Levels 3-7 (see **Figure 1**). Testing methods intend to assess the flow and the textural characteristics of food and fluids, and should be tested at their intended serving condition, including temperature.<sup>7</sup>

A specific syringe is used to test Levels 0-2 to assess the volume of fluid that flows in 10 seconds. The volume of fluid released will determine the consistency level of the fluid, meaning the more volume of fluid released the thinner the liquid is. For Level 3, the flow test could be used, however the fork drip or spoon tilt tests could also be used.<sup>8</sup> For levels 4-7, the fork pressure or spoon tilt tests may be used to determine the consistency of the foods. The fork pressure test will assess how much pressure is required to change the texture of the food, and descriptors will describe how the food should appear after pressure has been applied. The spoon tilt test provides descriptors of how the food will act if tilted off the spoon and whether or not a coating is left behind.<sup>8</sup>

These methods have been created to provide practical support for patients with swallowing difficulties and their carers to effectively test the consistency of preferred foods and fluids, to ensure diets can be as least restrictive as possible and meet individual preferences.

Figure 1: IDDSI Framework



## Why texture modification?

Difficulties with solids are common in certain populations, such as stroke,<sup>9</sup> head and neck cancers<sup>10</sup> and oesophageal dysphagia.<sup>11</sup> Foods are often modified according to a patient's oral motor ability<sup>2</sup> (e.g. breaking down textures and transferring the bolus posteriorly in a controlled manner). Fatigue is common in many conditions and has been observed to impact an individual's ability to manage certain textures and meet their nutritional needs.<sup>12</sup> In these cases, a modified diet may be recommended.

Thickened fluids are thought to increase sensory awareness and delay oral and pharyngeal transit time, allowing an individual more time to coordinate a safe swallow.<sup>13, 14, 15</sup> However, there is limited evidence that thickened fluids reduce the incidence of pneumonia,<sup>13, 16</sup> they are frequently associated with poor patient satisfaction and compliance,<sup>17, 18</sup> and can lead to dehydration.<sup>19, 20</sup> There is evidence that thickened fluids are no more effective at reducing pneumonia risk than thin fluids with a chin down posture.<sup>16</sup> In certain circumstances a water protocol may be introduced. This permits and encourages oral intake of plain water for appropriate dysphagic patients, with evidence suggesting improved hydration and quality of life without an increased risk of pneumonia<sup>21</sup> (see **Figure 2**).

Texture and fluid modification should be a short-term compensatory strategy and at the least restrictive level;<sup>13, 20</sup> however, there are some cases where texture and fluid modification may be long-term:

- Patient preference
- The patient is unsuitable for other compensatory strategies such as a chin tuck or head turn, either because it is ineffective or they are cognitively unable to comply
- The patient is unable or unwilling to engage in rehabilitation
- Rehabilitation has been trialled; however the swallow has not improved and the patient wants to continue to eat and drink orally but there are ongoing risks of choking or chest complications associated with regular diet or fluids, and modified textures have been assessed to be safer.

## Assessment & monitoring of patients with dysphagia

A dysphagia assessment should be carried out by an appropriately competent speech and language therapist (SLT) following a referral from another healthcare professional or following a failed screening test. **Figure 3** outlines common symptoms of oropharyngeal dysphagia that may trigger a referral.

An initial dysphagia assessment, often referred to as a 'bedside' assessment, usually includes a comprehensive case history, cranial nerve examination and observation of oral intake.<sup>22</sup> In some settings, cough reflex testing (used to assess for the risk of silent aspiration), pulse oximetry (observing oxygen saturation during swallow) or cervical auscultation (using a stethoscope to listen to the swallow) may also be used. However, evidence for some of these tools and for bedside assessment in general is limited.<sup>23</sup> Instrumental assessments, such as the videofluoroscopic swallow study (VFSS) or fiberoptic endoscopic evaluation of swallow (FEES), are more reliable and, although require clinical skill and can be costly, are imperative for planning suitable rehabilitation programmes, as well as assessing the benefit of compensatory strategies and texture modification. One study showed as many as 70% of profound aspirators identified on videofluoroscopy were not identified during bedside assessment.<sup>23</sup>

The SLT is interested in gaining information about the symptom onset and progression and whether any specific foods or fluids are causing difficulties. It is also of interest to know if the patient has adopted any strategies or is modifying their foods and to what effect. Careful assessment, preferably using instrumental assessment, is crucial in evaluating the benefit of modified textures. Instrumental assessment enables direct visualisation of bolus manipulation, control and breakdown and the impact this has on the pharyngeal swallow and safety.

Many factors will affect a patient's ability to meet their nutrition and hydration requirements with dysphagia. These will include underlying disease and its likely progression, acute disease status and current swallowing function and prognosis. The likely duration of the need for texture modification and the setting to which the patient is in (i.e. in hospital or the community) will affect the type of dietetic intervention required.

