TECHNOLOGY AND GUIDELINES

Secondary prevention for patients following a myocardial infarction: summary of NICE guidance

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Mortality from coronary heart disease has been falling in the UK since the 1970s, but remains higher than in most other Western countries. Most patients receive some treatment for secondary prevention after myocardial infarction, but not all patients are offered the most effective secondary prevention package. The recently published NICE guideline for secondary prevention in patients after myocardial infarction, summarised in this article, makes clear recommendations for management of patients after myocardial infarction, based on best available evidence. The guidelines update the 2001 NICE guideline, and have expanded and emphasised the recommendations for physical activity, dietary and other lifestyle changes, and cardiac rehabilitation, and updated the recommendations for drug therapy.

Although mortality from coronary heart disease in the UK has fallen since the 1970s, it remains higher than in most other Western countries, with over 103 000 deaths per year. Since the publication of the *National Service Framework for coronary heart disease* in 2000,[1] many patients are prescribed aspirin, beta blockers, ACE inhibitors and statins following myocardial infarction. However, not everyone is offered the most effective package for secondary prevention. Patients are not always prescribed all four of these drugs or other effective drugs, nor do they always receive advice about lifestyle changes and access to cardiac rehabilitation. This guideline clearly sets out the recommendations for effective secondary prevention in patients after myocardial infarction. It updates the 2001 NICE guideline *Prophylaxis for patients who have experienced a myocardial infarction*.[2] The recommendations for physical activity, dietary changes and rehabilitation have been expanded and emphasised, and the recommendations for drug therapy updated. The guideline makes recommendations for patients after an acute myocardial infarction and also for those who have had a proven myocardial infarction at any time in the past.

The detailed consideration of the evidence for this guideline is available in the full version (see http://www.nice.org.uk/CG048).

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RECOMMENDATIONS

NICE recommendations are based on systematic reviews of best available evidence. For guidance on secondary prevention for patients after a myocardial infarction, in cases where minimal evidence was available, the guideline development group created the recommendations on the basis of their own opinions and those of leading specialists; such recommendations are indicated with an asterisk (*).

After a myocardial infarction, confirmation of the diagnosis of acute myocardial infarction and results of investigations, future management plans and advice on secondary prevention should be part of every discharge summary*.

Lifestyle

Lifestyle advice should be consistent, take account of patients' current habits and any changes tailored to the individual.

Patients should be advised to:

- Take regular physical activity sufficient to increase exercise capacity (reduces total mortality), and building up physical activity to 20–30 min/day to the point of slight breathlessness.
- Stop smoking. Support and advice, and pharmacotherapy should be offered to those who have expressed a desire to quit.[3 4]
- Eat a Mediterranean-style diet—more bread, fruit, vegetables and fish; less meat; and replace butter and cheese with products based on vegetable and plant oils (reduces total mortality and the risk of myocardial infarction).
- Consume at least 7 g of omega-3 fatty acids per week from 2–4 portions of oily fish per week. If within 3 months of a myocardial infarction and they are not achieving this, consider providing at least 1 g daily of omega-3-acid ethyl esters treatment licensed for secondary prevention after myocardial infarction for up to 4 years. Initiation of omega-3-acid ethyl esters supplement treatment is not routinely recommended in patients that have had a myocardial infarction more than 3 months earlier (no evidence of benefit).
- Achieve and maintain a healthy weight. Patients who are overweight or obese should be offered appropriate advice and support.[5]
- Restrict their alcohol intake to within recommended safe limits of 14 units per week for women and 21 units per week for men, and avoid binge drinking*.

Patients should be advised against taking:

- Supplements containing beta-carotene (may increase risk of cardiovascular death).

- Antioxidant supplements (no evidence of benefit).
- Folic acid supplements (no evidence of benefit).

Cardiac rehabilitation

Cardiac rehabilitation should be actively promoted by all healthcare professionals, including senior medical staff, involved in providing care for patients after a myocardial infarction*.

Cardiac rehabilitiation:

- With an exercise component (reduces mortality) should be offered to all patients, and made accessible regardless of the patient's age, gender, ethnicity, socioeconomic status or comorbidities.
- Should include the following components: exercise (reduces mortality), health education, and stress management (reduces anxiety, depression and the risk of non-fatal myocardial infarction); however complex psychological interventions such as cognitive behavioural therapy should not be routinely offered.
- Should involve partners or carers, if the patient wishes*.
- May be a validated home-based programme, such as the Edinburgh Heart Manual,[6] with follow up by a trained facilitator.
- Should include advice about return to activities of daily living and return to work; any advice should take account of the physical and psychological status of the patient, the nature of the activity or work proposed and the work environment*.
- Should include reassurance that after recovery from a myocardial infarction sexual activity does not pose a greater risk of triggering a subsequent episode than in a person who has never had a myocardial infarction.
- Should take into account the patient's wider health and social needs, which may involve identifying and addressing economic, welfare rights, housing or social support issues. This may be a particular issue for patients in more deprived situations, and rehabilitation services should assess the likely scale of these needs when planning how their services meet the needs of the local population*.

