Neurodisability is increasingly being recognized as an important niche within pediatrics, more so since being recognized as a distinct subspecialty within the UK-STA in 2003. The spectrum of disorders encompassed in neurodisability includes learning disability, epilepsy, cerebral palsy, autistic spectrum disorders, head injury rehabilitation and neurometabolic disorders.

The child with neurodisability (ND) can be a challenge on several levels of care and it is incumbent upon the primary care physician, or pediatrician, to recognize the ramifications of the neurodisability to other systems including nutritional and gastrointestinal disorders. This article will address the nutritional complications of ND in childhood, feeding strategies, and the impact and management of disordered motility resulting in gastroesophageal disease and constipation in these patients. The second installment of this series will address dietary modification in ND syndromes including autism.

Assessment of the nutritional status in the child with cerebral palsy can be difficult. Routine height, weight and head circumference are the basis of longitudinal growth monitoring but can be riddled with clinical and practical difficulties (Table 1). In fact, even well recorded weight-for-height percentiles will miss a significant proportion of malnourished children with cerebral palsy rendering triceps skinfold measurement preferable in this population.1

Foresmost amongst the nutritional risks inherent to moderate and severe cerebral palsy is disordered calcium metabolism resulting in osteopenia and increased fracture risk.2 The diagnosis of osteopenia rests upon Bone Mineral Densitometry which in children however can be problematic because of the lack of population specific norms, and more so in a contracted population as is the child with cerebral palsy. Decreased mobility, difficulty with feeds and overall malnutrition and the use of anticonvulsants tend to exacerbate the risk.

Management includes addressing the global nutritional status but may require calcium supplementation and modification of anticonvulsant cover. Other trace element and vitamin deficiencies have been reported with ND including cerebral palsy, and include iron deficiency3 and vitamin C deficiency; management should focus on improving intake of fluids, proteins and vitamins. There is no consensus on the usefulness of routine vitamin supplementation in children with ND. Management of nutritional deficiencies in children with ND includes enteral supplementation with high-calorie drinks and modifying food preparations towards a higher calorie and more nutritious diet. Liaison with a qualified dietitian is invaluable at this stage. Children with ND, notably with autism spectrum disorder can be particularly picky eaters with extreme limitation in the variety of food and in some cases limited intake overall, including fluids.5 In cases where oral supplementation fails it is important to identify the potential contributing factors (Table 2) in order to map out further management. Children with ND are at higher risk for swallowing dysfunction.6 It is important to recognize and refer children at risk to a dedicated speech therapist; in many cases a video-fluoroscopic swallow study (VFSS) may be needed.
to define the risk of aspiration. In some patients assessment may result in recommendations to modify the consistency or quantity of food per feeding session; this in itself may improve the adequacy of feeding especially fluid intake. Dysphagia and pain upon swallowing will limit oral intake and children with ND are at increased risk of gastroesophageal reflux disease (GERD) and eosinophilic esophagitis. Significant reflux will result in loss of food through emesis but, more importantly pain and food refusal. GERD in children with ND is often complex with contributing dysmotility in the foregut rendering traditional medical and surgical management less likely to succeed. Proton pump inhibitors are safe

Dysfunctional swallow - slow, uncoordinated / ineffective feeds, risk of aspiration
Dental abnormalities, poor dental hygiene - caries
Dysphagia – eosophagitis
Gastroesophageal Reflux Disease
Eosinophilic Esophagitis / Allergic Enteropathy
Dysmotility - delayed gastric emptying
Medication associated
Celiac Disease
Small Bowel Bacterial Overgrowth
Fecal impaction – abdominal discomfort

Table 2: Failure of oral nutritional intervention (dietary modification and caloric supplementation) in the Child with Neurodisability.

Table 3: Potential Factors Contributing Towards the Development of Constipation in the Child with Cerebral Palsy.

References