Pharmaceutical care of people with coronary heart disease

Course information
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Course information

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Contents of pack

Your pack contains:

- *Pharmaceutical care of people with coronary heart disease – course information*
- *Pharmaceutical care of people with coronary heart disease – course activities*
- Set of pharmaceutical care needs assessment tools
- GTN spray/tablets leaflet (5x)
- Plan & record form
- Freepost envelope
- CD-ROM *Video presentation*

**CD-ROM**

The CD-ROM with Steve McGlynn’s presentation will work on a PC which runs Windows 98 or later and has:

- a CD-ROM drive
- a Windows Media player version 9 or later
- a soundcard with speakers or headphones
- a web browser, such as Internet Explorer 5.0 or later, or Netscape Navigator 7 or later.

Insert the CD-ROM in your computer and wait a little while. The CD-ROM starts automatically and will show the opening page in the browser window. (You may be prompted to download some additional software from Microsoft.) Click on ‘play’ to run the presentation.

If the CD-ROM doesn’t work in ‘autostart’ mode (or if you want to run it on an Apple Macintosh), open the CD-ROM and double-click on the file CHD.htm.
Introduction

Pharmaceutical care of people with coronary heart disease

This core course offers Scottish pharmacists training on how they can contribute to the care of people with coronary heart disease by applying the principles of the pharmaceutical care model schemes (PCMS). This invaluable training for community pharmacists will help prepare them for the future and can be seen as a therapeutic addition to the NES/PCMS frail elderly medication review training currently rolling out across Scotland.

The evening will start with a lecture on the management of coronary heart disease. In the majority of areas this will be delivered by Steve McGlynn, Specialist Principal Pharmacist (Cardiology)/Honorary Clinical Lecturer, Western Infirmary Glasgow. Steve will explore diagnosis, therapeutic and lifestyle management and common pharmaceutical care issues for people with stable angina and those requiring secondary prevention post myocardial infarction. The workshops will take the form of very practical patient interviews followed by a group discussion on ways to improve patient care.

The pack includes spare pharmaceutical care needs assessment tools which we encourage you to use in your pharmacy to help implement the learning from the evening and to help with your continued professional development.

This course will also be of interest to pharmacists working in other sectors to help with integrated care and will provide a useful update of current recommendations in this disease area.

Aim

To update pharmacists on the current management of stable coronary heart disease and explore ways to develop further the pharmaceutical care of this patient group as part of normal working practice in the community setting.

Objectives

At the end of the session you should be able to:

- define the current therapeutic management of stable angina and secondary prevention post myocardial infarction
- identify pharmaceutical care issues and respond to symptoms in patient scenarios and identify appropriate management solutions
- explore how to implement the principles of the pharmaceutical care needs assessment tool in practice.

Pre-course reading

- The Pharmaceutical Journal, Heart disease series
  - Chronic stable angina (page 14-16)
  - Secondary prevention of heart disease (page 17-19)
- Example patient information leaflet What is Angina (page 20-21)
- Key messages for patients (page 22)
- Pharmaceutical care needs assessment (PCNA) tool (page 8)
- Aide memoire for PCNA (page 9-13)
- Plan and record form.
Background


The pathological definition of coronary heart disease (CHD) is the narrowing or blockage of the coronary arteries by atheroma and/or thrombosis leading to angina, myocardial infarction, heart failure and/or sudden death. CHD can be present in the absence of symptoms: it is estimated that half a million Scots have CHD, of whom 180,000 require treatment for symptomatic disease.

Clinical standards

CHD mortality has fallen in recent years, however death rates from CHD in Scotland are amongst the highest in the world and remain the second highest in Western Europe. In the year 2003, CHD was second only to cancer as the leading form of death in both Scottish men (22% of all male deaths) and women (17% of all female deaths). Research suggests that much of the decline in CHD morbidity and mortality rates during the past two decades has been achieved through secondary prevention measures.

The Scottish Intercollegiate Guideline Network (SIGN) Secondary prevention of coronary heart disease following myocardial infarction provides guidance on the identification and modification of risk factors, pharmacological therapy and cardiac rehabilitation. The objectives of secondary prevention are to prevent death, major coronary events, congestive heart failure, stroke and coronary re-vascularisation. SIGN Management of stable angina categorises drug therapy as for secondary prevention and short term and long-term control of angina symptoms.

Updated SIGN guidelines, covering different aspects of CHD should be published in late 2005 or early 2006.

