NATIONAL CLINICAL GUIDELINES

THE ASSESSMENT & MANAGEMENT OF STABLE ANGINA

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Valid From: 28th July 2020
Date of Next Revision: 28th July 2022

المبادئ الإرشادية السريرية لدولة قطر
NATIONAL CLINICAL GUIDELINES FOR QATAR

وزارة الصحـــــة العامـــــة
Ministry of Public Health
State of Qatar • دولـــة قطـــر

Version History

Version	Status	Date	Editor	Description
1.0	Final	19th March 2017	Guidelines Team	Final Version for Publication.
2.0	Final	28th July 2020	Guidelines Team	Final Version for Publication.

Citation

Suggested citation style:

Ministry of Public Health Qatar. National Clinical Guideline: The Assessment and Management of Stable Angina (2020).

Abbreviations

The abbreviations used in this guideline are as follows:

ACE	Angiotensin-converting enzyme
ACS	Acute coronary syndrome
ASCVD	Atherosclerotic cardiovascular disease
BMI	Body mass index
BNP	Beta-natriuretic peptide
BP	Blood pressure
CAD	Coronary artery disease
CABG	Coronary artery bypass grafting
CBC	Complete blood count
CMR	Cardiac magnetic resonance
CTA	Computed Tomography Angiography
CVD	Cardiovascular disease
ECG	Electrocardiogram
eGFR	Estimated glomerular filtration rate
GTN	Glyceryl trinitrate
HBA_{1c}	Glycated haemoglobin
MDT	Multi-disciplinary team
MI	Myocardial infarction

MPS	Myocardial perfusion scintigraphy
NSTEACS	Non-ST-segment elevation acute coronary syndrome
NSTEMI	Non-ST-segment elevation myocardial infarction
PCI	Percutaneous coronary intervention
PCV13	13-valent pneumococcal conjugate vaccine
PPSV23	23-valent pneumococcal polysaccharide vaccine
PTP	Pre-test probability of coronary artery disease
SPECT	Single photon emission computed tomography
STEMI	ST-segment elevation myocardial infarction

View Pathway

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1 Information about this Guideline

1.1 Objective and Purpose of the Guideline

The purpose of this guideline is to define the appropriate assessment and management of stable angina in adults. The objective is to improve the appropriateness of investigation, prescribing and referral of patients presenting to provider organisations in Qatar. It is intended that the guideline will be used primarily by physicians, nurses, and health educators in a primary care setting.

1.2 Scope of the Guideline

Aspects of care covered within this guideline, include:

- Diagnosis investigation and management of stable angina in adults.
- Criteria for consideration of coronary revascularisation.
- Follow-up of patients with stable angina.

Aspects of care not covered within this guideline are:

- Diagnosis and management of stable angina in children and pregnant women.
- Diagnosis and management of cardiac chest pain not caused by coronary artery disease.
- Diagnosis and management of non-cardiac chest pain.
- Management of acute coronary syndrome - See the *MOPH National Guideline on Assessment and management of Acute Coronary Syndrome* [1].
- Angina occurring early after initially successful CABG or percutaneous transluminal coronary angioplasty.

1.3 Editorial Approach

This guideline document has been developed and issued by the Ministry of Public Health of Qatar (MOPH), through a process which aligns with international best practice in guideline development and localisation. The guideline will be reviewed on a regular basis and updated to incorporate comments and feedback from stakeholders across Qatar.

The editorial methodology, used to develop this guideline, has involved the following critical steps:

- Extensive literature search for well-reputed published evidence relating to the topic.
- Critical appraisal of the literature.
- Development of a draft summary guideline.
- Review of the summary guideline with a Guideline Development Group, comprised of practicing healthcare professionals, subject matter experts and patient representatives, from across Qatar.
- Independent review of the guideline by the National Clinical Guidelines & Pathways Committee, appointed by the MOPH, from amongst stakeholder organisations across Qatar.

Whilst the MOPH has sponsored the development of the guideline, the MOPH has not influenced the specific recommendations made within it.

1.4 Sources of Evidence

The professional literature has been systematically queried using specially developed, customised, and tested search strings. Search strategies are developed to allow efficient yet comprehensive analysis of relevant publications for a given topic and to maximise retrieval of articles with certain desired characteristics pertinent to a guideline.

For each guideline, all retrieved publications have been individually reviewed by a member of the Editorial Team and assessed in terms of quality, utility, and relevance. Preference is given to publications that:

1. Are designed with rigorous scientific methodology.
2. Are published in higher-quality journals.
3. Address an aspect of specific importance to the guideline in question.

Further information about the literature search and appraisal process is included in the appendix.

1.5 Evidence Grading and Recommendations

Recommendations made within this guideline are supported by evidence from the medical literature and where possible the most authoritative sources have been used in the development of this guideline. In order to provide insight into the evidence basis for each recommendation, the following evidence hierarchy has been used to grade the level of authoritativeness of the evidence used, where recommendations have been made within this guideline.

Where the recommendations of international guidelines have been adopted, the evidence grading is assigned to the underlying evidence used by the international guideline. Where more than one source has been cited, the evidence grading relates to the highest level of evidence cited:

- **Level 1 (L1):**
  - Meta-analyses.
  - Randomised controlled trials with meta-analysis.
  - Randomised controlled trials.
  - Systematic reviews.

- **Level 2 (L2):**
  - Observational studies, examples include:
    - Cohort studies with statistical adjustment for potential confounders.
    - Cohort studies without adjustment.
    - Case series with historical or literature controls.
    - Uncontrolled case series.
  - Statements in published articles or textbooks.

- **Level 3 (L3):**
  - Expert opinion.
  - Unpublished data, examples include:
    - Large database analyses.
    - Written protocols or outcomes reports from large practices.

In order to give additional insight into the reasoning underlying certain recommendations and the strength of recommendation, the following recommendation grading has been used, where recommendations are made:

- **Recommendation Grade A (RGA):** Evidence demonstrates at least moderate certainty of a net benefit from the recommendation.
- **Recommendation Grade B (RGB):** Evidence is insufficient, conflicting, or poor and demonstrates an incomplete assessment of net benefit vs harm; additional research is recommended.
- **Recommendation Grade C (RGC):** Evidence demonstrates potential harm that outweighs benefit; additional research is recommended.
- **Recommendation of the GDG (R-GDG):** Recommended best practice on the basis of the clinical experience of the Guideline Development Group members.

1.6 Guideline Development Group Members

The following table lists members of the Guideline Development Group (GDG) nominated by their respective organisations and the National Clinical Guidelines & Pathways Committee. The GDG members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

Guideline Development Group Members		
Name	**Title**	**Organisation**
Dr Ahmed M. Hussein Babiker	Head of Registration Section & Clinical Pharmacist	Dept of Pharmacy and Drug Control, MOPH[1]
Dr Abdul Hakeem Hamza	Senior Consultant Family Medicine	Primary Health Care Corp
Dr Joji Matthews	Specialist Cardiology	Aster Medical Center
Dr Ghulam Mustafa	Consultant Cardiologist	Al Ahli Hospital
Dr Mohammed Salem Nasrallah	Consultant Family Medicine	Primary Health Care Corp
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[1] Dr Ahmed Babiker attended the MOPH in his capacity as a Clinical Pharmacist and advisor on the availability of medications in Qatar.

