1 Background information

Quick info:
The purpose of this care map is to define the appropriate diagnosis and management of hypertension in adults. The objective is to reduce inappropriate investigation, prescribing, and referral of patients presenting to provider organisations in Qatar. It is intended that the care map will be used primarily by physicians in primary care and outpatient settings.

Scope
Aspects of care covered within this care map include:

• Diagnosis and management of hypertension in adults (aged 18 years and older).
• Aetiology and classification of hypertension.
• Assessment and referral criteria for hypertension.
• Emergency referral criteria for suspected hypertensive crisis.
• Appropriate BP measuring techniques.
• Assessment of atherosclerotic cardiovascular risk.
• Clinical conditions associated with hypertension.
• Assessment of end-organ damage.
• Management of hypertension in patients with type 1 and type 2 diabetes mellitus.

Out of scope
Aspects of care not covered within this care map include:

• Hypertension in children (aged less than 18 years).
• Hypertension in pregnancy.
• Specialist management of secondary hypertension.
• Specialist management of hypertensive crises.

Aetiology
Primary (essential) hypertension [1]:
• Refers to the majority of people with sustained high BP (approximately 90%) encountered in clinical practice, for which there is no obvious, identifiable cause.

Secondary hypertension [1]:
• Refers to high BP from an identifiable underlying cause.
• It may occur in up to 10% of hypertension cases, the most common cause being chronic renal disease.

Epidemiology
Hypertension is a major risk factor for ASCVD, which is the leading cause of morbidity and mortality worldwide [4]. In 2013 in Qatar, 12.9% of registered deaths were related to CVD [5].

Data on the incidence and prevalence in Qatar is limited, however:
• The Qatar STEPwise Survey (2012) found a prevalence of 32.9% of raised BP among respondents. The prevalence was higher among females at 37.7%; than males at 28% [6,7].
• The WHO-reported prevalence (2014) of raised BP among adults aged 18 years and older was 27.0% in males and 22.1% in females [8].

Risk factors
The established risk factors for hypertension are as follows [1,2,9]:

• Non-modifiable risk factors:
  • Male sex.
  • Increasing age – particularly aged ≥ 55 years in men; and aged ≥ 65 years in women.
  • Ethnicity – higher risk in African, Afro-Caribbean and South Asian populations.
  • Family history.

• Modifiable risk factors:
  • Smoking.
  • Physical inactivity.
  • Obesity – BMI of ≥ 30 kg/m².
  • Diabetes mellitus.
Hypertension - suspected

Medicine > Cardiology > Hypertension

- Obstructive sleep apnoea.
- Psychosocial stress.
- Diet – high salt intake (more than 5 g/day), however there is controversy over the role of salt in modifying blood pressure [10].

Complications
Hypertension contributes to more deaths and disease than any other biomedical risk factor worldwide [11]. It is a major risk factor for each of the following [1]:

- Stroke (ischaemic and haemorrhagic).
- Myocardial infarction.
- Heart failure.
- Chronic kidney disease.
- Peripheral vascular disease.
- Cognitive decline and premature death.
- Hypertensive retinopathy.

Untreated, hypertension is associated with a progressive rise in blood pressure, often culminating in a treatment-resistant state due to associated vascular and renal damage [1].

References:
Please see the care map's Provenance.

2 Definitions

Quick info:
Hypertension is defined as follows:

