Complete Summary

GUIDELINE TITLE

Coronary heart disease (CHD): symptoms, diagnosis and treatment.

BIBLIOGRAPHIC SOURCE(S)

Finnish Medical Society Duodecim. Coronary heart disease (CHD): symptoms, diagnosis and treatment. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2008 Mar 20 [Various]. [18 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Finnish Medical Society Duodecim. Coronary heart disease (CHD): symptoms, diagnosis and treatment. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2007 Apr 22 [Various].

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- February 28, 2008, Heparin Sodium Injection: The U.S. Food and Drug Administration (FDA) informed the public that Baxter Healthcare Corporation has voluntarily recalled all of their multi-dose and single-use vials of heparin sodium for injection and their heparin lock flush solutions. Alternate heparin manufacturers are expected to be able to increase heparin production sufficiently to supply the U.S. market. There have been reports of serious adverse events including allergic or hypersensitivity-type reactions, with symptoms of oral swelling, nausea, vomiting, sweating, shortness of breath, and cases of severe hypotension.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Stable angina pectoris
- Coronary heart disease (CHD)

GUIDELINE CATEGORY

Diagnosis
Evaluation
Prevention
Risk Assessment
Treatment

CLINICAL SPECIALTY

Cardiology
Critical Care
Emergency Medicine
Family Practice
Internal Medicine
Pharmacology
Thoracic Surgery

INTENDED USERS

Health Care Providers
Physicians

GUIDELINE OBJECTIVE(S)

Evidence-Based Medicine Guidelines collect, summarize, and update the core clinical knowledge essential in general practice. The guidelines also describe the scientific evidence underlying the given recommendations.

TARGET POPULATION

Persons with suspected or confirmed stable angina and coronary heart disease

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation/Diagnosis

1. Clinical assessment
    - Signs and symptoms
        - Chest pain: typical, atypical
        - Classification of angina
    - Medical history
    - Physical examination
    - Electrocardiogram
    - Exercise stress test, exercise tolerance test
    - Laboratory tests: serum lipids, plasma glucose, blood chemistry, cardiac enzymes (troponins I and T)
    - Imaging studies
        - Chest x-ray
        - Radionuclide scan
        - Exercise echocardiogram
        - Coronary angiogram
    - Diagnostic problems in women: premenopausal and menopausal women

Treatment/Management

1. Risk factor reduction
    - Smoking, cholesterol, weight
    - Diet
    - Hormone replacement therapy
2. Pharmacotherapy
    - Beta blockers
    - Antiplatelet agents
        - Aspirin
        - Clopidogrel
    - Angiotensin converting enzyme inhibitors
    - Calcium channel blockers
    - Long-acting nitrates
3. Revascularization
    - Percutaneous transluminal coronary angioplasty
    - Coronary artery bypass graft surgery
4. Stable angina
5. ST elevation myocardial infarction (STEMI)
6. Non-ST elevation myocardial infarction (NSTEMI) and unstable angina pectoris

MAJOR OUTCOMES CONSIDERED

- Exercise tolerance
- Stent thrombosis and restenosis rate
- Coronary events
- Mortality rate

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

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

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The evidence reviewed was collected from the Cochrane database of systematic reviews and the Database of Abstracts of Reviews of Effectiveness (DARE). In addition, the Cochrane Library and medical journals were searched specifically for original publications.

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

Classification of the Quality of Evidence

Code	Quality of Evidence	Definition
A	**High**	Further research is very unlikely to change our confidence in the estimate of effect. • Several high-quality studies with consistent results • In special cases: one large, high-quality multi-centre trial
B	**Moderate**	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate. • One high-quality study • Several studies with some limitations
C	**Low**	Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate. • One or more studies with severe limitations
D	**Very Low**	Any estimate of effect is very uncertain.

Code	Quality of Evidence	Definition
		• Expert opinion • No direct research evidence • One or more studies with very severe limitations

GRADE (Grading of Recommendations Assessment, Development and Evaluation) Working Group 2007 (modified by the EBM Guidelines Editorial Team).

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

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

Not applicable

COST ANALYSIS

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

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence [A-D] supporting the recommendations are defined at the end of the "Major Recommendations" field.

