Feeding tubes are used to help meet the nutritional needs of children who are unable to eat and drink safely (due to neurological disorders, for example). Traditionally, commercial formulas are used to provide all the nutrients a child needs. However, some children fed with an enteral tube – which delivers food directly to the digestive tract – will experience gastrointestinal symptoms such as nausea, bloating, or diarrhoea.

An increasing number of tube-fed children are receiving a homemade blended diet, defined as blended food which is administered through the enteral feeding tube. Previous studies suggest that blended food feeding is used by between 58 and 90% of paediatric patients (Thornton-Wood & Saduera, 2020).

Blended diets seem to help reduce many of the intolerance issues seen with other feeds. Reported benefits of a blended diet include improved gastrointestinal tolerance (resulting in less vomiting, reflux, or abnormal bowel habit) (Novak et al, 2009) as well as social and emotional aspects: the parents and child can be more in control of the nutrition the child is receiving. Marti van der Linde, a community paediatric dietician, explains that the feeding process also needs to take the social aspects of eating into account, such as shared mealtimes and special occasions, to encourage a patient-centred approach. Van der Linde finds that focusing on the nutritional needs of the child who is tube fed may also help the rest of the family improve their diet.

Supporting a child on a fully enteral blended diet can be challenging; it can be time-consuming and expensive, as appropriate equipment is required to prepare the blended food. It also requires good nutritional knowledge to minimise the risk of nutritional deficiencies, and there may be additional medical concerns, such as the need for a high calorie or special diet. The increased risk of tube blockage, and potentially a higher microbial load resulting from domestic preparation of an enteral feed, also needs to be considered (BDA Practice Toolkit, 2021).

In 2020, Nestlé Health Science UK launched the first paediatric tube feed in the UK that contained 13% food-derived ingredients*, called Compleat® paediatric (formerly known as Isosource Junior Mix®). This is a nutritionally complete formula with a specially adapted packaging set to facilitate enteral tube feeding used by patients and parents. Over half of the fibre and a third of the protein in the feed is from food-derived sources, helping to provide the benefits of a blended diet without the constraints faced by parents and carers.

While the feed is able to meet the full nutritional requirements of a child if required, it can also be used for supplementary feeding. Clare Thornton-Wood, registered dietician, says that ‘some families have found it useful to give some blended meals, but also to continue to use formula alongside.’

In addition to the original acceptability and tolerance study reviewed the response of 19 children to a seven-day trial of Compleat® paediatric. The children were aged one to 14 years and, to be included in the study, they had to be receiving over 75% of their nutritional intake via a feeding tube (Thornton-Wood & Saduera, 2022). Sixteen participants completed the trial and the daily intake of formula ranged from 480 to 1400ml, with an average intake of 730ml of formula per day. The feed was well tolerated by the majority of the children, and the study showed that there was a decrease in gastrointestinal symptoms such as reflux, retching, and loose stools. Improvements in mood, eye contact, and concentration were also seen in one child.

A more recent retrospective, multi-centre study also explored the benefits of Compleat® paediatric (O’Connor et al, 2021). The authors collected data from 43 tube-fed children. Again, they found that there were significant improvements in gastrointestinal symptoms in up to 90% of children who had previously been struggling to tolerate alternative commercial feeds (retching: 17 out of 18 children reported improvements; flatulence: 6/8; loose stools and constipation: 10/11). In addition to improved symptoms, children receiving Compleat® paediatric gained weight and 16% (1143) of the children experienced positive changes in mood or behaviour. Almost a third of children reported positive changes in feeding pattern, meaning the feed regimen was easier to manage, therefore providing more time for other activities.

Overall, the results suggest that tube feeds containing food-derived ingredients, such as Compleat® paediatric, offer families more choice about how they provide nutrition.

