



Complete Summary

GUIDELINE TITLE

A guideline for the management of heart failure.

BIBLIOGRAPHIC SOURCE(S)

National Heart Foundation of New Zealand. A guideline for the management of heart failure: health professionals guide. Auckland (New Zealand): National Heart Foundation of New Zealand; 2001 Dec. 30 p. [44 references]

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SCOPE

DISEASE/CONDITION(S)

Congestive heart failure

GUIDELINE CATEGORY

Evaluation
Management
Treatment

CLINICAL SPECIALTY

Cardiology
Family Practice
Geriatrics
Internal Medicine

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To make recommendations relating to the management of patients with an established diagnosis of congestive heart failure
- To reduce morbidity and mortality from congestive heart failure
- To improve patients' understanding and satisfaction with their health care

TARGET POPULATION

Patients with congestive heart failure due to systolic ventricular dysfunction

Note: Patients with diastolic dysfunction are not included.

INTERVENTIONS AND PRACTICES CONSIDERED

Non-Pharmacological Management

1. Patient education, including one-to-one patient counseling
2. General counseling regarding the nature of heart failure, drug regimens, diet, symptoms or worsening heart failure and what to do if these symptoms occur, and prognosis.
3. Smoking cessation
4. Vaccination against influenza and pneumococcal disease
5. Activity, such as rehabilitative exercise training
6. Dietary changes, including sodium and fluid intake restrictions
7. Alcohol restrictions
8. Removing barriers to non-compliance through discussion and support
9. Patient self-management plans

Pharmacological Treatment/Management

1. Angiotensin-converting enzyme (ACE) inhibitors, such as captopril, enalapril, cilazapril, quinapril
2. Diuretics, including loop or thiazide diuretics, such as bendrofluazide, furosemide
3. Beta-blockers, such as metoprolol, carvedilol
4. Spironolactone
5. Digoxin
6. Angiotensin II (AII) antagonists, such as losartan
7. Anticoagulation with warfarin
8. Aspirin

Other Treatments

1. Cardioversion
2. Coronary Artery Bypass Grafting (CABG)

Specialist Referral

MAJOR OUTCOMES CONSIDERED

- Change in functional capacity and symptoms
- Morbidity and mortality associated with congestive heart failure
- Hospital admissions
- Survival
- Disease progress
- Cardiovascular events (e.g., myocardial infarction)

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

A systematic search of the external literature was undertaken to identify explicitly developed evidence based guidelines on the management of heart failure.

Areas requiring further review and evaluation of the external evidence were identified on the basis of the strength of the evidence backing current recommendations (recommendations with less strong evidence were selected) or areas where there was identifiable new evidence.

The following topics were selected for further review of the external evidence:

- The management of atrial fibrillation
- The role of anticoagulation in heart failure
- The role of amiodarone in heart failure
- The role of beta blockers in heart failure
- The role of digoxin in heart failure
- The effectiveness and role of patient education
- The effectiveness of interventions to improve patient compliance
- The effectiveness and role of exercise in heart failure

Each review included a systematic Medline search of the literature by medical librarians.

In April 2000 the guideline team selected topics for which there was consensus that significant new evidence was available. These were:

- The role of beta-blockers
- The optimal dose of ACE inhibitors
- The role of angiotensin II antagonists
- The role of spironolactone
- The effectiveness of patient held action plans

A systematic search of the literature to April 2000 was undertaken and evidence reviewed as the original guideline process. Two further large-scale randomized controlled trials (RCTs) of the effects of beta-blockers in patients with heart failure were published in 2001 and have been included because of the importance of these data.

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

The quality-rating scale, described by AHCPR (Agency for Health Care Policy and Research, now known as the Agency for Healthcare Research and Quality [AHRQ]), 1994, was used.