Basic Rules

- Patient history, clinical examination, assessment of risk factors and exercise stress test are usually sufficient for clinical diagnosis of stable angina pectoris.
- The exercise test is also required to assess the severity of the disease, sometimes to monitor the treatment response, and to assess the patient's working capacity.
- The diagnosis may in some cases be further confirmed by the observed response to the prescribed drug therapies.
- The treatment of coronary heart disease (CHD) consists of alleviation of symptoms with pharmacological treatment and, if necessary, with invasive interventions, and of careful management of risk factors.
    - Optimal treatment with drugs and lifestyle changes is crucial for the prognosis. The primary role of invasive interventions is in alleviating the symptoms.

Clinical Manifestations of CHD

- Chest pain on physical exertion is the most common presentation of angina pectoris.
- Other disease manifestations are dyspnoea or collapse on exertion, arrhythmias, unstable angina, acute or chronic heart failure, myocardial infarction, and sudden death.

Symptoms and Clinical Diagnosis

- For differential diagnosis of chest pain, see the Finnish Medical Society Duodecim guideline "Differential Diagnosis of Chest Pain."
- Stable angina is a clinical diagnosis which indicates the repeated occurrence of chest pain, induced by an exercise level typical for the patient. The pain is relieved by rest and shows no great daily variation; variation is typical for nonischaemic chest pain.
- Typical angina pain
    - Is precipitated on exertion
    - Becomes worse as the exertion continues
    - Is felt across a wide area in the middle of the chest (not in the cardiac apex), is tight and constrictive in nature and makes the patient to slow down or stop the physical activity
    - May be transmitted to the neck, jaw, arms, epigastric region, or back
    - May become worse in cold weather, after a heavy meal, or during static work
    - Is relieved in a few minutes by rest or glyceryl trinitrate
- However, only about half of all patients have a typical presentation of the symptoms.
- Atypical angina
    - Is more common in female patients
    - Is felt as dyspnoea or fatigue and exhaustion on exertion
    - May have a burning character
- The patient's history of pain is more reliable for diagnosis in men than in women aged less than 50 years. The probability of CHD in males over 55 with typical symptoms is 90%.

- Classification of chest pain (Canadian Cardiovascular Society [CCS] -- corresponds to the previously used New York Heart Association [NYHA] classification) (see Table 1 in the original guideline document)
- Nocturnal chest pain is, in most cases, a symptom of gastro-oesophageal reflux.
- The pain is usually induced by predictable levels of exercise when the rate-pressure product exceeds the patient's individual threshold. However, in some patients exercise tolerance may vary to some degree, but in general, totally asymptomatic days are rare. Large variations are typical of non-ischaemic pain.
- The pain may also be precipitated by mental stress as this causes rate-pressure product increases.
- The pain may be triggered by rapid onset of walking. After warming up, the patient can again "walk through his angina."
- The transmission of pain does not vary.
- After more intense exercise the pain may remain for 15 minutes. More prolonged pain should be considered as myocardial infarction or delayed recovery from an ischaemic insult (stunning).

Atypical Chest Pain Not Suggestive of Coronary Heart Disease (CHD)

- Appears also at rest
- Exercise tolerance is good despite pain
- Continues for hours or days
- Is associated with breathing or chest wall movements
- Is sharp in character
- Is displaced laterally towards the apex
- May be felt on palpation
- Is experienced as palpitations or occasional ectopic beats
- Is felt in the upper abdominal region or below the left costal arch
- Is not relieved with glyceryl trinitrate within a few minutes

Investigations

Physical Examination

- In most patients, physical examination is totally normal.
- Listen for systolic bruit: CHD patients often have concomitant carotid disease or generalised arteriosclerotic disease.
- S3 and a soft mitral regurgitant murmur are signs of impaired cardiac function. They may also be a transient functional effect of prolonged ischaemia or may only be audible during exercise. The auscultation of S3 is difficult.

Electrocardiogram (ECG)

- The ECG is usually normal at rest.
- ST-T changes are a sensitive finding but nonspecific.
- Slightly prolonged (<0.24 sec) PR interval is common.
- Left bundle branch block (LBBB) may be suggestive of CHD, hypertrophy, or myocardial disease.
- Q-wave as a sign of a prior myocardial infarction is suggestive of CHD.

- A reversible ST segment depression, which appears during pain and disappears as the pain subsides is strong evidence for CHD.
- Silent ischaemia (= ST depression) may be revealed during exercise test, during Holter registration or in hospital during cardiac monitoring (during myocardial infarction dynamic analysis [MIDA] and telemetry). As regards prognosis, it has similar clinical significance as symptomatic ischemia (Tresch, 1995) [**B**]. Silent ischemia is more common than symptomatic ischaemia. It can be assessed by MIDA monitoring in hospital.

