NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Draft quality standard for familial hypercholesterolaemia

1 Introduction

Familial hypercholesterolaemia (FH) is an inherited condition caused by an alteration in a gene which results in a high cholesterol concentration in the blood. Raised cholesterol concentrations are present from birth and lead to early development of atherosclerosis and coronary heart disease. The condition is transmitted from generation to generation in such a way that siblings and children of a person with FH have a 1 in 2 chance (50:50 risk) of also having FH.

Most people with FH have inherited a gene for FH from only 1 parent and are therefore ‘heterozygous’. Occasionally, a person will inherit an altered gene from both parents and will have ‘homozygous’ FH or ‘compound heterozygous’ FH. Homozygous FH is rare, with an incidence of approximately one case per million.

The prevalence of heterozygous FH in the UK population is estimated to be 1 in 500, which means that approximately 110,000 people are expected to be affected. However most of these are currently undiagnosed and untreated. If left untreated, more than 50% of men with heterozygous FH will develop coronary heart disease by the age of 50 years and at least 30% of women by the age of 60 years. Life expectancy is restored to near normal with early preventive treatment, particularly statin treatment and smoking cessation.

This quality standard covers the identification and management of FH in adults, young people and children. For more information see the scope for this quality standard.

NICE quality standards describe high-priority areas for quality improvement in a defined care or service area. Each standard consists of a prioritised set of specific, concise and measurable statements. They draw on existing guidance, which provides an underpinning, comprehensive set of recommendations, and are designed to support the measurement of improvement. The quality standard, in conjunction with the guidance on which it is based, should contribute to the improvements outlined in the following frameworks:

- NHS Outcomes Framework 2013/14 (Department of Health, November 2012).

The table below shows the outcomes, overarching indicators and improvement areas from the framework that the quality standard could contribute to:

NHS outcomes framework 2013/14	
Domain 1: Preventing people from dying prematurely	**Overarching indicators** 1a Potential years of life lost (PYLL) from causes considered amenable to healthcare i) Adults ii) Children and young people 1b Life expectancy at 75 i) Males ii) Females
Domain 2: Enhancing quality of life for people with long-term conditions.	**Overarching indicator** 2 Health related quality of life for people with long term conditions **Improvement areas** *Ensuring people feel supported to manage their condition* 2.1 Proportion of people feeling supported to manage their condition
Domain 4: Ensuring that people have a positive experience of care.	**Overarching indicators** 4a Patient experience of primary care i) GP services **Improvement areas** *Improving people's experience of outpatient care* 4.1 Patient experience of outpatient services

2 Draft quality standard for familial hypercholesterolaemia

Overview

The draft quality standard for familial hypercholesterolaemia (FH) requires that services should be commissioned from and coordinated across all relevant agencies encompassing the whole FH care pathway. An integrated approach to provision of services is fundamental to the delivery of high quality care to people with FH.

The quality standard should be read in the context of national and local guidelines on training and competencies. All healthcare professionals involved in diagnosing and managing FH in adults, young people and children should have sufficient and appropriate training and competencies to deliver the actions and interventions described in the quality standard.

No.	Draft quality statements
1	People with a clinical diagnosis of familial hypercholesterolaemia (FH) are referred to a specialist with expertise in FH.
2	People with a clinical diagnosis of familial hypercholesterolaemia (FH) are offered DNA testing.
3	Children at risk of familial hypercholesterolaemia (FH) are offered diagnostic tests by the age of 10 years.
4	Relatives of people with a confirmed diagnosis of familial hypercholesterolaemia (FH) are offered testing through a nationwide, systematic cascade process.
5	Adults with familial hypercholesterolaemia (FH) receive lipid-modifying drug treatment to reduce LDL-C concentration by more than 50% from baseline.
6	Children with familial hypercholesterolaemia (FH) are offered lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting by the age of 10 years.
7	People with familial hypercholesterolaemia (FH) are offered a structured review at least annually.