1.7 National Clinical Guidelines & Pathways Committee Members

The following table lists members of the National Clinical Guidelines & Pathways Committee (NCGPC), appointed by the MOPH. The NCGPC members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

National Clinical Guidelines & Pathways Committee (NCGPC) Members		
Name	**Title**	**Organisation**
Ms Huda Amer Al-Katheeri	Chair of the NCGPC, Director of Strategic Planning & Performance Department	Ministry of Public Health
Shk Dr Mohammed Hamad J. Al Thani	Co-Chair of the NCGPC, Director of Public Health	Ministry of Public Health
Prof Anthony Akobeng	Chair Clinical Practice Guidelines Committee	Sidra Medicine
Dr Alshaymaa Mohammed A. M. Al-Motawa	Consultant Family Medicine	Qatar Petroleum
Dr Basil Bashqawi	Accreditation Coordinator, Dept of Health Professions	Ministry of Public Health
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Dr Dahlia Mustafa Hassan	Consultant Family Medicine	Primary Health Care Corp
Dr Ghassan Youseph Hommos	Consultant Endocrinology	Al Emadi Hospital
Dr Egon Toft	VP and Dean	College of Medicine, Qatar University

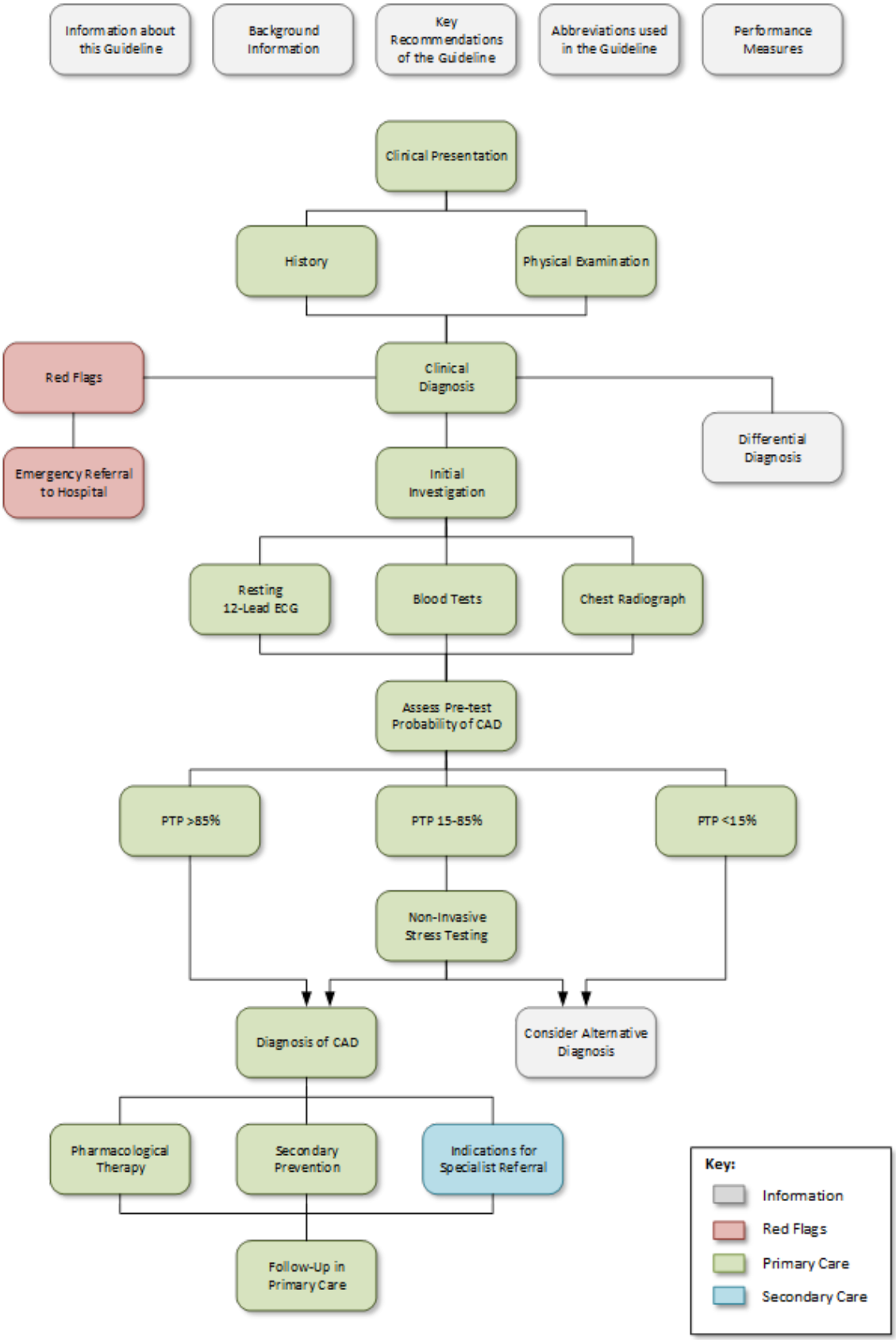
1.8 Responsibilities of Healthcare Professionals

This guideline has been issued by the MOPH to define how care should be provided in Qatar. It is based upon a comprehensive assessment of the evidence as well as its applicability to the national context of Qatar. Healthcare professionals are expected to take this guidance into account when exercising their clinical judgement in the care of patients presenting to them.

The guidance does not override individual professional responsibility to take decisions which are appropriate to the circumstances of the patient concerned. Such decisions should be made in consultation with the patient, their guardians, or caregivers and should consider the individual risks and benefits of any intervention that is contemplated in the patient's care.

2 Stable Angina Pathway

Click on a box below to see the relevant page of the Pathway.



3 Key Recommendations of the Guideline

The key recommendations of this guideline are:

Referral for Suspected Acute Coronary Syndrome:

- Refer patients to hospital as an emergency if acute coronary syndrome (ACS) is suspected; or if any of the following is present [2,3]:
    - Prolonged or recurrent chest pain typical of ischaemia; or
    - Pain free, but the patient has had chest pain typical of ischaemia in the last 48 hours [**R-GDG**]; or
    - A resting 12-lead ECG indicates ischaemia; or
    - There are signs of complications e.g. pulmonary oedema.
- If the patient has been pain-free for 48 hours or more and does not have any high risk features (e.g. presyncope, syncope or heart failure symptoms), refer urgently for outpatient cardiology assessment [**R-GDG**].

Assessing the Pre-Test Probability of CAD (see *Section 8.2*):

- Stepwise assessment of patients presenting with angina symptoms (who do not have a history of established ASCVD), is recommended to determine the most appropriate method of diagnostic evaluation [4,5].
- Assessment comprises of:
    - Clinical assessment.
    - Assessment of pre-test probability (PTP) of CAD.
    - Determining which investigations are required to confirm the diagnosis of CAD.

