Complete Summary

GUIDELINE TITLE

Nutrition support for neurologically impaired children: a clinical report of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition.

BIBLIOGRAPHIC SOURCE(S)

Marchand V, Motil KJ, NASPGHAN Committee on Nutrition. Nutrition support for neurologically impaired children: a clinical report of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition. J Pediatr Gastroenterol Nutr 2006 Jul;43(1):123-35. [127 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

Nutritional comorbidities to neurologic impairment, including:

- Undernutrition
- Growth failure
- Overweight
- Micronutrient deficiencies
- Osteopenia

GUIDELINE CATEGORY

Evaluation
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Gastroenterology
Nursing
Nutrition
Pediatrics
Psychology
Speech-Language Pathology

INTENDED USERS

Dietitians
Health Care Providers
Nurses
Occupational Therapists
Physicians
Psychologists/Non-physician Behavioral Health Clinicians
Social Workers
Speech-Language Pathologists

GUIDELINE OBJECTIVE(S)

To examine the principles and practices associated with the nutritional management of children with neurological disabilities

TARGET POPULATION

Children with neurologic impairment

INTERVENTIONS AND PRACTICES CONSIDERED

1. Periodic nutritional assessments, including measurements of height or length, weight, and body mass index (BMI) or weight-for-length
2. Alternative indices to evaluate nutritional status, if needed, including upper arm circumference, triceps skinfold thickness, or lower leg length
3. Mechanisms to ensure early identification of children at high risk for nutritional comorbidities
4. Monitoring rate of weight gain and BMI in response to therapy to determine adequate dietary intake
5. Monitoring for micronutrient deficiencies and providing supplementation
6. Oral feeding with nutrient and energy dense food, as appropriate
7. Enteral tube feedings, as needed
8. Nasogastric or nasojejunal feedings for short-term intervention and gastrostomy or gastrojejunostomy feedings for long-term support, as needed
9. Anti-reflux procedures (esophageal fundoplication) as appropriate
10. Consideration of parental concerns

11. Assessment of family support system and ability of family to carry out program

MAJOR OUTCOMES CONSIDERED

- Reliability of assessments for nutritional status
- Weight gain and growth
- Functional status
- Quality of life
- Complications of nutritional support measures

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Committee)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

1. Nutritional support is an integral part of the care of neurologically impaired children and is carried out by a multidisciplinary team of pediatric specialists, including physicians, nurses, dietitians, occupational and speech therapists, psychologists, and social workers.
2. Nutritional assessments may be performed at least annually in the older child and more frequently in the infant and toddler; height or length, weight, and body mass index (BMI) or weight-for-length may be sufficient to document adequate growth and nutrient intakes.
3. Mechanisms must be in place to insure the early identification of children at high risk for undernutrition, growth failure, chronic lung disease due to aspiration, and overweight, particularly younger children, children with severe neurological disability, and children with oral motor dysfunction.
4. Alternative anthropometric indices such as mid upper arm circumference, triceps skinfold thickness, and lower leg length can be used to evaluate nutritional status when accurate weight and height measurements are difficult to obtain.
5. Monitoring the rate of weight gain and BMI in response to nutritional therapy is an appropriate method to determine the adequacy of dietary intake because nutrient requirements may be lower than the Dietary Reference Intake (DRI) for age and because abnormalities of muscle tone, physical activity, and growth may be present.
6. Monitoring for micronutrient deficiencies such as iron and vitamin D may be considered annually; providing prophylactic supplements of micronutrients serves as a reasonable preventive strategy.
7. Foods with high nutrient and energy density are an appropriate first step in the nutritional repletion of children who can be fed orally; modification of food and beverage textures and consistencies may be required in children with advanced oral motor dysfunction. Periodic reassessment of oral feeding skills is important to determine the potential for oral feeding.
8. Enteral tube feedings can be initiated early in children who are unable to feed orally or who cannot achieve sufficient oral intake to maintain adequate nutritional or hydration status.