In addition, quality standards that should also be considered when commissioning and providing a high-quality FH service are listed in section 7.

General questions for consultation:

Question 1	Can you suggest any appropriate healthcare outcomes for each individual quality statement?
Question 2	What important areas of care, if any, are not covered by the quality standard?
Question 3	What, in your opinion, are the most important quality statements and why?
Question 4	Are any of the proposed quality measures inappropriate and, if so, can you identify suitable alternatives?
Please refer to Quality standards in development for additional general points for consideration.	

Draft quality statement 1: Specialist referral

Draft quality statement	People with a clinical diagnosis of familial hypercholesterolaemia (FH) are referred to a specialist with expertise in FH.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure people with a clinical diagnosis of FH are referred to a specialist with expertise in FH. **Process:** a) The proportion of adults with a clinical diagnosis of FH referred to a specialist with expertise in FH. Numerator – The number of people in the denominator referred to a specialist with expertise in FH. Denominator – The number of adults with a clinical diagnosis of FH. b) The proportion of children and young people with a clinical diagnosis of FH referred to a specialist with expertise in FH in children and young people. Numerator – The number of people in the denominator referred to a specialist with expertise in FH in children and young people. Denominator – The number of children and young people with a clinical diagnosis of FH. **Outcome:** Ratio of observed to estimated numbers of people with FH, using an estimate based on the area's estimated prevalence of FH (based on 1/500) and population.
Description of what the quality statement means for each audience	**Service providers** ensure systems are in place for people with a clinical diagnosis of FH to be referred to a specialist with expertise in FH. **Healthcare professionals** refer people with a clinical diagnosis of FH to a specialist with expertise in FH. **Commissioners** ensure they commission services that refer people with a clinical diagnosis of FH to a specialist with expertise in FH. **People who are given a clinical diagnosis of FH** because they have high cholesterol and other signs are referred to a specialist with expertise in FH.
Source clinical guideline references	NICE clinical guideline 71 recommendations 1.2.2 and 1.3.1.19 (key priorities for implementation).
Data source	**Structure:** Local data collection. **Process:** a) and b) Local data collection.

	Outcome: Local data collection including dedicated database where this is used.
Definitions	Children refers to people younger than 10,young people refers to those from age 10 up to and including age 15 and adults refers to people aged 16 and older. NICE clinical guideline 71 recommends that a clinical diagnosis of FH should be made using the criteria below: • exclusion of secondary causes of hypercholesterolaemia • 2 measurements of LDL-C concentration • meet Simon Broome criteria of possible or definite FH.

Draft quality statement 2: DNA testing

Draft quality statement	People with a clinical diagnosis of familial hypercholesterolaemia (FH) are offered DNA testing.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure people with a clinical diagnosis of FH are offered DNA testing. **Process:** The proportion of people with a clinical diagnosis of FH who receive DNA testing. Numerator – The number of people in the denominator receiving DNA testing. Denominator – The number of people with a clinical diagnosis of FH.
Description of what the quality statement means for each audience	**Service providers** ensure systems are in place for people with a clinical diagnosis of FH to be offered DNA testing. **Healthcare professionals** offer DNA testing to people with a clinical diagnosis of FH. **Commissioners** ensure they commission services that offer DNA testing to people with a clinical diagnosis of FH. **People who are given a clinical diagnosis of FH** because they have high cholesterol and other signs are offered DNA testing.
Source clinical guideline references	NICE clinical guideline 71 recommendation 1.1.12, 1.1.2, 1.1.3, and 1.1.6.
Data source	**Structure:** Local data collection. **Process:** Local data collection, including dedicated databases where these are used.
Definitions	NICE clinical guideline 71 recommends that a clinical diagnosis of FH should be made using the criteria below: • exclusion of secondary causes of hypercholesterolaemia • 2 measurements of LDL-C concentration • meet Simon Broome criteria of possible or definite FH. A clinical diagnosis of FH will usually be made by a GP or other healthcare professional. This diagnosis will then be confirmed by a healthcare professional with expertise in FH, who will also be able to offer or refer for DNA testing. DNA testing methods should meet the standards set out by the UK Genetic Testing Network.

