**Nutrition and Hydration**

**Introduction**

Adequate nutrition and hydration are vital for survival. However either or both can be at risk after stroke - due directly to the stroke sequelae and also due to this being a vulnerable population with increased rates of premorbid nutrition and hydration issues. Malnutrition is reported to be common after stroke, with Australian data suggesting that between 16 and 19% of people admitted with stroke are also suffering from malnutrition (Martineau et al. 2005; Davis et al. 2004). Dehydration is also common due to impairments of swallowing, communication and mobility post-stroke (Kelly et al. 2004; Bhalla et al. 2000; Finestone et al. 2001; Whelan 2001). Both dehydration and malnutrition increase in the first week of hospital admission and both are associated with reduced outcomes – including mortality and increased complications (Martineau et al. 2005; Perry 2004; Foley et al 2006) hence constant monitoring is vital during hospital admissions. Esper et al (2006) suggest that haemorrhagic forms of stroke may produce higher metabolic rates as a result of the pathology and therefore require a higher nutritional intake than other forms of stroke.

The Dieticians Association of Australia has produced guidelines with recommended levels of nutrition for adults in various care environments (DAA 2009). Prevention of malnutrition and dehydration are the primary aims of intervention via monitoring and adjustment of intake and management of contributing impairments. When premorbid issues exist, more intense education and management is obviously required. Long term considerations of adequate intake should be addressed as part of any lifestyle package.

**Research**

**Screening:**

There are a number of validated nutritional screening tools existing in the stroke literature including the Malnutrition Screening Tool and the Malnutrition Universal Screening Tool which have been used in the acute setting (Martineau et al. 2005; Davis et al. 2004; Stratton et al. 2004 and Ferguson et al. 1999).

**Full assessment:**

Typically malnutrition is evaluated via a clinical process with information regarding unintentional weight loss, decreased oral intake and evidence of muscle wasting/subcutaneous fat loss. Validated assessment tools include the Subjective Global Assessment (SGA), Mini Nutritional Assessment (MNA) and the patient-generated SGA and have been reported for people with stroke in the acute and rehabilitation settings (Martineau et al. 2005; Banks et al. 2007).

**Management:**

Hodgkinson et al. (2003) and Simmons et al. (2001) report *simple strategies* such as accessible fluid, preferred fluid and supervision during meals all increase fluid intake in elderly who have adequate oral function.
If there is dysphagia that limits oral intake, fluid can be administered via **intravenous, subcutaneous or enteral routes** (nasogastric [NG] or percutaenous endoscopic gastrostomy [PEG]) – Chaliner et al (1994) report there is no clear evidence to support one means over another. More recently James et al. (2005) reported early nutritional support via tube feeding improved outcomes for people with severe stroke (compared to standard care). However the FOOD trial (FOODa, 2005) found no difference between early nasogastric feeding compared to intravenous or subcutaneous fluids only, however it was underpowered. The FOOD trialists also investigated preferred methods of enteral feeding (FOODb, 2005) for those with dysphagia and reported NG feeding in the first month was associated with increased functional recovery and normal feeding at 6 months compared to PEG feeding. Three smaller RCTs report the opposite (Norton et al. 1996; Kostadima et al. 2005; Hamidon et al. 2006) – however the FOOD trial is considerably better powered and methodologically stronger than these hence the NSF guidelines follow this 2005 RCT for NG feeding in acute stroke.

Milne et al. (2006) conducted a systematic review for elderly patients and found **oral nutritional supplementation** reduces complications and mortality compared to standard care in the undernourished group (no difference for nourished). More recently Rabadi et al. (2008) conducted an RCT that demonstrated that undernourished adults in a specialist stroke unit, if given intensive nutritional supplementation, had improved motor recovery and were more likely to go home at discharge.

Overall Perry et al. (2003) report that implementation of locally developed EB guidelines for nutritional support (screening, monitoring and management with audit, feedback and education) resulted in greater adherence and reduced complications for the person with stroke.

**NSF Guidelines**

7.1 Nutrition and hydration

a) All stroke patients should have their hydration status assessed, monitored and managed. Appropriate fluid supplementation should be used to treat or prevent dehydration. (Grade B: Kelly et al. 2004; Bhalla et al. 2000; Whelan 2001; Hodgkinson et al. 2003; Chaliner et al. 1994)

b) All patients with stroke should be screened for malnutrition. (Grade B: Martineau et al. 2005; FOODa, 2005)

c) Patients who are at risk of malnutrition, including those with dysphagia, should be referred to a dietitian for assessment and ongoing management. (Good practice point)

d) Screening and assessment of nutritional status should include the use of validated nutritional assessment tools or measures. (Grade B: DAA, 2009)

e) Nutritional supplementation should be offered to people whose nutritional status is poor or deteriorating. (Grade A: Milne et al. 2006)

f) Nasogastric tube feeding is the preferred method during the first month post-stroke for people who do not recover a functional swallow. (Grade B: FOODb, 2005)

g) Food intake should be monitored for all people with acute stroke. (Good practice point)
Suggested Assessment

Screening (acute):

- Malnutrition Screening Tool or the Malnutrition Universal Screening Tool (Martineau et al. 2005; Davis et al. 2004; Stratton et al. 2004 and Ferguson et al. 1999).

Full assessment (acute and rehabilitation):

- Unintentional weight loss, decreased oral intake and evidence of muscle wasting/subcutaneous fat loss.
- Subjective Global Assessment (SGA), Mini Nutritional Assessment (MNA) or the patient-generated SGA (Martineau et al. 2005; Banks et al. 2007).

Practice Suggestions

- Best practice centres on screening and monitoring FOR ALL PEOPLE WITH STROKE.
- Simple strategies should be used routinely such as easy access to preferred fluids, supervision if oral intake is safe and effective
- Nutritional supplementation should be instituted early and intensively when indicated
- Alternate forms of fluid and nutrition intake should be instituted if indicated (oral intake is not functional) and the first route established should be via nasogastric tube
- Teamwork and communication is paramount for prompt implementation of management based on the screening and monitoring – in particular speech pathology and dietetics need to be in close contact with ward staff
- Stroke teams in acute and rehabilitation settings should institute local procedures and clinical paths and use audit, feedback and education to promote implementation

Considerations

- Health and recovery depend on adequate nutrition and hydration
- People who have stroke may have pre-morbid nutrition and hydration issues and are therefore doubly at risk
- With such high risk issues, all staff (and carers) must be adequately trained and resourced
- Contributing factors need to be addressed (upper limb activity, mobility, communication and cognition issues)
- Diet considerations should form a major part of any lifestyle management approach and for secondary prevention.

References and readings