- Stage 1 hypertension [1]:
  - Clinic BP is between 140/90 and 159/99 mmHg; and
  - Subsequent daytime average of ABPM, or average of HBPM, is between 135/85 and 149/94 mmHg.
- Stage 2 hypertension [1]:
  - Clinic BP is between 160/100 and 179/109 mmHg; and
  - Subsequent ABPM daytime average or HBPM average is between 150/95 and 179/109 mmHg.
- Stage 3 hypertension (severe hypertension) [1]:
  - Clinic SBP is 180 mmHg or higher; or
  - Clinic DBP is 110 mmHg or higher.
- White coat hypertension is defined when a patient has a persistently elevated clinic BP and a normal home or ambulatory daytime average BP, i.e. < 135/85 mmHg [1].
- White coat effect can occur in people with true hypertension [1]:
  - White coat effect, is defined as a discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM BP measurements.
  - Such patients are at risk of receiving more BP medication than they need and will require out-of-clinic measurement to monitor the efficacy of their BP treatment.
- Masked hypertension occurs where clinic BP is normal but ABPM and/or HBPM measurements are elevated [1].
- Resistant hypertension is defined as hypertension that is resistant to a treatment strategy that includes: lifestyle measures, plus a diuretic and two other antihypertensive drugs that belong to different classes at adequate doses (but does not necessarily include a mineralocorticoid receptor antagonist), which fails to lower SBP and DBP below 140 and 90 mmHg respectively [2,3].
- Accelerated/malignant hypertension is defined as a BP higher than 180/110 mmHg with signs of papilloedema and/or retinal haemorrhage [1].

References:
Please see the care map's Provenance.

3 Updates to this care map


This care map was published by Qatar. A printed version of this document is not controlled so may not be up-to-date with the latest clinical information.
Quick info:
Date of publication: 19-Mar-2017
Please see the care map's Provenance for additional information on references, contributors, and the editorial process.

4 Key recommendations of the care map 1

Quick info:
The key recommendations of this care map are:

**Confirming blood pressure measurements** (see the 'Confirming blood pressure measurements' care point):
- If clinic BP is persistently 140/90 mmHg or higher, or masked hypertension is suspected, confirm the diagnosis with [1,2]:
  - ABPM, where available [1][L1, RGA1]:
    - ABPM is the preferred method of confirming a diagnosis of hypertension in primary care [R-GDG].
  - Offer HBPM if ABPM is unlikely to be tolerated or is unavailable [1][L1, RGA1].

**Atherosclerotic cardiovascular disease risk assessment** (see 'ASCVD risk assessment' care point):
- ASCVD risk assessment is important for patients with hypertension who have not yet developed clinical ASCVD (i.e. primary prevention) [14].
- Use the ACC/AHA ASCVD Pooled Cohort Equations to assess 10-year ASCVD risk.
- Initiate treatment in patients with > 7.5% 10-year ASCVD risk [14].

**Lifestyle advice** (see the 'Lifestyle advice' care point on the 'Management' page):
- Should be offered initially and then periodically to all patients with hypertension [1][L1, RGA2].

**Pharmacological therapy** (see the 'Pharmacological management' care point on the 'Management' page):
- In determining the appropriateness of pharmacological therapies for the management of hypertension, the Guideline Development Group has reviewed the recommendations of the 2015 SPRINT Trial and decided not to adopt its recommendations at this time [19].

**First-line medication** (see the 'Consider first-line medication' care point on the 'Management' page):
- For patients aged under 55 years and NOT of black African/Afro-Caribbean ethnic origin:
  - Offer an ACE inhibitor or a low-cost ARB [1][L1, RGA1].
- For patients aged over 55 years or of black African/Afro-Caribbean ethnic origin, at any age:
  - Offer a CCB [1][L1, RGA1].
  - Offer a thiazide-like diuretic if a CCB is unsuitable [1][L1, RGA1].

**Second-line medication** (see the 'Second- and third-line medication' care point on the 'Management' page):
- Offer a CCB in combination with either an ACE inhibitor; or an ARB.
- Offer a thiazide-like diuretic if a CCB is unsuitable [1].
- For black people of African or Afro-Caribbean ethnic origin, consider an ARB in preference to an ACE inhibitor, in combination with a CCB [1].

**Third-line medication** (see the 'Second- and third-line medication' care point on the 'Management' page):
- If treatment with three medications is required, use either an ACE inhibitor or an ARB; and a CCB; and a thiazide-like diuretic [1].

