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DHA TELEHEALTH CLINICAL GUIDELINES

FOR VIRTUAL MANAGEMENT OF

HYPERTENSION – 27

Version 1

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Health Policies and Standards Department

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INTRODUCTION

Dubai Health Authority (DHA) is the responsible entity for regulating, licensing and monitoring health facilities and healthcare professionals in the Emirate of Dubai. The Health Regulation Sector (HRS) is an integral part of DHA and was founded to fulfil the following overarching strategic objectives:

Objective #1: Regulate the Health Sector and assure appropriate controls are in place for safe, effective and high-quality care.

Objective #2: Position Dubai as a global medical destination by introducing a value-based, comprehensive, integrated and high-quality service delivery system.

Objective #3: Direct resources to ensure happy, healthy and safe environment for Dubai population.

ACKNOWLEDGMENT

This document was developed for the Virtual Management of Hypertension in collaboration with Subject Matter Experts. The Health Policy and Standards Department would like to acknowledge and thank these professionals for their dedication toward improving the quality and safety of healthcare services.

The Health Regulation Sector

Dubai Health Authority

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EXECUTIVE SUMMARY

Telehealth is based on Evidence Based Practice (EBP) which is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient.

It means integrating individual clinical expertise with the best available external clinical evidence and guidelines from systematic research.

EBP is important because it aims to provide the most effective care virtually, with the aim of improving patient outcomes. As health professionals, part of providing a professional service is ensuring that practice is informed by the best available evidence.

This guideline is presented in the format comprising of clinical history/symptoms, differential diagnosis, investigations and management. Identification of 'Red Flags' or serious conditions associated with the disease is an essential part of this telehealth guideline as it aids the physician to manage patients safely and appropriately by referrals, if indicated during virtual telehealth assessment, to ER, family physicians or specialists for a face to face management.

Hypertension (high blood pressure) is one of the most preventable causes of premature morbidity and mortality world-wide.

Hypertension is a major risk factor for stroke (ischaemic and haemorrhagic), myocardial infarction, heart failure, chronic kidney disease, peripheral vascular disease, cognitive decline and premature death. 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.

The primary purpose of this Telehealth Guideline is to provide the health physicians, who will be managing patients virtually, with a summary of the best available evidence for the virtual management of this very common chronic condition among adults.

This guideline also identifies key “Red Flags” or serious symptoms associated with hypertension which warrant a referral to ER or specialist for further face-to-face management

DEFINITIONS/ABBREVIATIONS

Virtual Clinical Assessment: Is the evaluation of the patient's medical condition virtually via telephone or video call consultations, which may include one or more of the following: patient medical history, physical examination and diagnostic investigations.

Patient: The person who receives the healthcare services or the medical investigation or treatment provided by a DHA licensed healthcare professional.

ABBREVIATIONS

ACE	:	Angiotensin-Converting Enzyme
ACR	:	Albumin Creatinine Ratio
ARB	:	Angiotensin-II Receptor Blocker
BMI	:	Body Mass Index
BP	:	Blood Pressure
CBC	:	Complete Blood Count
CCB	:	Calcium-Channel Blocker
CKD	:	Chronic Kidney Disease
CVA	:	Cerebrovascular Accident
CVD	:	Cardiovascular Disease
DHA	:	Dubai Health Authority
DM	:	Diabetes Mellitus

EBP	:	Evidence Based Practice
ER	:	Emergency Room
HbA1C	:	Haemoglobin A1c
HBGM	:	Home Blood Glucose Monitoring
HT	:	Hypertension
IHD	:	Ischaemic Heart Disease
KPI	:	Key Performance Indicator
LFT	:	Liver Function Test
NICE	:	National Institute for Health and Care Excellence
TIA	:	Transient Ischemic Attack
U&Es	:	Urea and Electrolytes
WHO	:	World Health Organisation

1. BACKGROUND

- 1.1. Hypertension remains one of the most significant causes of mortality worldwide. It is preventable by medication and lifestyle modification. Office blood pressure (BP), out-of-office BP measurement with ambulatory BP monitoring, and self-BP measurement at home are reliable and important data for assessing hypertension.
- 1.2. Complications of hypertension are the clinical outcomes of persistently high BP that result in cardiovascular disease (CVD), atherosclerosis, kidney disease, diabetes mellitus, metabolic syndrome, preeclampsia, erectile dysfunction, and eye disease.
- 1.3. Treatment strategies for hypertension consist of lifestyle modifications and drug therapies which will be discussed below in this guideline.

