

## FROM THE FAMILY PRACTICE INQUIRIES NETWORK

**Does a low-salt diet reduce morbidity and mortality in congestive heart failure?**

**EVIDENCE-BASED ANSWER** No randomized controlled trials (RCTs) have addressed the independent role of sodium restriction in the morbidity or mortality of congestive heart failure. However, current guidelines recommend sodium restriction for secondary prevention of congestive heart failure exacerbation. (Grade of recommendation: D.) Clinical trials of multifactorial, nondrug interventions have shown an association of sodium restriction with reduced morbidity and improved quality of life in some populations with congestive heart failure. (Grade of recommendation: C.)

**EVIDENCE SUMMARY** Sodium restriction is a mainstay of nonpharmacologic therapy for congestive heart failure, although no evidence proves that sodium restriction alone reduces morbidity and mortality.<sup>1</sup> Sodium restriction reduces hypertension<sup>2,3</sup> and left ventricular hypertrophy,<sup>4</sup> both risk factors for congestive heart failure.

Studies of multifactorial interventions correlate reduced congestive heart failure morbidity with sodium restriction or dietary counseling. These results cannot be generalized to sodium restriction independent of the other nondrug interventions. A small RCT compared a program of exercise, cognitive therapy/stress management, salt restriction, and weight reduction to treating congestive heart failure with digoxin or placebo.<sup>5</sup> The nondrug interventions improved functional capacity, body weight, and mood but not ejection fraction in patients with congestive heart failure.<sup>5</sup> A systematic review of 6 RCTs showed that multidisciplinary heart failure disease management programs, which emphasized dietary

counseling and/or sodium intake reduction, improved functional capacity, patient satisfaction, and quality of life.<sup>6</sup>

A large RCT that investigated how sodium reduction affects hypertension and frequency of cardiovascular events (including congestive heart failure) in the elderly did not show a significant difference in primary prevention of cardiovascular events between the sodium-restricted group and controls.<sup>3,7</sup> Two prospective cohort studies linked high sodium intake to cardiovascular mortality and all-cause mortality in overweight persons independent of other cardiovascular risk factors.<sup>8,9</sup>

**RECOMMENDATIONS FROM OTHERS** Physiological principles, observational studies, common practice, and expert opinion support sodium restriction for reducing edema and the need for diuretic agents in patients with congestive heart failure.<sup>1</sup> No clinical trial evidence favors a 2-g over a 3- to 4-g sodium restriction. See Table for common recommendations.

*Renee Meadows, MD*  
General Internal Medicine  
University of Missouri–Columbia

*E. Diane Johnson, MLS*  
J. Otto Lottes Health Sciences Library  
University of Missouri–Columbia

Clinical Commentary by John Tipton, MD, at <http://www.fpin.org>.

**REFERENCES**

- Aronow WS. *J Am Geriatr Soc* 1997; 45:1252–7.
- Johnson AG, Nguyen TV, Davis D. *J Hypertens* 2001; 19:1053–60.
- Appel LJ, Espeland MA, Easter L, et al. *Arch Intern Med* 2001; 161:685–93.
- Beil AH, Schmieder RE. *Blood Press Suppl* 1995; 2:30–4.
- Kostis JB, Rosen RC, Cosgrove NM, et al. *Chest* 1994; 106:996–1001.
- Rich MW. *J Card Fail* 1999; 5:64–75.
- Whelton PK, Appel LJ, Espeland MA, et al. *JAMA* 1998; 279:839–46.
- Tuomilehto J, Jousilahti P, Rastenyte D, et al. *Lancet* 2001; 357:848–51.
- He J, Ogden LG, Vupputuri S, et al. *JAMA* 1999; 282:2027–34.
- Heart failure—systolic dysfunction. August 1999. Available at: <http://cme.med.umich.edu/pdf/guideline/heart.pdf>.
- ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1995 Guidelines for the Evaluation and Management of Heart Failure). November 1, 1995 (revised December 2001). Available at: <http://www.ncc.gov/VIEWS/summary.asp?guideline=2340>.
- American Medical Directors Association. Heart failure. 1996. Available at: [http://www.guideline.gov/Framesets/guideline\\_fs.asp?guideline=001035&](http://www.guideline.gov/Framesets/guideline_fs.asp?guideline=001035&).

**TABLE****Recommended sodium restrictions**

Patient populations with congestive heart failure	Sodium restriction
Older adult <sup>1</sup>	1.6 g Na
With fluid retention or hypertension <sup>11</sup>	Moderate sodium reduction
At risk for or with asymptomatic heart failure <sup>11</sup>	Prudent dietary salt reduction
Older adult nursing home residents <sup>12</sup>	Low salt
Taking diuretics <sup>10</sup>	2 g Na

Members of the Family Practice Inquiries Network answer clinical questions with the best available evidence in a concise, reader-friendly format. Each peer-reviewed answer is based on a standard search of resources, including MEDLINE, the Cochrane Library, and InfoRetriever, and is graded for level of evidence (<http://cebm.jr2.ox.ac.uk/docs/levels.html>). The collected Clinical Inquiries can be found at <http://www.jfponline.com> and <http://www.fpin.org>; the latter site also includes the search strategy used for each answer.