The Scottish Executive Health Department National Demonstration Project Have a Heart Paisley involved pharmacists in number of primary and secondary prevention multi-disciplinary initiatives. Outcomes of the GTN audit include; in the first cycle 16% of 254 patients knew what to do if the first dose did not relieve angina symptoms by the 3rd cycle 68% of 117 patients knew what to do. In the first cycle 34% would inform their GP if their symptoms became more frequent or severe this increased to 98% by the 3rd cycle. In the first cycle 22% were not prescribed aspirin, changing to 11% by the 3rd cycle. Of the 447 pharmaceutical care issues identified in the medication review clinics, 18% resulted in initiation of secondary prevention treatment, 16% in dose optimisation in line with SIGN and 19% improved patient's understanding.

The Clinical Resource and Audit Group (CRAG) framework for Clinical Pharmacy Practice in Primary Care states that the pharmacist can identify the pharmaceutical care needs of their patients as part of their normal working practice. Pharmaceutical care needs include: concordance, education, medication review, and health promotion.
Pharmaceutical Care Model Schemes (PCMS) provide an opportunity for community pharmacists to develop their clinical practice further and implement the recommendations from CRAG and clinical guidelines. Aspects of the PCMS will provide the clinical component of the new pharmacy contract, including medication review. To facilitate this process, the pharmacist must begin to define the demographics of the patient population cared for by their pharmacy and manage the pharmaceutical care process.

PCMS service development projects designed to test the pharmaceutical care needs assessment tools included in this pack will be undertaken from September 2005.

3 General Register Office for Scotland
4 Scottish Intercollegiate Guideline Network (SIGN). Guideline 41 Secondary Prevention of Coronary Heart Disease following Myocardial Infarction. www.sign.ac.uk
6 The Scottish Executive Health Department National Demonstration Project Have a Heart Paisley. www.show.scot.nhs.uk
7 Clinical Research and Audit Group (CRAG) Clinical Pharmacy Practice in Primary Care: a framework for the provision of community-based pharmaceutical services, 1999.
8 Scottish Executive Health Department Directorate of Primary Care Community Pharmacy: Model Schemes for Pharmaceutical Care, (MEL (1999) 78) http://www.show.scot.nhs.uk/sehd/mels/1999_78.doc
9 Scottish Executive Health Department Directorate of Primary Care Community Pharmacy Contract, PCA (P) (2004) 36.
### Teaching plan

<table>
<thead>
<tr>
<th><strong>Lecture</strong></th>
<th>40 minutes and 10 minutes for questions</th>
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<tbody>
<tr>
<td><strong>Coronary Heart Disease</strong></td>
<td>Focusing on stable angina/secondary prevention post-myocardial infarction and its management. This talk will cover:</td>
</tr>
<tr>
<td></td>
<td>● definition and diagnosis</td>
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<td></td>
<td>● symptoms</td>
</tr>
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<td></td>
<td>● epidemiology/statistics</td>
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<tr>
<td></td>
<td>● guidance on management</td>
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<tr>
<td></td>
<td>● pharmaceutical care</td>
</tr>
</tbody>
</table>

| **Comfort break** | 20 mins |

| **Workshops** | 60 mins |
| Large groups will be divided into 20-30 participants. Smaller groups will be divided into 12-15 participants. One facilitator will be assigned to this group, which will be further divided into smaller groups of three to five. |
| | ● Case 1: to be completed without the use of the pharmaceutical care needs assessment tool (10 minutes) |
| | ● Case 2, 3 and 4: volunteers for each case, one participant chosen to play the patient and one to play the pharmacist who completes the case using the pharmaceutical care needs assessment tool. Remaining participants will observe. The group will identify care issues at the end of the role play (10 minute role play with 5 minutes discussion) |

| **Questions/discussion/answers** | 10 minutes in large groups. |
| Answers will be provided at the end of the session. |

| **Summary** | 15 mins |
| Find out what guidelines for angina/secondary prevention post myocardial infarction management are followed locally. |
| CPD-action (recording), evaluation and identification of further training needs and using the spare assessment tools to explore implementing the tool in practice. |
| Course assessment. |
**Pharmaceutical Care Needs Assessment for People with Coronary Heart Disease**

<table>
<thead>
<tr>
<th>Name</th>
<th>Doctor's name</th>
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</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>or CHI no.</td>
</tr>
</tbody>
</table>

1. Can you tell me what medical conditions you have?

2. What is (are) the name(s) of your CHD medication and how do you take it (them)?

<table>
<thead>
<tr>
<th>dose</th>
<th>frequency</th>
<th>with food, etc</th>
</tr>
</thead>
</table>

3. For GTN spray or tablet:
   a. When and how frequently are you having angina symptoms?
   b. Do you use it before exercise or activity?
   c. What would you do if one dose of your spray or tablet did not relieve your angina symptoms?
   d. Would you report any changes to your GP?

