NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

CENTRE FOR CLINICAL PRACTICE

QUALITY STANDARDS PROGRAMME

Quality standard topic: Stable angina

Output: Briefing paper

Introduction

This briefing paper presents a structured evidence review to help determine the suitability of recommendations from the key development sources listed below, to be developed into a NICE quality standard. The draft quality statements and measures presented in this paper are based on published recommendations from these key development sources:

Management of stable angina. NICE clinical guideline 126 (2011; NHS Evidence accredited). Available from www.nice.org.uk/guidance/CG126

Chest pain of recent onset. NICE clinical guideline 95 (2010; NHS Evidence accredited). Available from www.nice.org.uk/guidance/CG95

Structure of the briefing paper

The body of the paper presents supporting evidence for the draft quality standard reviewed against the three dimensions of quality: clinical effectiveness, patient experience and safety. Information is also provided on available cost-effectiveness evidence and current clinical practice for the proposed standard. Where possible, evidence from the clinical guideline is presented. When this is not available, other evidence sources have been used.

1 Clinical assessment and diagnosis – Estimating the likelihood of coronary artery disease

1.1 NICE CG95 Recommendation 1.3.3.1

1.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.3.1 Anginal pain is: • constricting discomfort in the front of the chest, or in the neck, shoulders, jaw, or arms • precipitated by physical exertion • relieved by rest or GTN within about 5 minutes. Use clinical assessment and the typicality of anginal pain features listed below to estimate the likelihood of CAD (see table 1): • Three of the features above are defined as typical angina. • Two of the three features above are defined as atypical angina. • One or none of the features above are defined as non-anginal chest pain. **Table 1 Percentage of people estimated to have coronary artery disease according to typicality of symptoms, age, sex and risk factors** (see table below) For men older than 70 with atypical or typical symptoms, assume an estimate > 90%. For women older than 70, assume an estimate of 61–90% EXCEPT women at high risk AND with typical symptoms where a risk of > 90% should be assumed. Values are per cent of people at each mid-decade age with significant coronary artery disease (CAD)[1]. Hi = High risk = diabetes, smoking and hyperlipidaemia (total cholesterol > 6.47 mmol/litre). Lo = Low risk = none of these three. The shaded area represents people with symptoms of non-anginal chest pain, who would not be investigated for stable angina routinely. Note: These results are likely to overestimate CAD in primary care populations. If there are resting ECG ST-T changes or Q waves, the likelihood of CAD is higher in each cell of the table.
Proposed quality statement	People with stable chest pain have a standardised estimation of the likelihood of coronary artery disease using clinical assessment and typicality of anginal pain features.
Draft quality measure	Structure: Evidence of local arrangements to ensure the standardised estimation, using clinical assessment and typicality of anginal pain features, of the likelihood of coronary artery disease in people presenting with stable chest pain. Process: Proportion of people presenting with stable chest pain who have a standardised estimation of the likelihood of

Table 1 Percentage of people estimated to have coronary artery disease according to typicality of symptoms, age, sex and risk factors

	Non-anginal chest pain				Atypical angina				Typical angina			
	Men		Women		Men		Women		Men		Women	
Age (years)	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi
35	3	35	1	19	8	59	2	39	30	88	10	78
45	9	47	2	22	21	70	5	43	51	92	20	79
55	23	59	4	25	45	79	10	47	80	95	38	82
65	49	69	9	29	71	86	20	51	93	97	56	84

coronary artery disease using clinical assessment and typicality of anginal pain features.

Numerator – The number of people in the denominator with a standardised estimation of the likelihood of coronary artery disease using clinical assessment and typicality of anginal pain features.

Denominator – The number of people presenting with stable chest pain.

1.1.2   Clinical and cost-effectiveness evidence

The association of the term angina for the symptoms associated with CAD has led to angina often being used synonymously with CAD. Generally however, the diagnosis of CAD is only fully confirmed by imaging the arteries, usually by invasive or CT coronary angiography. However the epidemiological association of typical symptoms reflecting myocardial ischaemia with CAD often allows a confident diagnosis to be made even short of imaging the arteries, and the GDG recognized that in most cases, the association of the typical symptom with pathology was straightforward, and that treating the pathology would relieve the symptom.

One high quality systematic review and four well conducted cohort studies have identified single characteristics which when present make the diagnosis of angina more or less likely. However, it is the combination of the characteristics which are usually considered in the clinical history. Two cohort studies have developed chest pain scores, whilst other studies have recognised three distinct categories; typical angina, atypical angina and non-anginal chest pain. Four cohort studies found that the pre-test likelihood that chest pain is due to angina in the presence of CAD can be predicted from the symptom category and that this can be further refined by including age and gender in the assessment. Using these three categories of chest pain together with age and gender, based on the Diamond and Forrester pre-test likelihood of CAD, it is possible to have a high degree of confidence that a given patient with stable chest pain has angina. The GDG also found that the pre-test likelihood of patients with chest pain of suspected cardiac origin have angina could be further refined by including the presence or absence of cardiovascular risk factors, such as smoking, diabetes and hyperlipidaemia in the assessment, as well as whether there is any past history of established CAD, for example evidence of a past history of MI.

The GDG noted that the estimates for the pre-test likelihood of CAD in people with suspected angina, with the exception of those with the most typical presentation, are likely to overestimate CAD in primary care populations.

No health economic evidence was identified from the literature search.

1.1.3   Patient experience

No relevant patient experience information was identified.

1.1.4   Patient safety

The use of standardized estimation of the likelihood of CAD should result in a reduction of unnecessary diagnostic testing and therefore a reduction in unnecessary radiation exposure and risks associated with invasive procedures.

1.1.5   Current practice

No data on current practice has been found.

1.1.6   Current indicators

No current indicators have been identified.