**Fourth-line medication** (see the 'Consider fourth-line medication' care point on the 'Management' page):
- If specialist expertise and experience exists in a primary care setting, patients can be started and managed on fourth line antihypertensive treatment without referral [R-GDG].
- In the absence of such expertise in a primary care setting, refer to secondary/specialist care [R-GDG].
- Consider further diuretic therapy with low-dose spironolactone if the blood potassium level is 4.5 mmol/L or lower [1].
- Consider a higher dose thiazide-like diuretic if the blood potassium level is higher than 4.5 mmol/L [1].
- If further diuretic therapy is not tolerated, is contraindicated or is ineffective; consider adding either an alpha blocker or a beta-blocker [1].

**Treatment targets for non-diabetic patients** (see the 'Patient does not have diabetes mellitus' care point on the 'Management' page):
- Aim to achieve a clinic BP of [1][L1, RGA1]:


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Hypertension - suspected

< 140/90 mmHg in people aged less than 80 years.
< 150/90 mmHg in people aged 80 years and older.

References:
Please see the care map's Provenance.

5 Key recommendations of the care map

Quick info:
Management in patients with either type 1 or type 2 diabetes mellitus (see the 'Type 2 diabetes' care point on the 'Management' page):

• First line treatment:
  • A once daily ACE inhibitor [20]; or
  • For people of African or Afro-Caribbean descent use an ACE inhibitor; plus either a diuretic or CCB [20].
• Second line treatment:
  • With first-line therapy, add a CCB or a diuretic (usually thiazide or thiazide-like diuretic) [20].
• Third-line treatment:
  • With dual therapy, add the other drug, i.e. either a CCB; or a diuretic [20].
• Fourth-line treatment:
  • With triple therapy, add either an alpha blocker; or a beta-blocker; or a potassium-sparing diuretic [20].
• Refer to secondary/specialist care if BP remains above target levels following triple therapy including a diuretic [R-GDG].

Treatment targets for patients with either type 1 or type 2 diabetes mellitus (see the 'Type 2 diabetes' care point on the 'Management' page):

• Aim to achieve a clinic BP of [21]:
  • Below 140/90 mmHg; or
  • Below 130/80 mmHg in younger patients if there is albuminuria or one or more additional ASCVD risk factors.

Referral to secondary/specialist care:

• Refer on the same day to secondary care for urgent treatment if any of the following are present or are suspected [1,10,18]:
  • Accelerated hypertension.
  • Suspected pheochromocytoma.
  • Particularly severe hypertension (more than 220/120 mmHg).
  • Impending complications.
• Further indications for non-urgent referral to secondary/specialist care are as follows [18]:
  • Consider referral for all patients who are inadequately managed on triple antihypertensive therapy [R-GDG].
  • Possible secondary hypertension.
  • All patients with evidence of end-organ damage (for collaborative care) [R-GDG].
  • Therapeutic problems.
  • White coat hypertension is suspected and ambulatory BP monitoring or home monitoring is unavailable.

References:
Please see the care map's Provenance.

6 Abbreviations used in this care map

Quick info:
The abbreviations used in this care map are as follows:

**ABPM**
Ambulatory blood pressure monitoring

**ACC/AHA**
American College of Cardiology / American Heart Association

**ACE**
Hypertension - suspected

Angiotensin-converting enzyme
ARB
Angiotensin II receptor blocker
ASCVD
Atherosclerotic cardiovascular disease
BMI
Body mass index
BP
Blood pressure
CBC
Complete blood count
CCBs
Calcium channel blockers
COPD
Chronic obstructive pulmonary disease
DBP
Diastolic blood pressure
eGFR
Estimated glomerular filtration rate
ESC
European Society for Cardiology
HbA1c
Glycated haemoglobin
HBPM
Home blood pressure monitoring
MAOIs
Monoamine oxidase inhibitors
MoPH
Ministry of Public Health of Qatar
NSAIDs
Non-steroidal anti-inflammatory drugs
QNF
Qatar National Formulary
SBP
Systolic blood pressure
SNRIs
Serotonin norepinephrine reuptake inhibitors
TIA
Transient ischaemic attack
WHO
World Health Organisation

7 Hypertension - clinical presentation

Quick info:
Hypertension is usually an asymptomatic condition [1].
Patients may present [1]:
• During routine screening.
• After an event, such as a TIA.
• Following a consultation for a specific problem, such as dizziness or chest pain.

