

Evidence-based guideline recommends isotonic solutions for children who need intravenous fluids

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A new AAP clinical practice guideline says children who require maintenance intravenous fluids (IVFs) should receive isotonic solutions with appropriate potassium chloride and dextrose to decrease the risk of developing hyponatremia.

Until now, hypotonic IVFs have been the standard despite being linked to a high incidence of hyponatremia.

“Concerns have been raised that this approach results in a high incidence of hyponatremia and that isotonic intravenous fluids (sodium concentration similar to serum values) could prevent the development of hyponatremia,” according to *Clinical Practice Guideline: Maintenance Intravenous Fluids in Children*. The guideline is available at <http://pediatrics.aappublications.org/content/early/2018/11/21/peds.2018-3083> and will be published in the December issue of *Pediatrics*.

Past guidance for maintenance IVF therapy has been based mainly on opinion, according to the guideline, with wide variability in fluid prescribing practices and a lack of guidance for fluid composition and electrolyte monitoring.

Maintenance IVFs, which provide critical supportive care for acutely ill children, are required if sufficient fluids can't be provided by enteral administration in cases such as gastrointestinal illness, respiratory compromise, neurologic impairment, perioperative state, or being moribund from an acute or chronic illness. But maintenance IVFs have both potential benefits and harms and should be given only when clinically indicated.

The new guidance applies to children ages 28 days to 18 years in surgical (postoperative) and medical acute care settings, including critical care and the general inpatient ward. It does *not* apply to those with neurosurgical disorders, congenital or acquired cardiac disease, hepatic disease, cancer, renal dysfunction, diabetes insipidus, voluminous watery diarrhea, severe burns or neonates younger than 28 days or in the neonatal intensive care unit, and patients older than 18.

The AAP Subcommittee on Fluid and Electrolyte Therapy reviewed 17 randomized clinical trials to develop the guideline, which includes only one key action statement about using isotonic solutions (evidence grade A, strong recommendation). Of the studies, all but one found that isotonic solutions were superior to hypotonic IVFs.

“We are all aware that variability exists in prescribing maintenance fluid therapy for acutely sick children,” said Leonard G. Feld, M.D., Ph.D., M.M.M., FAAP, a lead author and chair of the subcommittee that issued

the guideline. “Our committee put in significant time and effort on this guideline for over two years to provide an evidence-based approach to maintenance intravenous fluid therapy for hospitalized children.”

Also addressed in the guideline are the following: inclusion and exclusion criteria, phases of fluid therapy, effect of dextrose on tonicity, complications of IVF treatment, biochemical laboratory monitoring, isotonic vs. hypotonic solutions, and suggestions for future quality improvement questions.

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