2 Clinical assessment and diagnosis - Features of typical angina and >90%likelihood of coronary artery disease

2.1 NICE CG95 Recommendation 1.3.3.5 KPI

2.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.3.5 (KPI) If people have features of typical angina based on clinical assessment and their estimated likelihood of CAD is greater than 90% (see table 1), further diagnostic investigation is unnecessary. Manage as angina.
Proposed quality statement	People with stable chest pain, features of typical angina and an estimated likelihood of coronary artery disease of more than 90% are treated for stable angina without further diagnostic investigation.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people with stable chest pain, features of typical angina and an estimated likelihood of coronary artery disease of more than 90% are treated for stable angina without further diagnostic investigation. Process: Proportion of people with stable chest pain, features of typical angina and an estimated likelihood of coronary artery disease of more than 90%, who are treated for stable angina without further diagnostic investigation. Numerator – The number of people in the denominator treated for stable angina without further diagnostic investigation. Denominator – The number of people with stable chest pain, features of typical angina and an estimated likelihood of coronary artery disease of more than 90%.

2.1.2 Clinical and cost-effectiveness evidence

The evidence discussed in 1.1.2 means it is possible to have high confidence in the accurate prediction of the likelihood of CAD using formal assessment. Consensus of GDG opinion was that in those people who have features of typical angina and their population estimated likelihood of CAD is greater than 90 per cent clinical assessment alone is appropriate to make a diagnosis of stable angina. These patients should be managed as having angina. For example, men aged over 65 years with typical angina symptoms do not need to be referred to confirm the diagnosis and a diagnosis of stable angina can be made without need for further diagnostic testing.

2.1.3 Patient experience

No relevant patient experience information was identified.

2.1.4   Patient safety

A patient safety incident is any unintended or unexpected incident which could have or did lead to harm for one or more patients receiving NHS care (see Appendix A). A comprehensive analysis of recent reported incidents (please see full accompanying report from the NPSA) identifies the following priority areas relating to patient safety.

- Unnecessary invasive diagnostic procedures.

2.1.5   Current practice

No data on current practice has been found.

2.1.6   Current indicators

No current indicators have been identified.

3   Clinical assessment and diagnosis – Non-anginal chest pain

3.1   NICE CG95 Recommendation 1.3.3.6 KPI

3.1.1   Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.3.6 (KPI) Unless clinical suspicion is raised based on other aspects of the history and risk factors, exclude a diagnosis of stable angina if the pain is non-anginal (see recommendation 1.3.3.1). Other features which make a diagnosis of stable angina unlikely are when the chest pain is: • continuous or very prolonged and/or • unrelated to activity and/or • brought on by breathing in and/or • associated with symptoms such as dizziness, palpitations, tingling or difficulty swallowing. Consider causes of chest pain other than angina (such as gastrointestinal or musculoskeletal pain).
Proposed quality statement	People with non-anginal chest pain are assessed for causes other than angina.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people presenting with non-anginal chest pain are assessed for causes other than angina. Process: Proportion of people presenting with non-anginal chest pain who are assessed for causes other than angina. Numerator – The number of people in the denominator who are assessed for causes other than angina. Denominator – The number of people presenting with non-anginal chest pain.

3.1.2   Clinical and cost-effectiveness evidence

The evidence discussed in 1.1.2 means it is possible to have high confidence in the accurate prediction of the likelihood of CAD using formal assessment. Consensus of GDG opinion was that following this assessment those patients with a very low likelihood of CAD should have alternative explanations, other than angina, explored first.

3.1.3   Patient experience

No relevant patient experience information was identified.

3.1.4   Patient safety

A comprehensive analysis of recent reported incidents (please see full accompanying report from the NPSA) identifies the following priority areas relating to patient safety.

- Unnecessary invasive diagnostic procedures.

3.1.5   Current practice

No data on current practice has been found.

3.1.6   Current indicators

No current indicators have been identified.

4   Clinical assessment and diagnosis – further diagnostic testing

4.1   NICE CG95 Recommendation 1.3.3.16 KPI

4.1.1   Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.3.16 (KPI) In people without confirmed CAD, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, estimate the likelihood of CAD (see table 1). Take the clinical assessment and the resting 12-lead ECG into account when making the estimate. Arrange further diagnostic testing as follows: • If the estimated likelihood of CAD is 61–90%, offer invasive coronary angiography as the first-line diagnostic investigation if appropriate (see recommendations 1.3.4.4 and 1.3.4.5). • If the estimated likelihood of CAD is 30–60%, offer functional imaging as the first-line diagnostic investigation (see recommendation 1.3.4.6). • If the estimated likelihood of CAD is 10–29%, offer CT calcium scoring as the first-line diagnostic investigation (see recommendation 1.3.4.7).
Proposed quality statement	People with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, are offered further diagnostic testing according to their likelihood of coronary artery disease.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, have further diagnostic investigation according to their likelihood of coronary artery disease. Process: a) Proportion of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, an estimated likelihood of coronary artery disease of 61-90% and who are being considered for coronary revascularisation, who have invasive coronary angiography as the first-line diagnostic investigation. Numerator – The number of people in the denominator who have invasive coronary angiography as the first-line diagnostic investigation. Denominator – The number of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, an estimated likelihood of coronary artery disease of 61-90% and who are being considered for coronary revascularisation. b) Proportion of people with stable chest pain, in whom stable

angina cannot be diagnosed or excluded based on clinical assessment alone, an estimated likelihood of coronary artery disease of 61-90% and who are not being considered for coronary revascularisation, who have non-invasive functional imaging as the first-line diagnostic investigation.

Numerator – The number of people in the denominator who have non-invasive functional imaging as the first-line diagnostic investigation.

Denominator – The number of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, an estimated likelihood of coronary artery disease of 61-90% and who are not being considered for coronary revascularisation.

c) Proportion of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, and an estimated likelihood of coronary artery disease of 30-60% who have non-invasive functional imaging as the first-line diagnostic investigation.

Numerator – The number of people in the denominator who have non-invasive functional imaging as the first-line diagnostic investigation.

Denominator – The number of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone and an estimated likelihood of coronary artery disease of 30-60%.

d) Proportion of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, and an estimated likelihood of coronary artery disease of 10-29% who have CT calcium scoring as the first-line diagnostic investigation.

Numerator – The number of people in the denominator who have CT calcium scoring as the first-line diagnostic investigation.

