

Enterální výživa v pediatrii

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Možnosti nutriční podpory

- Fortifikace stravy, sipping
- NG sonda
- PEG, chirurgická gastrostomie
- NJ sonda, jejunostomie
- Doplnková parenterální výživa
- TPN

Možnosti nutriční podpory enterální cestou

CAVE! ZOHLEDNIT PORUCHU POLYKÁNÍ

- **(Fortifikace stravy, sipping)**
- **NG sonda**
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Kalorická potřeba

Věk	PROTEINY (g/kg)	SACHARIDY (g/kg)	LIPIDY (g/kg)	Energie (kcal/kg)
1. rok života	1,5-2,5	8-15	2-3	90-110
2.	1,5	12-16	2-3	80-100
3.-5.	1,5	12	1-2	60-80
6.-10.	1,0	10	1-2	50-70
10.-14.	1,0	8	1	50-60

VÝPOČET JÍDELNÍČKU – DIETNÍ SESTRA

Potřeba tekutin

Tělesná hmotnost (kg)	Denní potřeba tekutin
1-10	100 ml/kg
10-20	1000 ml+50 ml na každý kg nad 10 kg TH
Nad 20	1500 ml+20 ml na každý kg nad 20 kg TH

Fortifikace stravy

Modulární dietetika	Fantomalt	Protifar	MCT oil
	1 odměrka =4,5g(17kcal)	1 odměrka =2,2g(9,3kcal)	
energie	360kcal/100g	371kcal/100g	900kcal/100ml
složení	95% malto-dextrinu	88,5% mléčné bílkoviny (kasein)	95% MCT olej

- Zahuštění stravy (modifikovaný škrob)
 - Nutilis, Nutriton, Resource thicken up

Sipping

- Standardní polymerní výživa; 200-300 ml
 - 1-1,5 kcal/ml; 16-20 % B, 25-30 % T, 50-54 % S
 - bohaté na vitamíny a stopové prvky; bez laktózy
- Různé příchuti a složení dle věku dítěte
- Speciální výživa (hyperkalorická, bez tuku, s vlákninou, pro diabetiky, krémy apod.)

Příklady:

- NUTRIDRINK
- FRESUBIN
- ISOSOURCE
- ENSURE

Nasogastrická sonda (NGS)

- Krátkodobá (PVC) - na několik dnů
- Dlouhodobá (PUR,SIL) – 8T
- Některé s vodičem
- RTG kontrastní
- Vyměření délky
- Ověření polohy
 - pH, RTG
- I pro aplikaci léků
- Může zhoršit GER?

Perkutánní endoskopická gastrostomie (PEG)

- Předpoklad dlouhodobé sondové výživy
- Lehčí formy GER
- Zavádění endoskopem v celkové anestezii

Sondová výživa

- Mixovaná strava (blenderised diet)
- Přípravky enterální výživy
 - Obvykle isokalorické (1kcal/1ml)
 - Podávání v bolusech nebo kontinuálně
 - Poměr živin - viz. sipping
 - Různé složení dle věku
 - Tekuté nebo v prášku
 - Objem 500 - 1000 ml; vaky, sklo
 - Neochucené
- Do NJS pouze sterilní strava kontinuálně!

Practical Approach to Paediatric Enteral Nutrition: A Comment by the ESPGHAN Committee on Nutrition

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ABSTRACT

Enteral nutrition support (ENS) involves both the delivery of nutrients via feeding tubes and the provision of specialised oral nutritional supplements. ENS is indicated in a patient with at least a partially functioning digestive tract when oral intake is inadequate or intake of normal food is inappropriate to meet the patients' needs. The aim of this comment by the Committee on Nutrition of the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition is to provide a clinical practice guide to ENS, based on the available evidence and the clinical expertise of the authors. Statements and recommendations are presented, and future research needs highlighted, with a particular emphasis placed on a practical approach to ENS. Among the wide array of enteral formulations, standard polymeric feeds based on cow's-milk protein with fibre and age adapted for energy and nutrient content are suitable for most paediatric patients. Whenever possible, intragastric is preferred to postpyloric delivery of nutrients, and intermittent feeding is preferred to continuous feeding because it is more physiological. An anticipated duration of enteral

of procedural protocols that include scrupulous attention to hygiene, as well as regular monitoring by a multidisciplinary nutrition support team to minimise the risk of EN-associated complications.

Key Words: complications, enteral nutrition support, formulations, indications, paediatric patients, techniques

(*JPGN* 2010;51: 110–122)

Paediatric patients represent a particularly vulnerable population that has specific nutritional requirements, as highlighted in the position paper by the European Society of Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) Committee on Nutrition (CoN) (1). The disease-related consequences of malnutrition, their causal mechanisms, and recommendations for

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approach to ENS. Among the wide array of enteral formulations, standard polymeric feeds based on cow's-milk protein with fibre and age adapted for energy and nutrient content are suitable for most paediatric patients. Whenever possible, intragastric is preferred to postpyloric delivery of nutrients, and intermittent feeding is preferred to continuous feeding because it is more physiological. An anticipated duration of enteral nutrition (EN) exceeding 4 to 6 weeks is an indication for gastrostomy or enterostomy. Among the various gastrostomy techniques available, percutaneous endoscopic gastrostomy is currently the first option. In

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TABLE 1. Suggested criteria for nutritional support (4,11)

Insufficient oral intake

Inability to meet $\geq 60\%$ to 80% of individual requirements for >10 days

In children older than 1 y, nutrition support should be initiated within 5 days, and in a child younger than 1 y within 3 days of the anticipated lack of oral intake

Total feeding time in a disabled child >4 to 6 h/day

Wasting and stunting

Inadequate growth or weight gain for >1 mo in a child younger than 2 years of age

Weight loss or no weight gain for a period of >3 mo in a child older than 2 years of age

Change in weight for age over 2 growth channels on the growth charts

Triceps skinfolds consistently <5 th percentile for age

Fall in height velocity >0.3 SD/y

Decrease in height velocity >2 cm/y from the preceding year during early/mid-puberty

SCREENING RIZIKA MALNUTRICE

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TABLE 2. Clinical situations for which EN could be required (11,14,18–20)

Inadequate oral intake

Disorders of sucking and swallowing

Prematurity

Neurologic impairment (eg, cerebral palsy, dysphagia)

Congenital abnormalities of the UGI tract

Tracheoesophageal fistula

Tumors

Oral cancer

Head and neck cancer

Trauma and extensive facial burns

Critical illness

Mechanical ventilation

Severe gastroesophageal reflux

Food aversion, anorexia, depression

Disorders of digestion and absorption

Cystic fibrosis

Short bowel syndrome

Inflammatory bowel disease

Malabsorption syndrome due to food allergy

Cow's milk protein

Multiple food

Enteritis due to chronic infection

Giardia lamblia

Protracted diarrhoea of infancy

Intractable diarrhoea of infancy

Severe primary or acquired immunodeficiency

Chronic liver disease

Graft-versus-host disease

Intestinal fistula

Disorders of gastrointestinal motility

Chronic pseudo-obstruction

Extensive ileocolonic Hirschsprung disease

Increased nutritional requirements and losses

Cystic fibrosis

Chronic solid-organ diseases: renal, heart, liver

Inflammatory bowel disease (Crohn disease, ulcerative colitis)

Multiple trauma, extensive burns

Growth failure or chronic malnutrition (in addition to above)

Anorexia nervosa

Nonorganic growth faltering

Crohn disease: primary disease treatment for induction of remission

Metabolic diseases

EN = enteral nutrition; UGI = upper gastrointestinal.

Děkuji za pozornost