



Complete Summary

GUIDELINE TITLE

ADA heart failure evidence-based nutrition practice guideline.

BIBLIOGRAPHIC SOURCE(S)

American Dietetic Association (ADA). ADA heart failure: evidence-based nutrition practice guideline. Chicago (IL): American Dietetic Association (ADA); 2008. Various p. [162 references]

GUIDELINE STATUS

This is the current release of the guideline.

The guideline will undergo a complete revision every three to five years.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
CONTRAINDICATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Heart failure, specifically left ventricular dysfunction

GUIDELINE CATEGORY

Counseling
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Cardiology
Family Practice
Internal Medicine
Nutrition

INTENDED USERS

Dietitians

GUIDELINE OBJECTIVE(S)

Overall Objective

To provide medical nutrition therapy (MNT) guidelines aimed at managing symptoms of heart failure (edema, shortness of breath, fatigue), and maintaining optimal nutrition status

Specific Objectives

- To define evidence-based recommendations for registered dietitians (RDs) that are carried out in collaboration with other healthcare providers
- To guide practice decisions that integrate medical, nutritional and behavioral elements
- To reduce variations in practice among RDs
- To promote self-management strategies that empower the patient to take responsibility for day-to-day management
- To enhance the quality of life for the patient, utilizing customized strategies based on the individual's preferences, lifestyle and goals
- To develop guidelines for interventions that have measurable clinical outcomes
- To define the highest quality of care within cost constraints of the current healthcare environment

TARGET POPULATION

Adult patients 19 years and older with heart failure who have been diagnosed with heart failure (left ventricular ejection fraction [LVEF] 45% or less)

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation

1. Referral to a registered dietitian
2. Nutrition assessment
 - Medical history and relevant laboratory tests
 - Nutrition-focused assessment
 - Height, weight, and body mass index (BMI)
 - Comprehensive diet history including current dietary intake and willingness to undertake behavior change
 - Physical activity pattern
 - Psychosocial and economic issues impacting nutrition therapy

- Consideration of co-morbid conditions and need for additional modifications in nutrition care plan

Management/Treatment

1. Individualized prescription for medical nutrition therapy based on:
 - Dietary interventions
 - Sodium and fluid restriction
 - Folate, B12, thiamine, and magnesium supplements
 - Physical activity interventions
 - Behavioral interventions
 - Alcohol use
 - Pharmacotherapy
 - Coenzyme Q10, L-arginine, carnitine, and hawthorn use
2. Coordination of nutrition care
3. Monitoring of progress

MAJOR OUTCOMES CONSIDERED

- Morbidity
- Mortality
- Food and nutrient intake
- Quality of life
- Changes in laboratory values
- Hospitalization
- Cost of medical care

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
 Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Searches of Cochrane Library database, the Database of Abstracts of Reviews of Effects (DARE), the Agency for Healthcare Research and Quality (AHRQ) database, and hand searches of other relevant literature were performed on the following topics:

- Medical nutrition therapy
- Sodium and fluid restriction
- Energy and protein needs
- Alcohol
- Vitamin, mineral and herbal supplements

General Exclusion Criteria

As a general rule, studies are excluded if the:

- Study sample size is less than 10 in each treatment group
- Drop-out rate was >20%

Inclusion Criteria

- Study design preferences: randomised controlled trials, meta-analyses, systematic reviews
- Limited to articles in English
- Sample >10 in each treatment group

The American Dietetic Association (ADA) has determined that for narrowly focused questions dealing with therapy or treatment, six well designed randomized controlled trials that demonstrate similar results is sufficient to draw a conclusion.

No one study design was preferred for all questions. The preferred study design depended on the type of question. The ADA uses the following principles in the table below for identifying preferred study design.

