



Acute gastroenteritis in children aged 2 months - 5 years

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NATIONAL AND GULF CENTRE FOR EVIDENCE BASED MEDICINE:
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Evidence Based Clinical Practice Guideline

The National and Gulf Centre for Evidence Based Medicine Clinical Practice Guideline Program.

The NGCEBM encourages the development and use of evidence based clinical practice guidelines and provides resources and assistance to guideline developers in the Kingdom of Saudi Arabia and the Gulf Countries in the development and dissemination of Clinical Practice Guidelines (CPGs). CPGs that inform health professionals about clinical practice and specifically what constitutes best practice in health care. The NGCEBM publishes CPGs submitted by any guideline developers in the region that are derived from reviews of health care research and that follow the principles laid out in the Centre's publication "Draft Guidance for Clinical Practice Guideline Development, Adaptation and Endorsement."

Aims and scope of Clinical Practice Guidelines

CPG development involves rigorous, standardised methods to ensure that all information provided to health professionals is of the highest standard and constitutes best practice. The conduct of an evidence review and development of the guideline are two parts of a staged process. All aspects of the conduct of the evidence review and the development of the accompanying *guideline* are documented so that these methods may be scrutinised.

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Disclaimer

"The procedures described in Guidelines must only be used by people who have appropriate expertise in the field to which the procedure relates. The applicability of any information must be established before relying on it. While care has been taken to ensure that this guideline summarises available research and expert consensus, any loss, damage, cost, expense or liability suffered or incurred as a result of reliance on these procedures (whether arising in contract, negligence or otherwise) is, to the extent permitted by law, excluded".

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Introduction

Acute

Scope

Disease/Condition(S)

Acute gastroenteritis

Guideline Category

Treatment/Management

Clinical Specialty

Emergency Medicine

Family Practice

Pediatrics

Nutrition

Infectious diseases

Intended Users

Nurses

Dieticians

Families

Physicians

Health educators

Guideline Objective(S)

To help practitioners at all levels of experience refine their knowledge and select among the options for evaluation and management of children with acute gastroenteritis based on the most current and best scientific information

In the target population, the objectives of this guideline are to:

- Improve the use of appropriate clinical and laboratory assessment
- Increase the use of oral rehydration and early progression to usual diet
- Improve parental involvement in decision making around the management of acute gastroenteritis (AGE)
- Improve prevention of transmission of acute gastroenteritis
- Decrease use of emergency department (ED) services for management of mild cases
- Reduce the number of hospitalizations
- Reduce the length of stay

Target Population

Children aged 2 months to 5 years of age with signs and symptoms of acute gastroenteritis (diarrhea of recent onset not caused by chronic disease) with or without accompanying nausea, vomiting, fever, or abdominal pain.

Interventions and Practices Considered

All interventions appropriate to the diagnosis and treatment of gastro-enteritis including:

Evaluation:

1. History and physical examination
2. Assessment of degree of dehydration
3. Laboratory studies (not routinely recommended)

Management:

1. Usual diet

2. Small frequent feedings
3. Oral rehydration therapy solutions (ORS)
4. Intravenous (IV) therapy
5. Nasogastric oral rehydration solutions
6. Prompt refeeding of regular diet after rehydration
7. antiemetic not routinely recommended but only for selected children
8. Antimicrobial therapy for selected children
9. Probiotics as adjunctive therapy
10. Hospitalization
11. Reassessment of hydration status
12. Patient/parent education

These guidelines do NOT address all considerations needed to manage those with the following:

- Toxic appearance or requiring intensive care
- Episodes of diarrhea lasting longer than 7 days
- Previously diagnosed disorders including immunodeficiency or those affecting major organ systems
- Vomiting with no accompanying diarrhea
- Acute gastroenteritis accompanying failure to thrive
- Diarrhea and/or vomiting accompanied by chronic metabolic disorders (e.g., diabetes, organic acidemia)
- Diagnosis of hyponatremic or hypernatremic dehydration

Major Outcomes Considered

- The severity of dehydration
- The need for intravenous or nasogastric (NG) therapies
- Hospitalization rate
- The duration of illness and length of hospitalization

Methodology

This guideline has been adapted from the Cincinnati Children's Hospital Medical Center guideline (2006) and has been appraised using the AGREE framework to evaluate guidelines.

