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Title

Hypotonic intravenous solutions in children. [Review] [33 refs]

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[Hyponatremia / et \[Etiology\]](#)

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[Hypotonic Solutions / ad \[Administration & Dosage\]](#)

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[Osmolar Concentration](#)

<http://gateway2.ovid.com/ovidweb.cgi>

05/05/2004

DHSSPS

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Abstract

The use of hypotonic intravenous solutions, especially 4% dextrose/0.18% saline, remains standard practice in many paediatric units in the UK. The practice of prescribing hypotonic intravenous fluids derives from the work of investigators in the 1950s, who produced arbitrarily-derived formulae for calculating the maintenance requirements for water and electrolytes in hospitalised patients. Combining these values led to the widespread acceptance of hypotonic solutions such as 4% dextrose/0.18% saline as 'standard maintenance' parenteral fluids. Unfortunately, these calculations do not account for the effects of antidiuretic hormone, the secretion of which is stimulated by many factors encountered during acute illness and especially in the perioperative period. In this setting, the administration of hypotonic intravenous fluids results in the retention of free water and the development of **hyponatraemia**. The routine administration of hypotonic intravenous fluids has been shown to be associated with severe morbidity and the deaths of many previously healthy children. The problem is compounded by the fact that 4% dextrose/0.18% saline is labelled as 'isotonic'. Whilst this solution is isosmolar compared to plasma, lack of osmotically-effective solutes means that it is hypotonic with reference to the cell membrane. There is no justification for the routine administration of hypotonic intravenous fluids. [References: 33]

CAS Registry/EC Number

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