Type of Question	Preferred Study Designs (in order of preference)
Diagnosis questions	Sensitivity & specificity of diagnostic test Cross-sectional study
Etiology, causation, or harm questions	Prospective cohort Case control study Cross-sectional study
Therapy and prevention questions	Randomized controlled trial Nonrandomized trial
Natural history and prognosis questions	Cohort study

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Grading the Strength of the Evidence for a Conclusion Statement or Recommendation Conclusion Grading Table

Strength of Evidence Elements	Grade I Good/Strong	Grade II Fair	Grade III Limited/Weak	Grade IV Expert Opinion Only	Grade V Grade I Assignment
<p>Quality</p> <ul style="list-style-type: none"> Scientific rigor/validity Considers design and execution 	<p>Studies of strong design for question</p> <p>Free from design flaws, bias and execution problems</p>	<p>Studies of strong design for question with minor methodological concerns</p> <p>OR</p> <p>Only studies of weaker study design for question</p>	<p>Studies of weak design for answering the question</p> <p>OR</p> <p>Inconclusive findings due to design flaws, bias or execution problems</p>	<p>No studies available</p> <p>Conclusion based on usual practice, expert consensus, clinical experience, opinion, or extrapolation from basic research</p>	<p>No evidence that pertains to question being addressed</p>
<p>Consistency</p> <p>Of findings across studies</p>	<p>Findings generally consistent in direction and size of effect or degree of association, and statistical significance with minor exceptions at most</p>	<p>Inconsistency among results of studies with strong design</p> <p>OR</p> <p>Consistency with minor exceptions across studies of weaker designs</p>	<p>Unexplained inconsistency among results from different studies</p> <p>OR</p> <p>Single study unconfirmed by other studies</p>	<p>Conclusion supported solely by statements of informed nutrition or medical commentators</p>	<p>NA</p>
<p>Quantity</p> <ul style="list-style-type: none"> Number of studies Number of subjects in studies 	<p>One to several good quality studies</p> <p>Large number of subjects studies</p> <p>Studies with negative results having sufficiently large sample size for adequate statistical</p>	<p>Several studies by independent investigators</p> <p>Doubts about adequacy of sample size to avoid Type I and Type II error</p>	<p>Limited number of studies</p> <p>Low number of subjects studies and/or inadequate sample size within studies</p>	<p>Unsubstantiated by published studies</p>	<p>Relevant studies have not been done</p>

Strength of Evidence Elements	Grade I Good/Strong	Grade II Fair	Grade III Limited/Weak	Grade IV Expert Opinion Only	Grade V Grade I Assignment
	power				
Clinical Impact <ul style="list-style-type: none"> • Importance of studies outcomes • Magnitude of effect 	<p>Studied outcome relates directly to the question</p> <p>Size of effect is clinically meaningful</p> <p>Significant (statistical) difference is large</p>	<p>Some doubt about the statistical or clinical significance of effect</p>	<p>Studies outcome is an intermediate outcome or surrogate for the true outcome of interest</p> <p>OR</p> <p>Size of effect is small or lacks statistical and/or clinical significance</p>	<p>Objective data unavailable</p>	<p>Indicate area for future research</p>
Generalizability To population of interest	<p>Studied population, intervention and outcomes are free from serious doubts about generalizability</p>	<p>Minor doubts about generalizability</p>	<p>Serious doubts about generalizability due to narrow or different study population, intervention or outcomes studied</p>	<p>Generalizability limited to scope of experience</p>	<p>NA</p>

This grading system was based on the grading system from: Greer N, Mosser G, Logan G, Wagstrom Halaas G. *A practical approach to evidence grading. Jt Comm. J Qual Improv.* 2000; 26:700-712. In September 2004, The ADA Research Committee modified the grading system to this current version.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
 Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Step 1: Formulate the question

Specify a question in a defined area of practice; or state a tentative conclusion or recommendation that is being considered. Include the patient type and special

needs of the target population involved, the alternatives under consideration, and the outcomes of interest.

Step 2: Gather and classify evidence reports

Conduct a systematic search of the literature to find evidence related to the question, gather studies and reports, and classify them by type of evidence. Classes differentiate primary reports of new data according to study design, and distinguish them from reports that are a systematic review and synthesis of primary reports.

Step 3: Critically appraise each report

Review each report for relevance to the question and critique for scientific validity. Abstract key information from the report and assign a code to indicate the quality of the study by completing quality criteria checklist.