2. SCOPE

- 2.1. Telehealth services in DHA licensed Health Facilities.

3. PURPOSE

- 3.1. To support the implementation of Telehealth services for patients with complaints of Hypertension in Dubai Health Authority (DHA) licensed Health Facilities

4. APPLICABILITY

- 4.1. DHA licensed physicians and health facilities providing Telehealth services.
- 4.2. Exclusion for Telehealth services are as follows
 - 4.2.1. Emergency cases where immediate intervention or referral is required.
 - 4.2.2. Prescribe Narcotics, Controlled or Semi-Controlled medications.

5. RECOMMENDATION

5.1. Diagnosis:

The evidence on the benefits of screening for hypertension is well-established.

There is also good evidence that establishing an accurate diagnosis of hypertension and starting appropriate treatments substantially will reduce the incidence of cardiovascular events.

The following points should be taken into consideration when making a diagnosis of and/or managing patients with hypertension:

5.1.1. Every (non-hypertensive) adult should have their BP checked at least once every five years to screen for hypertension.

- a. Normal BP <140/90
- b. If Normal re-check every 5 years

5.1.2. For new patients who had no previous diagnosis of hypertension:

If BP not normal >140/90, then review as below:

- a. 140-179/90 -109, then ask the patient to come back and have at least 3 different repeats BP readings, or arrange for twice daily home BP measurements over one week or refer for ambulatory daytime monitoring.
- b. >180/110, then either start treatment immediately and refer to ophthalmology for fundoscopy (according NICE guideline); or refer to

Internal Medicine specialist for both: Fundoscopy examination and also for treatment to be started immediately

- c. Malignant hypertension BP>180/110 (with suspected papilledema &/or retinal hemorrhage or suspected pheochromocytoma), then Refer to ER

5.2. Hypertension can be classified into 2 stages as follow:

5.2.1. Stage 1 hypertension:

- a. Virtual Clinic BP >140/90
- b. Ambulatory BP or Averaged home readings > 135/85

5.2.2. Stage 2 HT

- a. Virtual Clinic BP >160/100
- b. Ambulatory BP or Averaged home readings > 150/95

6. MANAGEMENT

6.1. Refer to APPENDIX 2 for the Virtual Management of Hypertension Algorithm

6.2. Ordering Laboratory tests for patients with Hypertension

6.2.1. Hypertension would require regular monitoring in most cases. The monitoring decision and the type of lab tests required would depend on the following six phases:

- a. Pre-treatment monitoring/lab test to determine if a disease or a stage of disease is present

- b. After the initiation of treatment.
 - c. After the disease is treated and stable
 - d. After a significant change in the disease process or treatment has occurred; or
 - e. To determine if it is possible to stop treatment
 - f. Based on doctor's clinical judgment
- 6.2. Refer to APPENDIX 1 for tests required for patients with Hypertension
- 6.3. The clinical management of primary (essential) hypertension include lifestyle and pharmacological interventions:
- 6.3.1. Non-pharmacological Management
- Patient education and advice on lifestyle are very important. Lifestyle advice or interventions include the following:
- a. Offer education material related to hypertension, obesity, and cardiovascular diseases to encourage lifestyle modifications.
 - b. Offer advice on reducing smoking for smokers
 - c. Emphasize on reducing alcohol consumption to reduce high blood pressure.
 - d. Emphasize on reducing caffeine-containing products
 - e. Recommend decreasing or substituting dietary sodium.

- f. Avoid prescribing calcium, magnesium, and/or potassium supplements, as they do not play a role in blood pressure reduction.
- g. Recommend relaxation therapies as part of high blood pressure treatment
- h. Offer a diet and exercise plan to reduce blood pressure. NICE recommends the following regarding physical activities/ exercise:

- All adults aged 19 years and over should aim to be active daily.
- Over a week, this should add up to at least 150 minutes (2.5 hours) of moderate intensity¹ physical activity in bouts of 10 minutes or more.
- Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity² activity spread across the week or combinations of moderate and vigorous intensity activity.
- All adults should also undertake physical activity to improve muscle strength on at least 2 days a week.
- They should minimise the amount of time spent being sedentary (sitting) for extended periods.
- Older adults (65 years and over) who are at risk of falls should incorporate physical activity to improve balance and coordination on at least 2 days a week.