Laboratory Investigations

- Risk factor investigations: serum lipids (Institute for Clinical Systems Improvement (ICSI), 2003; Health Technology Assessment database, 2004) [**A**], plasma glucose and basic blood picture.
- Glucose tolerance test if there is a suspicion of metabolic syndrome (see the Finnish Medical Society Duodecim guideline "Metabolic Syndrome"). A 2-hour glucose tolerance test should be performed in all patients who have survived a myocardial infarction and who have no diagnosis of diabetes established earlier.

Exercise Test

- Exercise stress test or exercise tolerance test (ETT) is very often required for the confirmation of the diagnosis and for the assessment of disease severity. For details, see the Finnish Medical Society Duodecim guideline "Exercise Stress Test."

Imaging Studies

Chest X-Ray

Heart size, pulmonary congestion, signs of heart failure, valvular calcification, and other causes of chest pain

Radionuclide Imaging

- The sensitivity is higher than, but the specificity is equal to, that of the exercise test.
- May be used when
    - The exercise test is normal and still the disease is very probable
    - The patient is physically handicapped
    - An abnormality in the ECG interferes with the interpretation of the exercise test.

Exercise Echocardiography

- Ischaemia induces myocardial wall motion abnormalities, which can be detected with sensitive imaging equipment. More sensitive and accurate than exercise test but an experienced operator is required.
- May be used when there are abnormalities in the ECG that interfere with the interpretation of exercise test (e.g., LBBB)

Coronary Angiography

- For indications, see the Finnish Medical Society Duodecim guideline "Diagnostic Coronary Angiography."

Special Diagnostic Problems in Women

- In women, CHD is diagnosed on average 10 years later than in men. The incidence of CHD is clearly increased after menopause. In the age of 70 to 79 years, the difference between women and men in the morbidity and mortality due to CHD is levelled out.
- The risk factors of CHD are similar in both sexes. Women who develop CHD before menopause have more risk factors than those who develop the disease at a later age.
- It is more difficult to settle the diagnosis of CHD in women than in men.
    - The symptoms are different: in women, angina pectoris symptoms are more often atypical and may also present only as dyspnoea, exhaustion, malaise or nausea on exertion.
    - On the other hand, CHD is diagnosed in only every second premenopausal woman with typical angina pain.
    - After menopause, the diagnostic accuracy of symptoms is clearly increased. In women at the age of 65-70 years, the diagnostic accuracy of angina pectoris symptom is similar to men.
- The diagnostic specificity of chest pain in premenopausal women is low unless the pain is clearly typical angina pain.
    - In typical angina, the pain or dyspnoea appear only on exertion.
    - Only about half of the women with typical angina pain have a significant CHD.
    - Premenopausal women complain of chest pain more often than men. The pain is usually atypical (i.e., appears in rest or is multiform).
    - In old age, the diagnostic specificity of the symptoms becomes as high as in males (90%).
- The predictive value of exercise test (see the Finnish Medical Society Duodecim guideline "Exercise Stress Test") is worse in women. The number of false-positive test results is high in premenopausal women.
    - Ischaemic ST-segment depression that appears at a low heart rate and lasts several minutes after the end of exertion is suggestive of a significant CHD.
    - If the targeted maximum heart rate is reached and no ST segment changes appear, the probability of a significant CHD is low.
    - A slight, upsloping ST segment depression that occurs at a high heart rate and rapidly disappears in rest is a typical false positive finding.
    - In problematic cases, further investigations are indicated (myocardial perfusion study, coronary angiography).
- Before menopause, the specificity of radionuclide imaging may be higher than that of the conventional exercise test.

Treatment of CHD Risk Factors

- To improve prognosis, minimizing all risk factors to slow down the progress of atherosclerosis and prevent myocardial infarction (MI) is valuable. Efficient secondary prevention usually includes aspirin, a beta-blocker, a statin, an

angiotensin-converting enzyme (ACE) inhibitor and discontinuation of smoking (Pyörälä, 1996; Heart Protection Study Collaborative Group, 2002; MIRACL. Pitt et al., 1999).