Non-Invasive Stress Testing (see *Section 8.2.1- 8.2.3*):

- Non-invasive stress testing is not routinely indicated in patients with a PTP of <15% [4,5].
- Patients who are deemed to have a PTP of between 15-85% should be investigated for CAD using a non-invasive stress test using one of the following tests [**R-GDG**]:
    - Stress echocardiography.
    - Myocardial perfusion scintigraphy (MPS) with single photon emission computed tomography (SPECT).
    - Perfusion cardiac magnetic resonance (CMR).
- Patients with a high PTP of >85% should be considered to have CAD and additional stress imaging will not add diagnostic value [4,5].
- If the patient declines stress imaging or is unsuitable, consider investigation using an exercise ECG [**R-GDG**].

Further Management and Referral (see *Section 8.3*):

- Patients diagnosed with CAD following investigation with stress imaging or those with a PTP probability of >85% should be managed as having established CAD.
- Medical management should be optimised and patients should be risk-assessed in order to determine their probability of experiencing a cardiac event [4,5].
- Those deemed to be at medium or high risk of a cardiac event should be considered for invasive coronary angiography (see *Section 10.2*).

Medical Management (See *Section 9.1*):

- Sublingual GTN tablets or spray should be used for the immediate relief of angina and before performing activities that are known to precipitate angina [6,7].

- Either beta blockers or calcium channel blockers should be used as the first line therapy for the relief of symptoms of stable angina [8] [**L1, RGA**].
- If adequate control of anginal symptoms is not achieved with beta blocker or calcium-channel blocker monotherapy, use the two in combination [6,7].

Secondary Prevention of ASCVD (see *Section 9.2*):

- Anti-thrombotic medication [2,3,5,9]:
  - All patients diagnosed with angina should receive long term therapy with aspirin.
- Blood pressure control [2–6,9]:
- Lipid management [2–6,9–11]:
- Diabetes control [4,5]:
- Smoking [4,5]:
  - All smokers should be advised to quit and offered cessation assistance.
- Physical activity and rehabilitation following treatment should be encouraged within exercise tolerances [4,5,12].
- Attention should be given to diet and body weight [4,5]:
- The presence of sleep apnoea symptoms should be assessed, especially in obese patients [4,5].

Specialist Management (see *Section 10*):

- Outpatient referral to a cardiologist is indicated for the following patients [13]:
  - All patients with a new diagnosis of angina.
  - Patients with poorly controlled angina symptoms despite maximal treatment.
  - Patients requesting referral.
  - Patients with a significant co-morbidity which cannot otherwise be managed in primary care.

Coronary Angiography and Revascularisation:

- See *Section 10.2*.

Follow-up (see Section 11):

- Patients presenting with angina and with a diagnosis of coronary artery disease should receive long term structured follow-up in primary care [2,3] .

4 Background Information

4.1 Definitions

Stable Angina:

- Angina is a symptom of myocardial ischaemia.
- Typically presents with chest heaviness or tightness that is [2,3,6,7]:
  - Precipitated by exertion or emotional stress; and
  - Is relieved by rest or nitrates.
- Angina is usually caused by coronary artery disease (CAD) [2,3] .
- Angina is considered stable when [2,3,6,14]:
  - It is not a new symptom.
  - There is no deterioration in frequency, severity, or duration of episodes.
  - It is predictable in onset, reproducible and relieved within a few minutes by rest or nitrates.
  - There is no recent myocardial damage.

Unstable Angina:

- Unstable angina is defined as [2,3] :
  - A new onset of chest pain or discomfort, or
  - Abrupt deterioration in previously stable angina.
  - With frequent occurrences of chest pain or discomfort; and
  - With little or no exertion.
  - Episodes are often prolonged.

Myocardial Infarction:

- Sudden insufficiency of the blood supply to the myocardium resulting in myocardial necrosis [15].
- Usually occurs as a result of thrombotic occlusion of a coronary artery and typically results in [2,3,9]:
  - Cardiac chest pain.
  - Raised biomarkers of myocardial damage,
  - Characteristic ECG changes:
    - ST segment elevation or new onset left bundle branch block.
    - ST-segment depression or T-wave inversion.

Acute Coronary Syndrome:

- Acute coronary syndrome (ACS) is defined as a condition in which there is a coronary artery event with plaque rupture, erosion, or coronary dissection, resulting in the formation of intra-coronary thrombus [2,3] .
- ACS includes the following [2,3,16]:
  - ST-segment elevation myocardial infarction (STEMI).
  - Non-ST-elevation acute coronary syndromes (NSTEACS), which is comprised of:
    - Unstable Angina.
    - Non-ST-segment elevation myocardial infarction (NSTEMI).

4.2 Epidemiology

In 2013, 12.9% of registered deaths in Qatar were related to atherosclerotic cardiovascular disease (ASCVD)[17]:

- In the Qatari population, 12.2% of deaths were related to ASCVD.
- In the non-Qatari population, 13.2% of deaths were related to ASCVD.

The 2012 Qatar the STEPwise survey showed the following prevalences for key ASCVD risk factors in the survey population [18]:

- Raised blood pressure in 32.9%:
  - Females - 37.7%.
  - Males – 28%.
- Raised total cholesterol in 21.9%:
  - Females - 24.6%.
  - Males -19.1%.
- Raised blood glucose (blood glucose ≥110 mg/dl) as well as those with history of receiving medication for diabetes was 16.7%:
  - Males - 17.6%.
  - Females - 15.9%.
- Smoking was 16.4%.
  - Males - 31.9%.
  - Females - 1.2%.
- Low level of physical activity was 45.9%:
  - Females - 54.2%.
  - Males - 37.4%.
- Obesity (body mass index (BMI) ≥30 kg/m^2) was 41.4%:
  - Females - 43.2%.
  - Males - 39.5%.

In a study conducted by Qatar's Primary Health Care Corporation (PHCC) in 2017, the prevalence of cardiovascular disease in the 18-39, 40-59 and 60+ age group was 1.1%, 3.8% and 11.6% respectively [19].

4.3 Risk factors

The main risk factors for ASCVD are as follows [2,3,9,17,18]:

- Smoking.
- Hypertension.
- Diabetes mellitus (DM).
- Family history of premature CAD.
- Dyslipidaemia.
- Male sex.
- Increasing age.
- Obesity.
- Sedentary lifestyle.

5 Clinical Presentation

A detailed clinical history should be taken, documenting:

- The characteristics of the pain, including [2,3]:
  - Location.
  - Radiation.
  - Severity.
  - Duration and frequency.
  - Factors that provoke and relieve the pain.
- Any associated symptoms, such as [2,3,5,9]:
  - Breathlessness.
  - Syncope.
- Stability of symptoms, e.g. [2,3,5,9]:
  - Whether the chest pain follows a predictable pattern such as exercise-induced
  - A new or deteriorating chest pain that may require urgent assessment.
- Any history of angina, myocardial infarction (MI), coronary revascularisation, or other cardiovascular disease (CVD) and any cardiovascular risk factors [2,3].
- Comorbidities [4,5].
- Quality of life of the patient [4,5].