Denominator – The number of people with stable chest pain, in whom stable angina cannot be diagnosed or excluded based on clinical assessment alone, and an estimated likelihood of coronary artery disease of 10-29%.

4.1.2   Clinical and cost-effectiveness evidence

In some patients with chest pain of suspected cardiac origin there will still be uncertainty about the cause of the chest pain following clinical assessment (people with a population estimated likelihood of CAD of 10–90%) and it is these patients who may require further diagnostic investigation. Diagnostic performance of diagnostic tests is often evaluated in groups selected by setting or predetermined management plan rather than pre-test likelihood of CAD. No studies were found examining the diagnostic performance of these tests with the pre-test likelihood of CAD. The GDG translated the evidence of

diagnostic performance into the more defined populations with the assumption that the performance of the test is comparable to that in the study populations.

Systematic reviews were identified to determine the diagnostic performance of tests under examination. Across all reviews over 600 diagnostic studies were considered in meta-analysis. Heterogenity in the meta-analysis was almost universally reported however the methodology of the identified systematic reviews was predominantly excellent. From the health economic literature search, six full economic evaluations were included as part of the review.

The GDG acknowledged however that the thresholds are there to help guide clinical decision making, not dictate clinical decision making. It was also acknowledged that some patents might have contra-indications to particular investigations that must be taken into account.

NICE diagnostics guidance on new generation CT scanners has been out for consultation (consultation closed on 3 October 2011). Provisional recommendation 1.1 recommends new generation cardiac CT scanners for the first-line imaging in people with suspected stable coronary artery disease with an estimated likelihood of CAD of 10-29% in whom imaging with earlier generation CT scanners is difficult[1]. Final guidance on this topic is expected to be published in January 2012.

4.1.3   Patient experience

No relevant patient experience information was identified.

4.1.4   Patient safety

A comprehensive analysis of recent reported incidents (please see full accompanying report from the NPSA) identifies the following priority areas relating to patient safety.
- Wrong diagnosis
- Failure / delay in diagnosis

4.1.5   Current practice

The Cardiac Network survey has reported on the potential impact of the implementation of clinical guideline 95. The results showed 52% had an exercise test as first line diagnostic with the next highest being 16% coronary angiography. If NICE guidance had been applied patients could be aligned in particular risk score categories with the recommended imaging, and 58.5% of patients would go forward to angiography as their first diagnostic, 24.5% would have functional imaging and 17% CT scanning. In terms of numbers of

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[1] NICE diagnostics draft guidance Computed tomography (CT) scanners for cardiac imaging - Somatom Definition Flash, Aquilion One, Brilliance iCT and Discovery CT750 (accessed November 2011) Available from www.nice.org.uk

patients, this would suggest a four fold increase of CT scanning, a small increase in functional imaging and double the number of angiography[2].

A recent report suggests that within the next three years half of the MRI and CT scanners in the UK will need to be replaced[3].

Integrated Performance Measure statistics show high achievement of the number of people referred to the rapid access chest pain clinic being seen within 14 days: 99.8% in Q4 2010/11[4].

4.1.6   Current indicators

QOF CHD13. For patients with newly diagnosed angina (diagnosed after 1 April 2011), the percentage who are referred for specialist assessment[5]. This indicator is new to 2011/12 so there is no data available and recent decision has been made that it will be removed from the 2012/13 QOF.

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[2] NHS Improvement Cardiac Network survey results for Rapid Access Chest Pain Clinics and Cardiac Diagnostics (2010). Available from www.improvement.nhs.uk
[3] National Audit Office. Managing high value capital equipment in the NHS in England (2011). Available from www.nao.org.uk
[4] Department of Health Integrated Performance Measures (accessed November 2011). Available from www.dh.gov.uk
[5] Quality and Outcomes Framework indicators (accessed November 2011). Available from www.nhsemployers.org

5 Clinical assessment and diagnosis – conditions exacerbating angina

5.1 NICE CG95 Recommendation 1.3.3.9

5.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.3.9 Arrange blood tests to identify conditions which exacerbate angina, such as anaemia, for all people being investigated for stable angina.
Proposed quality statement	People being investigated for stable angina have their haemoglobin level measured to identify anaemia.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people being investigated for stable angina have their haemoglobin level measured to identify anaemia.
	Process: Proportion of people being investigated for stable angina who have their haemoglobin level measured.
	Numerator – The number of people in the denominator who have their haemoglobin level measured.
	Denominator – The number of people being investigated for stable angina.

5.1.2 Clinical and cost-effectiveness evidence

This recommendation is based on consensus of GDG opinion on the importance of investigations to identify conditions which have been shown to exacerbate angina. Generally, invasive angiographic luminal obstruction in an epicardial coronary artery estimated as ≥ 70% diameter stenosis is regarded as "severe" and likely to be a cause of angina. However, there are a number of factors that influence ischaemia giving rise to angina with less severe lesions. Reduced oxygen delivery caused by anaemia is one factor that causes less severe lesions to produce angina.

5.1.3 Patient experience

No relevant patient experience information was identified.

5.1.4 Patient safety

No patient safety issues have been identified

5.1.5 Current practice

No data on current practice has been found.

5.1.6 Current indicators

No current indicators have been identified.

6 Information for patients

6.1 NICE CG126 Recommendation 1.2.7 KPI

6.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.2.7 (KPI) Explore and address issues according to the person's needs, which may include: • self-management skills such as pacing their activities and goal setting • concerns about the impact of stress, anxiety or depression on angina • advice about physical exertion including sexual activity.
Proposed quality statement	People with stable angina are offered personalised information, education, support and opportunities for discussion to help them understand their condition and be involved in its management, if they wish.
Draft quality measure	Structure: Evidence of local arrangements to ensure people with stable angina are offered personalised information, education, support and opportunities for discussion to help them understand their condition and be involved in its management, if they wish. Process: Proportion of people with stable angina receiving personalised information, education, support and opportunities to discuss their care. Numerator – The number of people in the denominator receiving personalised information, education, support and opportunities to discuss their care. Denominator – The number of people with stable angina. Outcome: Evidence from experience surveys showing that people with stable angina felt they were provided with personalised information, education, support and opportunities for discussion to help them understand their condition and be involved in its management, if they wished.