Draft quality statement 3: Diagnosis in children

Draft quality statement	Children at risk of familial hypercholesterolaemia (FH) are offered diagnostic tests by the age of 10 years.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children at risk of FH are offered diagnostic tests by the age of 10 years. **Process:** The proportion of children at risk of FH who receive a specified diagnostic test by the age of 10 years. Numerator – The number of people in the denominator who had received a specified diagnostic test. Denominator – The number of children aged 10 years, at risk of FH. **Outcome:** a) Number of children at risk of FH. b) Ratio of observed to estimated numbers of children at risk of FH, using an estimate based on the area's estimated prevalence of FH (based on 1/500) and population.
Description of what the quality statement means for each audience	**Service providers** ensure systems are in place for children at risk of FH to be offered diagnostic tests by the age of 10 years. **Healthcare professionals** offer children at risk of FH diagnostic tests by the age of 10 years. **Commissioners** ensure they commission services that offer children at risk of FH diagnostic tests by the age of 10 years. **Children at risk of FH** because they have one parent with the condition are offered diagnostic tests by the age of 10 years.
Source clinical guideline references	NICE clinical guideline 71 recommendation 1.1.15 (key priority for implementation).
Data source	**Structure:** Local data collection. **Process:** Local data collection. **Outcome:** a) and b) Local data collection.
Definitions	Children at risk of FH have 1 affected parent. NICE clinical guideline 71 recommends that in children at risk of FH because of 1 affected parent, the following diagnostic tests should be carried out: • A DNA test if the family mutation is known. • LDL-C concentration measurement if the family mutation is not known. When excluding a diagnosis of FH a further LDL-C measurement should be repeated after puberty because LDL-

	C concentrations change during puberty. All children and young people being investigated for a diagnosis of FH should be referred to a specialist with expertise in FH in children and young people. This should be in an appropriate child/young person-focused setting. NICE clinical guideline 71 defines a child-focused setting as valuing the child's view and validating their voice in making decisions impacting their lives. A child-focused facility or space is one designed from the viewpoint of the service recipients.

Draft quality statement 4: Cascade testing

Draft quality statement	Relatives of people with a confirmed diagnosis of familial hypercholesterolaemia (FH) are offered testing through a nationwide, systematic cascade process.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure relatives of people with a confirmed diagnosis of FH are offered cascade testing. **Process:** a) The proportion of untested first-degree relatives of people with a confirmed diagnosis of FH who are offered cascade testing. Numerator – The number of people in the denominator offered cascade testing. Denominator – The number of untested first-degree relatives of people with a confirmed diagnosis of FH. b) The proportion of at-risk, untested, second- and third-degree relatives of people with a confirmed diagnosis of FH who are offered cascade testing. Numerator – The number of people in the denominator offered cascade testing. Denominator – The number of at-risk, untested second- and third-degree relatives of people with a confirmed diagnosis of FH. c) The proportion of untested first-degree relatives of people with a confirmed diagnosis of FH who receive cascade testing. Numerator – The number of people in the denominator receiving cascade testing. Denominator – The number of untested first-degree relatives of people with a confirmed diagnosis of FH. d) The proportion of at-risk, untested, second- and third-degree relatives of people with a confirmed diagnosis of FH who receive cascade testing. Numerator – The number of people in the denominator receiving cascade testing. Denominator – The number of at-risk, untested second- and third-degree relatives of people with a confirmed diagnosis of FH. **Outcome:** Incidence of FH.
Description of what the quality statement	**Service providers** ensure systems are in place for relatives of people with a confirmed diagnosis of FH to be offered testing through a nationwide, systematic cascade process.