Step 4: Summarize evidence in a narrative and an overview table

Combine findings from all reports in a table that pulls out the important information from the article worksheets. Write a brief narrative that summarizes and synthesizes the information abstracted from the articles that is related to the question asked.

Step 5: Develop a conclusion statement and grade the strength of evidence supporting the conclusion

Develop a concise conclusion statement (the answer to the question), taking into account the synthesis of all relevant studies and reports, their class and their quality ratings. Assign a grade to indicate the overall strength or weakness of evidence informing the conclusion statement.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The expert work group, which includes practitioners and researchers with a depth of experience in the specific field of interest, develops the disease-specific guideline. The guideline development involves the following steps:

Review Evidence Based Conclusions

The work group meets to review the materials resulting from the evidence analysis, which may include conclusion statements, evidence summaries, and evidence worksheets.

Formulate Recommendations for the Guideline Integrating Conclusions from Evidence Analysis

The work group uses an expert consensus method to formulate recommendations, taking into account the following:

- Recommendations for what the dietitian should do and why
- Rating of recommendations based on strength of supporting evidence
- Label of Conditional (clearly define a specific situation) or Imperative (broadly applicable to the target population without restraints on the pertinence)
- Risks and Harms of Implementing the Recommendations, including potential risks, harms, or adverse consequences
- Conditions of Application, including organizational barriers or conditions that may limit application
- Potential Costs Associated with Application
- Recommendation Narrative
- Recommendation Strength Rationale, evidence strength and methodological issues
- Minority Opinions, when the expert working group cannot reach consensus on a recommendation
- Supporting Evidence

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Criteria for Recommendation Rating

Statement Rating	Definition	Implication for Practice
Strong	A Strong recommendation means that the workgroup believes that the benefits of the recommended approach clearly exceed the harms (or that the harms clearly exceed the benefits in the case of a strong negative recommendation), and that the quality of the supporting evidence is excellent/good (grade I or II)*. In some clearly identified circumstances, strong recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.	Practitioners should follow a Strong recommendation unless a clear and compelling rationale for an alternative approach is present.
Fair	A Fair recommendation means that the workgroup believes that the benefits exceed the harms (or that the harms clearly exceed the benefits in the case of a negative recommendation), but the quality of evidence is not as strong (grade II or III)*. In some clearly	Practitioners should generally follow a Fair recommendation but remain alert to new information and be sensitive to patient preferences.

Statement Rating	Definition	Implication for Practice
	identified circumstances, recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits outweigh the harms.	
Weak	A Weak recommendation means that the quality of evidence that exists is suspect or that well-done studies (grade I, II, or III)* show little clear advantage to one approach versus another.	Practitioners should be cautious in deciding whether to follow a recommendation classified as Weak , and should exercise judgment and be alert to emerging publications that report evidence. Patient preference should have a substantial influencing role.
Consensus	A Consensus recommendation means that Expert opinion (grade IV)* supports the guideline recommendation even though the available scientific evidence did not present consistent results, or controlled trials were lacking.	Practitioners should be flexible in deciding whether to follow a recommendation classified Consensus , although they may set boundaries on alternatives. Patient preference should have a substantial influencing role.
Insufficient Evidence	An Insufficient Evidence recommendation means that there is both a lack of pertinent evidence (grade V)* and/or an unclear balance between benefits and harms.	Practitioners should feel little constraint in deciding whether to follow a recommendation labeled as Insufficient Evidence and should exercise judgment and be alert to emerging publications that report evidence that clarifies the balance of benefit versus harm. Patient preference should have a substantial influencing role.

*Conclusion statements are assigned a grade based on the strength of the evidence. Grade I is good; grade II, fair; grade III, limited; grade IV signifies expert opinion only and grade V indicates that a grade is not assignable because there is no evidence to support or refute the conclusion. The evidence and these grades are considered when assigning a rating (Strong, Fair, Weak, Consensus, Insufficient Evidence - see chart above) to a recommendation.

Adapted by the American Dietetic Association from the American Academy of Pediatrics, Classifying Recommendations for Clinical Practice Guideline, Pediatrics. 2004;114;874-877.

