

Isotonic saline

Isotonic saline is commonly known by several alternative names and formulations. Here are the main ones:

0.9% Sodium Chloride (NaCl) – The most precise and widely accepted name in clinical settings.

Normal Saline (NS) – The most common colloquial term used in hospitals.

Physiological Saline – Reflects its osmolality approximating that of human plasma.

Isotonic **NaCl** Solution – A generic term used in academic or pharmacological contexts.

Saline 0.9% – A shorthand often seen on IV bags and clinical charts.

All refer to a solution of 9 grams of sodium chloride per liter of water, with an osmolarity of ~308 mOsm/L, making it isotonic relative to blood plasma.

Narrative reviews

* **Type of Study:** Narrative Review * **Authors:** Thomas et al. * **Institution and City:** University of Pennsylvania, Philadelphia, PA, USA * **Journal:** *Neurosurgical Clinics of North America*, July 2025 * **Purpose:** To synthesize current clinical practices and considerations for fluid, electrolyte, and nutritional management in critically ill neurotrauma patients. * **Conclusions:** Isotonic saline remains the fluid of choice for resuscitation in TBI. Hypertonic saline is increasingly favored over mannitol for hyperosmolar therapy. Electrolyte imbalances are prevalent and necessitate close management. Nutritional optimization requires multidisciplinary coordination due to the elevated metabolic demands in TBI.

Critical Peer Review

1. Scientific Rigor & Methodology:

This narrative review lacks systematic methodology, which limits reproducibility and objectivity. There is no explicit discussion of inclusion/exclusion criteria for literature cited, nor a transparent framework for evaluating evidence quality. Future iterations would benefit from at least a semi-structured approach or alignment with PRISMA-ScR guidelines for scoping reviews.

2. Clinical Utility:

While the review offers a general overview, it fails to provide granular clinical algorithms or decision-support tools that could assist intensivists or neurosurgeons in real-time management. No risk stratification models or patient-specific recommendations (e.g., based on ICP levels or renal

function) are offered.

3. Originality and Novelty:

The subject matter is not novel, and the article largely reiterates established guidelines without offering new interpretations or analyses. The preference for hypertonic saline over mannitol is now well-supported and widely practiced; reiterating it without new data or insights adds little scholarly value.

4. Evidence Support:

Claims are largely made without critical appraisal of the underlying studies. For instance, recommendations regarding fluid choice are asserted without reference to the quality, size, or outcomes of supporting trials. Furthermore, key controversies (e.g., timing and thresholds for nutritional interventions) are mentioned but not analyzed.

5. Writing and Structure:

The manuscript is readable but suffers from a lack of depth and precision. For example, "patients with especially traumatic brain injury" is an awkward and unclear phrase. More rigorous terminology and structured subheadings could enhance clarity and scientific tone.

6. Conflicts of Interest & Transparency:

The authors report no conflicts of interest, and affiliations are clearly stated. However, social media links (e.g., Twitter handle) in academic affiliations are unconventional and inappropriate for a peer-reviewed clinical review.

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Recommendation: Major Revision — This review requires significant enhancement in methodological transparency, clinical specificity, and scholarly depth. A restructured, evidence-graded format with inclusion of decision pathways or comparative tables would greatly improve its value to the neurosurgical critical care community.

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