

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.¹ Sodium restriction reduces hypertension^{2,3} and left ventricular hypertrophy,⁴ 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.⁵ The nondrug interventions improved functional capacity, body weight, and mood but not ejection fraction in patients with congestive heart failure.⁵ 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.⁶

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.^{3,7} Two prospective cohort studies linked high sodium intake to cardiovascular mortality and all-cause mortality in overweight persons independent of other cardiovascular risk factors.^{8,9}

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.¹ 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

1. Aronow WS. *J Am Geriatr Soc* 1997; 45:1252–7.
2. Johnson AG, Nguyen TV, Davis D. *J Hypertens* 2001; 19:1053–60.
3. Appel LJ, Espeland MA, Easter L, et al. *Arch Intern Med* 2001; 161:685–93.
4. Beil AH, Schmieder RE. *Blood Press Suppl* 1995; 2:30–4.
5. Kostis JB, Rosen RC, Cosgrove NM, et al. *Chest* 1994; 106:996–1001.
6. Rich MW. *J Card Fail* 1999; 5:64–75.
7. Whelton PK, Appel LJ, Espeland MA, et al. *JAMA* 1998; 279:839–46.
8. Tuomilehto J, Jousilahti P, Rastenyte D, et al. *Lancet* 2001; 357:848–51.
9. He J, Ogden LG, Vupputuri S, et al. *JAMA* 1999; 282:2027–34.
10. Heart failure—systolic dysfunction. August 1999. Available at: <http://cme.med.umich.edu/pdf/guideline/heart.pdf>.
11. 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>.
12. American Medical Directors Association. Heart failure. 1996. Available at: http://www.guideline.gov/Framesets/guideline_fs.asp?guideline=001035&.

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

How effective are nasal steroids combined with nonsedating antihistamines for seasonal allergic rhinitis?

EVIDENCE-BASED ANSWER For treating seasonal allergic rhinitis, inhaled nasal corticosteroids are superior to nonsedating antihistamines (Grade of recommendation: A, based on a large meta-analysis of randomized controlled trials [RCTs]). Combining nasal steroids and nonsedating antihistamines yields no additional benefits (Grade of recommendation: A, based on several RCTs). Unless patient preference limits their use, nasal steroids should be first-line therapy.

EVIDENCE SUMMARY A meta-analysis of 16 RCTs compared the efficacy of intranasal steroids and oral antihistamines for alleviating nasal, eye, and global allergy symptoms.¹ Intranasal steroids were superior to oral antihistamines for all patient-oriented nasal symptom and global symptom ratings. Eye symptom scores and adverse events were similar in each treatment group.

Several large RCTs have addressed whether combining the 2 classes of drugs would achieve greater symptom control. Only 1 study² found combination therapy to be superior. This RCT compared beclomethasone dipropionate with loratadine or placebo daily in 154 patients.² Total symptom scores were better for the combination group mainly due to improved relief from ocular symptoms.

Fluticasone propionate aqueous nasal spray (FPANS) was evaluated alone and in combination with cetirizine in a multicenter double-blind study of 454 patients.³ The mean symptom scores for nasal and eye symptoms were not significantly different

between the 2 groups. A more recent RCT had similar results when comparing FPANS with loratadine and with combined therapy.⁴ This double-blinded placebo-controlled trial, which included 600 patients, measured patient- and clinician-rated total symptom scores, individual nasal symptom scores, and overall evaluations after 7 and 14 days of therapy. Although the symptom scores for the FPANS group were significantly lower than those in the loratadine and placebo groups, no significant difference in scores was found between the FPANS and combined groups. The results were the same for the quality-of-life questionnaire scores. In an RCT of 106 patients, budesonide nasal spray's efficacy was tested against terfenadine alone and in combination; the nasal steroid alone was more effective than the histamine.⁵ Combining the 2 drugs yielded no significant improvements.

The newer nasal steroids such as fluticasone may be more effective because of their stronger affinities to glucocorticoid receptors, but no clinical evidence confirms this hypothesis.⁶

RECOMMENDATIONS FROM OTHERS The Joint Task Force on Practice Parameters in Allergy, Asthma, and Immunology recommends second-generation oral antihistamines for first-line therapy, but notes that nasal steroids are the most effective medication class for controlling allergy symptoms.⁷ The task force states that combination drug therapy may be tried. A monograph from the American Academy of Family Physicians notes the lack of consensus guidelines for first-line therapy and recommends that treatment be individualized.⁸ It states that combination therapy may be tried if monotherapy fails.

Camille Andy, MD

*Moses Cone Family Practice Residency Program
Greensboro, North Carolina*

Ann Thering, MLS

*Family Practice Inquiries Network
Columbia, Missouri*

Clinical Commentaries by Tsveti Markova, MD, and John W. Tipton, MD, at <http://www.FPIN.org>.