<table>
<tr><td>means for each audience</td><td>Healthcare professionals offer testing to relatives of people with a confirmed diagnosis of FH through a nationwide, systematic cascade process.

Commissioners ensure they commission services that offer testing to relatives of people with a confirmed diagnosis of FH, through a nationwide, systematic cascade process.

Relatives of people with a confirmed diagnosis of FH are offered testing themselves as part of a national scheme.</td></tr>
<tr><td>Source clinical guideline references</td><td>NICE clinical guideline 71 recommendations 1.2.4 (key priority for implementation) and 1.2.1, 1.2.5 and 1.2.8.</td></tr>
<tr><td>Data source</td><td>Structure: Local data collection.

Process: a), b), c) and d) Local data collection including dedicated databases where this is used.

Outcome: Local data collection including dedicated databases where this is used.</td></tr>
<tr><td>Definitions</td><td>Relatives should include at least first- and second-degree biological relatives and third-degree biological relatives if possible.

A confirmed diagnosis of FH should be made by a healthcare professional with expertise in FH.

A confirmed diagnosis in the index person should meet the components of definite FH from the Simon Broome criteria:

• cholesterol concentrations as defined in the table below and tendon xanthomas, or evidence of these signs in first- or second-degree relatives

or

• DNA-based evidence of an LDL receptor mutation, familial defective apo B-100, or a PCSK9 mutation.

Table: Cholesterol levels to be used as diagnostic criteria for the index individual (levels either before treatment or highest on treatment.)
<table>
<tr><td></td><td>Total cholesterol</td><td>LDL-C</td></tr>
<tr><td>Child/young person</td><td>>6.7 mmol/litre</td><td>>4.0 mmol/litre</td></tr>
<tr><td>Adult</td><td>>7.5 mmol/litre</td><td>>4.9 mmol/litre</td></tr>
</table>
The systematic cascade process is outlined in NICE clinical guideline 71, which recommends in families in which a mutation has been identified, the mutation (not the LDL-C concentration) should be used to identify affected relatives. In the absence of a DNA diagnosis, cascade testing using LDL-C concentration measurements should be undertaken. To diagnose FH in relatives of an index individual, the gender- and age-specific criteria for LDL-C concentration in relatives should be used. The Simon</td></tr>
</table>

	Broome LDL-C criteria for index individuals should not be used because this will result in under diagnosis. NICE clinical guideline 71 recommends the use of a nationwide, family-based, follow-up system to enable comprehensive identification of people affected by FH.

Draft quality statement 5: Drug treatment in adults

Draft quality statement	Adults with familial hypercholesterolaemia (FH) receive lipid-modifying drug treatment to reduce LDL-C concentration by more than 50% from baseline.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure adults with FH receive lipid-modifying drug treatment to reduce LDL-C concentration by more than 50% from baseline. **Outcome:** Number of adults with FH whose LDL-C concentration is reduced by more than 50% from baseline within 1 year.
Description of what the quality statement means for each audience	**Service providers** ensure systems are in place for adults with FH to receive lipid-modifying drug treatment to reduce LDL-C concentration by more than 50% from baseline. **Healthcare professionals** give adults with FH lipid-modifying drug treatment to reduce LDL-C concentration by more than 50% from baseline. **Commissioners** ensure they commission services that give adults with FH lipid-modifying drug treatment to reduce LDL-C concentration by more than 50% from baseline. **Adults with FH** are given drugs to reduce the LDL-C concentration in their blood to less than a half of the level before treatment.
Source clinical guideline references	NICE clinical guideline 71 recommendation 1.3.1.3 (key priority for implementation), 1.3.1.2, 1.3.1.4, 1.3.1.5, 1.3.1.6, 1.3.1.7, 1.3.1.8 and 1.3.1.15.
Data source	**Structure:** Local data collection. **Outcome:** Local data collection including dedicated databases where this is used.
Definitions	Adults are defined as aged 16 and older. A baseline concentration is the LDL-C concentration before treatment.
Equality and diversity considerations	The statement has been restricted to adults only because there is currently no evidence on which to base any specific target for lowering LDL-C in children and young people. However, lipid-modifying drug treatment should be considered by the age of 10 years in line with NICE clinical guideline 71. Women with FH should be advised that lipid-modifying drug treatment should not be taken if they are planning to conceive or during pregnancy because of the potential risk of fetal abnormality.