A physical examination should be performed to:

- Identify risk factors for ASCVD [2,3,6,10,11,13]:
  - Measure body weight and height − this allows calculation of body mass index (BMI).
  - Measure waist circumference.
  - Measure blood pressure (BP).
  - Look for signs of hyperlipidaemia, e.g.:
    - Corneal Arcus.
    - Xanthelasma.
    - Tendinous xanthomata.
- Examine for signs of non-atherosclerotic CVD [2,3]:
  - Aortic stenosis (ejection systolic murmur).
  - Arrhythmia.
  - Hypertrophic cardiomyopathy
- Examine for evidence of peripheral artery disease, e.g. absent foot pulses or bruits [13].
- Examine for non-cardiac causes of chest pain [2,3].

6 Diagnosis

A working diagnosis of angina can be made in primary care on the basis of clinical history, but further diagnostic assessment and risk stratification are needed, which require referral to a specialist[6].

Diagnose stable angina based on one of the following[2,3] :

- Clinical assessment alone; or
- Clinical assessment plus diagnostic testing, i.e. anatomical testing for obstructive CAD and/or functional testing for myocardial ischaemia.

Suspect angina in patients presenting with tight, dull, or heavy chest discomfort which is[2,3,6]:

- Retrosternal or left-sided, radiating to the left arm, neck, jaw, or back.
- Angina pain[2,3,6]:
    - Is predictable.
    - Is not fleeting in nature and usually lasts for longer than a minute.
    - Is not usually sharp or stabbing or influenced by respiration.
    - Subsides gradually.
- Associated with exertion or emotional stress and relieved within a few minutes by rest or glyceryl trinitrate (GTN) [2,3] .
- Precipitated by cold weather or a meal [2,3] .

Some patients may present with atypical symptoms, including [2–6,21] :

- Breathlessness.
- Nausea.
- Epigastric discomfort or burping.
- Atypical symptoms are particularly likely in:
    - Women.
    - Older people.
    - Those with diabetes mellitus.

Following initial assessment in primary care, patients with suspected angina should, wherever possible, have the diagnosis confirmed and the severity of the underlying coronary heart disease assessed in the chest pain evaluation service [6] [**L1, RGA**].

7 Differential Diagnosis

7.1 Other Causes of Chest Pain

Cardiac causes of chest pain include [2–6,21]:

- Unstable angina:
  - New onset of chest pain or discomfort, or sudden worsening of stable angina.
  - Occurs frequently and with little or no exertion
  - Episodes often prolonged.
- Myocardial infarction.
- Valvular heart disease (e.g. aortic stenosis).
- Hypertrophic cardiomyopathy.
- Prinzmetal's (vasospastic) angina:
  - A rare form of angina in which pain is experienced at rest rather than during activity.
  - Spasm of proximal coronary arteries causes narrowing or occlusion.
  - During vasospasm, ECG usually shows ST-elevation.
- Pericarditis.

Non-cardiac causes of chest pain include [2,2,3,9,13,22]:

- Aortic dissection.
- Pulmonary embolism.
- Gastro-Oesophageal reflux.
- Oesophageal dysmotility.
- Psychological causes, e.g.:
  - Anxiety.
  - Panic attacks.
  - Depression.
- Musculoskeletal pain, e.g.:
  - Costochondritis.
  - Referred pain from thoracic spine.
- Pleural pain, e.g.:
  - Pleural infection.
  - Pleural tumour.
  - Pneumothorax.
- Thyroid disorders.

Patients with proven cardiac chest pain can also experience non-cardiac chest pain, and they often interpret the non-cardiac pain as symptoms of heart disease. It is important to distinguish between the two causes early, in order to reduce levels of distress and avoid inappropriate treatments [**R-GDG**].

7.2 Referral to the Emergency Department

Refer patients to hospital as an emergency if ACS is suspected; or there any of the following are present[2,3]:

- Prolonged or recurrent chest pain typical of ischaemia; or
- Pain free, but the patient has had chest pain typical of ischaemia in the last 48 hours [**R-GDG**]; or
- A resting 12-lead ECG indicates ischaemia; or
- There are signs of complications e.g. pulmonary oedema.

If the patient has been pain-free for 48 hours or more and does not have any high risk features (e.g. presyncope, syncope or heart failure symptoms), refer urgently for outpatient cardiology assessment [**R-GDG**].

8 Investigation

8.1 Initial Investigation

Resting ECG [4,5]:

- All patients should have a resting 12-lead ECG [4,5] [**L2, RGA**]:
  - A normal ECG does not exclude the diagnosis of ischaemia.
  - The ECG establishes a baseline for future comparisons.
  - May assist in clarifying differential diagnosis.
- The typical ECG changes consistent with ischaemia include [2,3] :
  - ST-segment deviation.
  - T wave abnormalities.
  - New onset or intermittent left bundle branch block.
  - Pathological Q waves.

Blood tests should include [2,3,5,9]:

- CBC.
- Serum creatinine and eGFR.
- Lipid profile.
- Fasting blood glucose and HBA_{1C}.
- Thyroid function tests
- Liver function tests.
- Beta-natriuretic peptide (BNP) - if heart failure is suspected.

Chest Radiography:

- A chest radiograph is recommended in patients with an atypical presentation of angina or suspicion of pulmonary disease [4,5] [**L3, RGA**].
- Consider also in patients with suspected heart failure [4,5].

8.2 Assessing the Pre-Test Probability of CAD

Stepwise assessment of patients presenting with angina symptoms (who do not have a history of established ASCVD), is recommended to determine the most appropriate method of diagnostic evaluation[4,5].

Assessment comprises of the following steps [2,3,5,9]:

- Determine clinically whether pain is typical angina, atypical angina or non-anginal:
  - Patients with all of the following are determined to have **typical angina**:
    - Constricting discomfort in the anterior chest, neck, shoulders, jaw, or arms.
    - Pain is precipitated by physical exertion.
    - Pain is relieved by rest or GTN.
  - Patients with two of the above features are defined as having **atypical angina**.
  - Patients with one or none of the above features are defined as having **non-anginal pain**.
- Use the table below to determine the patient's pre-test probability (PTP) of having CAD.
- Determine which investigations are required to confirm the diagnosis of CAD (see below).

The table below has been adapted from the European Society of Cardiology Guidelines[4,5] for determining the clinical PTP of CAD in patients presenting with possible symptoms of angina.

	Typical angina		Atypical angina		Non-anginal pain	
Age (years)	Men	Women	Men	Women	Men	Women
30-39	59	28	29	10	18	5
40-49	69	37	38	14	25	8
50-59	77	47	49	20	34	12
60-69	84	58	59	28	44	17
70-79	89	68	69	37	54	24
≥80	93	76	78	47	65	32

Risk group	PTP	Diagnostic test
	<15%	No further testing required
	15-65%	Non-invasive stress testing [**R-GDG**]
	65-85%	Non-invasive stress testing
	>85%	Assumed to have CAD

Table 8.2: Clinical pre-test probabilities and related diagnostic modality for CAD by age and sex [Adapted from ESC Guidelines 2013 [4,5]].