References:
Please see the care map's Provenance.
8 RED FLAG!

Quick info:
Refer on the same day to secondary care for urgent treatment if any of the following are present or are suspected [1,10,18]:

- Accelerated hypertension (blood pressure usually higher than 180/110 mmHg with signs of papilloedema and/or retinal haemorrhage).
- Suspected pheochromocytoma (labile or postural hypotension, headache, palpitations, pallor and diaphoresis).
- Particularly severe hypertension (more than 220/120 mmHg).
- Impending complications, e.g. transient ischaemic attack, left ventricular failure.

Further indications for non-urgent referral to secondary/specialist care are as follows [18]:

- Consider referral for all patients who are inadequately managed on triple antihypertensive therapy [R-GDG].
- Possible secondary hypertension.
- All patients with evidence of end-organ damage (for collaborative care) [R-GDG].
- Therapeutic problems.
- White coat hypertension is suspected and ambulatory BP monitoring or home monitoring is unavailable.

See the 'Management in secondary care' care point for further information.

References:
Please see the care map's Provenance.

11 History

Quick info:
Obtain a comprehensive history, including the following points [2][L2]:

- BP measurements.
- Duration and severity.
- Antihypertensive therapy; including current and previous medications; efficacy, side-effects and adherence.
- Symptoms of postural hypotension.
- Comorbidities which may influence management, e.g. bronchial asthma, COPD, benign prostatic hypertrophy.

Ask about other risk factors associated with CVD, including:

- Family and/or personal history of [2][L2, RGA1]:
  - Hypertension.
  - Diabetes.
  - CVD.
  - Dyslipidaemia.
  - Smoking status.
  - Recent weight changes – obesity.
  - Dietary habits.
  - Physical exercise.
  - History of snoring or sleep apnoea.
  - Personal history of pre-eclampsia.

Ask about symptoms and consequences of end organ damage and CVD, affecting [2][L2, RGA1]:

- The brain and eyes, e.g.:
  - Headache.
  - Vertigo.
  - Impaired vision.
  - Sensory or motor deficit.
  - Stroke/TIA.
Hypertension - suspected

• Carotid revascularisation.
• Cognitive dysfunction.

• The heart, e.g.:
  • Chest pain.
  • Shortness of breath.
  • Swollen ankles.
  • Myocardial infarction.
  • Revascularization.
  • Syncope.
  • History of palpitations.
  • Arrhythmias.
  • Atrial fibrillation.

• The kidney, e.g.:
  • Thirst.
  • Polyuria.
  • Nocturia.
  • Haematuria.

• The peripheral arteries, e.g.:
  • Erectile dysfunction.
  • Cold extremities.
  • Intermittent claudication.
  • Pain-free walking distance.
  • Peripheral revascularization.

To assess for possible secondary hypertension, enquire about the following [1,2,12][L2, RGA1]:

• Age at diagnosis.

• Symptoms suggestive of:
  • Pheochromocytoma – repetitive episodes of sweating, headache, anxiety and palpitations.
  • Hyperaldosteronism – episodes of muscle weakness and tetany.
  • Thyroid disease.

• Personal history of:
  • Renal disease.
  • Haematuria.
  • Analgesic abuse (parenchymal renal disease).

• Family history of:
  • Chronic kidney disease.
  • Polycystic kidney disease.