Seven levels were used:

- I. Evidence from large, well-conducted RCTs
- II. Evidence from small, well-conducted RCTs
- III. Evidence from well-conducted cohort studies
- IV. Evidence from well-conducted case-control studies
- V. Evidence from uncontrolled or poorly controlled studies
- VI. Conflicting evidence, but tending to favour the recommendation
- VII. Expert opinion

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

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

A. Good evidence:

Evidence from well-conducted RCTs or cohort studies (Levels I-III)

B. Fair evidence:

Evidence from other types of studies (Levels IV-VI)

C. Expert opinion:

(Level VII)

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft guideline was written by the guideline team and subjected to peer review by the Goodfellow Unit, Division of General Practice and Primary Health Care, University of Auckland, the Royal New Zealand College of General Practitioners, and members of the Heart Foundation Heart Failure Guideline Committee. The review confined itself to issues of format, presentation and utility, not issues of evidence.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Excerpted by the National Guideline Clearinghouse (NGC)

The strength evidence grading (A-C) is defined at the end of the "Major Recommendations" field.

Non-Pharmacological Management

Effective Patient Education

Educational interventions, including one to one patient counseling, improve patient compliance and outcomes. (Strength of evidence = B) (Rosenberg, 1971; Mullen, 1985)

Vaccination

Practitioners should recommend that patients receive vaccination against influenza and pneumococcal disease. (Strength of evidence = C)

Activity

Rehabilitative exercise training in patients with heart failure and moderate-to-severe left ventricular systolic dysfunction improves functional capacity and symptoms. (Strength of evidence = A)

Diet

Dietary sodium should be restricted to as close to 2 grams per day as possible. In no case should sodium intake exceed 3 grams daily. (Strength of evidence = C)

Patients with heart failure should be advised to avoid excessive fluid intake. However, fluid restriction is not advisable unless patients develop hyponatremia. (Strength of evidence = C)

Alcohol

Alcohol use should be discouraged. Patients who drink alcohol should be advised to consume no more than one drink per day or, if suffering from alcohol related cardiomyopathy, abstain altogether. (Strength of evidence = C)

The Problem of Non-compliance

Practitioners should be attuned to the problem of non-compliance and its causes. They should discuss the importance of compliance at follow-up visits and assist patients in removing barriers to compliance (e.g. cost, side effects, or complexity of the medical treatment regimen). (Strength of evidence = B)

Pharmacologic Treatment

Angiotensin-Converting Enzyme Inhibitors

All patients with heart failure due to systolic dysfunction should be considered for treatment with an angiotensin-converting enzyme (ACE) inhibitor in appropriate doses. (Strength of evidence = A) (The CONSENSUS Trial Study Group, 1987; The SOLVD Investigators, 1991)

Diuretics

Patients with heart failure and clinical signs of fluid overload should be started on a diuretic. (Strength of evidence = B)

Beta-Blockers

Beta-blockers should be considered for all patients with heart failure due to systolic dysfunction (low ejection fraction) who have mild to moderate symptoms and are clinically stable. The aim of treatment is to improve survival and reduce hospitalisations. (Strength of evidence = A) (Doughty et al., 1997; CIBIS-II Investigators and Committees, 1999; MERIT-HF Study Group, 1999; Packer et al., 2001; The Beta-Blocker Evaluation of Survival Trial Investigators, 2001)

Spironolactone

Patients with severe heart failure (New York Heart Association classification III or IV, and who have been class IV within the last 6 months) should be considered for the addition of spironolactone 25mg daily to existing therapy (including ACE inhibitors). (Strength of evidence = A) (Pitt et al., 1999)

Digoxin

Digoxin should be considered for all patients with heart failure who are in atrial fibrillation. (Strength of evidence = B)

Digoxin should be considered for patients with heart failure who remain symptomatic despite treatment with ACE inhibitor and diuretics, with the aim of improving symptoms and preventing further clinical deterioration. (Strength of evidence = A) (Jaeschke, Oxman, & Guyatt, 1990; The Digitalis Investigation Group, 1997)

