

## 'My Practice'

### Reducing hospital admissions: the role of enteral feeding

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#### Background

Vera\*, a 73 year old enterally fed female with epilepsy and learning difficulties (LD), had a percutaneous endoscopic gastrostomy (PEG) placed ten years ago due to worsening dysphagia and risk of aspiration. Since then, she had been living in a care home, under the care of Gloucestershire Hospitals NHS Foundations Trust home enteral feeding (HEF) team. Despite being nil by mouth, over the last year Vera had been diagnosed with chest infections likely secondary to aspiration on 8 occasions, 3 of which led to a hospital admission. Recently, Vera was admitted to hospital once again with aspiration pneumonia and referred to the acute dietitian.

#### Initial Assessment

On admission to hospital, Vera weighed 57.5kg, and subjectively appeared to be within the healthy weight range. On assessment, Vera's BMI was not calculated due to the differing stature and fat distribution of patients with LD making BMI an invalid measure<sup>1</sup> for this population. Her energy requirements were estimated at between 1200-1300kcal per day, protein was 60.5g<sup>2</sup> and approximately 1700-1750ml fluid per day for adequate hydration. For the past 3 years Vera had been receiving her energy requirements from her enteral nutrition regimen and her weight had remained stable between 57-61kg. This suggested that her daily energy requirements had been accurately estimated within this range. Vera's enteral feeding regimen on admission was 5 x 300ml boluses per day, made up of 200ml Nutrison 1200 Complete Multi Fibre with 50ml water flushes pre- and post-feeding. These bolus volumes seemed large when considering her risk of aspiration, however a feeding regimen with smaller, more frequent boluses seemed impractical in the hospital setting. Vera was kept in the hospital setting while a continuous daytime feeding regimen was indicated to reduce her aspiration risk.

#### Dietetic Management

Vera was not safe to be fed overnight due to staff's concerns about her positioning whilst sleeping which may have increased her risk of aspiration. Therefore, continuous daytime feeding was indicated to reduce this risk. The acute dietitian felt that the inpatient setting was an appropriate opportunity for Vera to try a continuous feeding regimen whilst under close monitoring of the ward staff. Therefore, while in hospital, Vera received 1000ml Nutrison 1200 Complete Multi Fibre at 100ml/hour over 10 hours during the day, which provided 1240kcal and 55g of protein. During her inpatient stay, Vera tolerated this well and no issues were reported by the ward staff. After 8 days in hospital, Vera was medically stable and discharged back to her care home and to the care of the HEF team.

#### Community Review

After being discharged from hospital on her continuous feeding regimen, an HEF team dietitian reviewed Vera in her care home. Vera had lived in the same care home for over 10 years and the staff there knew her well. They reported that Vera was exhausted and unable to engage in her usual daytime activities as the continuous feeding regimen was causing staff to have to keep Vera up longer than her usual 7:30am-8:30pm day and preventing Vera from taking her usual 90 minute daytime nap. Vera was not safe to be fed at more than 100ml/hour as this increased her aspiration risk, so a shorter continuous feeding regimen with a smaller feed volume needed to be established. A more nutritionally dense enteral feeding regimen was therefore indicated to meet Vera's nutritional requirements in a smaller volume, whilst managing her high aspiration risk and promoting her quality of life.

#### Indication for Change of Feeding Regimen

Vera received a combined regiment of 500ml Nutrison Concentrated and 125ml Fortisip Compact Protein, which fit in with her daily routine (see table overleaf).

Nutrison Concentrated was delivered over 5 hours during the day, allowing Vera to fit in her daily nap in the afternoon and ensure that she was not disturbed by the feeding regimen. She received a slow bolus of 125ml Fortisip Compact Protein, to provide additional energy and protein to prevent muscle wastage, whilst minimising her aspiration risk with a small feed volume.

This combined regimen of 500ml Nutrison Concentrated and 125ml Fortisip Compact Protein provided 1300kcal and 55.5g protein per day and was nutritionally complete, meeting Vera's nutritional needs without wastage.

#### Outcomes

Several months after changing her feeding regimen, Vera was reviewed again by the HEF dietitian. Vera weighed 58.6kg, remaining stable within her usual weight range. She had not been diagnosed with any further chest infections since her hospital discharge and required less frequent medical and dietetic intervention. As a result, Vera was able to remain in her own familiar environment. During the review, Vera was sitting in the communal room, covered in paint and smiling whilst participating in her art class. Her new feeding regimen allowed her to sleep as she wished, enabling Vera to be more engaged in her daily activities and her quality of life seemed significantly improved. Her next planned dietetic review was in 6 months' time.