Methods Used To Collect/Select Evidence

The developers of the Cincinnati Children's Hospital Medical Center guideline (2005) searched the Medline, EmBase, and the Cochrane databases from January 2000 to March 2003 to generate an unrefined, "combined evidence" database using a search strategy focused on answering clinical questions relevant to acute gastroenteritis (AGE) and employing a combination of Boolean searching on human-indexed thesaurus terms (Medical Subject Heading headings using an OVID Medline interface) and "natural language" searching on searching on human-indexed thesaurus terms (MeSH headings using an OVID Medline interface) and "natural language" searching on words in the title, abstract, and indexing terms. The citations were reduced by eliminating duplicates, review articles, non-English articles, and adult articles. The resulting abstracts were reviewed by a methodologist to eliminate low quality and irrelevant citations. During the course of the guideline development, additional clinical questions were generated and subjected to the search process, and some relevant review articles were identified. December 1999 was the last date for which literature was reviewed for the previous version of this guideline. The details of that review strategy are not documented. However, all previous citations were reviewed for appropriateness to this revision.

May 2006 Review

A search using the above criteria was conducted from January, 2004 to May, 2006. Thirty-three relevant articles were selected as potential future citations for the guideline. However, none of these references were determined to require changes to the 2005 version of the recommendations.

Description Of Methods Used to Review the Evidence

Inclusion Criteria

Types of Participants

Children aged 2 months – 5years with symptoms of gastro-enteritis

Types of Interventions

All interventions appropriate to the diagnosis and treatment of gastro-enteritis

Types of Outcomes

- The severity of dehydration
- The need for intravenous or nasogastric (NG) therapies
- Hospitalization rate
- The duration of illness and length of hospitalization

Types of Studies

Meta-Analyses

Systematic Reviews

RCTs

Search Strategy

The Medline, EmBase, and the Cochrane databases were searched from December 1999 to May 2006 employing a combination of Boolean searching on human-indexed thesaurus terms (Medical Subject Heading [MeSH] headings using an OVID Medline interface) and "natural language" searching on searching on human-indexed thesaurus terms (MeSH headings using an OVID Medline interface) and "natural language" searching on words in the title, abstract, and indexing terms. The citations were reduced by eliminating duplicates, review articles, non-English articles, and adult articles. The resulting abstracts were reviewed by a methodologist to eliminate low quality and irrelevant citations. During the course of the guideline development, additional clinical questions were generated and subjected to the search process, and some relevant review articles were identified.

Methodological Quality

Assessment of methodological quality is not addressed in the guideline.

Data Synthesis

Not described.

Methods Used To Formulate The Recommendations

Expert Consensus

Description Of Methods Used To Formulate The Recommendations

Recommendations were formulated by a consensus process directed by best evidence, patient and family preference and clinical expertise. During formulation of these guidelines, the committee members remained cognizant of controversies and disagreements over the management of these patients. They tried to resolve controversial issues where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

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

External Peer Review

Internal Peer Review

Major Recommendations

1. It is recommended that the history and physical examination be the primary basis for the diagnosis of AGE.
2. It is recommended that clinical assessment be initially performed for the presence and degree of dehydration (*Steiner 2004 [M]*).
3. It is recommended that laboratory tests **not** be routinely performed in children with signs and symptoms of AGE, including tests for specific pathogens, such as those for rotavirus, ova and parasites, bacteria, and fecal antigen tests for parasites
4. It is recommended that continued use of the child's preferred, usual, and age appropriate diet be encouraged to prevent or limit dehydration (*Brown 1994 [M], Fayad 1993 [A], Alarcon 1992 [A]*). Regular diets are generally more effective than restricted and progressive diets, and in numerous trials have consistently produced a reduction in the duration of diarrhea
5. It is recommended that the vomiting child be offered frequent small feedings (every 10 to 60 minutes) of any tolerated foods or oral rehydration solutions (ORS)
6. It is recommended that a child with recurrent vomiting but no signs of significant dehydration may be managed by frequent telephone follow up or by direct supervision in the office, emergency department, or in a hospital setting
7. It is recommended that dehydration be treated with ORS, if tolerated and if intake exceeds losses, for a period of 4 to 6 hours or until an adequate degree of rehydration is achieved
8. It is recommended,
 - when unable to replace the estimated fluid deficit and keep up with the on-going losses using oral feedings alone, and/or
 - for severely dehydrated children with obtunded mental status, that IV fluids or NG ORS be given for a period of 4 to 6 hours or until an adequate degree of rehydration is achieved. It is appropriate to involve the family in the decision regarding the method of fluid replacement (*Cohen 1995 [A], Mackenzie 1991 [A], Santosham 1982 [A], Nager 2002 [B], Vesikari 1987 [B], Listernick 1986 [B], Tamer 1985 [C], King 2003 [S,E]*).

Oral Feeding Following Rehydration

9. It is recommended that refeeding of the usual diet be started at the earliest opportunity after an adequate degree of rehydration is achieved
10. It is recommended that maintenance IV fluids or NG ORS be given:
 - when unable to replace the estimated fluid deficit and keep up with the on-going

losses using oral feedings alone, and/or

- to severely dehydrated children with obtunded mental status, and after discussion with family regarding choice of IV or NG (Cohen 1995 [A], Mackenzie 1991 [A], Santosham 1982 [A], Nager 2002 [B], Vesikari 1987 [B], Listerick 1986 [B], Tamer 1985 [C]).