Drug treatment after acute myocardial infarction

- All patients should be offered combined treatment with the following:
  - ACE (angiotensin-converting enzyme) inhibitor (reduces total mortality, the risk of myocardial infarction and, in selected patients, the risk of developing heart failure)
  - Aspirin (reduces cardiovascular mortality and morbidity)
  - Beta blocker (reduces mortality and cardiovascular morbidity)
  - Statin (reduces mortality and major cardiovascular morbidity).
- Clopidogrel in combination with aspirin is recommended for 12 months in patients after a non-ST elevation myocardial infarction[7] (reduces cardiovascular mortality and the risk of myocardial infarction and stroke), and for at least 4 weeks in patients after a ST elevation myocardial infarction (reduces total mortality and the risk of myocardial infarction and stroke). Thereafter, standard treatment, including low dose aspirin should be continued, unless there are other indications to continue dual antiplatelet agents.
- Patients with heart failure and left ventricular systolic dysfunction should be offered a licensed aldosterone antagonist within 3–14 days of the acute myocardial infarction, preferably after ACE inhibitor therapy (reduces total mortality and the risk of hospitalisation for cardiovascular events including heart failure).
- Moderate intensity warfarin (INR 2–3) can be considered in patients intolerant of both aspirin and clopidogrel (reduces the risk of myocardial infarction). In patients after an acute myocardial infarction who are intolerant to clopidogrel and have a low risk of bleeding, treatment with aspirin and moderate intensity warfarin combined should be considered.
- In patients already treated with warfarin for another indication, warfarin should be continued. In those treated with moderate intensity warfarin and who have a low risk of bleeding, the addition of aspirin should be considered.

Cardiological assessment

- Patients should be offered a cardiological assessment, taking into account comorbidity, to identify patients who will benefit from coronary revascularisation for secondary prevention (reduces the risk of myocardial infarction and improves survival in appropriately selected patients), or from other cardiological interventions.[8]

OVERCOMING BARRIERS

- Ensure timely communication between hospitals and primary care to ensure that appropriate therapy is continued, monitored and uptitrated following discharge.
- Adapt current post-myocardial infarction pathways to ensure that all patients are offered access to a cardiac rehabilitation programme and have appropriate cardiological assessment.
- Incorporate advice about lifestyle into standard models of care.
- GPs should review their disease registers and ensure that all eligible patients with a proven myocardial infarction in the past are being appropriately managed.

UNANSWERED RESEARCH QUESTIONS

- How long should patients with ST elevation myocardial infarction treated with thrombolysis take aspirin plus clopidogrel, compared with aspirin alone?
- How effective is long-term continuation of drugs for secondary prevention after a myocardial infarction? For example, do all patients with normal left ventricular function benefit from long-term beta blockers and ACE inhibitors?
- How effective is spironolactone compared with eplerenone in patients with heart failure and left ventricular dysfunction early after myocardial infarction?
- What strategies are effective in improving uptake and adherence to comprehensive cardiac rehabilitation programmes, particularly in groups under-represented in those programmes?
- What is the added value of the non-exercise components of comprehensive cardiac rehabilitation programmes?
- How effective are omega-3-acid ethyl esters in all patients after myocardial infarction?
- What measures encourage the maintenance of regular exercise and a Mediterranean-style diet beyond the period of comprehensive cardiac rehabilitation?

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Declaration: A similar summary of this guideline has also been published in the *BMJ* 2007;**334**:1112–13.

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Commentary on NICE guidance for secondary prevention for patients following a myocardial infarction

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The recently published NICE guideline *MI: secondary prevention in primary and secondary care for patients following a myocardial infarction*[1] updates the previous guideline published in 2001[2] and the relevant sections of the *National Service Framework for coronary heart disease*.[3] The guideline is important to clinicians in both primary and secondary care, and to those who plan services. There have been significant improvements in recent years and the majority of eligible patients leaving hospital after an acute myocardial infarction are now treated with aspirin and statins. However, other important interventions such as advice about lifestyle and cardiac rehabilitation are less consistently provided and there is inconsistent practice with regards to some drug therapies. This guideline makes recommendations for lifestyle and cardiac rehabilitation in far greater detail than in the previous one, as well as updating and expanding the recommendations for drug treatment.

Patients who have just had an acute myocardial infarction are readily identifiable, and this guideline addresses secondary prevention after the very early acute phase. It also makes recommendations for the management of patients with a proven myocardial infarction in the past. These patients will generally no longer be under hospital follow-up and it will be the responsibility of primary care to review patients on their disease registers to ensure that management has been optimised.

DRUG TREATMENT

The recommendations that aspirin, beta blockers, statin and ACE inhibitors be considered in all patients after acute myocardial infarction are maintained in this guideline and further supplemented to include appropriate treatment with a combination of aspirin and clopidogrel, and early treatment with an aldosterone antagonist in patients with heart failure. Other drugs such as vitamin K antagonists are also now included.

Recommendations for treatment with the combination of aspirin and clopidogrel in non-ST elevation myocardial infarction restate those of the NICE technology appraisal number 80, *Clopidogrel in the treatment of non-ST-segment-elevation acute coronary syndrome*,[4] to continue treatment for a year. After an ST elevation myocardial infarction patients who have been thrombolysed and treated with clopidogrel and aspirin on initial presentation should continue with both agents for at least four weeks. However, evidence is lacking as to the optimal duration of treatment with both agents in patients after an ST elevation myocardial infarction and, in practice, clinicians in secondary care should make explicit recommendations for the duration of dual antiplatelet therapy as part of the patient management plan. Further research to examine the optimal duration of dual antiplatelet therapy in this group is recommended in the guideline.

Treatment with both aspirin and clopidogrel is not routinely recommended for longer than a year. Treatment plans can be made in secondary care, but most patients who have had a myocardial infarction will no longer be under hospital follow-up one year later. Primary care will need to make sure that patients have an individual review before stopping clopidogrel to ensure that other indications to continue both agents have not developed.

Patients with heart failure after myocardial infarction are at high risk for further events and early treatment (within 3–14 days) with an aldosterone antagonist licensed for this indication is recommended in patients who have had symptoms and signs of heart failure and a left ventricular ejection fraction of 40% or less, preferably after an ACE inhibitor. This means that all patients with heart failure after acute myocardial infarction will require an early assessment of left ventricular function, generally before discharge, so that appropriate treatment can be initiated in those fulfilling the criteria. This may prove a challenge for some units and services should