Angiotensin II Antagonists

Angiotensin II (AII) antagonists should be considered for patients intolerant of ACE inhibitors. (Strength of evidence = C)

Anticoagulation

Routine anticoagulation is not recommended for all patients with heart failure. Long-term anticoagulation with warfarin should be considered in patients with concurrent atrial fibrillation (international normalized ratio [INR] 2.0-3.0). (Strength of evidence = A) (Atrial Fibrillation Investigators, 1994; Prystowsky et al., 1996)

Anticoagulation with warfarin should be considered in patients with a history of systemic or pulmonary emboli, documented left ventricular thrombus (optimal range for anticoagulation in these groups has not been ascertained, consider using INR 2.0-3.0). (Strength of evidence = C)

Aspirin

Patients with underlying coronary artery disease or concomitant peripheral vascular or cerebrovascular disease should be treated with low-dose aspirin (eg 75-150 mg daily) to prevent further vascular events. (Strength of evidence = A)

Co-prescribing

Certain drugs interact adversely with the primary therapeutic agents for congestive heart failure or are poorly tolerated. Vigilance should be exercised in all prescribing. The following groups of drugs should be used cautiously or avoided altogether:

- Non-steroidal anti-inflammatory drugs (NSAIDS)
- Calcium channel blockers (with the exception of amlodipine and felodipine)

- Corticosteroids
- Tricyclic antidepressants
- Carbenoxolone
- Urinary alkalinisers (high sodium content)

Concomitant Conditions

Atrial Fibrillation

- In patients with atrial fibrillation anticoagulate with warfarin to prevent thromboembolism (INR 2.0-3.0). (Strength of evidence = A)
- Consider the need for cardioversion (will require specialist referral for cardioversion).
- Continue anticoagulation for a further 6-12 months while monitoring for recurrence. If atrial fibrillation persists consider long-term therapy with amiodarone. (Strength of evidence = C)

Ischaemic Heart Disease

Patients with congestive heart failure and ischaemic heart disease, and who do not have contraindications to bypass surgery, should have the risks and benefits of coronary artery surgery considered. This will usually require a specialist cardiology assessment.

Coronary artery bypass grafting (CABG) improves survival in patients with moderate (LVEF 35-50%) heart failure due to ischaemic heart disease. (Level of evidence = A) (Passamani et al., 1985)

CABG surgery improves survival, New York Heart Association class and angina in selected patients with severe (LVEF <30%) heart failure. (Level of evidence = B)

Criteria for Specialist Referral

Many patients with heart failure are elderly and have multiple concomitant medical conditions in whom extensive investigation may not be appropriate. Recommendations regarding the criteria for specialist referral cannot be based on evidence from randomised controlled trials as the interventions evaluated in such trials usually refer to subsets of patients with established diagnosis. Consequently, the recommendations for referral, below, are based on consensus from this guidelines group (with outside consultation). Clinicians should rely on their clinical judgment and when in doubt should err on the side of referral.

There are certain patients who may benefit from consideration of further investigation. Of particular note are:

- The onset of heart failure in younger patients (in whom transplantation may be considered)
- Those whose history suggests severe ischaemia or significant valvular disease where further investigation and intervention (such as angioplasty or surgery) may be indicated

In these cases, specialist referral is recommended.

Specialist referral may also be considered in the following situations where:

- The diagnosis is uncertain
- The aetiology is uncertain
- Arrhythmia (either supra-ventricular, ventricular or at times atrial fibrillation) are apparent
- In those with sudden onset of heart failure
- When beta-blocker treatment is being considered
- Those who have an inadequate response to treatment
- When the indication for anticoagulation is uncertain

The recommendations for specialist referral should not delay initiation of appropriate treatment for patients with symptomatic heart failure.