8.2.1 Pre-Test Probability <15%

Patients with a PTP of <15% should have other cardiac causes of chest pain excluded with modification of risk factors for ASCVD following assessment of their 10 year ASCVD risk. Non-invasive stress testing is not routinely indicated in these patients [4,5].

Patients with repeated attacks of chest pain occurring only at rest, should be reviewed for possible vasospastic angina and investigated appropriately by a cardiology specialist [4,5].

8.2.2 Pre-Test Probability of 15-85%

Patients who are deemed to have a PTP of between 15-85% should be investigated for CAD using a non-invasive stress test [**R-GDG**].

Where available, one of the following tests may be applicable with stress applied by either exercise or pharmacological agents (typically dobutamine). Pharmacological agents may be used where exercise is not feasible or desirable[4,5]:

- Computed tomography angiography (CTA), is recommended as a first-line diagnostic test when the diagnosis of stable angina cannot be made from history taking [3,5,6]. However, CTA is not recommended in case of [5]:
    - Extensive coronary calcification.
    - Irregular heart rate.
    - Inability to follow breath-hold commands.
    - Significant obesity.
- Stress echocardiography.
- Myocardial perfusion scintigraphy (MPS) with single photon emission computed tomography (SPECT).
- Perfusion cardiac magnetic resonance (CMR).
- Exercise ECG is recommended when non-invasive imaging tests are not-suitable[3,6]

8.2.3 Pre-Test Probability of >85%

Patients with a high PTP of >85% should be considered to have CAD and additional stress imaging will not add diagnostic value [4,5]. Patients should be considered for invasive coronary angiography if the patient is at high risk of a cardiac event and/or they experience severe angina at a low level of exercise.

8.3 Further Management and Referral

Patients diagnosed with CAD following investigation with stress imaging or those with a PTP of >85% should be managed as having established CAD. Medical management should be optimised and patients should be risk-assessed in order to determine their probability of experiencing a cardiac event [4,5].

Those deemed to be at medium or high risk of a cardiac event should be considered for invasive coronary angiography (see *Section 10.2*).

9 Medical Management of Stable Angina

9.1 Pharmacological Management

Optimal pharmacological treatment of stable angina includes[8]:

- Anti-anginal medications as necessary; and
- Medication for secondary prevention of ASCVD.

Pharmacological management of angina symptoms includes[6]:

- Medication monotherapy.
- Combination therapy.
- Secondary prevention of ASCVD.

9.1.1 Monotherapy

First-Line Therapy:

- Either beta blockers or calcium channel blockers should be used as the first line therapy for the relief of symptoms of stable angina [8] [**L1, RGA**].
    - Decide which drug to use based on comorbidities, contraindications and the person's preference.
    - If one cannot be tolerated, consider switching to the other option, i.e. beta blocker or calcium channel blocker [8].
- In patients with left ventricular dysfunction [7,8]:
    - Beta-blocker therapy should be started at a very low dose and titrated up very gradually over weeks or months.
    - Rate-limiting calcium-channel blockers, diltiazem, and verapamil, are contra-indicated as they may precipitate heart failure.
- Patients with Prinzmetal (vasospastic) angina should be treated with [4,5] [**L1, RGA**]:
    - A dihydropyridine derivative calcium-channel blocker (e.g. amlodipine, felodipine etc.).
    - Beta blockers should be avoided.

If a patient cannot tolerate a beta blocker or a calcium channel blocker, or if both treatments are contraindicated, consider monotherapy with one of the following [8] [**L3, RGA**]:

- A long-acting nitrate; or
- Ivabradine; or
- Nicorandil; or
- Trimetazidine.

Sublingual GTN tablets or spray should be used for the immediate relief of angina and before performing activities that are known to precipitate angina [6,7] – provide information on the following [8]:

- How to use the GTN medication – this includes advising the patient to [8]:
    - Repeat the dose after 5 minutes if the pain does not resolve.
    - Call an emergency ambulance if the pain has not resolved after taking the second dose.
- Expected side effects which include [7]:
    - Flushing.
    - Headache.
    - Light-headedness – in this scenario, patient should sit down or find something to hold on to.

9.1.2 Combination Therapy

Ensure that the patient is taking the maximum licensed, or highest tolerated, dose of monotherapy before moving to combination therapy [7].

Combination Therapy [6,7]:

- If adequate control of anginal symptoms is not achieved with beta blocker or calcium-channel blocker monotherapy, use the two in combination:
    - Do not routinely combine a beta blocker with a rate-limiting CCB (diltiazem or verapamil) as severe bradycardia and heart failure may occur.
    - Use a long-acting dihydropyridine calcium-channel blocker (CCB), such as:
        - Amlodipine.
        - Modified-release Nifedipine; or
        - Felodipine.
- If a patient cannot tolerate beta blockers and calcium channel blockers or both are contraindicated, consider monotherapy with one of the following [7,8]:
    - A long-acting nitrate; or
    - Ivabradine (with minimum heart rate of 70 bpm at rest); or
    - Nicorandil (second-line treatment due to risk of ulcer); or
    - Trimetazidine.

People on combination therapy [6,13]:

- Ensure that the person is taking the maximum licensed or highest tolerated dose of each drug.
- If symptom control is poor on the maximum licensed or tolerated doses of two drugs, refer to a cardiologist, for advice on drug management and assessment for revascularisation:
    - Consider starting a third anti-anginal drug while awaiting referral.
    - Do not routinely combine a beta blocker with a rate-limiting calcium channel blocker (diltiazem or verapamil) as severe bradycardia and heart failure may occur.
    - Do not combine a rate-limiting calcium channel blocker with ivabradine, as severe bradycardia and heart failure may occur.
    - Dihydropyridine calcium channel blocker, such as slow release nifedipine, amlodipine, or felodipine is recommended when a combination therapy of ivabradine with a calcium channel blocker is in use.

Assessing response and titrating therapy [6,7]:

- After initiating or changing drug therapy, response to treatment should be assessed every 2-4 weeks.
- The medication should be titrated based on symptom control to the maximum licensed or tolerated dose.

Stopping beta-blockers [7]:

- Evidence suggests that sudden withdrawal of beta-blockers may cause an exacerbation of angina.
- A gradual reduction in dose is preferred when beta-blockers are to be stopped.

9.2 Secondary Prevention of ASCVD

All people with angina are assumed to be at risk for future cardiovascular events, and their cardiovascular risk factors should therefore be optimised [4,5,23].

Attention should be paid to the following ASCVD risk factors, through a combination of lifestyle modification and, if necessary, pharmacological treatment:

- Anti-thrombotic medication[2,3,5,9]:
  - All patients diagnosed with angina should receive long term therapy with aspirin.
  - Clopidogrel is indicated as an alternative to aspirin in patients with intolerance to aspirin.
- Blood pressure control[2–6,9]:
  - All patients with angina should receive an ACE inhibitor if any of the following are present:
    - Hypertension.
    - Heart failure.
    - Diabetes mellitus.
- Lipid management[2–6,9–11]:
  - All patients with angina should receive long-term statin therapy.
- Diabetes control[4,5]:
  - Consider referral to diabetes specialist team if control is difficult to achieve.
- Smoking[4,5]:
  - All smokers should be advised to quit and offered cessation assistance.
- Physical activity and rehabilitation following treatment should be encouraged within exercise tolerances[4,5,12].
- Attention should be given to diet and body weight [4,5]:
- The presence of sleep apnoea symptoms should be assessed, especially in obese patients [4,5].