Other Therapy

11. It is recommended that anti-diarrheal agents or antiemetics **not** be used in the routine management of children with AGE
12. It is recommended that antimicrobial therapies be used only for selected children with AGE who present with special risks or evidence of a serious bacterial infection (SBI) (Barbara 2000 [C]) (see Appendix 5). **Note:** *Giardia lamblia* and *Cryptosporidium* are common causes of persistent diarrhea and, if found, treatment is available with metronidazole or nitazoxanide (AAP 2003 [O]).
13. It is recommended that probiotics be considered as adjunctive therapy, as they have been shown to reduce the duration of diarrhea (Allen 2004 [M]). Family preference may be central to the decision to use probiotics. Parameters influencing the family's decision may include cost, degree of potential benefit, availability and unverified effectiveness of commercial products.
14. It is recommended that those patients who are treated in the hospital setting and who are eligible for the AGE guideline be placed as Short Stay patients with a discharge goal of 23 hours or less
15. It is recommended that for children receiving care in a hospital setting, prompt discharge be considered when the following levels of recovery are reached:
 - sufficient rehydration achieved as indicated by weight gain and/or clinical status;
 - IV or NG fluids not required;
 - oral intake equals or exceeds losses;
 - adequate family teaching has occurred; and
 - medical follow up is available via telephone or office visit(Local Expert Consensus 2005 [E]).