COST ANALYSIS

An analysis was performed of potential costs associated with application of the recommendations in the guideline.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Each guideline is reviewed internally and externally using the AGREE (Appraisal of Guidelines for Research and Evaluation) instrument as the evaluation tool. The external reviewers consist of a multidisciplinary group of individuals (may include dietitians, doctors, psychologists, pharmacists, nurses, etc.). The review is done electronically. The guideline is adjusted by consensus of the expert panel and approved by American Dietetic Association's Evidence-Based Practice Committee prior to publication on the Evidence Analysis Library (EAL).

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Ratings for the strength of the recommendations (**Strong, Fair, Weak, Consensus, Insufficient Evidence**), conclusion grades (**I-V**), and statement labels (**Conditional versus Imperative**) are defined at the end of the "Major Recommendations" field.

Heart Failure (HF) Medical Nutrition Therapy and Heart Failure

HF: Medical Nutrition Therapy (MNT) and Heart Failure

Referral to a registered dietitian for MNT is recommended whenever an individual has heart failure. A planned initial visit lasting at least 45 minutes and at least one to three planned follow-up visits (at least 30 minutes each) can lead to improved dietary pattern and quality of life and decreases in edema and fatigue. Along with optimal pharmacological management, MNT may also reduce hospitalizations.

Strong, Imperative

Recommendation Strength Rationale

- **Conclusion statement was Grade II**

Heart Failure (HF) Protein Needs in Heart Failure Patients

HF: Protein Needs

In assessing protein needs for patients with HF, clinically stable depleted patients should have a daily intake of at least 1.37 g protein/kg and normally nourished patients should have a daily intake 1.12 g protein/kg in order to preserve their actual body composition or limit the effects of hypercatabolism. Research indicates that HF patients have significantly higher protein needs than those without HF, as measured by negative nitrogen balance.

Fair, Imperative

Recommendation Strength Rationale

- **Conclusion statement was Grade III**

Heart Failure (HF) Energy Needs in Heart Failure Patients

In assessing energy needs for patients with HF, the majority of studies indicate that use of indirect calorimetry best determines energy needs. When indirect calorimetry is not possible consider starting with usual predictive equations and adjusting for increased catabolic state.

Fair, Imperative

Recommendation Strength Rationale

- **Conclusion statement was Grade III**

Heart Failure (HF) Sodium and Fluid Restriction and Heart Failure

Fluid Intake

For patients with HF, fluid intake should be between 1.4 and 1.9 L (48 to 64 oz.) per day, depending on clinical symptoms (i.e., edema, fatigue, shortness of breath). Fluid restriction will improve clinical symptoms and quality of life.

Fair, Imperative

Sodium Intake

For patients with HF, sodium intake should be less than 2000 mg (2 g) per day. Sodium restriction will improve clinical symptoms (i.e., edema, fatigue) and quality of life.

Fair, Imperative

Recommendation Strength Rationale

- **Conclusion statement was Grade II**

Heart Failure (HF) Folate, B12, and Heart Failure

HF: Folate and Heart Failure

The practitioner should encourage patients with HF to consume at least the daily reference intake (DRI) for folate through food and/or a combination of B6, B12, and folate supplementation. Folate supplementation given with other vitamins/minerals has been shown to have beneficial clinical HF outcomes.

Fair, Imperative

HF: B12 and Heart Failure

A multi-vitamin/mineral containing B12 or a combination of B6, B12 and folate could be recommended in HF patients. This level of B12 supplementation (200 to 500 micrograms daily), given with other vitamins/minerals, has been shown to have beneficial clinical HF outcomes.

Fair, Imperative

Recommendation Strength Rationale

- **Conclusion statement was Grade II**

Heart Failure (HF) Thiamine Supplementation and Heart Failure

HF: Thiamine Supplementation

Since diuretic use can lead to thiamine deficiency in patients with HF, the practitioner should evaluate thiamine status. The practitioner should encourage the patient to consume at least the DRI through food and/or supplements. The practitioner should stay alert to future research involving thiamine.

Fair, Conditional

Recommendation Strength Rationale

- **Conclusion statement was Grade III**

Heart Failure (HF) Magnesium Supplementation and Heart Failure

The practitioner should encourage patients with HF to consume at least the DRI for magnesium through food and/or supplements. Low levels of magnesium may be present in patients with HF and irregular heart rhythms may occur. The practitioner should stay alert to future research involving magnesium.