Refer also to the *MOPH National Guideline on ASCVD risk assessment and management* [24].

9.3 Additional Advice to Patients

Advice on Sexual Activity [4,5,7]:

- If sexual activity precipitates an episode of angina, sublingual GTN taken immediately before intercourse may help prevent subsequent attacks.
- The concomitant use of phosphodiesterase inhibitors (sildenafil, tadalafil, and vardenafil) with nitrates or nicorandil is contraindicated.

Advice on Work [13]:

- Many people with angina can continue to work as before.
- If their job involves heavy manual work, they may need to alter their work practices.
- If their job involves driving, flying, or operating heavy machinery, advise the patient to discuss with their employer and a cardiology specialist.
- If the person's employer has an occupational health department, they should be encouraged to discuss the options available for work.

Advice on Exercise [12]**:**

- Patients with stable CAD should perform regular aerobic, strength and flexibility type exercises.
- Low activity pastimes should be limited to no more than 2 hours per day.
- 20-60 minutes of exercise (sufficient to make the patient out of breath) is recommended, 3-5 times per week, according to the exercise tolerance and severity of the angina.
- Recommended aerobic exercises include:
  - Brisk walking.
  - Jogging.
  - Swimming.
  - Skiing.
  - Skating.
  - Fitness classes.

Vaccination:
The MOPH Public Health Department recommends the following immunisations in patients with CAD, unless contraindicated [25]:

- Annual influenza vaccine, ideally before influenza viruses circulate each year.
- Pneumococcal vaccination:
    - Administer pneumococcal conjugate vaccine (PCV13), if not previously given during the patient's lifetime.
    - Administer pneumococcal polysaccharide vaccine (PPSV23), 6-12 months after vaccination with PCV13.
    - Repeat PPSV23 to a maximum of 3 times during the patient's life with the final dose given after the age of 65 years.

9.4 Psychological and Cognitive Issues

Psychological factors exert an influence on patients with angina in several ways [6]:

- Limitations and concerns related to living with angina can influence mood, degree of disability, quality of life, and mortality.
- Beliefs and misconceptions about heart disease have been shown to influence outcome and eliciting and reforming unhelpful beliefs decreases disability.
- Depression and anxiety influence health service use.
- The presence of depression influences mortality and morbidity.
- Patients commonly report cognitive difficulties following coronary artery bypass grafting (CABG).

The patient's beliefs about angina should be assessed when discussing management of risk factors and how to cope with symptoms [6,8]. Involve the patients' families or carers in the discussion when relevant [8].

10 Specialist Management

10.1 Criteria for Referral to Cardiology

Outpatient referral to Cardiology is indicated for the following patients [13]:

- All patients with a new diagnosis of angina.
- Patients with poorly controlled angina symptoms despite maximal treatment.
- Patients requesting referral.
- Patients with a significant co-morbidity which cannot otherwise be managed in primary care.

10.2 Angiography and Revascularisation

Early access to angiography and coronary artery bypass surgery may reduce the risk of adverse cardiac events and impaired quality of life [6].

The main indications for revascularisation are [20,26]:

- Persistent symptoms despite optimal medical therapy; and/or
- Improvement of prognosis.

10.2.1 Coronary Angiography

Coronary angiography should be considered for all patients with angina, particularly in the following patient groups [4,5,8]:

- Patients with symptoms which do not respond to maximal medical treatment.
- Those at high probability of CAD (>85% PTP), irrespective of symptom control with medical treatment.
- High risk features on non-invasive stress tests.
- Inconclusive data from non-invasive stress testing.

Consider additional investigations (e.g. fractional flow reserve or intra-vascular ultrasound) to evaluate angiographic findings and guide treatment decisions [8].

Following assessment of left ventricular function and coronary angiography, patients may be considered for coronary revascularisation by either percutaneous coronary intervention (PCI) or CABG [6].

10.2.2 Multi-Disciplinary Team Review

Ensure that there is a regular multidisciplinary team (MDT) meeting to discuss the risks and benefits of continuing drug treatment, or the need for treatment with revascularisation techniques, in the following patients[8]:

- Patients with left main stem or anatomically complex three-vessel disease.
- Patients 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.
- The MDT team should include cardiac surgeons and interventional cardiologists.

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.

NB: Rehabilitation programmes should be implemented after revascularisation for patients with stable angina[6].

10.2.3 Percutaneous Coronary Intervention

Percutaneous Coronary Intervention (PCI) [6,27,28]:

- PCI should be offered where medical therapy has failed, where the patient is deemed to be suitable.
- If PCI is selected as the appropriate procedure, stents should be used routinely:
    - Drug-eluting stents reduce restenosis and have thereby reduced re-intervention rates.

10.2.4 Coronary Artery Bypass Grafting

Coronary artery bypass grafting (CABG) [4–6]:

- Is an excellent symptomatic treatment and has also been shown to convey prognostic benefit in patients with significant left main stem and triple vessel coronary disease.
- Offer patients undergoing CABG, screening for anxiety and depression pre-surgery and during the following year as part of their postsurgical assessment, rehabilitation, and coronary artery disease secondary prevention.

10.3 No Response to Treatment

Where a patient's angina has not responded to drug treatment and/or revascularisation, offer comprehensive re-evaluation and advice, which may include[8]:

- Exploring the person's understanding of their condition.
- Exploring the impact of symptoms on the person's quality of life.
- Reviewing the diagnosis and consider non-ischaemic causes of pain.
- Reviewing drug treatment and consider future drug treatment and revascularisation options.
- Acknowledging the limitations of future treatment.
- Explaining how the person can manage the pain themselves.
- Paying specific attention to the role of psychological factors in pain.
- Encouraging development of skills to modify cognitions and behaviours associated with pain.

In patients with normal coronary arteries on angiogram and continuing anginal symptoms, consider a diagnosis of microvascular angina[8].

11 Follow-Up in Primary Care

Patients presenting with angina and with a diagnosis of coronary artery disease should receive long term structured follow-up in primary care [2,3] .

Follow-Up in Primary Care[13]:

- Review the person every 6 months to one year, depending on the stability of their angina and their co-morbidities.
- Check for symptoms of angina at rest, or with exercise:
    - If the person is taking optimal anti-anginal treatment but has persistent symptoms or deteriorating exercise tolerance, consider a specialist review.
- Identify any modifiable cardiovascular risk factors.
- Check for any complications of angina or treatment[2,3,29]:
    - Check the heart rate and BP.
    - Check for signs and symptoms of heart failure.
    - Screen for low mood or depression using the two-question test:
        - During the past month, have you often been bothered by feeling down, depressed, or hopeless?
        - During the past month, have you often been bothered by having little interest or pleasure in doing things?
- Check compliance and identify and manage drug interactions.
- Consider referral to a cardiac rehabilitation programme, if available:
    - Comprehensive rehabilitation should be offered to patients who have undergone coronary revascularisation.