• Drugs/substances that may raise BP, such as:
  • Oral contraceptives.
  • Glucocorticoid and mineralocorticoid steroid therapy.
  • NSAIDs.
  • Erythropoietin.
  • Cyclosporin.
  • MAOIs.
  • SNRIs.
  • Nasal decongestants.
  • Mirabegron.
  • Alcohol.
13 Measure blood pressure

Quick info:

Ensure the following when measuring BP:

- Devices should be validated, maintained, and regularly recalibrated in accordance with clinic policy [1][L1, RGA1].
- Standardise the environment. Patients should be [1,2][L2]:
  - Sitting for 3-5 minutes before measuring BP.
  - In a relaxed, temperate setting.
  - Remaining quiet.
- Patient's arm must be out-stretched and supported [1][L2].
- Cuff should be [1,2][L2]:
  - Appropriately sized.
  - Positioned at the level of the heart.
- Palpate the radial or brachial pulse to check for pulse irregularity. If the pulse is irregular [1]:
  - Do not use automated devices.
  - Measure BP manually using direct auscultation over the brachial artery.

When considering a diagnosis of hypertension:

- Measure BP on both arms [1][L2]:
  - Repeat if the difference between arms is greater than 20 mmHg.
  - If the difference remains greater than 20 mmHg, use the arm with the higher reading for subsequent measurements.
- If the BP measured in the clinic is 140/90 mmHg or higher [1]:
  - Take a second measurement.
  - Take a third measurement if the second is substantially different from the first.
  - Record the lower of the last two measurements as the clinic BP.
  - NB: Measurements should be spaced 1-2 minutes apart [2].
  - Consistent inter-arm differences of over 20/10 mmHg may suggest pathology warranting specialist referral [1].

References:
Please see the care map's Provenance.

14 Further clinical examination

Quick info:

Additional examination points to note include the following:

- Measure height, weight, BMI, and waist circumference [2][L2].
- Check for signs of secondary hypertension, including [2][L2, RGA1]:
  - Features of Cushing’s syndrome, e.g.:
    - Central obesity.
    - Moon face.
    - Buffalo hump.
    - Abdominal striae.
    - Hirsutism.
• Skin stigmata of neurofibromatosis (indicative of pheochromocytoma).
• Palpation of enlarged kidneys (indicative of polycystic kidney disease).
• Auscultation of abdominal murmurs (indicative of renovascular hypertension).
• Auscultation of precordial or heart murmurs (indicative of aortic disease, aortic coarctation or upper extremity arterial disease).
• Diminished and delayed femoral pulses (indicative of aortic coarctation, aortic disease or upper extremity arterial disease).
• Consistent inter-arm BP difference of greater than 20/10 mmHg (indicative of aortic coarctation or subclavian artery stenosis).
• Check for signs of end organ damage, including [1,2][L2, RGA1]:
  • Motor or sensory defects.
  • Fundoscopic abnormalities.
  • Cardiac abnormalities, such as:
    • Heart murmurs.
    • Arrhythmias.
    • Peripheral oedema.
  • Peripheral arterial disease, including:
    • Absence, reduction or asymmetry of peripheral pulses.
    • Cold extremities.
    • Ischaemic skin lesions.
    • Carotid murmur.
    • Abdominal bruits.

References:
Please see the care map's Provenance.

15 Assessing for postural hypotension

Quick info:
Elderly patients (aged over 65 years) and those with diabetes are at increased risk of postural hypotension [2]. Assess for postural hypotension in patients who have a history of falls or symptoms of postural dizziness [1]. Examine for the following [1,2]:
• Measure BP, 1 and 3 minutes after assumption of the standing position.
• If systolic BP falls by 20 mmHg or more, in the same arm, when standing:
  • Review medication.
  • Measure subsequent BPs with the patient standing.
  • Consider referral to a specialist if symptoms of postural hypotension persist.

References:
Please see the care map's Provenance.

16 Confirming blood pressure measurements

Quick info:
If clinic BP is persistently 140/90 mmHg or higher, or masked hypertension is suspected, confirm the diagnosis with [1,2]:
• ABPM, where available [1][L1, RGA1]:
  • Ensure at least two measurements are taken every hour.
  • Use the average of at least 14 measurements taken during the person's usual waking hours to confirm the diagnosis.
  • ABPM is the preferred method of confirming a diagnosis of hypertension in primary care [R-GDG].
• Offer HBPM if ABPM is unlikely to be tolerated or is unavailable [1][L1, RGA1]:
  • Record BP twice per day for at least 4 days, and ideally 7 days.
Hypertension - suspected
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- Take two consecutive readings at least 1 minute apart with the person seated.
- Discard the measurements taken on the first day and use the average value of the remaining measurements.