Fair, Conditional

Recommendation Strength Rationale

- **Conclusion statement was Grade II**

Heart Failure (HF) Alcohol and Heart Failure

HF: Alcohol and Heart Failure

Current limited evidence does not justify encouraging those who do not drink alcohol to start doing so. If a patient currently drinks alcohol, and if not contraindicated, then a maximum of one drink per day for women and up to two

drinks per day for men may be tolerated. This level of alcohol consumption has been demonstrated to not be harmful in HF patients.

Fair, Conditional

Recommendation Strength Rationale

- **Conclusion statement was Grade II**

Heart Failure (HF) L-Arginine, Carnitine, Coenzyme Q10, and Hawthorn

HF: L-Arginine, Carnitine, Coenzyme Q10, and Hawthorn

If a patient inquires about or is currently taking L-arginine, carnitine, coenzyme Q₁₀ or hawthorn supplements, then the practitioner may discuss the limited evidence available regarding clinical HF outcomes. Research is inconclusive. The practitioner should stay alert to future research involving these supplements.

Weak, Conditional

Recommendation Strength Rationale

- **Conclusion statements were Grades II and III**

Definitions:

Conditional versus Imperative Recommendations

Recommendations can be worded as *conditional* or *imperative* statements. Conditional statements clearly define a specific situation, while imperative statements are broadly applicable to the target population without restraints on their pertinence. More specifically, a conditional recommendation can be stated in if/then terminology (e.g., If an individual does not eat food sources of omega-3 fatty acids, then 1g of EPA and DHA omega-3 fatty acid supplements *may* be recommended for secondary prevention).

In contrast, imperative recommendations "require," or "must," or "should achieve certain goals," but do not contain conditional text that would limit their applicability to specified circumstances. (e.g., Portion control should be included as part of a comprehensive weight management program. Portion control at meals and snacks results in reduced energy intake and weight loss).

Levels of Evidence

Strength of Evidence Elements	Grade I Good/Strong	Grade II Fair	Grade III Limited/Weak	Grade IV Expert Opinion Only	Grade V Grade I Assigna
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Strength of Evidence Elements	Grade I Good/Strong	Grade II Fair	Grade III Limited/Weak	Grade IV Expert Opinion Only	Grade V Expert Opinion Only
Quality <ul style="list-style-type: none"> Scientific rigor/validity Considers design and execution 	Studies of strong design for question Free from design flaws, bias and execution problems	Studies of strong design for question with minor methodological concerns OR Only studies of weaker study design for question	Studies of weak design for answering the question OR Inconclusive findings due to design flaws, bias or execution problems	No studies available Conclusion based on usual practice, expert consensus, clinical experience, opinion, or extrapolation from basic research	No evidence that pertains to question being addressed
Consistency Of findings across studies	Findings generally consistent in direction and size of effect or degree of association, and statistical significance with minor exceptions at most	Inconsistency among results of studies with strong design OR Consistency with minor exceptions across studies of weaker designs	Unexplained inconsistency among results from different studies OR Single study unconfirmed by other studies	Conclusion supported solely by statements of informed nutrition or medical commentators	NA
Quantity <ul style="list-style-type: none"> Number of studies Number of subjects in studies 	One to several good quality studies Large number of subjects studies Studies with negative results having sufficiently large sample size for adequate statistical power	Several studies by independent investigators Doubts about adequacy of sample size to avoid Type I and Type II error	Limited number of studies Low number of subjects studies and/or inadequate sample size within studies	Unsubstantiated by published studies	Relevant studies have not been done
Clinical Impact	Studied	Some doubt	Studies	Objective data	Indicate