Provide information on angina [2,3,8]:

- Provide written information if this has not already been given.
- Explain when to seek further medical advice (such as worsening symptoms).

12 Key Considerations for Patient Preferences

Patient preferences refer to patient perspectives, beliefs, expectations, and goals for health and life, and to the steps employed by individuals in assessing the potential benefits, harms, costs, and limitations of the management options in relation to one another. Patients may have preferences when it comes to defining their problems, identifying the range of management options, and selecting or ranking the outcomes used to compare these options.

It is important for healthcare professionals to develop an understanding of the patient as an individual and the unique way in which each person experiences a condition and its impact on their life.

The following recommendations are therefore made for physicians and other healthcare professionals regarding general principles of patient care in Qatar:

- **Respect Patients:** Treat patients with respect, kindness, dignity, courtesy, and honesty. Ensure that the environment is conducive to discussion and that the patient's privacy is respected, particularly when discussing sensitive, personal issues. Ask the patient how they wish to be addressed and ensure that their choice is respected and used.

- **Maintain Confidentiality:** Respect the patient's right to confidentiality and avoid disclosing or sharing patients' information without their informed consent. In this context, students and anyone not directly involved in the delivery of care should first be introduced to the patient before starting consultations or meetings, and let the patient decide if they want them to stay.

- **Clarify Third-Party Involvement:** Clarify with the patient at the first point of contact whether and how they like their partner, family members or carers to be involved in key decisions about their care or management and review this regularly. If the patient agrees, share information with their partner, family members or carers.

- **Obtain Informed Consent:** Obtain and document informed consent from patients, in accordance with MOPH policy and guidance.

- **Encourage Shared Decision Making:** Ensure that patients are involved in decision making about their own care, or their dependent's care, and that factors that could impact the patient's participation in their own consultation and care including physical or learning disabilities, sight, speech or hearing impairments and problems with understanding, reading or speaking English are addressed.

- **Disclose Medical Errors:** Disclose errors when they occur and show empathy to patients.

- **Ensure Effective Communication:** Explore ways to improve communication including using pictures, symbols or involving an interpreter or family members. Avoid using medical jargon. Use words the patient will understand and confirm understanding by asking questions.

- **Ensure Continuity of Care:** Provide clear and timely sharing of patient information between healthcare professionals especially at the point of any transitions in care.

13 Performance Measures

A list of performance measures is given in the table below. Healthcare organisations are encouraged to monitor service performance using the indicator definitions below [30].

Number	Numerator	Denominator
SA01	Number of patients in the denominator who are prescribed a short-acting nitrate and either a beta-blocker or calcium-channel blocker as first-line treatment	Total number of patients newly diagnosed with stable angina in the last 12 months.
SA02	Number of patients in the denominator who are prescribed a short-acting nitrate and 1 or 2 anti-anginal drugs as necessary before revascularisation is considered.	Total number of patients with stable angina who are considered for revascularisation in the last 12 months.
SA03	Number of patients in the denominator who have their diagnosis and treatment re-evaluated	Total number of patients with stable angina whose symptoms have not responded to treatment in the last 12 months.

Table 13.1: Performance Measures[30].

14 References

1. Ministry of Public Health (MOPH) Qatar. The Assessment and Management of Acute Coronary Syndrome. National Clinical Guideline. Published online 2020.
2. Cooper A, Calvert N, Skinner J, et al. Chest pain of recent onset: assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin. Published online 2010.
3. National Institute for Health and Clinical Excellence. Recent-onset chest pain of suspected cardiac origin: assessment and diagnosis. [CG 95]. *NICE*. Published online 2020:30.
4. Task Force Members, Montalescot G, Sechtem U, et al. 2013 ESC guidelines on the management of stable coronary artery disease: The Task Force on the management of stable coronary artery disease of the European Society of Cardiology. *Eur Heart J*. 2013;34(38):2949-3003. doi:10.1093/eurheartj/eht296
5. Knuuti J. 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes The Task Force for the diagnosis and management of chronic coronary syndromes of the European Society of Cardiology (ESC). *Russ J Cardiol*. 2020;25(2):119-180. doi:10.15829/1560-4071-2020-2-3757
6. Scottish Intercollegiate Guidelines Network. *Management of Stable Angina: A National Clinical Guideline. [SIGN 151]*. SIGN; 2018.
7. British National Formulary (BNF). Published online April 2016.
8. National Institute of Health and Clinical Excellence (NICE). Stable angina: management. [CG 126]. *NICE*. Published online 2016:22.
9. Institute for Clinical Systems Improvement. Coronary Artery Disease, Stable. Published online 2013.
10. Catapano AL, Graham I, De Backer G, et al. 2016 ESC/EAS Guidelines for the Management of Dyslipidaemias. *Eur Heart J*. 2016;37(39):2999-3058. doi:10.1093/eurheartj/ehw272
11. Mach F, Baigent C, Catapano AL, et al. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. *Eur Heart J*. 2020;41(1):111-188. doi:10.1093/eurheartj/ehz455
12. Qatar National Physical Activity Guidelines (NPAG-Q). Published online 2014.
13. National Institute of Health and Clinical Excellence (NICE). Clinical Knowledge Summaries (CKS). Angina. Published online 2015.
14. Institute for Clinical Systems Improvement. Coronary Artery Disease, Stable. Published online 2013.
15. Stedman TL. *Stedman's Medical Dictionary*. 28th ed. Lippincott Williams & Wilkins; 2006.
16. National Institute of Health and Clinical Excellence (NICE). Unstable angina and NSTEMI: early management. [CG 94]. *NICE*. Published online 2013:30.
17. Supreme Council of Health (SCH). Qatar Health Report 2013. Published online 2015.
18. Supreme Council of Health (SCH). Qatar STEPwise Report 2012. Doha. Published online 2013.
19. Zainel A, Al Nuaimi A, Syed M, A/Qotba H. Risk Factors Associated with Cardiovascular Diseases among Adults Attending the Primary Health Care Centers in Qatar, a Cross-Sectional Study. *J Community Med Public Health*. 2020;4(171). doi:10.29011/2577-2228.100071
20. Task Force members, Windecker S, Kolh P, et al. 2014 ESC/EACTS Guidelines on myocardial revascularization: The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)Developed with the special contribution of the European Association of Percutaneous Cardiovascular Interventions (EAPCI). *Eur Heart J*. 2014;35(37):2541-2619. doi:10.1093/eurheartj/ehu278
21. Fox K, Garcia MAA, Ardissino D, et al. Guidelines on the management of stable angina pectoris: executive summary: The Task Force on the Management of Stable Angina Pectoris of the European Society of Cardiology. *Eur Heart J*. 2006;27(11):1341-1381. doi:10.1093/eurheartj/ehl001
22. Bass C, Mayou R. Chest pain. *BMJ*. 2002;325(7364):588-591. doi:10.1136/bmj.325.7364.588
23. Scottish Intercollegiate Guidelines Network, Healthcare Improvement Scotland. *Risk Estimation and the Prevention of Cardiovascular Disease: A National Clinical Guidleine.* SIGN; 2017.
24. Ministry of Public Health (MOPH) Qatar. The Atherosclerotic Cardiovascular Disease Risk Assessment and Management. National Clinical Guideline. Published online 2020.
25. Ministry of Public Health (MOPH). National Immunization Guidelines for Vaccine Providers. Published online 2016.

