



Q/Are IV fluids better than oral rehydration for children with acute diarrhea and vomiting?

EVIDENCE-BASED ANSWER

A | **INTRAVENOUS FLUID THERAPY (IVF)** has a slightly lower failure rate than oral replacement therapy (ORT) in children with acute gastroenteritis, but the clinical significance is questionable. IVF takes longer to initiate than ORT and lengthens the hospital stay (strength of recommendation: **B**, meta-analysis of poor-to-moderate-quality trials).

Shorter hospital stay with oral replacement therapy

A 2006 systematic review compared ORT and IVF in 1811 children 0 to 18 years of age with viral gastroenteritis who were treated for failure to rehydrate in both outpatient and inpatient settings (18 randomized controlled trials [RCTs] of poor to moderate quality).¹ The primary outcome was “continued failure to rehydrate,” which varied by study and included persistent vomiting, persistent dehydration, shock, or seizures.

Overall, the risk of failure to rehydrate was 4.9% for ORT and 1.3% for IVF (risk difference [RD]=4%; 95% confidence interval [CI], 1%-7%; number needed to treat [NNT]=25). The length of stay (24-hour observation unit or inpatient hospitalization) was shorter for ORT than IVF (6 studies, 526 patients; weighted mean difference (WMD)= -1.2 days; 95% CI, -2.38 to -0.02). Investigators found no difference in weight gain, hyponatremia, hypernatremia, duration of diarrhea, or total fluid intake at 24 hours.

ORT can be started more quickly than IVF
An RCT conducted in an urban emergen-

cy department evaluated ORT and IVF for 4 hours in 72 children ages 8 weeks to 3 years with moderate dehydration from viral gastroenteritis.² This trial was included in the previously described review but evaluated additional outcomes: time required to initiate either ORT or IVF, improvement in symptoms at 2 hours, hospitalization rate, and preference for ORT in the future.

The authors also used a 10-point dehydration scoring system that included: decreased skin elasticity, capillary refill >2 seconds, general appearance, absence of tears, abnormal respirations, dry mucous membranes, sunken eyes, abnormal radial pulse, tachycardia >150 beats per minute, and decreased urine output. Details on the type of ORT or IVF were not reported.

ORT was initiated faster than IVF (mean difference [MD]=21 minutes; 95% CI, 10-32 minutes). No difference in improvement in dehydration scores was observed at 2 hours (ORT 78% vs IVF 80%; MD=1.2%; 95% CI, -20.5% to 18%). Nor was the hospitalization rate significantly different (IVF 48.7% and ORT 30.6%; MD=-18.1%; 95% CI, -40.1% to 4.1%). Most patients preferred to have the same therapy, whether ORT or IVF, with the next episode of gastroenteritis (61.3% vs 51.4%; MD=9.9%; 95% CI, -14 to 34). **JFP**

References

1. Hartling L, Bellmare S, Wiebe N, et al. Oral versus intravenous rehydration for treating dehydration due to gastroenteritis in children. *Cochrane Database Syst Rev*. 2006;(3):CD004390.
2. Spandorfer PR, Alessandrini EA, Joffe MD, et al. Oral versus intravenous rehydration of moderately dehydrated children: a randomized, controlled trial. *Pediatrics*. 2005;115:295-301.

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