Strength of Evidence Elements	Grade I Good/Strong	Grade II Fair	Grade III Limited/Weak	Grade IV Expert Opinion Only	Grade V Grade I Assignment
<ul style="list-style-type: none"> • Importance of studies outcomes • Magnitude of effect 	<p>outcome relates directly to the question</p> <p>Size of effect is clinically meaningful</p> <p>Significant (statistical) difference is large</p>	<p>about the statistical or clinical significance of effect</p>	<p>outcome is an intermediate outcome or surrogate for the true outcome of interest</p> <p>OR</p> <p>Size of effect is small or lacks statistical and/or clinical significance</p>	<p>unavailable</p>	<p>area for future research</p>
<p>Generalizability</p> <p>To population of interest</p>	<p>Studied population, intervention and outcomes are free from serious doubts about generalizability</p>	<p>Minor doubts about generalizability</p>	<p>Serious doubts about generalizability due to narrow or different study population, intervention or outcomes studied</p>	<p>Generalizability limited to scope of experience</p>	<p>NA</p>

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Criteria for Recommendation Rating

Statement Rating	Definition	Implication for Practice
Strong	<p>A Strong recommendation means that the workgroup believes that the benefits of the recommended approach clearly exceed the harms (or that the harms clearly exceed the benefits in the case of a strong negative recommendation), and that the quality of the supporting evidence is excellent/good (grade I or II)*. In some clearly identified circumstances, strong</p>	<p>Practitioners should follow a Strong recommendation unless a clear and compelling rationale for an alternative approach is present.</p>

Statement Rating	Definition	Implication for Practice
	recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.	
Fair	A Fair recommendation means that the workgroup believes that the benefits exceed the harms (or that the harms clearly exceed the benefits in the case of a negative recommendation), but the quality of evidence is not as strong (grade II or III)*. In some clearly identified circumstances, recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits outweigh the harms.	Practitioners should generally follow a Fair recommendation but remain alert to new information and be sensitive to patient preferences.
Weak	A Weak recommendation means that the quality of evidence that exists is suspect or that well-done studies (grade I, II, or III)* show little clear advantage to one approach versus another.	Practitioners should be cautious in deciding whether to follow a recommendation classified as Weak , and should exercise judgment and be alert to emerging publications that report evidence. Patient preference should have a substantial influencing role.
Consensus	A Consensus recommendation means that Expert opinion (grade IV)* supports the guideline recommendation even though the available scientific evidence did not present consistent results, or controlled trials were lacking.	Practitioners should be flexible in deciding whether to follow a recommendation classified Consensus , although they may set boundaries on alternatives. Patient preference should have a substantial influencing role.
Insufficient Evidence	An Insufficient Evidence recommendation means that there is both a lack of pertinent evidence (grade V)* and/or an unclear balance between benefits and harms.	Practitioners should feel little constraint in deciding whether to follow a recommendation labeled as Insufficient Evidence and should exercise judgment and be alert to emerging publications that report evidence that clarifies the balance of benefit versus harm. Patient preference should have a substantial influencing role.

*Conclusion statements are assigned a grade based on the strength of the evidence. Grade I is good; grade II, fair; grade III, limited; grade IV signifies expert opinion only and grade V indicates that a grade is not assignable because there is no evidence to support or refute the conclusion. The evidence and these grades are considered when assigning a rating (Strong, Fair, Weak, Consensus, Insufficient Evidence - see chart above) to a recommendation.

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CLINICAL ALGORITHM(S)

The following algorithms are provided in the original guideline document:

- Heart failure nutrition guideline
- Heart failure nutrition assessment
- Heart failure nutrition diagnosis
- Heart failure nutrition intervention
- Heart failure nutrition monitoring and evaluation

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

The guideline contains conclusion statements that are supported by evidence summaries and evidence worksheets. These resources summarize the important studies (randomized controlled trials [RCTs], clinical studies, observational studies, cohort and case-control studies) pertaining to the conclusion statement and provide the study details.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

The primary goal of implementing these recommendations includes improving the percentage of individuals who are able to meet their nutritional needs while following a sodium and fluid restricted diet plan, reducing the incidence of decompensation and hospitalization, and positively impacting the patient's quality of life.

POTENTIAL HARMS

Overall Risk/Harm Considerations

When using these treatment recommendations:

- Use clinical judgment when evaluating patients with comorbid conditions. Such conditions may include: acute or chronic renal insufficiency, chronic renal failure, diabetes, metabolic diseases, coronary artery disease, cardiac

arrhythmias, hypertension, psychiatric disorders, food allergies, and HIV/AIDS.

