

Pediatric Oral Rehydration for Gastroenteritis

Clinical

Gastroenteritis causes nausea, vomiting, and diarrhea, which contribute to significant pain and suffering in children. Pediatric patients with acute gastroenteritis can suffer from dangerous levels of dehydration. Oral rehydration therapy (ORT) for pediatric patients with mild to moderate dehydration using a commercially-prepared oral rehydration solution is the preferred first line treatment.¹⁻⁴ Patients given ORT demonstrate a statistically significant shorter length of stay in the medical setting as compared to those who receive intravenous rehydration therapy.⁵⁻⁶

Significance

Population

Applies to the pediatric population including birth through age 18.

Translation Into Practice:

Recommended Clinical Practice

In determining hydration status (Table 1), healthcare workers should assess oral intake, urinary output, and patient's body weight measured in kilograms as compared to recent actual weight.^{1,3,7-9} **Level A Recommendation**

When it is determined that rehydration is necessary, initiate ORT with a solution that contains sodium and glucose in small (5mL) volumes every 2 to 5 minutes.³ **Level B Recommendation**

Oral rehydration solutions, such as those available commercially, should be used as a first line treatment for mild to moderate dehydration.^{1-3,5-6} **Level A Recommendation**

Studies suggest that use of ondansetron is recommended in children over 6 months of age since it can reduce vomiting, increase oral intake, and shorten emergency care length of stay.^{6,10-11} **Level A Recommendation**

Continuous re-evaluation of the patient is necessary to assist in determining hydration status and nursing interventions. Be prepared to anticipate electrolyte replacement in the event of failure to rehydrate.^{1,3,7-9} **Level B Recommendation**

For severe dehydration or failed oral rehydration, intravenous rehydration should be implemented.¹⁻³ **Level A Recommendation**

Laboratory work, which may include complete blood count with differential, chemistry panel, blood glucose, and urine testing, should be anticipated, with judicious consideration of the need to initiate intravenous access.³ **Level B Recommendation**

Early and gradual introduction of ORT should be attempted during intravenous fluid therapy. If tolerated, stop intravenous fluids and complete rehydration with ORT.³⁻⁴ **Level A Recommendation**

ORT is a safe, efficacious, and cost-effective alternative that should be considered with the standard treatment for uncomplicated, acute moderate dehydration in young children.¹²⁻¹⁴ **Level A Recommendation**

Supporting Rationale

The ENA position statement on the importance of obtaining accurate weights in kilograms is endorsed by multiple other organizations responsible for the care of pediatric patients.⁷ As both the assessment of dehydration status and rehydration treatment are based on the actual weight of the patient, healthcare workers should assess the patient's oral intake, urinary output, and body weight measured in kilograms as compared to recent actual weight.^{3,5,7} Mild to moderate dehydration should be managed with a first line regimen of ORT using either rehydration solution by mouth, or by a gastric tube.^{1,3,5-6} ORT with oral rehydration solutions is also the recommendation of the American Academy of Pediatrics and the World Health Organization and was the first line of treatment for 90% of the respondents in a survey study conducted in Europe; overall, shorter hospital stays are reported for patients receiving ORT.^{5,8-9,12,15}

Oral rehydration solutions, such as those available commercially (e.g., Pedialyte, Rehydralite), should be used as a first line treatment for mild to moderate dehydration.^{1-3,6,10} Staff time needed to provide care is less in patients receiving ORT when

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compared to intravenous therapy.² Rehydration therapy administered orally or via gastric tube is associated with increased development of paralytic ileus whereas intravenous therapy carries an increased risk of phlebitis.⁴ Additionally, intravenous rehydration therapy is a potentially painful procedure compared to ORT.⁴

When it is determined that rehydration is necessary, healthcare workers should initiate ORT with a solution that contains sodium and glucose in small (5mL) volumes every 2 to 5 minutes.³⁻⁴

Children receiving ondansetron are less likely to vomit, have greater oral intake, and are less likely to need treatment by intravenous rehydration.¹⁰⁻¹¹ Patients who receive ORT demonstrate a shorter length of stay in the emergency department as compared to those who receive intravenous rehydration therapy, and very few serious side effects have been reported.^{5-6,10}