<table>
<thead>
<tr>
<th>yes</th>
<th>no</th>
<th>detail</th>
</tr>
</thead>
</table>

4. Do you know what to do if you missed a dose of your CHD medication or were sick after taking it?

5. Can you tell me when your BP and cholesterol was last checked and what the results were? If you don’t know the figures, as far as you know, is it well controlled now?

<table>
<thead>
<tr>
<th>yes</th>
<th>no</th>
<th>detail</th>
</tr>
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</table>

6. Have there been any changes in your angina symptoms or general health recently?

7. Do you always check with the pharmacist or doctor before buying medicines including herbal and homeopathic? Are you taking any just now? List.

8. What side effects, if any, do you think you are experiencing from your medication? List.

9. Do you ever □ forget or □ choose (please tick) not to take your CHD medication? If yes, note how often in the detail box.

10. Would you like advice on the following: □ Healthier diet □ Exercise

<table>
<thead>
<tr>
<th>kg</th>
<th>m</th>
<th>BMI (kg/m²)</th>
</tr>
</thead>
</table>

11. Can you tell me your weight and height?

| yes (no/way) | non | ex (yes stopped) |

12. Do you smoke? If smoker note ‘ready to quit status’

Note any follow up action required and any outcome on the reverse ➔
Aide memoire

To be used in conjunction with national or local clinical guidelines and the British National Formulary.

Potential or actual pharmaceutical care issues are highlighted in the text.

1 Can you tell me what medical conditions you have?

This information will help you to identify the person’s understanding and knowledge about their medical conditions, with particular emphasis on conditions which may affect their CHD.

2 What is (are) the name(s) of your CHD medication and how do you take it (them)?

Check with prescription/patient medication records. Confirm that they are taking the medication as instructed, at the appropriate time and in the appropriate way. They should be aware of the differences between medication for short and long-term control of angina symptoms and secondary prevention medication. This helps to clarify their understanding of the indication(s) of their medication and whether they are taking it appropriately.

Action Prompt people if they are unsure of indication and provide advice on relevant counselling e.g. ensure nitrate-free period for oral nitrate therapy. Confirm if they are prescribed the appropriate evidence-based medication.

3 For GTN spray or tablet:

This helps to clarify their understanding of how to use their medication effectively and when to seek help. Treatment or prophylaxis of angina: one tablet or spray under tongue and close mouth. Repeat 3 times in 15 minutes if required. For full details, see patient information leaflet in the resource pack. Some people do not like the spray because it gives them a headache. In this instance, tablets may be preferred as they can spit the tablet out as soon as the angina eases.

a When and how frequently are you having angina symptoms?

With optimum therapy this should be as little as possible. If it is frequently, confirm if they are on optimum long-term prophylaxis therapy, e.g. beta-blocker, Ca Channel Blocker, nitrate. If the frequency is high or debilitating, confirm if they have reported this to their GP. Often people with angina ‘put up with the pain’ and or can be reluctant to use their GTN medication. If it is happening in the morning, it might be worth changing the timing of their prophylactic medication. You can confirm at this point or later if they are adhering fully to their prophylactic medication.
b  Do you use it before exercise or activity?

They should be encouraged to use their GTN before doing any exercise or activity that is likely to bring on their angina symptoms.

c  What would you do if it did not relieve your angina symptoms?

They can take up to 3 tablets or sprays at 5-minute intervals before seeking medical help. This will mean phoning 999 in some areas or their GP directly. Appropriate advice should be agreed with local GPs.

d  Would you report any changes to your GP?

It is extremely important that people report any changes in severity or frequency, especially if it is happening at rest or early in the morning to their GP as soon as possible.

Action  Offer advice as appropriate. If the person is having symptoms at rest, refer to their GP immediately.

4  Do you know what to do if you missed a dose of your heart medication or were sick after taking it?

As a general rule, immediate release medication should be taken as soon as they remember and they then should go on as before, unless they remember the missed dose within two hours of their next scheduled dose. In this case they should skip the missed tablet and carry on taking the rest of their tablets as usual. They should not take a double dose of tablets to make up for the missed dose. Vomiting up to three hours after taking medication can interfere with absorption, people should be advised to take a second dose when the vomiting subsides, unless it is less than two hours before the next due dose. For sustained release or long-acting medication provide appropriate advice.

Information on what to do with missed doses helps to clarify their understanding of the action to be taken in these circumstance and helps to avoid the potential to take too much or not enough of their medication.

Action  Offer advice appropriate advice.

5  Can you tell me when your BP and cholesterol was last checked and what the results were? If you don't know the figures, as far as you know, is it well controlled just now?