- Review the patient's age, socioeconomic status, cultural issues and other health conditions.
- Consider a referral to social services to assist patients with financial arrangements if economic issues are a concern.

Recommendation Specific Risks/Harms

Protein and Energy Needs

In the decompensated (fluid overload, shortness of breath) patient, the healthcare provider should be cautious of fluid levels, interpretation of albumin and renal insufficiency. Excess fluid could cause albumin levels to appear lower than actual resulting in an overestimation of protein needs. Diuretic use and fluid restriction may contribute to acute renal insufficiency, therefore limiting protein may not be warranted.

Sodium and Fluid Restriction

One potential risk of a fluid and sodium restricted diet is elevated blood urea nitrogen (BUN) and creatinine. If these parameters are elevated, the patient may be hypovolemic and alterations in diuretics, fluid and sodium intake should be considered.

Folate and Vitamin 12

Coronary artery disease (CAD) patients, not necessarily with heart failure, who have had a recent myocardial infarction (MI) or coronary stenting may have increased risk of restenosis with doses of:

- Folic acid: 0.8 to 1.2 mg per day when given with other vitamins. More research is warranted.
- Vitamin B12: 0.06 to 0.4 mg per day when given with other vitamins. More research is warranted.

Thiamine Supplementation

Mild adverse events (nausea and insomnia) were reported in the subjects taking thiamine supplements. Details regarding side-effects can be found in the worksheets and evidence summaries of the original guideline document.

Magnesium Supplementation

Mild adverse events (transient flushing, burning at the intravenous site, transient paresthesia) during the magnesium supplementation. Details regarding side-effects can be found in the worksheets and evidence summaries of the original guideline document.

Alcohol Use

Possible adverse effects of alcohol use:

- Fetal alcohol syndrome
- Hypertension
- Cardiac arrhythmia
- Sudden death
- Long-term consumption of 60 g alcohol per day (approximately 4 to 5 drinks) is associated with risk for strokes of all types
- Increases in serum triglyceride and very low-density lipoprotein (VLDL) cholesterol, resulting in increased risk for pancreatitis in some individuals
- Increased risk of automobile accident, trauma, and suicide

Carnitine

Adverse events associated with carnitine include nausea and minor gastrointestinal (GI) problems.

Coenzyme Q₁₀

Side effects include transient nausea, maculopapular rash, epigastric pain, dizziness, photophobia, and irritability.

Hawthorn

Side effects include dizziness and vertigo.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Clinical judgement is critical. Careful consideration should be given to the application of the recommendations in this guideline for patients classified as New York Heart Association (NYHA) class I and II, or those patients experiencing acute or chronic renal insufficiency.
- Practitioners should use additional resources in conjunction with the evidence analysis documents (in the original guideline document) for information regarding further potential side effects of these supplements. See the [Food and Drug Administration](#) for more information on the drugs listed below.
 - *Coenzyme Q₁₀*. Use caution in patients taking warfarin (Coumadin), as CoQ₁₀ is chemically similar to vitamin K and can decrease the effectiveness of warfarin.
 - *Hawthorn*. Use caution in patients taking beta-blockers and calcium channel blockers, as hawthorn may decrease blood pressure. Hawthorn in combination with digoxin or may increase the serum digoxin levels and increase the risk of side effects. Taking hawthorn with nitrates which increase blood flow may cause dizziness and lightheadedness.
- Contraindications to alcohol use include suspicion or history of alcohol abuse, liver failure, and pregnancy.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This nutrition practice guideline is meant to serve as a general framework for handling clients with particular health problems. It may not always be appropriate to use these nutrition practice guidelines to manage clients because individual circumstances may vary. For example, different treatments may be appropriate for clients who are severely ill or who have co-morbid, socioeconomic, or other complicating conditions. The independent skill and judgment of the health care provider must always dictate treatment decisions. These nutrition practice guidelines are provided with the express understanding that they do not establish or specify particular standards of care, whether legal, medical, or other.
- While the guideline represents a statement of best practice based on the latest available evidence at the time of publishing, they are not intended to overrule professional judgment. Rather, they may be viewed as a relative constraint on individual clinician discretion in a particular clinical circumstance.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The publication of this guideline is an integral part of the plans for getting the American Dietetic Association Medical Nutrition Therapy (ADA MNT) evidence-based recommendations on heart failure to all dietetics practitioners engaged in, teaching about, or researching heart failure as quickly as possible. National implementation workshops at various sites around the country and during the ADA Food Nutrition Conference Expo (FNCE) are planned. Additionally, there are recommended dissemination and adoption strategies for local use of the *ADA Heart Failure Evidence-Based Nutrition Practice Guideline*.