6.1.2 Clinical and cost-effectiveness evidence

As stable angina is a chronic condition people may live with it for many years. People require information to ensure they understand their condition and the available treatments. Episodes of angina are potentially frightening and it is important that people are guided as to how to adapt their lifestyle if they have continuing symptoms. It is equally important however to ensure that people do not unnecessarily limit their lifestyle because of fear about precipitating angina or myocardial infarction.

The GDG reviewed the evidence from 4 moderate quality studies (3 qualitative and 1 cross-sectional questionnaire study) reporting directly on patient experience and requirements for information. No specific evidence on needs of subgroups was found. Evidence confirmed that the following information themes are considered important by stable angina patients:

- causes of angina and management
- identification and management of risk factors
- organisation of medical services
- physical activity
- information to family members
- education on stress management
- forum/groups for discussion of the condition
- self-management programmes
- management of anger and depression
- preference for educator for delivery of information.

The GDG considered that information and advice on stress, anxiety, and depression is not necessarily required by all patients but healthcare professionals may need to address these areas with many patients.

No economic studies were found on this question.

6.1.3   Patient experience

The 2011 Department of Health research study on long term health conditions provides information on the current experience of people with a long term condition (including people with coronary heart disease).

A large majority of people with long term health conditions play an active role in managing their condition. More than four in five (83%) play an active role in taking care of their condition all or most of the time, a similar proportion to 2009 (79%) and 2007 (78%).

Six in ten (61%) say they take an active role all of the time, a significant increase of 8 percentage points over the proportions saying this in 2009 and 2007 (both 53%).

Information provision is central to helping people take a greater role in the treatment of their long term condition. When asked 'what would better help you to self-care and take a greater role in the care of your long term health condition?', the top three responses all concerned more information. Around one in five say that information about the condition (20%), about the treatment (17%) or about how to avoid worsening the condition (16%) would help.

Nearly two thirds of respondents (63%) have not heard of any training courses that teach self care skills, while a further one in five (23%) have not used any. Just 7% have used a training course of this kind[6].

6.1.4   Patient safety

A comprehensive analysis of recent reported incidents (please see full accompanying report from the NPSA) identifies the following priority areas relating to patient safety.

- Understanding symptoms of exacerbation
- Knowing when to contact a clinician
- Complying with advice about medication.

6.1.5   Current practice

No patient safety issues have been identified.

6.1.6   Current indicators

No current indicators have been identified.

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[6] Department of Health Long term health conditions – research study (2011). Available from www.dh.gov.uk

7 Optimal medical treatment – short acting nitrates

7.1 NICE CG126 Recommendation 1.3.3

7.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendations	1.3.3 Offer a short-acting nitrate for preventing and treating episodes of angina. Advise people with stable angina: • how to administer the short-acting nitrate • to use it immediately before any planned exercise or exertion • that side effects such as flushing, headache and lightheadedness • may occur • to sit down or find something to hold on to if feeling light-headed.
Proposed quality statement	People with stable angina are offered a short-acting nitrate.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people with stable angina are offered a short-acting nitrate. Process: Proportion of people with stable angina who are prescribed a short-acting nitrate. Numerator – The number of people in the denominator prescribed a short-acting nitrate. Denominator – The number of people with stable angina.

7.1.2 Clinical and cost-effectiveness evidence

In people with stable angina short-acting drugs may be used to relieve episodes of angina and can be taken prophylactically before activities that are likely to bring on an episode. Short-acting drugs include organic nitrates (e.g. glyceryl trinitrate) and nifedipine administered via the buccal mucosa.

Weak evidence suggests that glyceryl trinitrate relieves episodes of angina more effectively than nifedipine. Evidence from two small randomised trials suggests that sublingual nifedipine increases measures of exercise capacity on a treadmill relative to placebo or to no treatment. Evidence from one very small trial showed that sublingual glyceryl trinitrate was more effective than sublingual nifedipine at reducing pain severity and providing complete symptom relief at two and four minutes after treatment. One trial reported that buccal glyceryl trinitrate tablet (held in cheek for 15 minutes) is more effective than sublingual glyceryl trinitrate tablet at reducing the number of angina episodes requiring treatment and at preventing expected angina attacks.

One trial compared sublingual glyceryl trinitrate tablets with glyceryl trinitrate spray during daily exercise tests for six days and reported no significant differences in the amount of exercise or in the time to onset of anginal symptoms between the two treatment groups.

No economic studies were identified. As glyceryl trinitrate is more effective at relieving episodes of angina and does not increase costs compared to nifedeprine, this drug is likely to be more cost-effective.

The GDG did not feel they could recommend one formulation of GTN over another and formulation should be chosen according to patient preference and needs.

7.1.3   Patient experience

The 2011 Department of Health research study on long term health conditions provides information on the current experience of people with a long term condition (including people with coronary heart disease). The majority (73%) of respondents also said they followed instructions given to them by a doctor, nurse of pharmacist all the time. This is in line with the 2009 survey (72%) and a significant increase over 2007 (61%).Around nine in ten (91%) say they follow them all or most of the time while just 4% say they never or hardly ever do.[7]

7.1.4   Patient safety

A comprehensive analysis of recent reported incidents (please see full accompanying report from the NPSA) identifies the following priority areas relating to patient safety.
- Omission of medication in acute care settings
- Non availability of medication in acute care settings
- Dispensing errors.

7.1.5   Current practice

The 2003 European Society of Cardiology Euro Heart survey examined prescription of nitrates in people with stable angina referred to a specialist cardiologist. After initial assessment, the percentage of people prescribed a beta blocker was 73% in the UK (61% European total)[8].

7.1.6   Current indicators

No current indicators have been identified.