References:
Please see the care map's Provenance.

17 Investigations

Quick info:
While waiting for confirmation of a diagnosis of hypertension, carry out investigations for end organ damage and assess cardiovascular risk [1][L3].

References:
Please see the care map's Provenance.

18 ASCVD risk assessment

Quick info:
ASCVD risk assessment is important for patients with hypertension who have not yet developed clinical ASCVD (i.e. primary prevention) [14].

ASCVD risk assessment [1,14]:
- May identify underlying causes and important modifiable risk factors.
- May help identify:
  - Diabetes.
  - Evidence of hypertensive damage to the:
    - Heart.
    - Kidneys.
- Underlying causes of hypertension, e.g. kidney disease.
- Provides a context to discuss BP lowering drugs alongside other treatments for raised cardiovascular risk.

In the absence of established ASCVD, consider starting antihypertensive therapy if the following apply [14,15]:
- Stage 1 hypertension is diagnosed; and:
  - 10-year ASCVD risk, using the ACC/AHA Pooled Cohort Equations is ≥ 7.5%; or
  - Target organ damage, renal disease or diabetes mellitus are present.
- Stage 2 or Stage 3 hypertension is diagnosed.

References:
Please see the care map's Provenance.

19 Initial investigations

Quick info:
The following investigations are carried out to assess for [2]:
- Modifiable risk factors.
- Secondary hypertension.
- The presence of end organ damage.

For all people with hypertension [1][L3]:
- Send urine sample for estimation of the albumin:creatinine ratio.
- Test urine for haematuria (by dipstick or urinalysis).
- Measure:
  - Serum electrolytes.
  - Serum creatinine.
• eGFR.
• Fasting plasma glucose.
• Fasting lipid profile (including total cholesterol, HDL, LDL and triglycerides).
• Thyroid function tests.
• Arrange a 12-lead electrocardiograph.
• Examine the fundi for hypertensive retinopathy.

Other investigations, based on history and examination, may include the following [2,13][L2]:

• CBC.
• Serum uric acid.
• HbA1c.
• Echocardiogram.
• Holter monitoring in case of arrhythmias.
• Exercise testing.
• Carotid ultrasound.
• Peripheral artery/abdominal ultrasound.
• Ankle-brachial pressure index.
• Urinary free metanephrines, if considering pheochromocytoma.

References:
Please see the care map's Provenance.

20 Diagnose hypertension

Quick info:
Diagnose hypertension if [1]:

• Clinic BP is 140/90 mmHg or higher; and
• After subsequent ABPM or HBPM the average BP is 135/85 mmHg or higher.

Hypertension is defined as [1]:

• Stage 1 hypertension:
  • Clinic BP is between 140/90 and 159/99 mmHg; and
  • Subsequent daytime average of ABPM, or average of HBPM, is between 135/85 and 149/94 mmHg.

• Stage 2 hypertension [1]:
  • Clinic BP is between 160/100 and 179/109 mmHg; and
  • Subsequent ABPM daytime average or HBPM average is between 150/95 and 179/109 mmHg.

• Stage 3 hypertension (Severe hypertension) [1]:
  • Clinic SBP is 180 mmHg or higher; or
  • Clinic DBP is 110 mmHg or higher.

References:
Please see the care map's Provenance.