This helps to clarify how effective the therapeutic plan is. The ePharmacy programme will provide access to this information in the future. Unless, hypertension is newly diagnosed, BP should be checked every 6 months to one year (check with local guidance). Cholesterol should be checked annually. Some people will know their results, others will not. If the person has no idea, encourage them to discuss this with their GP or nurse at their next visit. The following target guidance is provided, although please check with local guidelines before making recommendations.
- Non-Diabetic target BP: Systolic < 140 and Diastolic < 85
- The minimum acceptable level of control (audit standard) recommended is <150/90mm Hg
- Diabetic target BP: Systolic < 130 and Diastolic < 80 Audit standard < 140/80mm Hg

Aim to lower cholesterol to below 5mmol/l (below 4mmol/l if post-coronary artery bypass graft (CABG) or percutaneous transluminal coronary angioplasty (PTCA)) or to achieve 30% reduction from baseline cholesterol, whichever is greater. A statin may still be indicated even if baseline cholesterol is less than 5mmol/l.

**Action**
Note results if known, refer those who report not having BP and cholesterol or bloods taken for more than a year. Provide appropriate advice and encourage attendance at GP or nurse clinics. If known and they are not within target ranges consider if it is possible to optimise the therapeutic plan further and make recommendations to the GP or nurse. N.B. Check with patient medication records or the patient to confirm that any suggested changes have not been tried already.

6 **Have there been any changes in your angina symptoms or general health recently?**

This question helps to clarify how effective the therapeutic management is and if there has been any change in clinical need that requires review. For example, shortness of breath, problems with breathing while lying down, an increased frequency or severity of angina symptoms, more fatigue, swollen ankles etc. Confirm if these are new symptoms or existing ones that are worsening or getting more intense? Co-morbidity e.g. heart failure and asthma can affect treatment choice.

**Action**
Confirm if they have discussed this with their GP or nurse and clarify the response. People who are experiencing a change in symptoms or general health and who have not discussed with their GP should be referred.

7 **Do you always check with the pharmacists or doctor before buying medicines including herbal and homeopathic? Are you taking any just now?**

This allows you to carry out interaction check to identify any safety issues. Over-the-counter medicines containing aspirin should be avoided as they can negate the anti-platelet effect of prescribed low-dose aspirin and increase the likelihood of adverse effects, as do non-steroidal anti-inflammatory drugs in general. Effervescent formulations and some antacids contain high levels of sodium and should be avoided.

**Action**
List all medication, undertake an interaction check for prescribed and bought medication, provide appropriate advice and encourage everyone to check with the pharmacist or doctor before buying anything.
8 What side effects, if any, do you think you are experiencing from your medication?

This helps to identify any safety issues. Check that any adverse effects can be attributed to their medication. If the adverse effects reported are not consistent with their prescribed medication this may require a clinical review. Identifying adverse effects is important as many can be managed. If adverse effects are adversely affecting the person’s quality of life and or their adherence with treatment this may require a referral. Always confirm if they have reported adverse effects to their GP as optimum management is often a balance between effectiveness and adverse effects and the GP may already have done as much as they can.

Action List and prompt if required, offer advice and support. Refer anything reported that is not consistent with their medication or intolerable or manageable adverse effects that have not reported to their GP or nurse.

9 Do you ever □ forget or □ choose (please tick) not to take your CHD medication? If yes, note how often.

This helps to identify any compliance problems. Whilst occasionally missing a dose should not have a huge impact on the effective management of their condition, frequently missing will. It is especially important that β-blockers are not stopped suddenly. Many people with long-term medical conditions choose not to take their medicines as advised. The reasons for this are varied; some people may not be fully aware of the reasons for taking medicines, or the benefits, or the consequences of not taking medicines or they may be experiencing adverse effects, e.g. fatigue with β-blockers. Choosing not to comply with their medication as advised is the right of the patient and should be based on an informed choice. For those forgetting to take their medication, simple solutions, for example, linking medication to meal times may help or reinforcing the importance and benefits of taking medication as prescribed.

Action Explore the person’s reasons for not taking their medicines and provide the information they need to help them make an informed decision. If required encourage people to discuss any problems with their refer GP or nurse or note in referral form.

10 Would you like advice on a healthier diet or exercise?

Suggested healthy lifestyle measures include: eating more starchy carbohydrate, fruit and vegetables (recommend 5 portions of fruit and veg every day). Eating more omega-3 fat intake, e.g. oily fish (2-3 large portions/week). Eating less saturated fat, sugar and salt. Reducing weight if obese, particularly reducing energy dense foods and drinks. Increasing lifestyle physical activity, e.g. if they exercise 20 mins per week, encourage them to exercise for 20 mins twice a week. Reducing sedentary behaviour – if they do not exercise at all, begin by encouraging one 20-minute walk
per week and build on that. Reducing alcohol intake if >21 units/week for men, >14 for women.

