NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Centre for Clinical Practice

Review of Clinical Guideline (CG95) – Chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin

Background information

Guideline issue date: 2010
Review: 2012 (first review)
National Collaborating Centre: National Clinical Guidelines Centre

Review recommendation

- The guideline should be considered for an update.

Factors influencing the decision

Literature search

1. Through an assessment of abstracts from a high-level randomised control trial (RCT) search, new evidence was identified relating to the following clinical areas within the guideline:
    - Use of biomarkers
    - Making a diagnosis
    - Multislice CT coronary angiography for emergency department triage of patients with acute chest pain

2. Through this stage of the process, a sufficient number of studies relevant to the above clinical areas were identified to allow an assessment for a proposed review decision.

3. From initial intelligence gathering, qualitative feedback from other NICE departments, the views expressed by members of the Guideline Development Group (GDG), as well as the high-level search, an additional focused literature search was conducted for the following clinical areas:
    - The diagnostic utility of calcium scoring, non-invasive and invasive tests imaging techniques including CT coronary angiography and MR perfusion imaging in the diagnosis of patients with acute chest pain and stable chest pain of suspected cardiac origin
    - The utility and cost effectiveness of cardiac biomarkers in evaluation of individuals with acute chest pain of suspected cardiac origin
    - The incremental benefit and cost effectiveness of a clinical history, risk factors and physical examination in evaluation of patients with stable chest pain of suspected cardiac origin

2. New evidence was identified in these areas which may potentially invalidate the current guideline recommendations, particularly in relation to:
    - Computerised tomographic angiographies for the diagnosis of acute coronary syndromes in patients with acute chest pain
    - The use of high sensitive troponins compared to the conventional cardiac troponins to diagnose acute coronary syndromes in patients with acute chest pain
    - The use of updated Diamond-Forrester prediction model to better estimate the pre-test probability of coronary artery disease in patients with stable chest pain without evidence of previous coronary artery disease
3. Two ongoing clinical trials (publication dates unknown) were identified focusing on CT coronary angiogram versus traditional care in emergency department assessment of potential acute coronary

syndrome and a study to rule out myocardial infarction by cardiac computed tomography. However, at this time it is unclear whether the ongoing clinical trials will have any impact on the guideline recommendations in the future.

4. No evidence was identified that was relevant to research recommendations in the original guideline.

Guideline Development Group and National Collaborating Centre perspective

5. A questionnaire was distributed to GDG members and the National Collaborating Centre to consult them on the need for an update of the guideline. Eight responses were received and three respondents indicated that there was no new relevant literature that potentially changes current recommendations. Five respondents mentioned new evidence on the following areas:
    - Novel imaging techniques, particularly computerised tomography coronary angiography and magnetic resonance perfusion imaging for diagnosis of chest pain
    - Diagnostic assessment in patients with suspected stable angina
    - Further research on biomarkers is available including the introduction of highly sensitive troponins and their impact on timescales for testing in patients with suspected acute coronary syndrome
    - A key area of the guideline, the pre-test likelihood table has been updated recently, which is critical in the diagnostic pathway. There is additional evidence for the validity of using Diamond and Forrester to assess pre-test likelihood of coronary artery disease in contemporary practice, and the use of electronic tools rather than tables needs to be considered

6. One respondent mentioned that computerised tomography and magnetic resonance imaging techniques are more widely available, hence might have become more cost effective.

7. In terms of ongoing research relevant to the guideline, the following trial was identified:
   - SCOTHEART Trial. The primary objective of the study is to see if coronary artery calcium score and computed tomography coronary angiogram alters the proportion of patients diagnosed with angina due to coronary heart disease. Expected study completion date: January 2015

8. Overall, four respondents commented that there was insufficient evidence or variation of practice to warrant an update of current guideline at this time. However, two other respondents were unsure and two respondents disagreed and proposed the following areas to be further reviewed: novel imaging techniques to diagnose patients with acute chest pain, evidence on highly sensitive troponin and additional evidence for the validity of using Diamond and Forrester to assess pre-test likelihood of coronary artery disease.

Implementation and post publication feedback

9. No new evidence was identified through post publication enquiries or implementation feedback that would indicate a need to update the guideline.

Relationship to other NICE guidance

10. NICE guidance related to CG95 can be viewed in Appendix 1.

Summary of Stakeholder Feedback

Review proposal put to consultees:
The guideline should be updated at this time.

11. In total 8 stakeholders commented on the review proposal recommendation during the two week consultation period. The table of stakeholder comments can be viewed in Appendix 2.