The guideline development team recommended multi-faceted strategies to disseminate the guideline and encourage its implementation. Management support and learning through social influence are likely to be effective in implementing guidelines in dietetic practice. However, additional interventions may be needed to achieve real change in practice routines.

Implementation of the Heart Failure guideline will be achieved by announcement at professional events, presentations and training. Some strategies include:

- **National and Local Events** – State dietetic association meetings, an ADA House of Delegates training session and media coverage will help promote the guideline
- **Local Feedback Adaptation** – Presentation by members of the work group at peer review meetings and opportunities for continuing education unites (CEUs) for courses completed
- **Education Initiatives** – The guideline and supplementary resources are freely available for use in the education and training of dietetic interns and

students in approved Commission on Accreditation of Dietetics Education (CADE) programs

- **Champions** – Local champions have been identified and expert members of the guideline team will prepare articles for publications. Resources are provided that include PowerPoint presentations, full guidelines, and pre-prepared case studies
- **Practical Tools** – Some of the tools that will be developed to help implement the guideline include specially designed resources such as clinical algorithms, slide presentation(s), training, and toolkits

Specific distribution strategies include:

Publication in Full – The guideline will be available electronically at the ADA Evidence Analysis Library website (www.adaevidencelibrary.com) and will be announced to all the ADA dietetic practice groups. The ADA website will also provide downloadable supporting information and links to relevant position papers.

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Dietetic Association (ADA). ADA heart failure: evidence-based nutrition practice guideline. Chicago (IL): American Dietetic Association (ADA); 2008. Various p. [162 references]

ADAPTATION

The levels of evidence were based on the grading system from: Greer N, Mosser G, Logan G, Wagstrom Halaas G. *A practical approach to evidence grading. Jt*

Comm. J Qual Improv. 2000; 26:700-712. In September 2004, The American Dietetic Association (ADA) Research Committee modified the grading system to this current version.

The grades of recommendation were adapted by the American Dietetic Association (ADA) from the American Academy of Pediatrics, Classifying Recommendations for Clinical Practice Guideline, Pediatrics. 2004;114;874-877.

DATE RELEASED

2008 Jul

GUIDELINE DEVELOPER(S)

American Dietetic Association - Professional Association

SOURCE(S) OF FUNDING

American Dietetic Association

GUIDELINE COMMITTEE

Heart Failure Evidence-Based Guideline Workgroup

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Workgroup Members: Toni Kuehneman, MS, RD, LMNT, *Chair*; Mark A. Dinga, MEd, RD, LDN; Patricia Davidson, MS, RD, CDE; Rita A. Frickel, MS, RD, LMNT; Mary Beth Russell, RD, LN, CDE; KC Wright, MS, RD, LD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, American Dietetic Association (ADA) has adopted the policy of revealing relationships workgroup members have with companies that sell products or services that are relevant to this topic. Workgroup members are required to disclose potential conflicts of interest by completing the ADA Conflict of Interest Form. It should not be assumed that these financial interests will have an adverse impact on the content, but they are noted here to fully inform readers.

None of the work group members listed above disclosed potential conflicts of interest.

GUIDELINE STATUS

This is the current release of the guideline.

The guideline will undergo a complete revision every three to five years.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [American Dietetic Association Web site](#).

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Executive summary of recommendations. Chicago (IL): American Dietetic Association; 2008. Available from the [American Dietetic Association Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on November 5, 2008. The information was verified by the guideline developer on December 9, 2008.

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