



OES vs IV Research Overview

Oral electrolyte solutions compare favorably with IV hydration when treating dehydration

If you're considering the benefits of hydrating with oral electrolyte solutions (OES) or IV, consider the research findings on the next page. Numerous studies indicate that oral electrolyte solutions, such as Pedialyte®:

- Are just as effective when compared with IV rehydration in mild to moderate dehydration¹
- Are safe and reliable for children²
- Offer more convenience and flexibility for parents, caregivers, and medical staff³
- Are less expensive than IV hydration³

On the following page is a summary of several compelling findings in the area of acute gastroenteritis in children and, specifically, how enteral hydration (oral electrolyte solutions including Pedialyte) performs when compared with IV hydration. In each cited case, the authors' conclusions support the effectiveness and appeal of OES as a viable alternative.



Therapeutic hydration to the rescue™

Powder Packs and Freezer Pops not for use for children under 1 year of age.

For more information, visit Pedialyte.com

CITED REFERENCE	TYPE OF STUDY	POPULATION	CLINICAL SUPPORT	AUTHOR CONCLUSIONS
Santosham M, Daum RS, Dillman L, et al. Oral rehydration therapy of infantile diarrhea: a controlled study of well-nourished children hospitalized in the United States and Panama. <i>New Engl J Med.</i> 1982;306:1070-1076.	Prospective RCT	N = 146 Well-nourished children ages 3 mo – 2 y with dehydration due to acute diarrhea	Both a 50 mEq sodium and 90 sodium mEq OES were compared with IV therapy for rehydration of subjects. 99% of subjects receiving OES were treated adequately with no serious complications.	Both OES products were effective and safe for the treatment of well-nourished children with acute diarrhea and could completely replace IV fluids in the majority of such children.
Tamer AM, Friedman LB, Maxwell SR, et al. Oral rehydration of infants in a large urban U.S. medical center. <i>J Pediatr.</i> 1985;107:14:-19.	Prospective RCT	N = 100 Well-nourished children ages 3-33 mo with acute gastroenteritis resulting in dehydration and acidosis	OES therapy (specifically administering 75 mEq sodium for initial 6 h, then 50 mEq sodium solution) had a failure rate of 6% compared with IV therapy for rehydration. OES therapy also had a faster correction for acidosis than IV.	OES therapy is safe, less expensive for patients, and more convenient for medical and nursing staffs.
Listernick R, Ziesler E, Davis AT. Outpatient oral rehydration in the United States. <i>Am J Dis Child.</i> 1986;140:211-215.	Prospective RCT	N = 29 Well nourished children ages 3-24 mo with acute gastroenteritis	A 60 mEq sodium solution was compared to IV therapy in an ER setting. Thirteen out of 15 subjects in OES group were successfully rehydrated; the 2 failures had persistent vomiting secondary to urinary tract infections. The total fluid intake was significantly greater in the OES group compared with the IV group ($P < 0.00001$).	OES rehydration is safe and cost-effective for treating dehydrated children in an outpatient setting in the U.S.
Vesikari T, Isolauri E, Baer M. A comparative trial of rapid oral and intravenous rehydration in acute diarrhoea. <i>Acta Paediatr Scand.</i> 1987;76:300-305.	Prospective RCT	N = 37 Children under the age of 5 hospitalized for acute diarrhea and dehydration	Rehydration using an OES with 60 mEq sodium was compared to IV therapy. The results were satisfactory in both treatment groups with equal rates of correction of dehydration, metabolic acidosis and sodium deficit. The OES group showed a 2.9% weight gain in the hospital and a shorter duration of diarrhea compared to the IV group.	OES therapy was equal or superior to IV rehydration therapy in the management of acute diarrhea in children.
Mackenzie A, Barnes G. Randomised controlled trial comparing oral and intravenous rehydration therapy in children with diarrhoea. <i>BMJ.</i> 1991;303:393-396.	Prospective RCT	N = 104 Children ages 3-36 mo with moderate dehydration caused by gastroenteritis	Oral rehydration therapy with a 60 mEq sodium solution was compared with intravenous therapy in an ER department. The OES had a failure rate of 3.8% (2/52 children), and after 24 h, 97% of the children were clinically rehydrated.	OES can replace IV rehydration in children who are dehydrated but not in shock, even if they are vomiting. And OES was at least at parity with IV treatment when measured with biochemical tests.
Gavin N, Merrick N, Davidson B. Efficacy of glucose-based oral rehydration therapy. <i>Pediatrics.</i> 1996;98:45-51.	Meta-analysis of 13 RCT studies	Most studies involved children ages 3 mo – 3 y with mild to moderate dehydration due to gastroenteritis	A data analysis of 13 trials was conducted to review the safety and efficacy of OES in young children with gastroenteritis in developed countries. Six of these studies had IV treatment arms. There was an overall failure rate of 3.6% associated with OES use and when compared with IV rehydration, patients treated with OES had no higher risk for hyponatremia or hypernatremia. Failure rates related to sodium content showed no significant differences, with a range of 30-90 mEq.	The few studies with significant findings favored oral rehydration over IV rehydration – patients receiving OES had shorter duration of diarrhea, greater weight gain at discharge, and a shorter length of hospital stay.
Atherly-John YC, Cunningham SJ, Crain EF. A randomized trial of oral vs intravenous rehydration in a pediatric emergency department. <i>Arch Pediatr Adolesc Med.</i> 2002;156:1240-1243.	Prospective RCT	N = 34 Children ages 3 mo – 17 y with moderate dehydration due to acute gastroenteritis	OES was compared with IV therapy for treatment of moderate dehydration, and the primary outcome was length of stay in the ER department. The mean length of stay was significantly less with OES therapy ($p < 0.01$), and significantly more parents were highly satisfied with all aspects of the visit compared with IV therapy ($P = 0.01$).	Reported barriers to OES use were not supported by study results, and OES performed better than IV on all measured outcomes.
Fonseca BK, Holdgate A, Craig JC. Enteral vs intravenous rehydration therapy for children with gastroenteritis. <i>Arch Pediatr Adolesc Med.</i> 2004;158:483-490.	Meta-analysis of 16 RCT studies that compared OES and IV therapy for rehydration	Most studies involved children ages 5 y and younger with mild to moderate dehydration	Safety and efficacy of enteral (OES) versus intravenous (IV) therapy was assessed upon review of data from 16 trials. Compared with children treated with IV, children treated with OES had significantly fewer major adverse events, including death or seizures, and a significant reduction in hospital stay. The overall failure rate for OES was 4%.	For childhood gastroenteritis, enteral rehydration is as effective if not better than IV rehydration.
Spandorfer PR, Alessandrini EA, Joffe MD, et al. Oral versus intravenous rehydration of moderately dehydrated children: a randomized, controlled trial. <i>Pediatrics.</i> 2005;115:295-301.	Prospective RCT	N = 73 Children ages 3-33 mo with moderate dehydration due to viral gastroenteritis	OES (45 mEq sodium) was compared with IV therapy in an ER setting with a primary outcome as successful rehydration at 4 hrs defined as resolution of moderate dehydration, production of urine, weight gain, and the absence of severe emesis. OES was found to be non-inferior for the main outcome and favorable for secondary outcomes such as time to initiate therapy and rate of hospitalization.	OES therapy is as good as IVF in rehydration of moderately dehydrated children due to gastroenteritis.