9. Nasogastric or nasojejunal tube feedings are reserved for short-term nutritional intervention; gastrostomy or gastrojejunostomy tube feedings may be considered when long-term nutritional rehabilitation is required.
10. Antireflux procedures such as esophageal fundoplication are reserved for appropriate clinical indications; anticipatory guidance that highlights symptoms such as retching and frequency of fundoplication failure is important.
11. Although the health and welfare of the child are paramount, parental concerns and family issues have a role in the decision to provide aggressive nutritional support.
12. Assessments can be performed to provide assurances that a family support system to care for the child exists and that the family has the ability to carry out the nutritional rehabilitation program.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Undernutrition and overweight lead to increased health care use, hospitalization, and physician visits, as well as diminished participation in home and school activities. Adequate nutritional support may restore linear growth, normalize weight, improve health and quality of life, reduce the frequency of hospitalization, decrease irritability and spasticity, increase alertness, enhance developmental progress, improve wound healing and peripheral circulation, decrease the frequency of aspiration, and ameliorate gastroesophageal reflux in neurologically impaired children. Careful evaluation and monitoring of severely disabled children for nutritional problems are warranted because of the increased risk of nutrition-related morbidity and mortality.

POTENTIAL HARMS

- Percutaneous endoscopic gastrostomy (PEG) placement in children carries a 2 to 17% risk of major complications such as perforation, peritonitis, or separation of the stomach from the abdominal wall. PEG placement has a 22 to 67% risk of minor complications, such as stomal infection, leakage from the stoma, granulation tissue formation, broken or leaking tubes, and accidental dislodgment of the tube. Nutrient deficiencies may occur as a consequence of artificial feedings. The higher death rate in children fed by gastrostomy may reflect the severity of their neurological disability compared

with those fed orally. The risk of inducing acid reflux or esophagitis after PEG placement in neurologically impaired children without previous symptoms is 12 to 60%. The likelihood that ongoing medical therapy will be required for preexisting acid reflux after PEG placement is 71%.

- Surgical gastrostomy is associated with a higher risk of inducing acid reflux severe enough to require fundoplication than is PEG placement (39% vs 10%).
- Laparoscopic fundoplication is associated with a 5% risk of intraoperative complications, a 30% risk of postoperative complications, and a 1% risk of mortality in these children. Although a pyloroplasty in conjunction with a fundoplication improves gastric emptying, dumping syndrome may occur and require long-term continuous infusions until bolus feeds are tolerated. The risk of feeding difficulty, gas bloat or dumping syndrome, and recurrence of acid reflux after a fundoplication varies between 10 and 29% in neurologically impaired children. Retching may be a disturbing symptom after a fundoplication. The presence of the emetic reflex preoperatively may predict postoperative retching. A second fundoplication may be required in 4% to 19% of these children. The Thal operation is associated with a higher failure rate than the Nissen procedure in neurologically impaired children. An esophagogastric separation procedure may be indicated for failed fundoplication in neurologically impaired children.
- The retrograde percutaneous technique has a higher rate of successful placement than the PEG method and has a lower rate of major complications than PEG or surgical gastrostomy placement. The rate of major complications including peritonitis, abscess, septicemia, and death is 6 to 12%. The rate of minor complications including dislodgment, leakage, obstruction, and migration is 44 to 73%.

CONTRAINDICATIONS

CONTRAINDICATIONS

Prior abdominal surgery, ascites, hepatomegaly or splenomegaly, and portal hypertension may be contraindications to the percutaneous endoscopic gastrostomy procedure.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Jul

GUIDELINE DEVELOPER(S)

North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition - Professional Association

SOURCE(S) OF FUNDING

North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition

GUIDELINE COMMITTEE

Committee on Nutrition

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) Web site.

Print copies: Available from NASPGHAN, PO Box 6, Flourtown, PA 19031; Telephone (215) 233-0808; Fax (215) 233-3939; E-mail naspghan@naspghan.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on November 29, 2006. The information was verified by the guideline developer on November 30, 2006.

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