Draft quality statement 6: Drug treatment in children

Draft quality statement	Children with familial hypercholesterolaemia (FH) are offered lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting by the age of 10 years.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with FH are offered lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting by the age of 10 years. **Process:** a) The proportion of children with FH who are offered lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting by the age of 10 years. Numerator – The number of people in the denominator offered lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting. Denominator – The number of children with FH aged 10 years. b) The proportion of children with FH who receive lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting by the age of 10 years. Numerator – The number of people in the denominator who receive lipid-modifying drug treatment from a healthcare professional with expertise in FH in a child-focused setting. Denominator – The number of children with FH aged 10 years.
Description of what the quality statement means for each audience	**Service providers** ensure systems are in place for children with FH to be offered lipid-modifying drug treatment by a healthcare professional with expertise in FH in a child-focused setting by the age of 10 years. **Healthcare professionals with expertise in FH** offer children with FH lipid-modifying drug treatment in a child-focused setting by the age of 10 years. **Commissioners** ensure they commission services in which healthcare professionals with expertise in FH offer lipid-modifying drug treatment to children with FH in a child-focused setting by the age of 10 years. **Children with FH** are offered drugs to reduce the LDL-C concentration in their blood by a specialist in a child-focused setting by the age of 10 years.
Source clinical guideline	NICE clinical guideline 71 recommendation 1.3.1.20.

references	
Data source	**Structure:** Local data collection. **Process:** a) and b) Local data collection.
Definitions	NICE clinical guideline 71 recommends the decision to defer or offer lipid-modifying drug treatment for a child or young person should take into account their age, age of onset of coronary heart disease within the family and the presence of other cardiovascular risk factors, including their LDL-C concentration NICE clinical guideline 71 defines a child-focused setting as valuing the child's view and validating their voice in making decisions impacting their lives. A child-focused facility or space is one designed from the viewpoint of the service recipients.
Equality and diversity considerations	All children, both boys and girls, should have equal access to lipid-modifying drug treatment for FH. Gender should not influence a clinician's decision to offer treatment; the decision should be made in accordance with the recommendations in NICE clinical guideline 71, which indicate that lipid-lowering with statins should be considered by the age of 10 years..

Draft quality statement 7: Annual review

Draft quality statement	People with familial hypercholesterolaemia (FH) are offered a structured review at least annually.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure people with FH are offered a structured review at least annually. **Process:** The proportion of people with FH who receive a structured review at least annually. Numerator – The number of people in the denominator who had a structured review within 12 months of the last review or diagnosis. Denominator – The number of people with FH.
Description of what the quality statement means for each audience	**Service providers** ensure systems are in place for people with FH to be offered a structured review at least annually. **Healthcare professionals** offer people with FH a structured review at least annually. **Commissioners** ensure they commission services that offer a structured review at least annually to people with FH. **People with FH** are offered a detailed review of their condition at least once a year.
Source clinical guideline references	NICE clinical guideline 71 recommendations 1.5.1.1 (key priority for implementation), 1.3.1.27, 1.4.2.1, 1.4.3.2, 1.5.1.3, 1.5.1.4 and 1.5.1.5.
Data source	**Structure:** Local data collection. **Process:** Local data collection including, dedicated databases where these are used.
Definitions	A structured review should include all the following components: • Recording progress of cascade testing among relatives. • Updating the family pedigree and noting changes in the coronary heart disease status of relatives. • Assessing any symptoms of coronary heart disease. • Assessing smoking status, and offering advice and information on smoking cessation services if appropriate. • Measuring fasting lipid profile. • Discussing adherence to treatment, and possible side effects of treatment the person may be experiencing. • Discussing any changes in lifestyle or lipid-modifying drug treatment that may be needed to achieve the recommended LDL-C concentration. • Giving contraceptive advice. • Monitoring growth and pubertal development (in children and

	young people only).