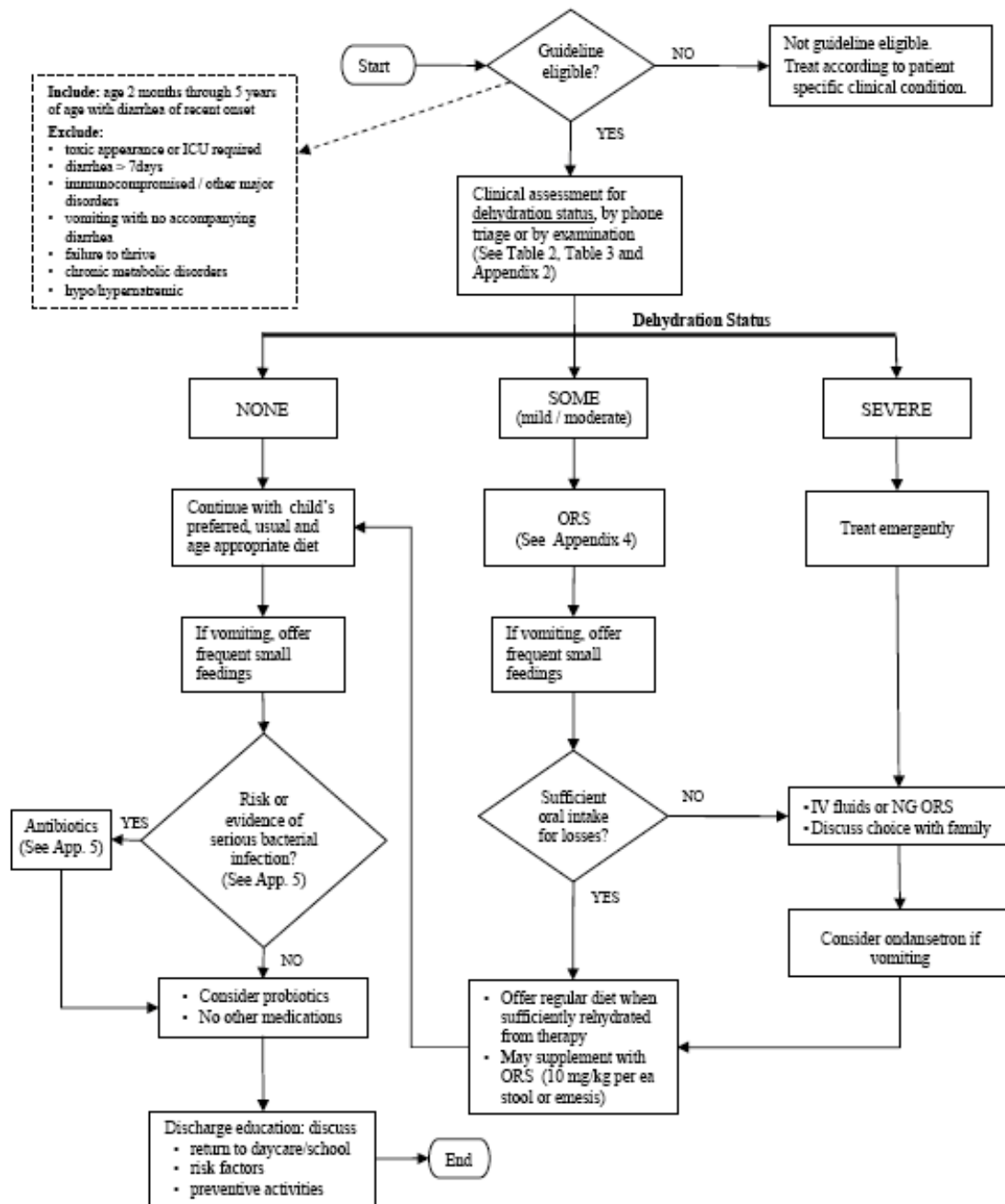
Education

16. It is recommended that return to school/daycare be discussed in the context of the following parameters:
 - consideration for controlling disease transmission
 - no vomiting for 24 hours
 - stools are able to be adequately contained
 - assurance that daycare/school adheres to appropriate handwashing policies
 - temperature less than 38.0; C (100.4; F)
17. It is recommended that risk factors and preventive activities be discussed with parents, including:
 - continue breastfeeding (Wan 1999 [A], Khin 1985 [C]) and
 - handwashing.

Insert text

Clinical Algorithm(S)

Algorithm for evaluation and management for Acute Gastroenteritis (AGE) in children aged 2 months through 5 years



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Evidence Supporting The Recommendations

See Appendix 2

Benefits/Harms of Implementing The Guideline Recommendations

Potential Benefits

Insert text

Potential Harms

Insert text

Implementation Of The Guideline

Description of Implementation Strategy

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Bibliographic Source

Acute Gastroenteritis Guideline Team, Cincinnati Children's Hospital Medical Center: Evidence-based clinical care guideline for medical management of acute gastroenteritis in children aged 2 months through 5 years, <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/ev-based/gastro.htm>, Guideline 5, pages 1-15, October 31, 2005. (2006 Update)

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Appendices

Appendix 1 Levels of Evidence and Grades of Recommendation

The NGCEBM recommends the use of the Joanna Briggs Institute Levels of Evidence with the specific evidence hierarchy corresponding to the type of evidence identified. See evidence tables below.

Level of Evidence	Feasibility F(1-4)	Appropriateness A(1-4)	Meaningfulness M(1-4)	Effectiveness E(1-4)	Economic Evidence EE(1-4)
1	SR of research with unequivocal synthesised findings	SR of research with unequivocal synthesised findings	SR of research with unequivocal synthesised findings	SR (with homogeneity) of Experimental studies (eg. RCT with concealed allocation) Or 1 or more large experimental studies with narrow confidence intervals	SR (with homogeneity) of evaluations of important alternative interventions comparing all clinically relevant outcomes against appropriate cost measurement, and including a clinically sensible sensitivity analysis
2	SR of research with credible synthesised findings	SR of research with credible synthesised findings	SR of research with credible synthesised findings	Quasi-experimental studies (eg. without randomisation)	Evaluation of important alternative interventions comparing all clinically relevant outcomes against appropriate cost measurement, and including a clinically sensible sensitivity analysis
3	SR of text/opinion with credible synthesised findings	SR of text/opinion with credible synthesised findings	SR of text/opinion with credible synthesised findings	3a. Cohort studies (with control group) 3b. Case-controlled 3c. Observational studies without control groups	Evaluation of important alternative interventions comparing a limited number of outcomes against appropriate cost measurement, without a clinically sensible sensitivity analysis
4	Expert opinion without explicit critical appraisal	Expert opinion without explicit critical appraisal	Expert opinion without explicit critical appraisal	Expert opinion without explicit critical appraisal, or based on physiology, bench research or consensus	Expert opinion without explicit critical appraisal, or based on economic theory

The NGCEBM recommends the use of the Joanna Briggs Institute the Joanna Briggs Institute Grades of Recommendation with the specific hierarchy corresponding to the type of recommendation provided. See recommendation tables below.

Grade of Recommendation	Feasibility	Appropriateness	Meaningfulness	Effectiveness
A	Immediately practicable	Ethically acceptable and justifiable	Provides a strong rationale for practice change	Effectiveness established to a degree that merits application
B	Practicable with limited training and/or modest additional resources	Ethical acceptance is unclear	Provides a moderate rationale for practice change	Effectiveness established to a degree that suggests application
C	Practicable with significant additional training and/or resources	Conflicts to some extent with ethical principals	Provides limited rationale for practice change	Effectiveness established to a degree that warrants consideration of applying the findings
D	Practicable with extensive additional training and/or resources	Conflicts considerably with ethical principals	Provides minimal rationale for advocating change	Effectiveness established to a limited degree
E	Impracticable	Ethically unacceptable	There is no rationale to support practice change	Effectiveness not established

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