The content of micronutrients, such as vitamin C, folate, zinc and iron, in foods can be affected by cooking methods, including boiling or high heats. If a patient is attempting to meet their full nutritional requirements orally, especially long-term, consideration should be taken to ensure patients have a varied diet to maximise their micronutrient intake (see **Figure 4**). The use of oral nutritional supplements and enteral feeds, which contain a wide variety of micronutrients, could be helpful for patients on limited oral diets.

### Figure 2: Water protocol<sup>21</sup>

- Free access to water, without thickener or additions, such as cordial after thorough oral care
- Not permitted with food, medication or for 30 minutes after eating
- Good oral hygiene

### Figure 3: Common symptoms of oropharyngeal dysphagia

- Food/fluids coming out of the mouth
- Difficulty gathering the bolus at the back of the tongue/ pushing bolus backwards
- Food sticking in the mouth or throat
- Food/fluids coming out of the nose
- Hesitation or inability to initiate swallow
- Multiple swallows per mouthful
- Frequent throat clearing (at rest on saliva or during/after food/fluids)
- Gurgly voice (at rest on saliva or during/after food/fluids)
- Speech changes – may sound slurred, more nasal or voice may sound hoarse
- Coughing before, during or after swallowing
- Choking episodes
- Weight loss
- Recurrent pneumonia

### Figure 4: Maximising micronutrient intake<sup>24</sup>

- Include a variety of foods in the diet
- Cook vegetables in small amounts of water where possible
- Use the left-over liquid used for cooking vegetables (e.g. in sauces)
- Store food as directed, such as avoiding sun exposure
- Use the shortest cooking time as possible for the safe consumption of food
- Use of commercial products that may be fortified with micronutrients

Texture modification can have a huge impact on a patient's self-esteem, socialisation and quality of life.<sup>1, 25, 26</sup> Compliance with texture modification can also be a challenge,<sup>25, 27</sup> and there is evidence that modified fluids can lead to reduced oral fluid intake and subsequent dehydration.<sup>5, 19, 20, 28</sup> Therefore, assessment needs to take this into account and collaborative MDT management planning with the patient and their caregivers is essential. Close monitoring of patient's nutritional and hydration status is also essential as is regular review of their swallow function which may change over time.

For patients with a progressive condition, such as multiple sclerosis or motor neurone disease, great care should be taken to discuss the likely progression of the disease and the impact it will have on swallowing and nutrition. This will allow for adequate planning, thought and discussion on the patient's wishes, to ensure enteral nutrition is started at an appropriate time, ideally before the patient becomes malnourished.

## Conclusion

Texture modification is a common strategy in the management of dysphagia. However, it is not always appropriate and should only be implemented following an extensive swallowing assessment. There is evidence of increased risk of malnutrition and dehydration associated with dysphagia and modified textures,<sup>3, 5</sup> therefore regular nutritional screenings should be implemented. The patient and caregiver abilities and wishes, as well as the social and psychological impact, should be considered throughout assessment and should guide MDT management planning.

## Case study

Jane is a 71-year-old female who presented with severe oropharyngeal dysphagia following a stroke. Assessment revealed significant difficulties chewing and controlling solids resulting in oral residue, reported pharyngeal sticking and coughing.

A videofluoroscopy was completed and there was evidence of aspiration on thin liquids which was eliminated with Level 2 thickened fluids. Although there was no evidence of aspiration or penetration across diet textures trialled, she struggled orally with subsequent significant pharyngeal residue putting her at risk of respiratory compromise. Pharyngeal residue was reduced with Level 5 Minced & Moist Diet and a chin tuck posture, and secondary clearing swallows were effective to clear remaining residue. She was commenced on Level 2 thickened fluids and Level 5 diet and a targeted and intensive dysphagia therapy programme was commenced. During intervention she expressed dissatisfaction with thickened fluids and there were concerns with meeting her hydration requirements. She was a good candidate for a free water protocol, therefore between meals she was encouraged to drink plain water.

On reassessment, her swallow had improved, and she was observed to safely manage Level 0 thin fluids and a Level 7 regular diet, and she was upgraded. However, upon dietetic assessment Jane was found not to be able to meet her nutrition requirements due to ongoing fatigue limiting her ability to manage a regular diet across a mealtime. Jane was keen to remain on a Level 7 diet, however agreed to a Level 7 Easy To Chew Diet during mealtimes with Level 7 regular diet snacks as the most appropriate plan.

Upon dietetic reassessment, Jane's oral intake had improved, meeting her nutritional requirements and maintaining her weight. Jane and her caregivers were advised to monitor her fatigue levels and seek re-referral if further advice or assessment was required.

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