3 Status of this quality standard

This is the draft quality standard released for consultation from 28 February until 28 March 2013. This document is not NICE's final quality standard on familial hypercholesterolaemia. The statements and measures presented in this document are provisional and may change after consultation with stakeholders.

Comments on the content of the draft standard must be submitted by 5pm on 28 March 2013. All eligible comments received during consultation will be reviewed by the Topic Expert Group and the quality statements and measures will be refined in line with the Topic Expert Group considerations. The final quality standard will then be available on the NICE website from August 2013.

4 Using the quality standard

It is important that the quality standard is considered alongside current policy and guidance documents listed in the evidence sources section.

The quality measures accompanying the quality statements aim to improve the structure, process and outcomes of health care. They are not a new set of targets or mandatory indicators for performance management.

Expected levels of achievement for quality measures are not specified. Quality standards are intended to drive up the quality of care, so achievement levels of 100% should be aspired to (or 0% if the quality statement states that something should not be done). However, NICE recognises that this may not always be appropriate in practice when taking account of patient safety, patient choice and clinical judgement and therefore desired levels of achievement should be defined locally.

We have indicated where national indicators currently exist and measure the quality statement. National indicators include those developed by the Health and Social Care Information Centre through their Indicators for Quality Improvement Programme. For statements for which national quality indicators

do not exist, the quality measures should form the basis for audit criteria developed and used locally to improve the quality of health care.

For further information, including guidance on using quality measures, please see What makes up a NICE quality standard?.

5 Diversity, equality and language

During the development of this quality standard, equality issues have been considered and equality assessments will be published on the NICE website with the final version of the quality standard.

Good communication between healthcare professionals and people with familial hypercholesterolaemia is essential. Treatment and care, and the information given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English. People with familial hypercholesterolaemia should have access to an interpreter or advocate if needed.

6 How this quality standard was developed

The evidence sources used to develop this quality standard are listed in appendix 1, along with relevant policy context, definitions and data sources. Further explanation of the methodology used can be found in the Quality standards process guide.

7 Related NICE quality standards

7.1 Published

Patient experience in adult NHS services. NICE quality standard 15 (2012).

7.2 In development

Smoking cessation. Publication expected August 2013.

7.3 Future quality standards

This quality standard will be developed in the context of the full list of quality standards referred to NICE, including the following topics scheduled for future development:

Childhood obesity.

Lipid modification.

Medicines optimisation.

Obesity (adults).

Physical activity.

Risk assessment of modifiable cardiovascular risk factors.

Secondary prevention of myocardial infarction and cardiac rehabilitation.

Appendix 1: Development sources

Evidence sources

The documents below contain clinical guideline recommendations or other recommendations that were used by the Topic Expert Group to develop the quality standard statements and measures.

Familial hypercholesterolaemia. NICE clinical guideline 71 (2008; NICE accredited).

Policy context

It is important that the quality standard is considered alongside current policy documents, including:

Royal College of Physicians (2010) National audit of the management of familial hypercholesterolaemia 2010

Royal College of Physicians (2010) National clinical audit of the management of familial hypercholesterolaemia pilot 2009

NHS Wales (2009) Cardiac disease national service framework for Wales

Department of Health (2004) National service framework for children, young people and maternity services: core standards

Department of Health (2000) Coronary heart disease: national service framework for coronary heart disease – modern standards and service models