Definition of one unit of alcohol:
- 1/2 pint of ordinary beer, lager or cider (3.5% ABV)
- 1 small glass of wine (125ml of 8% ABV wine)
- 1 single pub measure of spirits (1/6th gill i.e. 25ml)
(Some beverages may be stronger!)

If yes, can you tell me your weight and height?

Obesity is a known cardiovascular risk factor. A simple definition of obesity is Body Mass Index (BMI) > 30.0 kg/m². A simple definition of overweight is BMI > 25 – 29.9. On average, 40% of men in Scotland are overweight, with a further 16% obese. For women, 30% of women are overweight, and 17% are obese.

BMI: weight in kilograms divided by the square of height in metres: \( \text{kg/m}^2 \)

<table>
<thead>
<tr>
<th>Weight</th>
<th>9st 5lb in kilograms 59kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>5ft 3” in metres 1.6m squared 2.56m²</td>
</tr>
</tbody>
</table>

Body Mass Index = 59/2.56 = 23

Action All people, but particularly overweight or obese people, should be offered advice on healthy lifestyle measures.

11 Do you smoke? Would you like help to stop?

Brief intervention by healthcare professionals to help people stop smoking is accepted good practice and encouraged by clinical guidelines as part of Scotland’s health improvement strategy.

Action Note if they are a current, ex or non-smoker and ready to quit status if known. You may offer a smoking cessation service from your pharmacy or you can refer to local or national support services.

Issue and Action At the end of the assessment, review the answers to the questions and assess if they are on the medication that you would expect them to be on and take appropriate action. Tick the box that most accurately describes the pharmaceutical care issue or problem identified and note any follow up required and any outcome of your intervention. The action taken may involve providing information, clarifying points, providing compliance solutions, undertaking a review of their medication in light of the information available and or referring any effectiveness or safety issues to their GP nurse with recommendations to review based on what the patient has reported.
What is angina?
Example patient information leaflet

Angina Pectoris is a discomfort or pain usually felt in the chest, that comes from the heart muscle. You normally feel it as a tightness, heaviness, weight, pressure or some similar feeling. It may also spread to the throat, jaw, shoulders or back. Sometimes you might also notice aching or tingling in your arms or hands, or breathlessness when you have angina.

You will usually get your angina by doing something energetic or by getting angry or excited or upset. You might find it is worse in cold weather.

Angina is caused by the heart muscle not getting enough blood. This happens because of a narrowing in the blood vessels (the coronary arteries) which bring blood to the heart muscle. Normally, enough blood flow occurs to satisfy the heart muscle at rest or during light activity. With more energetic activity (or when you get more angry or excited) the heart has to pump harder and faster and the muscle needs more blood. If the coronary arteries are narrowed the blood flow through them cannot increase and the heart complains about the blood supply not matching what it needs. You feel this as angina.

In many ways angina is like a muscle cramp in the arm or leg which also occurs when the working muscle does not get enough blood to match what it needs. That is why angina warns you to stop and rest for a few minutes or calm down a bit.

Patients with angina are looked after mostly by their GP.

What your GP will do

- Your doctor will do some blood tests to make sure you are not anaemic, that you do not have diabetes, and to measure your blood cholesterol.

- Your doctor will arrange an ECG (NB Some people with a normal ECG have got coronary heart disease). Your doctor should discuss referring you to hospital for an exercise test to help to decide how severe the condition is. The severity of your symptoms does not indicate the severity of the disease in your coronary arteries. Ask your doctor about this test if you haven’t had one. The test will help your doctor decide what treatment is best for you.

- Your doctor may refer you to a specialist for further tests if the exercise test is positive or if the diagnosis is uncertain.

The biggest risk for patients with angina is having a heart attack. If you follow the advice below you chances of getting a heart attack will be as low as possible – and your chance of doing all the things you want to without getting angina will be better.

What you can do

- Any chest pain should be discussed with your GP.

- You should see your doctor quickly if your symptoms get any worse, especially if the pain is worse than usual, or comes on at night, or at rest.
Changing your lifestyle will improve your chance of not getting further problems:

- You should quit **smoking**. Nicotine patches will help people to quit if they are well motivated. They are of help when used over a limited time.

- If you are **overweight**, weight loss is sensible.

- **Regular exercise** is sensible. Aim for 30 minutes of moderate physical activity on most days. This can be done all at once or in smaller blocks of around 10 minutes. Build up gradually.

- Eat a **sensible diet**. Try to eat five portions of fresh fruit and vegetables a day and two or three portions of oil rich fish a week. Eat less fat and make as much of it as possible polyunsaturated or monounsaturated. Cut down on the sugary foods and eat more starchy foods (bread, rice, pasta etc).