12. Five stakeholders agreed with the review proposal, 2 stakeholders disagreed with the review proposal and 1 stakeholder offered no opinion on the proposal.

13. Stakeholders that disagreed with the review proposal commented that they did not agree with the areas proposed for update. However, through the review of CG95 potential new evidence was identified in 3 clinical areas, which differs to what is currently recommended. As this could potentially lead to variation in clinical practice, the guideline should be considered for an update.

Anti-discrimination and equalities considerations

14. No evidence was identified to indicate that the guideline scope does not comply with anti-discrimination and equalities legislation. The original scope is inclusive of adults only.

Relationship to quality standards

15. This guideline is potentially related to the upcoming quality standard for acute coronary syndromes (including myocardial infarction).

Conclusion

16. The evidence and intelligence identified through the process suggests that some areas of the guideline may need updating, particularly in relation to:
    - Computerised tomographic angiographies for the diagnosis of acute coronary syndromes in patients with acute chest pain
    - The use of high sensitive troponins compared to the conventional cardiac troponins to diagnose acute coronary syndromes in patients with acute chest pain

- The use of updated Diamond-Forrester prediction model to better estimate the pre-test probability of coronary artery disease in patients with stable chest pain without evidence for previous coronary artery disease

17. Guidance Executive confirmed that Centre capacity will be prioritised to accommodate new topic referrals. Where there is currently a published quality standard or where a quality standard is not required, guideline updates will be subject to NICE scheduling processes at a later date.

18. An update of CG95 Chest pain may potentially inform the upcoming quality standard for acute coronary syndromes (including myocardial infarction).

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Centre for Clinical Practice
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Appendix 1

The following NICE guidance is related to CG95:

Guidance	Review date
CG130: Hyperglycaemia in acute coronary syndromes (Oct 2011)	To be confirmed
CG127: The clinical management of primary hypertension in adults (Aug 2011)	To be confirmed
CG126: The management of stable angina (Jul 2011)	To be confirmed
CG27: Referral for suspected cancer (June 2005)	To be updated
CG107: Hypertension in pregnancy (May 2011)	To be confirmed
CG108: Chronic heart failure (Aug 2010)	To be reviewed Aug 2013
CG109:Transient loss of consciousness in adults and young people (Aug 2010)	To be reviewed Aug 2013
CG94: Unstable angina and NSTEMI: The early management of unstable angina and non-ST-segment-elevation myocardial infarction (Mar 2010)	Guideline is currently under review
CG69: Respiratory tract infections (Jul 2009)	Reviewed in 2011 (Not to be updated)
CG68: Diagnosis and initial management of acute stroke and transient ischaemic attack (TIA) (Jul 2008)	Reviewed in 2011 (Not to be updated)

CG48 MI: secondary prevention (Oct 2007)	To be updated
IPG286: Thoracoscopic epicardial radiofrequency ablation for atrial fibrillation (Jan 2009)	To be confirmed
MTG4 BRAHMS copeptin assay to rule out myocardial infarction in patients with acute chest pain (Jun 2011)	To be confirmed
TA47: Glycoprotein IIb/IIIa inhibitors in the treatment of acute coronary syndromes (Sept 2002)	TA47 was updated by CG94, 2010.
TA52: Guidance on the use of drugs for early thrombolysis in the treatment of acute myocardial infarction (Oct 2002)	As per review proposal project incorporated verbatim into the forthcoming clinical guideline on the 'management of acute coronary syndromes including myocardial infarction.'
TA71: Guidance on the use of coronary artery stents (Oct 2003)	Sections 1.2-1.4 of this guidance have been replaced by TA152 Coronary artery disease - drug-eluting stents (July 2008)
TA73: Myocardial perfusion scintigraphy for the diagnosis and management of angina and myocardial infarction (Nov 2003)	This guidance has been partially updated by 'Chest pain of recent onset' (NICE clinical guideline 95) and 'Management of stable angina' (NICE clinical guideline 126). Section 1.2 of the guidance should be updated within the clinical guideline on 'The management of stable angina' currently in development. The rest is placed on the static list in 2010