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[7] Department of Health Long term health conditions – research study (2011). Available from www.dh.gov.uk
[8] European Heart Journal The initial management of stable angina in Europe, from the Euro Heart Survey (2005). Available from www.escardio.org

8 Optimal medical treatment – beta blocker / calcium channel blocker

8.1 NICE CG126 Recommendations 1.4.7 to 1.4.9

8.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendation	1.4.7 Offer either a beta blocker or a calcium channel blocker as first-line treatment for stable angina. Decide which drug to use based on comorbidities, contraindications and the person's preference.
	1.4.8 If the person cannot tolerate the beta blocker or calcium channel blocker, consider switching to the other option (calcium channel blocker or beta blocker).
	1.4.9 If the person's symptoms are not satisfactorily controlled on a beta blocker or a calcium channel blocker, consider either switching to the other option or using a combination of the two.
Proposed quality statement	People with stable angina are offered a beta blocker or a calcium channel blocker as first line treatment, which is reviewed if there are intolerable side effects or symptoms are not satisfactorily controlled.
Draft quality measure	Structure:
	a) Evidence of local arrangements to ensure that people with stable angina are offered a beta blocker or calcium channel blocker as first line treatment.
	b) Evidence of local arrangements to ensure that people with intolerable side effects or symptoms not satisfactorily controlled have the prescription of beta blocker or calcium channel blocker reviewed.
	Process:
	a) Proportion of people with stable angina who are prescribed a beta blocker or calcium channel blocker as first line treatment.
	Numerator – The number of people in the denominator are prescribed a beta blocker or calcium channel blocker as first line treatment.
	Denominator – The number of people with stable angina.
	b) Proportion of people with stable angina and intolerable side effects to a beta blocker or a calcium channel blocker who are switched to the alternative.
	Numerator – The number of people in the denominator who are switched to the alternative.
	Denominator – The number of people with stable angina and intolerable side effects to a beta blocker or a calcium channel blocker.
	c) The proportion of people with stable angina and symptoms

not satisfactorily controlled by a beta blocker or a calcium channel blocker who are prescribed the alternative or combination of the two.
Numerator – The number of people in the denominator who are prescribed the alternative or combination of the two.
Denominator – The number of people with stable angina and symptoms not satisfactorily controlled by a beta blocker or a calcium channel blocker.

8.1.2 Clinical and cost-effectiveness evidence

The GDG recognised the historical consensus that monotherapy with BB or CCB is effective for the prevention of attacks of angina. Previous guidelines have suggested that BBs should be the first-line treatment for stable angina because of evidence that beta-blockade reduces mortality after acute myocardial infarction and in people with chronic heart failure. It has also been suggested that short-acting dihydropyridines may have deleterious effects in people with coronary artery disease. The GDG concluded that there is no evidence to discriminate between BB and CCB for the initial treatment of people with stable angina.

Cost effectiveness analysis reported that the cost of treatments with BB and CCB and their consequences is similar after the first year.

8.1.3 Patient experience

No relevant patient experience information was identified.

8.1.4 Patient safety

No patient safety issues have been identified.

8.1.5 Current practice

The 2003 European Society of Cardiology Euro Heart survey examined prescription of beta blockers in people referred to a specialist cardiologist. After initial assessment the percentage of people prescribed a beta blocker was 72% in the UK (67% European total)[9].

8.1.6 Current indicators

QOF CHD10. The percentage of patients with coronary heart disease who are currently treated with a beta-blocker (unless a contraindication or side effects are recorded).

- 2007/08 – 72.7% underlying achievement (England wide).
- 2008/09 – 72.9% underlying achievement (England wide).
- 2009/10 – 73.7% underlying achievement (England wide).
- 2010/11 – 73.5% underlying achievement (England wide)[10].

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[9] European Heart Journal The initial management of stable angina in Europe, from the Euro Heart Survey (2005). Available from www.escardio.org
[10] Quality and Outcomes Framework clinical indicators data tables (accessed November 2011). Available from www.ic.nhs.uk

9   Secondary prevention of CVD – Lipid modification

9.1   NICE CG126 Recommendation 1.3.7

9.1.1   Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.7 Offer statin treatment in line with 'Lipid modification' (NICE clinical guideline 67).
Proposed quality statement	People with stable angina are offered statins in accordance with NICE guidance.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people with stable angina are offered statins in accordance with NICE guidance.
	Process: Proportion of people with stable angina who are prescribed statins in accordance with NICE guidance.
	Numerator – The number of people in the denominator prescribed statins in accordance with NICE guidance.
	Denominator – The number of people with stable angina.

9.1.2   Clinical and cost-effectiveness evidence

The recommendations on statin medication within NICE clinical guideline 67 are based upon the evidence reviewed in NICE technology appraisal 97 'Statins for the prevention of cardiovascular events. NICE TA 94 states that: Statin therapy is recommended for adults with clinical evidence of CVD. For people with established CVD there is substantive trial evidence (meta analysis of 14 randomised controlled trials) that statins reduce total mortality, cardiovascular mortality and morbidity and total mortality, and are cost-effective. This evidence is strongest for people with coronary heart disease (CHD). Among people with CHD treated with statins there is a reduction in recurrent CHD events of about 23%, (rate ratio (RR) 95% CI 0.74 to 0.80) and a reduction in stroke events by 17% (0.78 to 0.88).

Health economic modelling has concluded that statin therapy is cost effective for people with clinical evidence of CVD.

Technology appraisal 97 also recommends that the therapy should be initiated with a drug with a low acquisition cost, for example simvastin or pravastin. The NICE recommendations for statin therapy state that:

• The decision to initiate statin therapy should be made after an informed discussion between the responsible clinician and the individual about the risks

and benefits of statin treatment, and taking into account additional factors such as comorbidity and life expectancy.

• When the decision has been made to prescribe a statin, it is recommended that therapy should be initiated with a drug with a low acquisition cost (taking into account required daily dose and product price per dose).

9.1.3   Patient experience

The National Prescribing Centre has published a patient decision aid to assist health professionals in consultations with patients in whom treatment with a statin is being considered, for primary or secondary prevention of cardiovascular events[11].

9.1.4   Patient safety

No patient safety issues have been identified.

9.1.5   Current practice

Current expenditure on statins is around £500 million a year although national prescriptions data do not provide information on prescribed indication. A 28-day course of a branded statin is on average about 6 times more costly than an appropriate generic statin. If PCTs with below 79% use (achieved by the top quartile of trusts) of lower cost statins increased this to 79% over £64 m would be saved in a year (based on quarter 1, 2009/10)[12].