- Drinking a small amount of alcohol each day is perfectly safe for people with angina or after a heart attack. The limits should be: Men up to three units in one day; Women up to two units in one day.

- Some drugs may improve the length of your life – if you are not taking them ask your doctor about them. These drugs are aspirin and ACE Inhibitors.

- Some drugs allow you to carry out the activities you want to without having chest pain. These include beta-blockers, calcium antagonists and nitrates. **If you get chest pain that stops you doing things you want to, ask your doctor for help.**

- The GTN tablets or spray can prevent the pain of angina, so use them before any activities that you know will bring on an attack.

- If your **blood pressure** is raised, treatment will reduce your risk of a heart attack and stroke. If you don’t know your blood pressure, or what it ought to be, ask you doctor or practice nurse.

- All people with angina should have their **cholesterol** checked. You may be able to keep your cholesterol level down by a low fat diet and a healthy lifestyle. However if your cholesterol level stays above 5 mmol/l additional treatment may be required, usually with a drug called a statin. If you do not know your cholesterol level ask your doctor or practice nurse.

- If you are diabetic you should try to keep your blood sugar levels under good control (as close to 4 mmol/l – 8 mmol/l as possible).

- If you have not had pneumococcal immunisation (to prevent chest infections) ask your doctor or practice nurse. Make sure you get your **flu jab** each autumn.

- You should discuss **driving** with your doctor and you must notify DVLC if you hold a PVC or LGV licence.

Source: SIGN Guideline 51 *Management of stable angina*
Key messages for patients

These notes are provided for possible use by clinicians in discussing investigations and treatment options with patients following MI. They are not intended for direct distribution to patients, but might be incorporated into locally produced patient information materials.

Secondary prevention following a heart attack (myocardial infarction) aims to reduce the chance of further cardiac events.

Investigations following a heart attack are dependent on clinical assessment and decisions are made on an individual basis. Tests that may be indicated include:

- An exercise electrocardiogram test to examine changes to the electrical activity pattern of the heart when undertaking exercise.
- An echocardiogram to examine the function of heart muscle and valves.
- An angiogram to examine the arteries in the heart and the function of the heart muscle.
- In specialist centres, further detailed imaging studies of the heart may be performed.

Independently of the results of these investigations, there are a range of lifestyle changes and medical interventions that may be utilised to improve the health status of patients following a heart attack. Stopping smoking, modifying the diet in terms of reducing fat intake and increasing intake of fruit and vegetables, and increasing exercise are all effective in reducing the risk of further cardiac events.

- It is recognised that smoking cessation in particular can be difficult to achieve and the strongest evidence to support the most effective practice is based on personalised smoking cessation advice and assistance reinforced on many occasions over time. Nicotine replacement therapy has been shown to be an effective component in helping heavy smokers to stop.
- A healthy diet should aim to achieve an ideal body weight with a reduced overall fat intake, particularly saturated fat, and an increase in the intake of fresh fruit and vegetables.
- Increased physical exercise, particularly when associated with overall lifestyle changes such as reduced smoking and improved diet, appears to provide the greatest benefit and to improve overall survival.

A range of medications are available to reduce the risk of further cardiac events in patients following a heart attack.

- These include medications that can lower levels of cholesterol and blood pressure to within normal limits when they are raised.
- Specific heart drugs can be prescribed, depending on individual clinical status, and many of these drugs have been shown to reduce risk of a further heart attack and improve symptoms as a result of heart disease.
- It is recommended that all patients following a heart attack should be prescribed aspirin unless otherwise indicated.

Source: SIGN Guideline 41 Secondary Prevention of Coronary Heart Disease following Myocardial Infarction
Coronary Heart Disease

Steve McGlynn
Specialist Principal Pharmacist (Cardiology), NHS Greater Glasgow
Honorary Lecturer in Clinical Practice, University of Strathclyde

Presentation content

• What is CHD
• What causes CHD
• How common is CHD
• How to we treat CHD
• Why do we treat CHD
• How should we care for patients with CHD

CHD: a definition

Coronary heart disease (or coronary artery disease) is a narrowing of the small blood vessels that supply blood and oxygen to the heart (coronary arteries). Coronary disease usually results from the build up of fatty material and plaque (atherosclerosis). As the coronary arteries narrow, the flow of blood to the heart can slow or stop. The disease can cause chest pain (stable angina), shortness of breath, heart attack (myocardial infarction), or other symptoms.
Coronary Heart Disease

- Stable angina
- Silent ischaemia
- Syndrome X
- Prinzmetal’s angina (vasospasm)
- Acute coronary syndromes (ACS)
  - Unstable angina
  - Non-ST segment elevation myocardial infarction (NSTEMI)
  - ST segment myocardial infarction (STEMI)