22 Consider secondary hypertension

Quick info:
Approximately 10% of people with hypertension have a raised BP that is secondary to an underlying condition [1]. Secondary hypertension is more likely when hypertension [1]:

• Occurs in younger patients – less than age 40 years.
• Worsens suddenly.
• Presents as accelerated hypertension.
• Responds poorly to treatment.
Secondary hypertension may be due to the following [1,2]:

- Renal disorders, e.g.:
  - Chronic kidney disease.
  - Polycystic kidney disease.
- Vascular disorders, e.g.:
  - Aortic coarctation.
  - Renal artery stenosis.
- Endocrine disorders, e.g.:
  - Hyperthyroidism.
  - Hyperaldosteronism – isolated hypokalaemia.
  - Pheochromocytoma.
  - Cushing’s syndrome.
  - Acromegaly.
- Drugs and other substances.
- Other conditions, e.g. obstructive sleep apnoea.

Indications for non-urgent referral to secondary/specialist care are as follows [18]:

- Any features on history or examination of a primary cause, e.g.:
  - Hypokalaemia with increased or high normal plasma sodium (Conn’s syndrome).
  - There is a consistent difference in BP readings between arms of more than 20/10 mmHg, consider coarctation of the aorta and refer to secondary care/specialist [1].
- Stage 3 Chronic kidney disease (eGFR < 60 mL/min/1.73m²).
- Proteinuria or haematuria.
- Sudden onset or worsening of hypertension.
- Young age (any hypertensive patient aged less than 30 years) [R-GDG].

References:

Please see the care map's Provenance.
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Provenance Certificate

Overview

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.

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

This care map was approved on 19 Mar 2017.

For information on changes in the last update, see the information point entitled 'Updates to this care map' on each page of the care map.

Editorial approach

This care map 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 care map 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 care map, 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 practising physicians and subject matter experts from across provider organisations in Qatar.
- Independent review of the guideline by the Clinical Governance body appointed by the MOPH, from amongst stakeholder organisations across Qatar.

Explicit review of the care map by patient groups was not undertaken.

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

Sources of evidence

The professional literature published in the English language 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 clinical editor and assessed in terms of quality, utility, and relevance. Preference is given to publications that:

1. Are designed with rigorous scientific methodology.
The diagnosis and management of hypertension in adults

2. Are published in higher-quality journals (i.e. journals that are read and cited most often within their field).
3. Address an aspect of specific importance to the guideline in question.

Where included, the ‘goal length of stay’ stated within this guideline is supported by and validated through utilisation analysis of various international health insurance databases. The purpose of database analysis is to confirm the reasonability and clinical appropriateness of the goal, as an achievable benchmark for optimal duration of inpatient admission.

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 A1 (RGA1):** Evidence demonstrates at least moderate certainty of at least moderate net benefit.
- **Recommendation Grade A2 (RGA2):** Evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care.
- **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 C1 (RGC1):** Evidence demonstrates a lack of net benefit; additional research is recommended.
- **Recommendation Grade C2 (RGC2):** 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.
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References


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30. National Hospital Discharge Database Analysis, all payers, all applicable states, 2011-2012.


Guideline Development Group members

The following table lists members of the Guideline Development Group (GDG) nominated by their respective organisations and the Clinical Governance Group. The GDG members have reviewed and provided feedback on the draft guideline relating to the topic. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

<table>
<thead>
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<th>Title</th>
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<tbody>
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¹ Mr Ahmed Babiker attended the MOPH in his capacity as a Clinical Pharmacist and advisor on the availability of medications in Qatar.
The diagnosis and management of hypertension in adults

Guideline Development Group members

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</tbody>
</table>

Responsibilities of healthcare professionals

This care map 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 carers and should consider the individual risks and benefits of any intervention that is contemplated in the patient’s care.

Acknowledgements

The following individuals are recognised for their contribution to the successful implementation of the National Guidelines project.

Healthcare Quality Management and Patient Safety Department of the MOPH:

- Ms Huda Amer Al-Katheeri, Acting Director & Project Executive.
- Dr Alanoud Saleh Alfehaidi, Guideline & Standardisation Specialist.
- Dr Ilham Omer Siddig, Guideline & Standardisation Specialist.
- Ms Maricel Balagtas Garcia, Guideline Standardisation Coordinator.
- Dr Rasmeh Ali Salameh Al Huneiti, Research Training & Education Specialist.
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- Dr Zara Quail, Clinical Editor.
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