26. Neumann F-J, Sousa-Uva M, Ahlsson A, et al. 2018 ESC/EACTS Guidelines on myocardial revascularization. *Eur Heart J*. 2019;40(2):87-165. doi:10.1093/eurheartj/ehy394
27. National Institute of Health and Clinical Excellence (NICE). Guidance on the use of coronary artery stents. [TA 71]. Published online 2008.
28. National Institute of Health and Clinical Excellence (NICE). Drug-eluting stents for the treatment of coronary artery disease. [TA 152]. Published online 2008.
29. UK Department of Health. Coronary heart disease: national service framework for coronary heart disease - modern standards and service models. Published online 2000.
30. Champagne F, Dhami S. WHO Recommendations and Implementation Plan to Optimize and Institutionalize the National Clinical Guidelines for Qatar Project. Published online 2017.

Appendix: Detailed Description of the Literature Search

A systematic search for existing literature on Stable Angina was performed in the period June 10th – June 20th, 2020.

All existing references were evaluated and where necessary and applicable, the latest version of the specific manuscript was used to update the guideline and replace the older reference. The search for clinical practice guidelines on stable angina assessment and/or management was performed in the *PubMed* database and websites of relevant organisations and societies including the *UK NICE*, the *Supreme Council of Health (Qatar),* the *Institute for Clinical Systems Improvement* and the *BNF*. The present guideline is primarily based on *UK NICE*, the *European Society for Cardiology* and the *Scottish Intercollegiate Guidelines Network* guidelines and is supplemented with other relevant studies.

Peer-reviewed scientific publications were found in PubMed and via *Google Scholar* Internet search engine. Non-peer reviewed studies were identified in *bioRxiv*. Books were checked on *Amazon* and via *Google* and *Google Scholar* search engines.

The included publications were identified using the terms "Angina" and specified with the following terms in combinations:

Guideline, stable, adult, definition, prevalence, epidemiology, risk, assessment, investigation, diagnosis, differential, chest, pain, probability, ASCVD, CAD, management, monotherapy, combination therapy, beta-blockers, calcium channel blockers, nitrate, trimetazidine, glyceryl trinitrate, anti-thrombotic, side effects, angiography, revascularization, percutaneous intervention, bypass, prevention, advice, exercise, psychology, referral, specialist, follow-up.

Figure A.1 on the next page demonstrates graphically the results of the search and application of exclusion criteria.

View Pathway

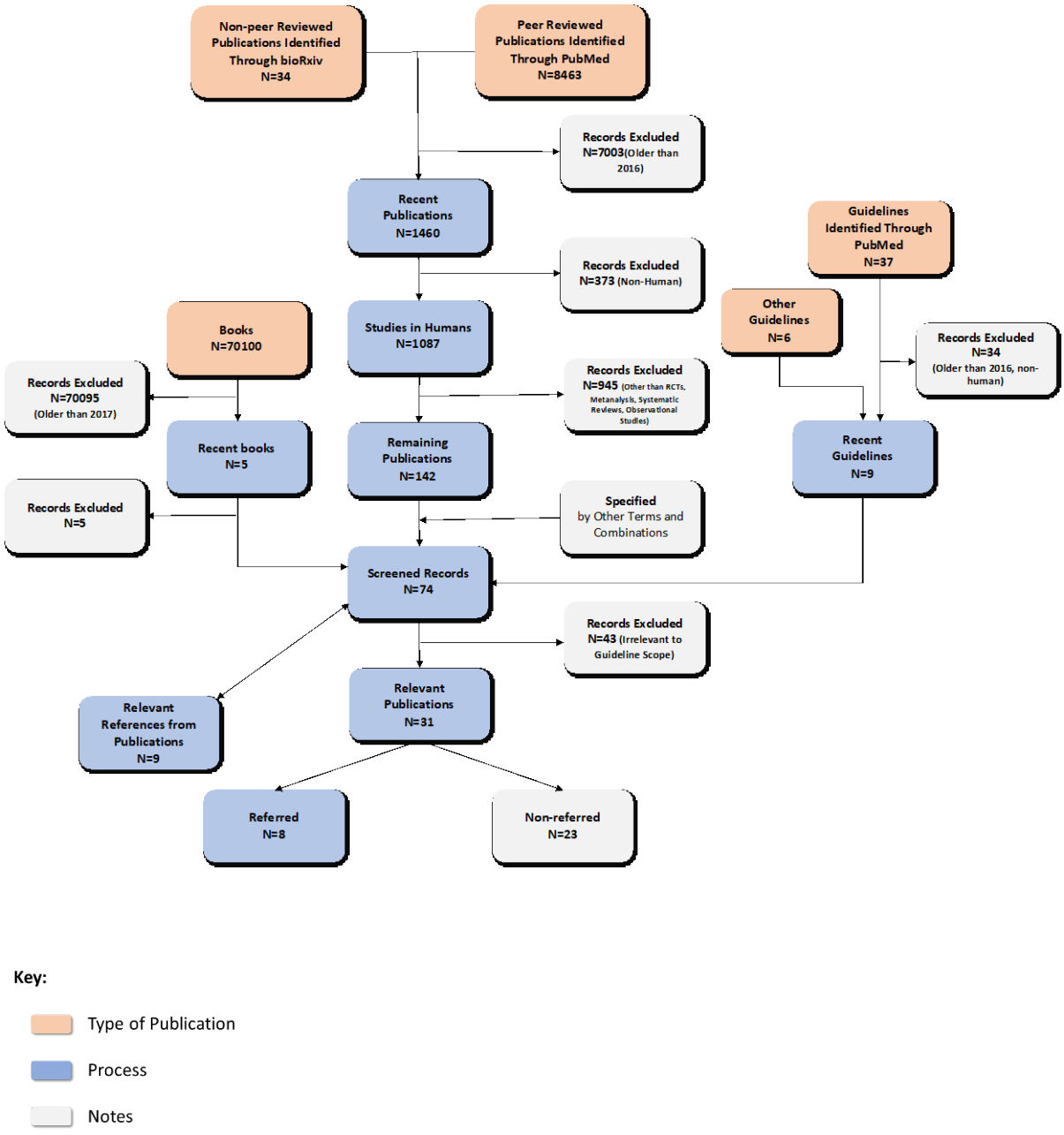


Fig A.1: Literature search results and application of exclusion criteria.

Acknowledgements

The following individuals are recognised for their contribution to the successful development of the National Clinical Guideline.

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- **Ms Huda Amer Al-Katheeri**, *Director of Strategic Planning & Performance Dept, MOPH*.
- **Dr Nawal Al Tamimi,** *Head of Healthcare Quality & Patient Safety Dept, MOPH.*
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