Risk Factors

- Modifiable
  - Hypertension
  - Diabetes
  - Hypercholesterolaemia (Total : HDL-C, LDL-C)
  - Smoking
- Non-modifiable
  - Age
  - Sex
  - Family history

Incidence (per 100,000)

National Problem

CHD/Stroke Task Force Report:

- Estimated half million people with CHD
- 180,000 with symptomatic disease
- 12,500 deaths from CHD

‘Towards A Healthier Scotland’:

- Reduce death rates from heart disease in people under 75 years by 50% between 1995 and 2010
nGMS Clinical Indicators

1. Practice has an accurate register of patients with CHD
2. % patients with newly diagnosed angina referred for exercise testing / specialist assessment
3. % patients with smoking status recorded [if never smoked, recorded once]
4. % smokers given smoking cessation advice
5. % patients with BP recorded
6. % patients with last recorded BP < 150/90
7. % patients with recorded total cholesterol
8. % patients with recorded total cholesterol < 5mmol/L
9. % patients prescribed aspirin or other anti-platelet, anticoagulant [unless C/I or SE recorded]
10. % patients currently treated with B-blocker [unless C/I or SE recorded]
11. % patients with a history of MI, currently treated with an ACE inhibitor
12. % patients with recorded influenza vaccination

Diagnosis

- History
- Symptoms
- Physical signs

- Investigations
  - ECG (often normal)
  - Exercise testing (diagnostic and prognostic)
  - Angiography (guides management)

Symptoms

- Chest pain
  - Causes
    - Exercise, stress, emotion especially if cold, after a meal
  - Description (watch how patient describes pain)
    - Crushing, pressure, tight, heavy, ache
  - Location
    - Left chest, shoulder
  - Radiation
    - Arm, neck, jaw, back
  - Relieved by rest and/or GTN
- Breathlessness
- Syncope (rare)

Diagnosis

- History
- Symptoms
- Physical signs

- Investigations
  - ECG (often normal)
  - Exercise testing (diagnostic and prognostic)
  - Angiography (guides management)
Exercise stress testing

Diagnosis

- History
  - Symptoms
  - Physical signs

- Investigations
  - ECG (often normal)
  - Exercise testing (diagnostic and prognostic)
  - Angiography (guides management)

Angiography

Management

- Risk factor reduction
  - Smoking
    - NRT
  - Exercise
  - Diet
  - Hypertension
  - Diabetes

- Drug therapy
- Coronary intervention and surgery
  - Angioplasty ± stent (PTCA)
  - Coronary Artery Bypass Grafts (CABG)
Drug Therapy

- Aims of therapy
  - Prevent disease progression (secondary prevention)
  - Control symptoms

Options

- Secondary prevention
  - Antiplatelets
  - Statins
  - β-blockers
  - ACE inhibitors
- Symptom control
  - β-blockers
  - Calcium antagonists
  - Nitrates (short and long acting)
  - Potassium channel openers (nicorandil)

Antiplatelets

- All patients unless contra-indicated
  - Allergy or GI bleeding
- Clopidogrel if:
  - Aspirin intolerant (by PPI first)
  - Aspirin sensitive
  - Previous ACS (combination antiplatelets)
  - Previous PCI (combination antiplatelets)
- Usually 75mg daily (sometimes aspirin 150mg)
- Monitor for side effects (GI)
- Probably life-long treatment
  - Clopidogrel duration depends on reason

Statins

- All patients unless contra-indicated
  - Active liver disease
- Different dosing strategies
  - Target TC<5mmol/L or LDL-C<3mmol/L
    - Dose to effect
  - Aggressive TC reduction (even if <5mmol/L)
    - E.g. Simvastatin 40mg daily
  - Very aggressive TC reduction (?)ACS only
    - E.g. Atorvastatin 80mg daily
• Monitoring
  • Effectiveness
  • Lipid profile
  • Toxicity
    • Symptoms of myopathy
    • Markers for myopathy (creatine kinase) if symptoms
    • Liver function tests (AST/ALT)
      • Baseline and during treatment
      • Especially high dose statins

• Probable lifelong treatment

β-Blockers

• No direct evidence of benefit in stable CHD
  • Extrapolation from post-MI data

• Protective effect and symptom control

• All patients unless contraindicated
  • Asthma (reversible airways obstruction)
  • Severe peripheral vascular disease
  • Heart block / bradycardia
  • Hypotension

• Dose depends on effect (no specific dose)
  • Avoid sudden withdrawal if possible
  • Monitoring
    • Effectiveness
      • Heart rate (50-60 bpm if tolerated)
      • Blood pressure
    • Toxicity
      • Side effects (often overemphasised)
        • Cold extremities
        • Nightmares
        • Fatigue (especially on initiation)
        • Wheeze
        • Impotence

