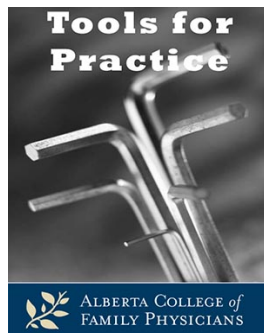


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Reviewed: August 13, 2016
Evidence Updated: No new evidence
Bottom Line: No change
First Published: April 2, 2013



Cutting out Sodium in Heart Failure – A Taste of the Evidence

Clinical Question: Does sodium restriction improve outcomes in those with systolic heart failure (HF)?

Bottom Line: (Please see correction immediately following). Factors regulating sodium and water handling in chronic HF remain poorly understood. A meta-analysis of 6 RCTs has important limitations but suggests worsening of outcomes, including an 8 NNH for all-cause mortality. More RCTs are needed, as sodium lowering in HF has not demonstrated clinical benefit in any RCT.

Evidence:

- 2012 systematic review, six Randomized Controlled Trials (RCTs) with 2,747 systolic HF patients. Compared to 2800mg/day, low sodium diet of 1800mg/day resulted in increased:¹
 - All-cause mortality, Relative Risk (RR)=1.95 (1.66-2.29), Number Needed to Harm (NNH)=8.
 - Death due to HF, RR=2.23 (1.77-2.81), NNH=10.
 - Hospital readmissions due to HF, RR=2.10 (1.67-2.64), NNH=5.
 - Limitations: All studies authored by one group, adherence uncertain, very high diuretic doses, and inadequate background medical therapy may limit application.
- Observational studies, with important confounders, report varying results:
 - 302 HF patients, higher sodium (>3000mg/day):²
 - Improved event free survival in NYHA class I/II.
 - Worsened event free survival in NYHA class III/IV.
 - 182 HF patients presenting to emergency with acute decompensation were:
 - No more likely to have consumed high sodium foods in the three days prior than those with unrelated symptoms.³
 - 123 HF patients who consumed >2800mg sodium/day compared to lesser amounts had:
 - Higher incidence of acute decompensated HF.⁴

Context:

- Sodium restriction in HF is based on the theory that increased activity of the renin-angiotensin-aldosterone system and other neurohormones results in sodium and water retention.⁵
- Conversely, others suggest that sodium restriction may in fact trigger compensatory neuroendocrine responses leading to HF exacerbation.⁶
- Hyponatremia is a powerful predictor of poor long-term prognosis in patients with HF.⁷⁻⁹
- Canadian and US guidelines recommend restricted sodium intake of 2000-3000 mg/day for those with symptomatic HF, considering further restriction in those with moderate to severe HF (consensus of opinion of experts and/or small studies).^{10,11}

Correction: The evidence for this Tools for Practice was based primarily on the systematic review by Dinicolantonio and colleagues.¹ Two of the included six trials appeared to be the same studies and the authors were asked to provide data from those two trials (to confirm they were separate studies).¹² Unfortunately, the authors reported that the original data was lost in a computer malfunction.¹² Because the data could not be provided, a decision was made to retract the entire article.¹² The authors assert that the trials are different and findings of their systematic review are still valid.¹³

We have kept the Tools for Practice unchanged and wrote the full details of the retraction to allow for complete transparency. Readers may wish to completely disregard the original systematic review by Dinicolantonio and colleagues (and thus the bottom-line of the Tools for Practice) or, at a minimum, the retraction should create uncertainty around the results.

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Tools for Practice is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians who are joined occasionally by a health professional from another medical specialty or health discipline. Each article is peer-reviewed, ensuring it maintains a high standard of quality, accuracy, and academic integrity. If you are not a member of the ACFP and would like to receive the TFP emails, please sign up for the distribution list at <http://bit.ly/signupfortfp>. Archived articles are available on the ACFP website.

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