Definitions:

The classification scheme for the guideline document was then simplified into a three-level system for strength of evidence:

A. Good evidence:

Evidence from well-conducted RCTs or cohort studies (Levels I-III)

B. Fair evidence:

Evidence from other types of studies (Levels IV-VI)

C. Expert opinion:

(Level VII)

Seven levels were used:

- I. Evidence from large, well-conducted RCTs
- II. Evidence from small, well-conducted RCTs
- III. Evidence from well-conducted cohort studies
- IV. Evidence from well-conducted case-control studies
- V. Evidence from uncontrolled or poorly controlled studies
- VI. Conflicting evidence, but tending to favour the recommendation
- VII. Expert opinion

CLINICAL ALGORITHM(S)

Algorithms are provided in the companion document to the original guideline for (1) diagnosis and (2) treatment of chronic heart failure.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

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

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

The aim of this guideline is to reduce morbidity and mortality from congestive heart failure. It is also hoped that patients' understanding and satisfaction with their health care will be improved. Outcomes predicted are increased survival and reduced morbidity as represented by either functional scores or by hospital admission.

POTENTIAL HARMS

Angiotensin-Converting Enzyme (ACE) Inhibitor

Hypotension may occur after the first dose of ACE inhibitor especially if there is pre-existing hypotension, hyponatremia, or over-diuresis. Monitor blood pressure, K⁺, and renal function (at least weekly initially).

Diuretics

Profound diuresis may ensue when a thiazide is used in combination with loop diuretics to treat resistant oedema. Use extreme caution.

Diuretics and ACE Inhibitors

- Volume depletion from over-diuresis may increase the risk of first-dose hypotension when starting ACE inhibitor therapy, therefore it is very important to avoid excessive diuresis prior to starting ACE inhibitor therapy.
- Serious hyperkalaemia can occur if potassium-sparing diuretics are used in combination with ACE inhibitors. This combination should only be used under careful supervision.

Beta-blockers

There is a potential for adverse effects of beta-blockers, particularly during initiation of therapy.

- Dizziness (common with the vasodilating beta-blockers such as carvedilol, often decreases if persist with treatment)
- Hypotension – usually a sign of intolerance (decrease dose or stop)
- Worsening heart failure – mainly increasing congestion. Manage by increasing diuretics and continuing beta-blocker if possible
- Heart block (should be checked for prior to starting treatment)

Spironolactone

10% of patients in one study experienced gynaecomastia or breast pain.

Digoxin

Signs of digoxin toxicity include confusion, nausea, anorexia, visual disturbance, and either tachy- or bradyarrhythmias

Anticoagulants

Bleeding complications (an international normalized ratio [INR] of 2.0 to 3.0 provides a reasonable balance between reducing the risk of thromboembolism and minimising potential for bleeding complications.)

Subgroups Most Likely to be Harmed:

Digoxin toxicity is most likely to occur in:

- Elderly patients
- Patients taking drugs that increase plasma digoxin levels, for example: amiodarone, diltiazem, verapamil, antibiotics, and quinidine

Anticoagulation risk of serious bleeding is more likely in patients:

- Susceptible to falls
- Those with a previous history of gastro-intestinal haemorrhage
- Those with impaired liver function
- Those who are unable to participate in the monitoring required

CONTRAINDICATIONS

CONTRAINDICATIONS

Contraindications to Angiotensin-Converting Enzyme (ACE) Inhibitors

- Prior ACE inhibitor intolerance
- Symptomatic hypotension
- Angioedema
- K^+ >5.5 mmol/l
- Creatinine >0.25 mmol/l (some patients with renal failure may tolerate an ACE inhibitor but specialist referral is recommended)

Contraindications to Beta-blockade

- Asthma
- Heart block (in the absence of a permanent pacemaker)

Contraindications to Spironolactone

- Serum creatinine >0.25 mmol/l
- Potassium >5.0 mmol/l

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

National Heart Foundation of New Zealand. A guideline for the management of heart failure: health professionals guide. Auckland (New Zealand): National Heart Foundation of New Zealand; 2001 Dec. 30 p. [44 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1996 (revised 2001 Dec)