Right Care NHS atlas of variation in care details the variation in percentage pravastatin / simvastatin items per all statins prescribed by PCT, July 2009 - Sep 2009. Lighter colours mean a smaller percentage. The range was from 59.1% to 86.1%[13]. Latest national figures estimate the proportion of scripts written for simvastatin and pravastatin as a percentage of the total number of prescriptions for all statins (including combinations of Ezetimibe with statins) is 75.86%.

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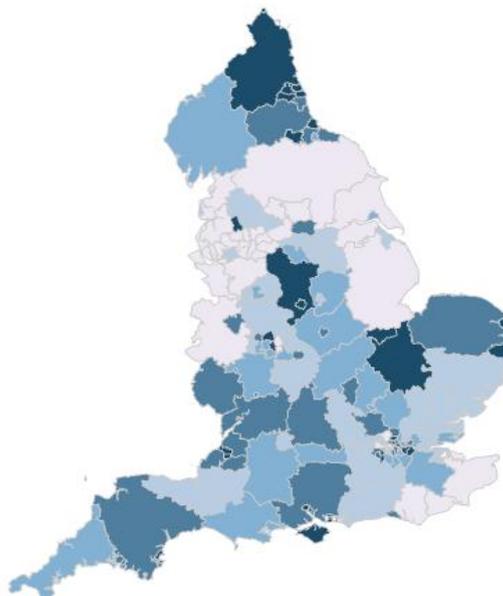
[11] National Prescribing Centre Statins patient decision aid (2009) Available from
www.nps.nhs.uk
[12] NHS Institute for Innovation and Improvement NHS Better Care, Better Value indicators
(accessed November 2011). Available from www.productivity.nhs.uk
[13] Right Care NHS Atlas of Variation (accessed November 2011). Available from
www.rightcare.nhs.uk

The 2003 European Society of Cardiology Euro Heart survey examined prescription of statins in people with stable angina referred to a specialist cardiologist. After initial assessment the percentage of people prescribed a statin was 72% in the UK (48% European total)[14].

The Euro Heart survey also examined management of cholesterol in people with stable angina referred to a specialist and found that 72% of patients had a cholesterol measurement performed within 4 weeks of assessment. Mean cholesterol level was 5.8 mmol/L, and just one-third of patients taking statin had achieved the target (5 mmol/L) cholesterol.

9.1.6   Current indicators

QOF CHD8. The percentage of patients with coronary heart disease whose last measured total cholesterol (measured in the preceding 15 months) is 5mmol/l or less.
- 2006/07 – 81.9% underlying achievement (England wide).
- 2007/08 – 82.5% underlying achievement (England wide).
- 2008/09 – 82.1% underlying achievement (England wide).
- 2009/10 – 82.1% underlying achievement (England wide).
- 2010/11 – 82.1% underlying achievement (England wide)[15].

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[14] European Heart Journal The initial management of stable angina in Europe, from the Euro Heart Survey (2005). Available from www.escardio.org
[15] Quality and Outcomes Framework clinical indicators data tables (accessed November 2011). Available from www.ic.nhs.uk

10   Secondary prevention of CVD – blood pressure treatment

10.1   *NICE CG126 Recommendation 1.3.8*

10.1.1   Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.3.8 Offer treatment for high blood pressure in line with 'Hypertension' (NICE clinical guideline 34 [Replaced by CG127]).
Proposed quality statement	People with stable angina and high blood pressure are offered antihypertensive medication in accordance with NICE guidance.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people with stable angina and high blood pressure are offered antihypertensive medication in accordance with NICE guidance.
	Process: Proportion of people with stable angina and high blood pressure who are prescribed antihypertensive medication in accordance with NICE guidance.
	Numerator – The number of people in the denominator prescribed antihypertensive medication in accordance with NICE guidance.
	Denominator – The number of people with stable angina and high blood pressure.

10.1.2   Clinical and cost-effectiveness evidence

Published epidemiological studies and trials together conclusively demonstrate that a sustained reduction in blood pressure by drugs reduces the incidence of stroke, coronary heart disease, heart failure and mortality. The size of benefit in any period generally depends on an individual's overall cardiovascular risk. For an individual at any age, the greater the cardiovascular risk the greater the potential to benefit from treatment.

The analysis for the 2011 update found that treating hypertension is highly cost-effective. Treatment resulted in improved health outcomes (higher QALYs) with all of the drug classes in the model and actually resulted in overall cost savings compared to no treatment as the reduction in cardiovascular events led to savings that offset the relatively low cost of antihypertensive medication; although it should be noted that this is based on low cost generic drugs.

10.1.3   Patient experience

Healthtalk Online presents feedback from 18 patients with high blood pressure[16]. A view shared by many was the dislike of taking tablets. Side effects were quoted as a prime inconvenience, and many had concerns whether the drugs were causing more damage than good. Not all were comfortable with taking medication nor did they find it easy to remember to take it regularly. Some saw it as a weakness or constant reminder of their problem. The selection process was viewed by most as a necessary trial and error process, and in numerous cases the patient was relieved when a suitable treatment was found, particularly when they had experienced side effects such as impotence and skin reactions from previous drugs.

10.1.4   Patient safety

No patient safety issues have been identified.

10.1.5   Current practice

The 2003 European Society of Cardiology Euro Heart survey examined prescription of anti-platelets in people referred to a specialist cardiologist. After initial assessment the percentage of people prescribed aspirin was 94% in the UK (78% European total). Alternative anti-platelet medication was prescribed in 4% of patients in the UK (9% European total)[17].

10.1.6   Current indicators

QOF CHD6. The percentage of patients with coronary heart disease in whom the last blood pressure reading (measured in the preceding 15 months) is 150/90 or less.
- 2006/07 – 88.9% underlying achievement (England wide).
- 2007/08 – 89.4% underlying achievement (England wide).
- 2008/09 – 89.7% underlying achievement (England wide).
- 2009/10 – 89.8% underlying achievement (England wide).
- 2010/11 – 90.2% underlying achievement (England wide)[18].