TABLE

Intranasal steroids for treating allergic rhinitis

Drug	Usual adult dosages	Cost per month*
Beclomethasone dipropionate		
Beconase AQ	2 sprays/nostril qd	\$44
Vancenase AQ	2 sprays/nostril qd	\$40
Budesonide		
Rhinocort AQ	2 sprays/nostril bid	\$48
Flunisolide		
Nasarel	2 sprays/nostril bid	\$44
Nasalide	2 sprays/nostril bid	\$46
Fluticasone propionate		
Flonase	2 sprays/nostril qd	\$53
Mometasone furoate		
Nasonex	2 sprays/nostril qd	\$56
Triamcinolone acetonide		
Nasacort AQ	2 sprays/nostril qd	\$56

bid, twice a day; qd, every day.

*Red Book. Medical Economics Data, 2001.

REFERENCES

- Weiner JM, Abramson MJ, Puy RM. *Br Med J* 1998; 317:1624-9.
- Drouin MA, Yang WH, Horak F, et al. *Allergy* 1992; 12(suppl):173.
- Benincasa C, Lloyd RS. *Drug Invest* 1994; 8:225-33.
- Ratner PH, Van Bavel JH, Martin BG, et al. *J Fam Pract* 1998; 47:118-25.
- Simpson RJ. *Ann Allergy* 1994; 73:497-502.
- Lumry J. *Allergy Clin Immunol* 2000; 105:394. *J Allergy Clin Immunol* 1999; 104(4 Pt 1):S150-8.
- Dykewicz M, Fineman S. *Ann Allergy Asthma Immunol* 1998; 81:463-518.
- Diagnosis and Management of Allergic Rhinitis. American Family Physician Monograph no. 3; 2001.

What environmental modifications improve pediatric asthma?

EVIDENCE-BASED ANSWER Reducing environmental tobacco smoke exposure decreases health care utilization among poor asthmatic children. Dust mite reduction by chemical measures is potentially harmful. (Grade of recommendations: B, based on single randomized controlled trial.) Evidence is insufficient for or against dust mite reduction by physical means, use of synthetic or feather bedding, removal of cats, use of air filters or reducing indoor humidity. (Grade of recommendations: D, inconsistent studies.)

EVIDENCE SUMMARY Although several studies have shown the benefit of placing asthmatic and allergic children in highly sanitized hospital and sanitarium environments,¹ benefit has been extremely difficult to prove with measures used in the child's home. Only reducing tobacco smoke exposure has been shown to be beneficial. In a randomized trial of predominantly poor minority subjects, fewer acute asthma medical visits were needed by children whose household members underwent behavioral education aimed at decreasing smoke exposure.²

Other methods of modifying the environment have not proved beneficial. Although a group of researchers found that home visits by care providers may decrease acute medical visits, specific allergy avoidance steps did not make a difference.³ Two of these authors also reported that the use of chemicals for house dust mite control and the use of synthetic pillows in lieu of feather pillows may actually exacerbate asthma.⁴ A Cochrane review was inconclusive on the risks or benefits of feather bedding.⁵ Benefit from removing cats is difficult to prove because of the ubiquitous nature of cat antigen and the difficulty in eradicating it from the home. Using air filters and reducing indoor humidity have likewise failed to show meaningful improvement in peak flow, medication use, or symptom scores.

The effectiveness of physical methods to reduce house dust mites is unclear. The Cochrane Review of 15 trials noted a small, statistically significant improvement in asthma symptom scores, but the results were not clinically important enough to rec-

Intervention	Effect
Tobacco smoke exposure reduction	Beneficial
Chemical reduction of dust mites	Harmful
Physical reduction of dust mites	Unknown
Bedding material (feather vs synthetic)	Unknown
Removal of cats	Unknown
Air filters or dehumidification	Unknown

ommend such measures.⁶ The potential harm of chemical measures was reiterated in this review.

RECOMMENDATIONS FROM OTHERS The National Heart, Lung, and Blood Institute continues to recommend physical barriers to reduce house dust mite antigen based on 4 small trials in which the major benefit was decreased bronchial hyperresponsiveness.⁷ Larger trials, now under way, may help resolve the issue.

Timothy Dudley, MD
Department of Family Medicine
University of Colorado

Joan Nashelsky, MLS
W.A. Foote Hospital
Jackson, Michigan

Clinical Commentary by Nicholas J. Solomos, MD, at <http://www.fpin.org>.

REFERENCES

1. Simon HU, Grotzer M, Nikolaizik WH, et al. *Pediatr Pulmonol* 1994; 17:304-11.
2. Wilson SR, Yamada EG, Sudhakar R, et al. *Chest* 2001; 120:1709-22.
3. Carter MC, Perzanowski MS, Raymond A, et al. *J Allergy Clin Immunol* 2001; 108:732-7.
4. Platts-Mills TA, Vaughan JW, Carter MC, et al. *J Allergy Clin Immunol* 2000; 106:787-804.
5. Campbell F, Jones K, Gibson P. In: *The Cochrane Library*, Issue 1, 2002. Oxford, England: Update Software.
6. Gotzsche P, Johansen H, Burr M, et al. In: *The Cochrane Library*, Issue 1, 2002. Oxford, England: Update Software.
7. National Asthma Education and Prevention Program. Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma. Bethesda, MD: National Institutes of Health, National Heart, Lung, and Blood Institute; 1997. NIH publication 97-4051.