GUIDELINE DEVELOPER(S)

National Heart Foundation of New Zealand - Disease Specific Society
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SOURCE(S) OF FUNDING

A one off grant by Merck Sharp & Dohme sponsored the initial guideline development process. Expenditure of the grant was at the discretion of the guideline team, such expenditure being for the purposes of developing the guideline. Any funds remaining at the end of the project were returned to the sponsor. No team member, except the MSD representative, received any remuneration from the sponsor. Printing of the revised guideline was supported by Merck Sharp & Dohme and Roche.

GUIDELINE COMMITTEE

Heart Foundation Heart Failure Guideline Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Guideline Team Members: Dr Rob Doughty, Co-chair, Fellow of the New Zealand Guidelines Group, Heart Foundation BNZ Senior Fellow, University of Auckland; Dr Peter Didsbury, Co-chair, Director ProCare Health Limited, Member of the Advisory Group to the New Zealand Guidelines Group, GP, Manurewa, Auckland; Dr Arthur Coverdale, Cardiologist, Greenlane Hospital; Dr Peter Gow, Director Clinical Services, South Auckland Health; Dr James Kriechbaum, GP, Member of ProCare, Penrose; Dr Douglas Gillanders, GP, Glendowie, Director of ProCare Central; Dr David Woolner, Medical Director, Merck, Sharp and Dohme Ltd; Dr Jocelyn Tracey, GP and Professional Development Facilitator, South Med; Dr Andrew Kerr, Cardiologist, South Auckland Health

The Heart Foundation Heart Failure Guideline Committee: Professor Hamid Ikram (chair); Dr. Sandra Hicks; Professor Gary Nicholls; Professor Norman Sharpe; Dr. Larry Skiba; Professor Harvey White

Heart Foundation staff: Dr Diana North, Dr Boyd Swinburn, Mrs Pip Mason, Dr Mary Seddon

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

No team member, except the Merck Sharp and Dohme (MSD) representative, received any remuneration from the sponsor.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: National Heart Foundation of New Zealand. A guideline for the management of heart failure: health professionals guide. Auckland (New Zealand): National Heart Foundation of New Zealand; 1996.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [New Zealand Guideline Group Web site](#).

Print copies: Available from New Zealand Heart Foundation, 9 Kalmia Street, Ellerslie, P.O. Box 17160, Greenlane, Auckland 1130; Phone: 64 (9) 571 9191; Fax: 64 (9) 571-9190; Email: Info@nhf.org.nz.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- New Zealand guideline for the management of chronic heart failure. Treatment algorithm. Auckland (New Zealand): National Heart Foundation of New Zealand; 2001 Dec. 1 p.
- New Zealand guideline for the management of chronic heart failure. Diagnostic algorithm. Auckland (New Zealand): National Heart Foundation of New Zealand; 2001 Dec. 30 p.

Electronic copies: Available from the [New Zealand Guideline Group Web site](#).

Print copies: Available from New Zealand Heart Foundation, 9 Kalmia Street, Ellerslie, P.O. Box 17160, Greenlane, Auckland 1130; Phone: 64 (9) 571 9191; Fax: 64 (9) 571-9190; Email: Info@nhf.org.nz.

PATIENT RESOURCES

The following is available:

- A patient guide to living with heart failure. Auckland (New Zealand): National Heart Foundation of New Zealand; 2002. 21 p.

Print copies: Available from New Zealand Heart Foundation, 9 Kalmia Street, Ellerslie, P.O. Box 17160, Greenlane, Auckland 1130; Phone: 64 (9) 571 9191; Fax: 64 (9) 571-9190; Email: Info@nhf.org.nz.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This NGC summary was completed by ECRI on January 17, 2003. The information was verified by the guideline developer on February 12, 2003.

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Date Modified: 11/15/2004

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