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[16] Healthtalk Online, High blood pressure (accessed November 2011). Available from www.healthtalkonline.org
[17] European Heart Journal The initial management of stable angina in Europe, from the Euro Heart Survey (2005). Available from www.escardio.org
[18] Quality and Outcomes Framework clinical indicators data tables (accessed November 2011). Available from www.ic.nhs.uk

11 Continuing treatment strategies following optimal medical treatment

11.1 *NICE CG126 Recommendations 1.5.5, 1.5.9 and 1.5.11 (KPIs)*

11.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.5.5 (KPI) When either procedure would be appropriate, explain to the person the risks and benefits of PCI and CABG for people with anatomically less complex disease whose symptoms are not satisfactorily controlled with optimal medical treatment. If the person does not express a preference, take account of the evidence that suggests that PCI may be the more cost-effective procedure in selecting the course of treatment. 1.5.9 (KPI) Ensure people with stable angina receive balanced information and have the opportunity to discuss the benefits, limitations and risks of continuing drug treatment, CABG and PCI to help them make an informed decision about their treatment. When either revascularisation procedure is appropriate, explain to the person: • The main purpose of revascularisation is to improve the symptoms of stable angina. • CABG and PCI are effective in relieving symptoms. • Repeat revascularisation may be necessary after either CABG or PCI and the rate is lower after CABG. • Stroke is uncommon after either CABG or PCI, and the incidence is similar between the two procedures. • There is a potential survival advantage with CABG for some people with multivessel disease. 1.5.11 (KPI) Discuss the following with people whose symptoms are satisfactorily controlled with optimal medical treatment: • their prognosis without further investigation • the likelihood of having left main stem disease or proximal three vessel disease • the availability of CABG to improve the prognosis in a subgroup of people with left main stem or proximal three-vessel disease • the process and risks of investigation • the benefits and risks of CABG, including the potential survival gain.
Proposed quality statement	People with stable angina have the opportunity to discuss continuing treatment strategies following optimal medical treatment.

Draft quality measure	**Structure:** Evidence of local arrangements to ensure that people with stable angina have the opportunity to discuss continuing treatment strategies following optimal medical treatment.
	Process: Proportion of people with stable angina treated with optimal medical treatment who have the opportunity to discuss continuing treatment strategies.
	Numerator – The number of people in the denominator who have the opportunity to discuss continuing treatment strategies
	Denominator – The number of people with stable angina treated with optimal medical treatment.
	Outcome: Evidence from experience surveys showing that people with stable angina treated with medication were given the opportunity to discuss their continuing treatment.

11.1.2   Clinical and cost-effectiveness evidence

People with stable angina may be considered for myocardial revascularisation with percutaneous coronary intervention or coronary artery bypass surgery. The choice between the two revascularisation procedures is influenced by the result of coronary arteriography. Some patients are not angiographically suitable for percutaneous or surgical revascularisation but many patients are technically suitable for either revascularisation technique.

The evidence review for the determination of the clinical effectiveness of PCI vs. CABG included a total of 42 papers. Outcomes of interest included long-term mortality (total and cardiovascular), rates of major adverse cardiovascular events (myocardial infarction, stroke, myocardial revascularisation), measures of symptom severity (frequency of angina, exercise test outcomes), and quality of life. The GDG concluded that there is no definitive evidence that one revascularisation strategy confers a prognostic advantage over the other strategy in contemporary clinical practice.

The GDG considered it important that patients are given full information about the relative benefits and risks of continuing medical therapy or undergoing revascularisation and therefore made further consensus recommendations on discussions of treatment strategies.

11.1.3   Patient experience

Healthtalk Online presents feedback from a small number of patients undergoing interventions following a heart attack[19].

Common themes reported by people about angioplasty include:
- needing to lie flat for several hours afterwards

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[19] Healthtalk Online, Heart attack (accessed November 2011). Available from www.healthtalkonline.org

- discomfort post-op
- repeated revascularisation

Common themes reported by people about coronary artery bypass surgery include:

- Mixed feelings on returning home after bypass surgery - happy to be home again, but at the same time feeling anxious that they no longer have the security of the hospital around them.
- Consent forms and information needed
- Fears and anxieties pre-op
- Unexpected weakness post-op
- Less pain than expected
- Healing of scars, including uncomfortable leg scar
- Recovery post-op and strength building.

11.1.4 Patient safety

No patient safety issues have been identified.

11.1.5 Current practice

No data on current practice has been found.

11.1.6 Current indicators

No current indicators have been identified.

12   Symptoms not controlled with optimal medical treatment – coronary angiography

12.1   NICE CG126 Recommendation 1.5.2

12.1.1   Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.5.2 Offer coronary angiography to guide treatment strategy for people with stable angina whose symptoms are not satisfactorily controlled with optimal medical treatment. Additional non-invasive or invasive functional testing may be required to evaluate angiographic findings and guide treatment decisions.
Proposed quality statement	People with stable angina whose symptoms are not satisfactorily controlled with optimal medical treatment are offered coronary angiography to help decide on a treatment strategy.
Draft quality measure	Structure: Evidence of local arrangements to ensure coronary angiography is available to help decide on treatment strategies for people with stable angina whose symptoms are not satisfactorily controlled with optimal medical treatment. Process: Proportion of people with stable angina and symptoms not satisfactorily controlled with optimal medical treatment who have a coronary angiography. Numerator – The number of people in the denominator who have a coronary angiography. Denominator – The number of people with stable angina and symptoms not satisfactorily controlled with optimal medical treatment.

12.1.2   Clinical and cost-effectiveness evidence

This recommendation is based on consensus of GDG opinion following discussions on the clinical effectiveness of revascularisation strategies (see 11.1.2).

NICE diagnostics guidance on new generation CT scanners has been out for consultation (consultation closed on 3 October 2011). Provisional recommendation 1.2 recommends that new generation cardiac CT scanners are the first-line evaluation of disease progression, to establish the need for revascularisation, in people with known coronary artery disease in whom

imaging with earlier generation CT scanners is difficult[20]. Final guidance on this topic is expected to be published in January 2012.

12.1.3   Patient experience

No relevant patient experience information was identified.