- Smoking should be stopped (Critchley & Capewell, 2003) [**C**]. The risk of an MI is 3-fold in smokers and even higher in women (Ounpuu et al., 2001). Alcohol consumption should be limited to moderate amounts.
- Hypertension should be treated. The target level of below 140/85 mmHg should always be achieved. The target in patients with diabetes is below 130/80 mmHg, especially if the diabetes is associated with renal complications.
- Effective reduction of hyperlipidaemia often requires the prescription of a statin. Target levels below are only meant as a guideline. Statins have an effect on endothelial dysfunction of coronary arteries (MIRACL. Pitt et al., 1999), as well as on the inflammatory reaction and thrombosis ("Randomised trial," 1994).
- Recommendations:
    - Serum cholesterol concentration below 4.5 mmol/L
    - Low-density lipoprotein (LDL) concentration below 2.5 mmol/L. Optimal level is below 2.0 mmol/L. According to the current scientific knowledge, drug therapy is almost always justified. In patients with diabetes and in high-risk patients, the target levels should be even lower (serum LDL <1.6 to 1.8 mmol/L).
    - Serum triglyceride concentration below 2 mmol/L
    - Serum cholesterol/serum high-density lipoprotein (HDL) below 4.0; serum HDL >1.0 mmol/L
    - See the Finnish Medical Society Duodecim guideline "Drug Treatment for Hyperlipidaemias" for details on relevant drug therapy.
- Treating obesity
    - Weight should be reduced to achieve a BMI less than 28 (or 25) and waist circumference less than 100 cm in men and 90 cm in women. Patients with abdominal obesity (high waist-to-hip ratio) are at a particularly high risk (Yusuf et al., 2005) [**B**].
    - Physical exercise
    - Regular exercise (see the Finnish Medical Society Duodecim guideline "Physical Activity in the Prevention, Treatment and Rehabilitation of Diseases") improves the sense of well being as well as prognosis, by reducing many risk factors (Taylor et al., 2004; Jolliffe et al., 2001) [**A**]. Physical activity also plays a part in primary prevention (Foster & Murphy, 2007)[**C**].
    - Abrupt and intensive physical strain should be avoided.
- Based on a randomised secondary prevention study (Heart and Estrogen/Progestin Replacement Study [HERS]) and a primary prevention study (Rossouw, et al., 2002) [**A**]), hormone replacement therapy offers no benefit.
- Antioxidant therapy with vitamin E had no beneficial effect in the HPS study (Heart Protection Study Collaborative Group, 2002), and neither did vitamins A and C.
- Inclusion of fish in the diet at least once every week or the use of omega 3 fatty acids have produced positive effects in secondary prevention and may be considered, even if there is no clear evidence that they would affect the prognosis (Hooper et al., 2004) [**C**].
- Folic acid (and vitamins B_6 and B_{12}) lower serum homocysteine concentration. According to current scientific knowledge, however, treatment of an increased

serum homocysteine concentration is of no benefit (Lonn et al., 2006; Bønaa, et al., 2006) [**A**].

Pharmacotherapy: Aims and Modes of Action

- Effective pharmacotherapy is usually sufficient treatment if the symptoms of CHD are only mild (Boden et al., 2007).
- Beta blockers lower the heart rate and blood pressure and thus decrease the oxygen consumption of the heart muscle on exertion. Beta-blockade is sufficient when the heart rate is down to 50 to 60 beats per minute (bpm) at rest.
    - Claudication is not a contraindication unless the ischaemia in the lower extremities is critical.
    - Beta blockers improve the prognosis at least in myocardial infarction survivors by decreasing the risk of reinfarction and sudden death by 10 to 30% (Freemantle et al., 1999). The prognosis is also improved in CHD patients with no prior history of myocardial infarction.
    - Beta blockers are the first line drugs in the treatment of arrhythmias of CHD patients as well.
- Aspirin inhibits thrombocyte adhesion and aggregation and thus reduces the risk of acute coronary events. Aspirin is recommended for all patients with CHD at a dose of 100 to 250 mg/day, unless it is contraindicated (Anti-thrombotic Trialists Collaboration, 2002). Patients allergic to aspirin may use clopidogrel.
    - Clopidogrel is used in the treatment of acute coronary syndromes, both in hospital and in continued treatment after the acute event. After insertion of a coronary stent, clopidogrel significantly decreases the incidence of stent thrombosis and should be included in the medication. The treatment is continued for 3 to 12 months depending on the situation.
    - Clopidogrel does not clearly improve prognosis in chronic CHD (Keller, Squizzato, & Middeldorp, 2007; Bhatt et al., 2006) [**B**].
- An ACE inhibitor should be included in the medication of patients who have a history of myocardial infarction or who have systolic left ventricular failure or diabetes. ACE inhibitor is also recommended for patients with CHD (Al-Mallah et al., 2006) [**A**] or other atherosclerotic vascular disease (Gibbons et al., 2003)
    - ACE inhibitors reduce symptoms and cardiac events that are associated with ischaemic cardiac insufficiency. It has been suggested that ACE inhibitors may in some way slow down the progress of atherosclerosis in the arterial walls.
- Statins reduce the rate of both myocardial infarctions and deaths in patients with CHD (Baigent et al., 2005; Dale et al., 2006; Costa et al.; 2006; Prospective Studies Collaboration, 2007)[**A**].
- Sublingual or aerosol nitrates that are classically used for acute episodes should also be used for prophylaxis.
- Calcium-channel blockers may be considered if beta-blockers are unsuitable (Heidenreich et al., 1999) [**B**].
    - Diltiazem and verapamil may be used unless the patient has left ventricular failure.