**Nutrison 1200 Complete Multi Fibre is a Food for Special Medical Purposes for the dietary management of disease related malnutrition in patients with low energy and/or low fluid requirements and must be used under medical supervision.**

**Nutrison Concentrated is a Food for Special Medical Purposes for the dietary management of disease related malnutrition in patients with fluid restrictions and must be used under medical supervision.**

**Fortisip Compact Protein is a Food for Special Medical Purposes for the dietary management of disease related malnutrition and must be used under medical supervision.**

Time	Feed	Daily Activities
7:30am	-	Vera wakes
7:30 - 8.30am	-	Personal care and medication
8:30am	100ml water flush <b>500ml Nutrison Concentrated</b> at 100ml/hour	Vera sits out in chair, able to engage in activities
1:30pm	Feed finishes 100ml water flush 1 hour to remain upright	
2:30-3:30/4:00pm	-	Vera naps
5:30pm	Slow bolus of <b>125ml Fortisip Compact Protein</b> with 30ml water flush pre and post 1 hour upright	Vera sits out in chair, able to engage in activities
6:45pm	-	Personal care
7:00pm onwards	-	Vera can go to bed (usually by 8:30pm)

Note: Additional water flushes were also provided throughout the day

## Discussion

### Challenges with nutritional assessment in patients with LD

Accurate nutritional assessment can be particularly challenging in patients with LD. For Vera, BMI was not calculated as BMI does not accurately measure weight distribution within the LD population due to differing stature and fat distribution compared with the non-LD population<sup>1</sup>. Commonly, the lack of weight bearing activities within the LD population results in low bone density and therefore skewed BMI calculations<sup>3</sup>. Visual assessments of Vera were used to determine the healthiness of her weight, which is a common subjective monitoring method for patients with LD. In addition, the Henry and Schofield equations<sup>2</sup> for calculating daily energy requirements tend to overestimate requirements in the LD population, at total energy expenditure tends to be significantly lower in the LD community<sup>4</sup>. For Vera and similar patients, feeding history was used to determine the approximate nutritional intake which promoted weight stability, and from this approximate energy requirements were inferred.

### Aspiration risk and LD

There are various physiological reasons for aspiration in the LD population. Reflux disease, delayed gastric motility, poorer respiratory muscle definition and swallowing impairments are common in patients with a learning disability<sup>1</sup>. Respiratory conditions are a more common cause of death in the LD community compared to the non-LD population and contribute to 25-40% of total LD deaths<sup>5</sup>. It is therefore important to identify and manage the risk of aspiration in these patients.

The increased risk of aspiration in LD patients can be managed effectively by

amending feeding regimens - as seen in Vera's case. By reducing the volume of liquid received in a 10 minute period from 300ml to 117ml, Vera's risk of reflux and subsequent aspiration of the refluxed fluid was decreased. A combined regimen of Nutrison Concentrated and Fortisip Compact Protein allowed Vera's nutritional requirements to be met in an overall smaller volume, which reduced her aspiration risk and shortened her feeding time.

### Enteral feeding methods in LD

There is limited evidence around different methods of enteral feeding within the LD population<sup>6</sup>. A report by the British Dietetic Association (BDA) in 2008 found that expert nutritional care reduced disease incidence in the LD patient and increased quality of life for both patients and carers. However, the paper did not consider the different methods of enteral feeding<sup>6</sup>. A more recent consensus guideline relating specifically to bolus feeding in adults was published in 2017<sup>7</sup>, highlighting some factors when considering bolus feeding in a range of patient groups, including the LD population. The guidelines highlight flexibility, poor tolerance to continuous feeding, mobility/active lifestyles and increased social interaction as potential benefits of bolus feeding in this patient group. They also state that repeated disruption and poor tolerance to bolus volumes were considered potential disadvantages in the LD population. In Vera's case, the most important factor for her was management of her high risk of aspiration, meaning that any feed administered either continuously or by bolus needed to be given at a slow rate, in minimal volumes.

This limited body of literature on enteral feeding methods in LD indicates the

importance of using clinical judgement and considering individual patient needs when designing an appropriate enteral feed regimen.

## Conclusion

Vera's case shows that enteral feeding regimens are not the only consideration for managing risk of aspiration; the clinical condition of an individual with LD must be considered when designing feeding regimens to minimise aspiration risk.

Dietitians also need to consider the potential impact that a feeding regimen can have on a patient's quality of life. A regimen that seemingly suits a patient in hospital may be too restrictive for patients once they are discharged into the community. More concentrated feeds can allow enteral feeding regimens to minimally affect a patient's lifestyle and routine. Vera was one of many tube-fed individuals with LD who struggle with balancing their feeding regimen alongside social activities, sleeping patterns and clinical risk. A combined regimen of Nutrison Concentrated and Fortisip Compact Protein allowed Vera to meet her nutritional requirements without disrupting her routine or increasing her aspiration risk.

\*Fictitious name

## References

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