If intravenous fluid therapy is used, clinicians should attempt early and gradual introduction of ORT; if tolerated, stop intravenous fluids and complete rehydration with ORT.^{1,3-5}

Nurses should anticipate laboratory work in the patient who is severely dehydrated, or whose hydration status is uncertain, which may include complete blood count with differential, chemistry panel, blood glucose, and urine testing; use careful consideration when deciding if intravenous access and the collection of blood samples are warranted.³ Most routine laboratory testing is of little value in mildly to moderately dehydrated patients, and should be avoided, except when clearly clinically indicated.¹⁴

Rehydration is a process; continued assessment of oral intake, urinary output, and patient body weight measured in kilograms is fundamental and continuous re-evaluations are necessary to assist in determining hydration status and nursing interventions (Table 1).^{1,3,7-9}

Nurses should also be prepared to anticipate electrolyte replacement in the event of failure to rehydrate.³ Failure to rehydrate is defined as being when there is persistent vomiting and/or the level of dehydration persists.³ The patient who fails to be rehydrated with ORT should be managed with intravenous hydration; options for obtaining intravenous access are presented in the *ENA Clinical Practice Guideline: Difficult Intravenous Access*.¹⁷ Nurses are encouraged to refer to the Food and Drug Administration's (2012) warning for updated information on recommended intravenous use of ondansetron (<http://www.fda.gov/Drugs/DrugSafety/ucm310190.htm#patients>).¹⁸

ORT in the ED is a safe, efficacious, and cost-effective alternative to the standard treatment of intravenous rehydration for uncomplicated, acute moderate dehydration in young children.¹⁴ Although the evidence is mixed regarding parental preference,¹²⁻¹³ evidence shows that the time required to initiate ORT is actually shorter than intravenous therapy and allows for a less stressful therapy that can be performed in the home.² It is estimated that appropriate use of ORT in ED pediatric patients with mild to moderate dehydration would prevent 30,000 (U.S.) and 4,000 (Canada) intravenous insertions annually.¹⁰ Over 8,000 admissions per year could be avoided with a monetary savings of \$66 million and \$1.7 million in the U.S. and Canada, respectively.¹⁰

Table 1. Symptoms of Dehydration^{1,3,7-9}

CHARACTERISTIC	LEVEL OF DEHYDRATION		
	NONE/MINIMAL	MILD/MODERATE	SEVERE
GENERAL APPEARANCE	Thirsty, restless, alert	Thirsty, drowsy, postural hypotension	Lethargic, limp, cold, sweaty. Cyanotic; May be unconscious
PULSE	Normal rate and strength	Rapid and weak	Rapid, thread, sometimes impalpable
RESPIRATORY RATE	Normal	Deep	May be deep and rapid
ANTERIOR FONTANELLE	Normal	Sunken	Deeply sunken
SYSTOLIC BLOOD PRESSURE	Normal	Normal to low	Low
SKIN ELASTICITY	Pinch retracts immediately	Pinch retracts slowly	Pinch retracts very slowly
EYES	Normal	Slightly sunken	Deeply sunken
TEARS	Present	Decreased	Absent
MUCOUS MEMBRANES	Moist	Sticky/dry	Very dry
URINE OUTPUT	Normal	Decreased	Decreased or absent

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Key for Level of Evidence Recommendation

A	Level A (High) Recommendation:	Based on consistent and good quality of evidence; has relevance and applicability to emergency nursing practice.	NR	Not Recommended:	Based upon current evidence.
B	Level B (Moderate) Recommendation:	There are some minor inconsistencies in quality evidence; has relevance and applicability to emergency nursing practice.	I/E:	Insufficient evidence:	Insufficient evidence upon which to make a recommendation.
C	Level C (Weak) Recommendation:	There is limited or low-quality patient-oriented evidence; has relevance and applicability to emergency nursing practice.	N/E:	No evidence:	No evidence upon which to make a recommendation.

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