ACE Inhibitors

• Conflicting evidence in stable CHD
  • For: Ramipril & perindopril
  • Against: Trandolopril

• Little evidence in uncomplicated angina patients
  • Most studies involve a large proportion of post-MI patients

• Indicated if high risk patient, e.g.:
  • Post-MI
  • Heart failure
  • Diabetes
- Up-titrate treatment to target dose
- Monitor treatment before and at the start and end of up-titration
- Target doses:
  - Ramipril 10mg daily
  - Perindopril 8mg daily
  - Other ACE inhibitors ???
- Monitoring
  - Effectiveness
  - Blood pressure
  - Toxicity
  - Side effects
    - Cough
    - Hyperkalaemia
    - Renal dysfunction

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### Calcium antagonists

- Some extrapolated evidence of protective effects from post-MI studies for rate limiting drugs (verapamil / diltiazem)
  - Alternative rate control if β-Blocker contra-indicated or not tolerated
  - Demonstrated benefit for symptom control for all calcium antagonists
  - Avoid short acting formulations
  - Monitor for effect (symptoms and blood pressure) and side effects

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### Nitrates

- Sublingual GTN for all patients
  - Education crucial
- Long-acting nitrates useful for symptom control
- Controlled-release formulations expensive but may improve adherence
- Dose to effect and to avoid tolerance developing
- Monitor for effect (symptoms) and side effects

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### Nicorandil

- Some evidence that symptom control translates to fewer admissions
  - In combination with standard treatment
- Monitor for effect and side effects
Possible treatment regimen

Secondary prevention

- Aspirin 75 daily (or clopidogrel 75mg daily)
- Simvastatin 40mg daily
- β-Blocker (or rate limiting calcium antagonist) dosed to heart rate
- ACE inhibitor to target dose if high risk

Symptom control

- GTN Spray as required.
- β-Blocker (or rate limiting calcium antagonist) dosed to heart rate.
- Chose any one from the three alternatives (avoid combining β-Blocker and rate limiting calcium antagonist).

Coronary intervention (PCI)

- Patients should be considered for PCI, especially if uncontrolled or high risk)
- Angiography to determine best option:
  - Medical management
  - Angioplasty / coronary stent
    - Combination antiplatelets post-PCI
    - Duration depends on presentation and intervention
  - Coronary artery bypass grafts

Angiography
Stent deployment

Restoration of flow

Drug interactions (general)

- All angina medication (except statins/aspirin) lower blood pressure
- Caution using angina medication with other drugs that lower blood pressure
- Avoid other drugs that cause GI irritation
- Avoid using two drugs that reduce heart rate if possible
Drug interactions (specific)

See appendix 1 of BNF for full list
- Aspirin and other NSAIDs
- Simvastatin and e.g. verapamil, amiodarone
- Simvastatin and grapefruit juice
- Calcium antagonists and digoxin
- ACE inhibitors and NSAIDs
- ACE inhibitors and K+
- GTN (tablets) and drugs causing dry mouth
- Nitrates and e.g. sildenafil (Viagra)

Drugs to avoid if possible

- Sildenafil and related drugs
- NSAIDs especially COX IIs (inc. aspirin at analgesic doses)
- Sympathomimetics (e.g. decongestants)
- Caffeine (high doses)
- Salt substitutes or K+ unless indicated (ACEI)
- Herbal medicines (unless known to be safe)

Medication adherence

- Compliance with prescribed medication is approximately 50% in chronic diseases.
- Some patients are wilful non-compliers (Concordance)
- Different methods of ‘measuring’ compliance.
- Options available to improve compliance e.g. Routine, reminders, aids, once/twice daily regimens.

Pharmaceutical care

- Education on lifestyle modification
  - Smoking, Diet, Alcohol, Exercise
- Support for lifestyle modification
  - NRT, Diet
- Selection of evidence based therapy
  - Secondary prevention
    - Aspirin, beta-blockers, statins, ACE inhibitors
Pharmaceutical care 2

- Assessment for appropriate treatment
  - Symptom control
    - β-blocker, calcium antagonist, nitrate, nicorandil
  - Co-morbidities, contra-indications etc
- Monitoring of treatment
  - Symptoms, side effects, biochemistry etc
- Education on medication
  - Regimen, rationale, side effects, benefits, lack of obvious benefit, adherence

Summary

- Range of drugs available for use in CHD
- Evidence to support choice of some treatments
- Monitoring of treatment important
- Adherence may be a problem
Pharmaceutical care of people with coronary heart disease

Course information