12.1.4   Patient safety

No patient safety issues have been identified.

12.1.5   Current practice

The 2003 European Society of Cardiology Euro Heart survey examined the use of coronary angiography in people with stable angina. After initial assessment 41% of people had a coronary angiogram performed or planned as a result of the assessment. Of those with results of angiography recorded within 4 weeks of presentation, revascularization was the chosen treatment strategy for 52% of patients with significant disease, i.e. .50% coronary stenosis[21].

12.1.6   Current indicators

No current indicators have been identified.

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[20] NICE diagnostics draft guidance Computed tomography (CT) scanners for cardiac imaging - Somatom Definition Flash, Aquilion One, Brilliance iCT and Discovery CT750 (accessed November 2011). Available from www.nice.org.uk
[21] European Heart Journal The initial management of stable angina in Europe, from the Euro Heart Survey (2005). Available from www.escardio.org

13 Symptoms not controlled with optimal medical treatment – multidisciplinary team

13.1 *NICE CG126 Recommendation 1.5.8 KPI*

13.1.1 Relevant NICE clinical guideline recommendation and proposed quality statement

Guideline recommendation	1.5.8 (KPI) Ensure that there is a regular multidisciplinary team meeting to discuss the risks and benefits of continuing drug treatment or revascularisation strategy (CABG or PCI) for people with stable angina. The team should include cardiac surgeons and interventional cardiologists. Treatment strategy should be discussed for the following people, including but not limited to: • people with left main stem or anatomically complex three-vessel disease • people in whom there is doubt about the best method of revascularisation because of the complexity of the coronary anatomy, the extent of stenting required or other relevant clinical factors and comorbidities.
Proposed quality statement	People with stable angina undergoing angiography because symptoms are not satisfactorily controlled with optimal medical treatment have their continuing treatment directed by a multidisciplinary team.
Draft quality measure	Structure: Evidence of local arrangements to hold multidisciplinary team meetings to discuss the continuing treatment of people with stable angina undergoing angiography because symptoms are not satisfactorily controlled by optimal medical treatment. Process: Proportion of people with stable angina undergoing angiography because symptoms are not satisfactorily controlled with optimal medical treatment who have their continuing treatment directed by a multidisciplinary team. Numerator – The number of people in the denominator who have their continuing treatment directed by a multidisciplinary team. Denominator – The number of people with stable angina undergoing angiography because symptoms are not satisfactorily controlled with optimal medical treatment.

13.1.2 Clinical and cost-effectiveness evidence

This recommendation is based on consensus of GDG opinion. The group considered that review of treatment options within a multidisciplinary team meeting that includes cardiac surgeons and an interventional cardiologist can be helpful. They did not think that this is required for all patients.

13.1.3   Patient experience

No relevant patient experience information was identified.

13.1.4   Patient safety

No patient safety issues have been identified

13.1.5   Current practice

No data on current practice has been found.

13.1.6   Current indicators

No current indicators have been identified.

14   Comprehensive re-evaluation

14.1   NICE CG126 Recommendation 1.7.1

14.1.1   Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendation	1.7.1 Offer people whose stable angina has not responded to drug treatment and/or revascularisation comprehensive re-evaluation and advice, which may include: • exploring the person's understanding of their condition • exploring the impact of symptoms on the person's quality of life • reviewing the diagnosis and considering non-ischaemic causes of pain • reviewing drug treatment and considering future drug treatment and revascularisation options • acknowledging the limitations of future treatment • explaining how the person can manage the pain themselves • specific attention to the role of psychological factors in pain • development of skills to modify cognitions and behaviours associated with pain.
Proposed quality statement	People with stable angina that has not responded to drug treatment or revascularisation are offered a comprehensive re-evaluation of their diagnosis and treatment strategy.
Draft quality measure	Structure: Evidence of local arrangements to ensure that people with stable angina that has not responded to drug treatment or revascularisation are offered a comprehensive re-evaluation of their diagnosis and treatment strategy. Process: Proportion of people with stable angina that has not responded to drug treatment or revascularisation who have a comprehensive re-evaluation of their diagnosis and treatment strategy. Numerator – The number of people in the denominator who have a comprehensive re-evaluation of their diagnosis or treatment strategy. Denominator – The number of people with stable angina that has not responded to drug treatment or revascularisation

14.1.2   Clinical and cost-effectiveness evidence

This recommendation is based on consensus of GDG opinion alongside evidence on self management strategies from one moderate and one low quality RCT. The moderate quality RCT showed self management programmes had statistically significant improvements in some Quality of Life

variables including physical functioning, general health, angina frequency and stability, and self-efficacy to manage disease.

No economic evidence was included for this intervention.

14.1.3   Patient experience

No relevant patient experience information was identified.

14.1.4   Patient safety

No patient safety issues have been identified.

14.1.5   Current practice

No data on current practice has been found.

14.1.6   Current indicators

No current indicators have been identified.

Appendix A: Definition of patient safety

The National Patient Safety Agency (NPSA) defines patient safety in the following terms:

Every day more than a million people are treated safely and successfully in the NHS, but the evidence tells us that in complex healthcare systems things will and do go wrong, no matter how dedicated and professional the staff. When things go wrong, patients are at risk of harm, and the effects are widespread and often devastating for patients, their families and the staff involved. Safety incidents also incur costs through litigation and extra treatment, and in 2009/10 the NHSLA paid out approximately £827, 000,000 in litigation costs and damages. These incidents are often caused by poor system design rather than the error of individuals i.e. 'they are an accident waiting to happen'.

In short patient safety could be summarised as 'The identification and reduction of risk and harm associated with the care provided to patients 'or 'Preventing patients from being harmed by their treatment'. Examples of this might be 'operating on or removing the wrong organ, ten times the dose of an opioid, giving a colonoscopy to the wrong patient with the same name as someone else in the waiting room etc.' These risks are unlikely to be identified through clinical trials or traditional evidence bases and so other evidence sources, such as the National Reporting and Learning System, need to be analysed to highlight the risks and improve system development. This does not however give an accurate picture of prevalence in that way that methods such as casenote review may do.