WHERE ARE WE NOW?
A multi-centre acceptability and tolerance study reviewed the response of 19 children to a seven-day trial of Compleat® paediatric. The children were aged one to 14 years and, to be included in the study, they had to be receiving over 75% of their nutritional intake via a feeding tube (Thornton-Wood & Saduera, 2022). Sixteen participants completed the trial and the daily intake of formula ranged from 480 to 1400ml, with an average intake of 730ml of formula per day. The feed was well tolerated by the majority of the children, and the study showed that there was a decrease in gastrointestinal symptoms such as reflux, retching, and loose stools. Improvements in mood, eye contact, and concentration were also seen in one child.

A more recent retrospective, multi-centre study also explored the benefits of Compleat® paediatric (O’Connor et al, 2021). The authors collected data from 43 tube-fed children. Again, they found that there were significant improvements in gastrointestinal symptoms in up to 90% of children who had previously been struggling to tolerate alternative commercial feeds (retching: 17 out of 18 children reported improvements; flatulence: 6/8; loose stools and constipation: 10/11). In addition to improved symptoms, children receiving Compleat® paediatric gained weight and 16% (1143) of the children experienced positive changes in mood or behaviour. Almost a third of children reported positive changes in feeding pattern, meaning the feed regimen was easier to manage, therefore providing more time for other activities.

Overall, the results suggest that tube feeds containing food-derived ingredients, such as Compleat® paediatric, offer families more choice about how they provide nutrition.

CASE STUDIES
In addition to the original acceptability study by Thornton-Wood and Saduera (2020), a number of case studies have been reported (Sidikiu, Steele & van der Linde, 2021).
The series includes case studies of four children, aged 26 months to ten years, with a range of health conditions. The children were trialled on Compleat® paediatric for a number of reasons, such as intolerance to other enteral feeds. The studies reported that all the children, as intolerance to other enteral feeds, as an option by dietitians in clinical practice. While a blended diet may have been attractive to some patients, the document also acknowledges that it can often be difficult to support this in external settings, such as hospital wards. Therefore, products such as Compleat® paediatric may offer families the best of both worlds: food-derived ingredients in the context of a commercial formula. Nestlé Health Science UK supports the recommendations made by the BDA around a need for open discussion for blended diets.

**SUPPORT FROM NESTLÉ HEALTH SCIENCE UK**

Led by the recommendations from the BDA and the findings from their own studies, Nestlé Health Science UK continues to support parents and children with blended diets. Some examples of the ways in which they achieve this goal include recipe cards, webinars and support guides for dietitians and parents. In addition to the resources from Nestlé Health Science Nestlé Health Science UK works alongside healthcare providers to help them offer personalised and effective feeding options to tube-fed children and their families.

**Over the last 12 months, we have seen new guidelines and toolkits being formulated around blended diets.**

Martí van der Linde says, “It is therefore good to have a commercial feed available that will suit the child in these situations.”

There is an urgent need for consistent blended-diet policies in hospitals, something that requires different teams to work together. This growing topic was also highlighted in the BDA toolkit (2021). Multi-disciplinary team (MDT) working is important for making sure that the best patient outcomes are achieved, and to ensure consistency. This team should include (but is not limited to) the medical team, dietitian, family/care, community support and the patient themselves. Clare Thornton-Wood explains that MDT working should not be limited to hospitals only, but that the open discussions should consider the challenges of administering blended diets in schools and respite settings, as well as at home.

**MOVING FORWARD**

Parents are becoming more proactive about their child’s diet is concerned. Nestlé Health Science UK works to continue providing a blended diet if their child is in hospital. In this situation, care, community support and the patient themselves. Clare Thornton-Wood explains that MDT working should not be limited to hospitals only, but that the open discussions should consider the challenges of administering blended diets in schools and respite settings, as well as at home.

**References**


Siddiqui, A, Steel, V, Van der Linde, M, (2021) Benefit of including food-derived ingredients on enteral nutrition formulas: practical experience from clinical cases. [dx.doi.org/10.24966/NCP-878X/100056](http://dx.doi.org/10.24966/NCP-878X/100056)