    - Dihydropyridine derivatives (amlodipine, felodipine, isradipine, nisoldipine) can be combined with beta-blockers. Amlodipine and felodipine seem to be suitable for patients with heart failure as well.
- A long-acting nitrate may be included in the medication if angina symptoms are frequent. The nitrate is administered at the time when symptoms occur most often, which is often during the daytime. The usual dose is 20 to 40 (to 60) mg/day. A nitrate patch can be used to treat nocturnal angina. The patch should be removed in the morning to avoid the development of nitrate tolerance. For the same reason a pause should be kept in the administration of long-acting nitrates, for example in the evening or at night. Nitrates are symptomatic therapy and are not needed if the patient is asymptomatic. They improve exercise tolerance but probably not the prognosis.

Revascularisation (PTCA and CABG)

- Coronary artery revascularisation may be performed either by balloon angioplasty (percutaneous transluminal coronary angioplasty, PTCA) followed by placing of a metal stent into the coronary artery (percutaneous coronary intervention, PCI), or by coronary artery bypass graft surgery (CABG).
    - By stenting, coronary artery patency is sustained better than with PTCA alone (The Wessex Institute for Health Research and Development, 1998; Meads, Cummings & Stevens, 1998) [**B**]. Stenting has reduced the need of coronary surgery (Grines et al., 1999; Robinson & Timmis, 2000).
    - Drug-eluting stents are impregnated with a cell growth inhibitor that is slowly, during months, released into the surrounding tissue. Drug-eluting stents have clearly reduced the frequency of restenosis and cardiovascular events compared to metal stents or sole PTCA, but late thrombosis of drug-eluting stents has raised concern (Katritsis, Karvouni, & Ioannidis, 2005; Kastrati et al., 2007; Lagerqvist et al., 2007; Stone et al., 2007; Stettler et al., 2006; Indolfi, Pavia ,& Angelillo, 2005)[**A**].

Stable Angina

- The decision about the need for revascularisation and the preferred mode (PCI/CABG) is based on the severity, location and number of coronary stenoses but also on the assessment of left ventricular function, potential valvular diseases, severity of symptoms and comorbidity (diabetes, renal disease).
    - Stenosis of the left main coronary artery (LCA) warrants coronary surgery (The Wessex Institute for Health Research and Development, 1998).
    - In three-vessel disease, left ventricular failure and diabetes, CABG is favoured.
    - Proximal stenoses in the left main branches are established indications for revascularisation.
    - Left ventricular failure due to ischaemia is an indication of revascularisation as well.
    - Opening of a complete obstruction with PTCA is not always successful, and coronary surgery is often needed (Sim et al., 1995; Bakkhai et al., 2005) [**C**]. In studies where opening of a complete obstruction has

succeeded, insertion of a drug-eluting stent has decreased the frequency of restenosis compared to bare metal stent.
- One-vessel disease, provided that the stenosis is not located proximally in a large coronary artery, has a favourable prognosis even with pharmacological treatment, but substantial symptoms may justify revascularisation. In one- or two-vessel disease, PCI is often the choice (The Wessex Institute for Health Research and Development, 1998).
- Patients with diabetes seem still to benefit more from CABG.
- The advantages of PCI include short duration of treatment, faster recovery and faster return back to work. The more frequent need for later revascularisation compared to CABG may be considered a disadvantage.