TA80: Clopidogrel in the treatment of non-ST-segment elevation acute coronary syndrome (July 2004)	Recommendations 1.1 and 1.2 were updated by CG94 and recommendations 1.3 was incorporated into CG94
TA88: Bradycardia – dual chamber pacemakers (Feb 2005)	It is currently subject to a technology appraisal review proposal project at the moment
TA90: Clopidogrel and dipyridamole for the prevention of artherosclerotic events (May 2005)	It has been updated and replaced by TA210- Vascular disease - clopidogrel and dipyridamole
TA94: Statins for the prevention of cardiovascular events in patients at increased risk of developing cardiovascular disease or those with established cardiovascular disease (Jan 2006)	As per review proposal project in late 2011, this piece of guidance is to be updated within a review of the NICE guideline CG67: Cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease
TA95: Implantable cardioverter defibrillators (ICDs) for the treatment of arrhythmias (review of TA11) (Jan 2006)	This appraisal is currently being reviewed as an MTA (along with TA120). Expected publication date is Sept 2013
TA120: Cardiac resynchronisation therapy for the treatment of heart failure (May 2007)	This appraisal is currently being reviewed as an MTA. Expected publication date is Sept 2013
TA122: Alteplase for the treatment of acute ischaemic stroke (June 2007)	This guidance has been updated and replaced by TA264 issued in September 2012
TA152: Coronary artery disease - drug-eluting stents (July 2008)	To be confirmed
TA182 Acute coronary syndrome – prasugrel (Oct 2009)	It will be updated as an MTA. Publication dates to be confirmed

TA210: Vascular disease - clopidogrel and dipyridamole (Dec 2010)	To be reviewed Jul 2013
TA230 Myocardial infarction (persistent ST-segment elevation) – bivalirudin (July 2011)	It will be incorporated verbatim into the forthcoming clinical guideline on the 'management of acute coronary syndromes including myocardial infarction.'
TA236: Acute coronary syndromes – ticagrelor (Oct 2011)	The guidance on TA236 for people with STEMI will be incorporated into the forthcoming NICE clinical guideline on the management of myocardial infarction with ST-segment elevation. The guidance on ticagrelor for people with NSTEMI and unstable angina will be considered for review at the same time as clinical guideline 94 (Unstable angina and NSTEMI: the early management of unstable angina and non-ST-segment elevation myocardial infarction) which is currently under review
Related NICE guidance in progress	
Quality Standard: Acute coronary syndromes (including myocardial infarction)	To be confirmed

Appendix 2

National Institute for Health and Clinical Excellence

Chest pain of recent onset
Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin

Guideline Review Consultation Comments Table
12 – 26 October 2012

Stakeholder	Agree with proposal to update?	Comments	Comments on areas excluded from original scope	Comments on equality issues	Response
College of Emergency Medicine	Agree (that an update is warranted)	On review of the Review Consultation Document, there appears to be relevant evidence that would inform an update on CG95 in areas related to (i) the use of CTA in patients with acute chest pain in the Emergency Department, (ii) the use of, and timing of, high sensitivity troponin in the evaluation of individuals with acute chest pain, (iii) the use of novel biomarkers (eg copeptin) in the early diagnosis of acute myocardial infarction and (iv) the use of an updated version of the Diamond-Forrester model for estimation of pre-test probability of coronary artery disease.	No comment	No comment	Thank you for your comment.
GDG	Agree (that an update is	1.3.4.7 - 1.3.6.4 Multi- detector CT showing excellent diagnostic accuracy			Thank you for your comment.

Stakeholder	Agree with proposal to update?	Comments	Comments on areas excluded from original scope	Comments on equality issues	Response
	warranted)				
GDG	Agree (that an update is warranted)	4.4.2 1.2.5.1 - 1.2.5.4 Use of Bio markers High Sensitivity Troponin T assays with possible addition of Copeptin, also PTX3 appearing to demonstrate superior diagnostic results at early testing.			Thank you for your comment. This information will be passed to the developers for consideration during scoping when this guideline is updated.
GDG	Agree (that an update is warranted)	Clinical History, costs and benefits 1.3.2.1 - 1.3.2.2 Probable improvement in sensitivity and specificity by taking good Clinical History. I believe that the new evidence now available warrants consideration of review of CG 95			Thank you for your comment. This information will be passed to the developers for consideration during scoping when this guideline is updated.
GDG	Agree (that an update is warranted)	I feel that the time is ripe to consider the implications of Electronic data collection and Patient Accessible Records and the part that they may play in diagnosis.			Thank you for your comment. This information will be passed to the developers for consideration during scoping when this guideline is updated.
Avon, Gloucestershire Wiltshire and	No	Clinical area 1: The diagnostic utility of calcium scoring, non-invasive and invasive tests imaging techniques including CT			Thank you for your comment. Through the review of CG95 new evidence was identified