ST Elevation Myocardial Infarction (STEMI)

- According to randomised trials, primary PCI is more effective than thrombolysis in the treatment of acute ST elevation myocardial infarction (STEMI) (Grines et al., 2003; Keeley, Boura, & Grines, 2003) [**A**]. Therefore, patients with STEMI should be referred directly to coronary angiography in the first place. See also the Finnish Medical Society Duodecim guidelines "Myocardial Infarction" and "Thrombolytic Therapy and Balloon Angioplasty in Acute ST Elevation Myocardial Infarction (STEMI)."
- If there is no possibility of emergent primary PCI, thrombolysis is given.
- If the effect of thrombolysis is insufficient (cardiac failure, less than 50% decrease in ST elevation, continuing pain, unstable haemodynamics), coronary angiography should be performed as soon as possible.

Non-ST Segment Elevation Myocardial Infarction (NSTEMI) and Unstable Angina Pectoris

- The signs of high risk predict a greater frequency of cardiac events in a patient with acute coronary syndrome during the following 30 days. The signs of high risk include
    - Recurring or prolonged angina
    - Increased concentration of cardiac enzymes (troponins I and T)
    - ST decrease in ECG
    - Unstable haemodynamics
    - Recurrent ventricular tachycardia or ventricular fibrillation
    - Diabetes
- Coronary angiography should be performed on these patients emergently or within 24 to 48 hours.

Related Resources

Refer to the original guideline document for related evidence, including Cochrane reviews and other evidence summaries.

Definitions:

Classification of the Quality of Evidence

Code	Quality of Evidence	Definition
A	**High**	Further research is very unlikely to change our confidence in the estimate of effect. • Several high-quality studies with consistent results • In special cases: one large, high-quality multi-centre trial
B	**Moderate**	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate. • One high-quality study • Several studies with some limitations
C	**Low**	Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate. • One or more studies with severe limitations
D	**Very Low**	Any estimate of effect is very uncertain. • Expert opinion • No direct research evidence • One or more studies with very severe limitations

GRADE (Grading of Recommendations Assessment, Development and Evaluation) Working Group 2007 (modified by the EBM Guidelines Editorial Team).

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Concise summaries of scientific evidence attached to the individual guidelines are the unique feature of the Evidence-Based Medicine Guidelines. The evidence summaries allow the clinician to judge how well-founded the treatment

recommendations are. The type of supporting evidence is identified and graded for select recommendations (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate diagnosis and treatment of coronary heart disease

POTENTIAL HARMS

Not stated

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

Getting Better
Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Finnish Medical Society Duodecim. Coronary heart disease (CHD): symptoms, diagnosis and treatment. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2008 Mar 20 [Various]. [18 references]

ADAPTATION

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

DATE RELEASED

2001 April 30 (revised 2008 Mar 20)

GUIDELINE DEVELOPER(S)

Finnish Medical Society Duodecim - Professional Association

SOURCE(S) OF FUNDING

Finnish Medical Society Duodecim

GUIDELINE COMMITTEE

Editorial Team of EBM Guidelines

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Primary Author: Helena Kervinen

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Finnish Medical Society Duodecim. Coronary heart disease (CHD): symptoms, diagnosis and treatment. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2007 Apr 22 [Various].

GUIDELINE AVAILABILITY

This guideline is included in a CD-ROM titled "EBM Guidelines. Evidence-Based Medicine" available from Duodecim Medical Publications, Ltd, PO Box 713, 00101 Helsinki, Finland; e-mail: info@ebm-guidelines.com; Web site: www.ebm-guidelines.com.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on August 28, 2001. The information was verified by the guideline developer as of October 26, 2001. This summary was

updated by ECRI on December 9, 2002, December 29, 2003, September 30, 2004, February 21, 2005, and July 13, 2006. This summary was updated by ECRI Institute on June 22, 2007 following the U.S. Food and Drug Administration (FDA) advisory on heparin sodium injection. This summary was updated by ECRI Institute on November 13, 2007. This summary was updated by ECRI Institute on March 14, 2008 following the updated FDA advisory on heparin sodium injection. This summary was updated by ECRI Institute on September 30, 2008.

COPYRIGHT STATEMENT

DISCLAIMER

NGC DISCLAIMER

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at http://www.guideline.gov/about/inclusion.aspx .

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

Date Modified: 11/3/2008


DEPARTMENT OF HEALTH & HUMAN SERVICES • USA