Stakeholder	Agree with proposal to update?	Comments	Comments on areas excluded from original scope	Comments on equality issues	Response
Somerset Cardiac and Stroke Network		coronary angiography and MR perfusion imaging in the diagnosis of patients with acute chest pain and stable chest pain of suspected cardiac origin ACUTE CHEST PAIN This was not viewed as an achievable proposal given the following factors: 1) volume of presentation for ?Chest pain who present to all acute DGHs not just larger centres (as for STEMI) 2) availability in all trusts of an angio-enabled CT scanner with sufficient capacity to allow the flexibility to do such urgent scans on a regular basis 3) capacity for reporting scans in a timely fashion, given the volume and acute setting 4) availability of sufficient CT-trained radiologists/cardiologists to run an immediate access on call rota. 5) multiple presentation by patients with atypical chest pain is common and presents a radiation exposure hazard if cardiac CT undertaken each			to suggest a role for CT in diagnosis of acute chest pain, particularly to rule out low risk cases. Therefore, this area of the guideline may need to be updated. At this stage we do not know what the final recommendations will be. New recommendations will be drafted when the guideline is updated. However, the points you have raised will be passed to the developers for consideration during scoping when this guideline is updated.

Stakeholder	Agree with proposal to update?	Comments	Comments on areas excluded from original scope	Comments on equality issues	Response
		time Overall it was not felt the case for clinical utility was sufficiently well made for CT angiography as the standard protocol to replace the current MDT approach (ED, Chest pain nurse, CCU and Cardiologist) that benefits a very wide range of patients including cardiology patients without IHD. Concern was also expressed about the concept of a 'triple rule out CT' which actually comprises multiple CT acquisitions (as the contrast injection timing varies for? PE/CT angio/? dissection). The x-ray exposure was felt to be considerable, and unnecessary when more defined mechanisms for deciding on a scanning protocol exist (e.g history taking/exam plus other basic tests – trop, ecg, CXR, d-dimer etc.).			
Avon, Gloucestershire Wiltshire and Somerset Cardiac and Stroke Network	No	Clinical area 2: The utility and cost effectiveness of cardiac biomarkers in evaluation of individuals with acute chest pain The move to the use of High sensitivity troponin was felt to be very sensible but it is already available in many centres. Therefore it was not felt worthwhile to adjust the guideline for this issue alone.			Thank you for your comment. Through the review of CG95 new evidence was identified which indicated that high sensitive troponin is diagnostically more effective that the conventional cardiac troponin in detecting acute myocardial infarction and acute coronary syndromes.

Stakeholder	Agree with proposal to update?	Comments	Comments on areas excluded from original scope	Comments on equality issues	Response
					Furthermore, 5 studies were identified which indicated that copeptin together with high sensitive troponin-I improves diagnostic performance in early diagnosis of patients with suspected myocardial infarction. As this is potential new evidence compared to what is currently recommended, which could lead to variation in clinical practice, the guideline should be considered for an update.
Avon, Gloucestershire Wiltshire and Somerset Cardiac and Stroke Network	No	Clinical area 3: The incremental benefit and cost effectiveness of a clinical history, risk factors and physical examination in evaluation of patients with stable chest pain of suspected cardiac origin Although the potential increase in cost effectiveness of coronary angiography should not be ignored it was not felt than an additional tool for risk stratification would be helpful at the current time.			Thank you for your comment. Through the review of CG95 an updated version of the Diamond–Forrester model was identified which is more effective and allows for accurate estimation of the pretest probability of coronary artery disease in stable chest pain without evidence for previous coronary artery disease. This could lead to decreased referral to cardiac coronary angiography, a higher yield of angiography, and increased use of non-invasive testing for risk

Stakeholder	Agree with proposal to update?	Comments	Comments on areas excluded from original scope	Comments on equality issues	Response
					stratification. As such, this area of the guideline may need updating at this stage.
NHS Direct	No	No evidence to suggest guideline changes.			Thank you for your comment.
The Department of Health		The Department of Health has no substantive comments to make, regarding this consultation.			Thank you for your comment.
Eli Lilly	Agree (that an update is warranted)	We agree with the current recommendation that the guideline should be considered for an update.			Thank you for your comment.
RCPathologists/ Association of Clinical Biochemists	Agree (that an update is warranted)	There is an extensive an evolving evidence base on the use of biomarkers that suggests the current recommendations are now outdated.	None	None	Thank you for your comment.
RCPathologists/ Association of Clinical Biochemists	Agree (that an update is warranted)	There are also new guidelines from the European Cardiac Society	None	None	Thank you for your comment. This information will be passed to the developers for consideration during scoping when this guideline is updated.
RCN	Agree (that an update is warranted)	We agree with the recommendation that the guideline should be considered for an update.			Thank you for your comment.