6.3.2. Pharmacological Treatment

- a. Start treatment if BP results reveal Stage 2 HT or Stage 1 with risk factors i.e. CVD, LVH, renal disease, retinopathy, DM, or significant 10-year CVD risk (as per ASCVD algorithm published in 2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk (the calculator is available at <http://www.cvriskcalculator.com/>)
- b. Refer to APPENDIX 3 for Drug Choice

6.3.3. Monthly Review

- a. Refer to APPENDIX 4 for Summary on Monthly Review

6.3.4. Lipid Treatment

- a. Primary prevention of CVD gives Atorvastatin 20mg if, the patient has DM Types 1 & 2 or CKD
- b. Have significant 10-year risk of heart disease or stroke using the ASCVD algorithm published in 2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk (calculate the risk by accessing <http://www.cvriskcalculator.com/>).
- c. Secondary prevention of CVD, then 'treating to target' with Atorvastatin 80mg (but use lower dose i.e. 40mg if on Calcium Channel Blocker like Amlodipine, Nifedipine, Lercanidipine, Verapamil and Diltiazem)

7. REFERRAL CRITERIA AND RED FLAGS

If a patient meets any of the below referral criteria, then he or she should be referred to specialists or ER as required.

7.1. Referral to ER

Some indications/Red Flags that warrant a referral to ER include:

- 7.1.1. Malignant hypertension or accelerated phase hypertension (BP>180/110)
- 7.1.2. Severe hypertension (e.g. 220/120 mmHg) with or without evidence of acute end-organ damage. [Note: severe hypertension (usually a diastolic blood pressure above 120 mmHg) is common in clinical practice, especially among patients with known hypertension who are not fully adherent to their medications.]
- 7.1.3. Impending complications e.g. TIA
- 7.1.4. Hypertensive patient with:
 - a. Recent onset of confusion or altered mental state
 - b. Suspected retinal haemorrhages and exudates (with or without papilloedema)
 - c. recent onset of chest pain, dyspnea (shortness of breath)
 - d. new neurological signs/symptoms (e.g. numbness, weakness)
 - e. severe headache

f. change in vision

7.2. Some indications/Red Flags that warrant a referral to Specialist as Outpatient include

Specialist investigations and referral for hypertension is indicated in the following circumstances:

7.2.1. suspected pheochromocytoma (labile or postural hypotension, headache, palpitations, pallor and diaphoresis) should be referred to specialty care the same day.

7.2.2. for people aged under 40 years with stage 1 hypertension and no evidence of target organ damage, cardiovascular disease, renal disease or diabetes, consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage. This is because 10-year cardiovascular risk assessments can underestimate the lifetime risk of cardiovascular events in these people

7.2.3. Resistant hypertension to multi-drug regimen. That is, if blood pressure remains uncontrolled with the optimal or maximum tolerated doses of 3 or more drugs (i.e. resistant to multi-drug regimen), seek expert advice if it has not yet been obtained

7.2.4. consider the need for the specialist investigations in people with signs and symptoms suggesting secondary cause of hypertension.

- 7.2.5. hypertension with a possible underlying cause or associated with:
- patients with hypokalaemia/increased plasma sodium (e.g. Conn's syndrome)
 - haematuria or significant proteinuria
 - raised/worsening serum creatinine and/or potassium
 - young age (any hypertension under 20 years: needing treatment < 30 years)
 - sudden-onset or worsening hypertension
- 7.2.6. patient is/becomes pregnant.
- 7.2.7. At higher risk of hypertensive complications or suffering from a relatively stable chronic complication. Examples:
- Worsening hypertensive nephropathy or microalbuminuria
 - Peripheral neuropathy or peripheral vascular disease
- 7.2.8. Referral to annual fundoscopic examination to screen for and/or monitor the progress of hypertensive retinopathy
- 7.2.9. Consider specialist referral if age < 40 at the time of diagnosis (stage 1 and 2 hypertension).
- 7.2.10. Therapeutic problems: unusual BP variability, intolerance to multiple medications or contra-indications, persistent non-adherence or treatment refusal.

7.2.11. Other conditions based on justifiable clinical decision.

8. KEY PERFORMANCE INDICATORS

8.1. % of hypertensive patient with BP > 140/90= No. of hypertensive patients with BP > 140/90 / Total number of Hypertensive patients managed via Telehealth

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APPENDICES

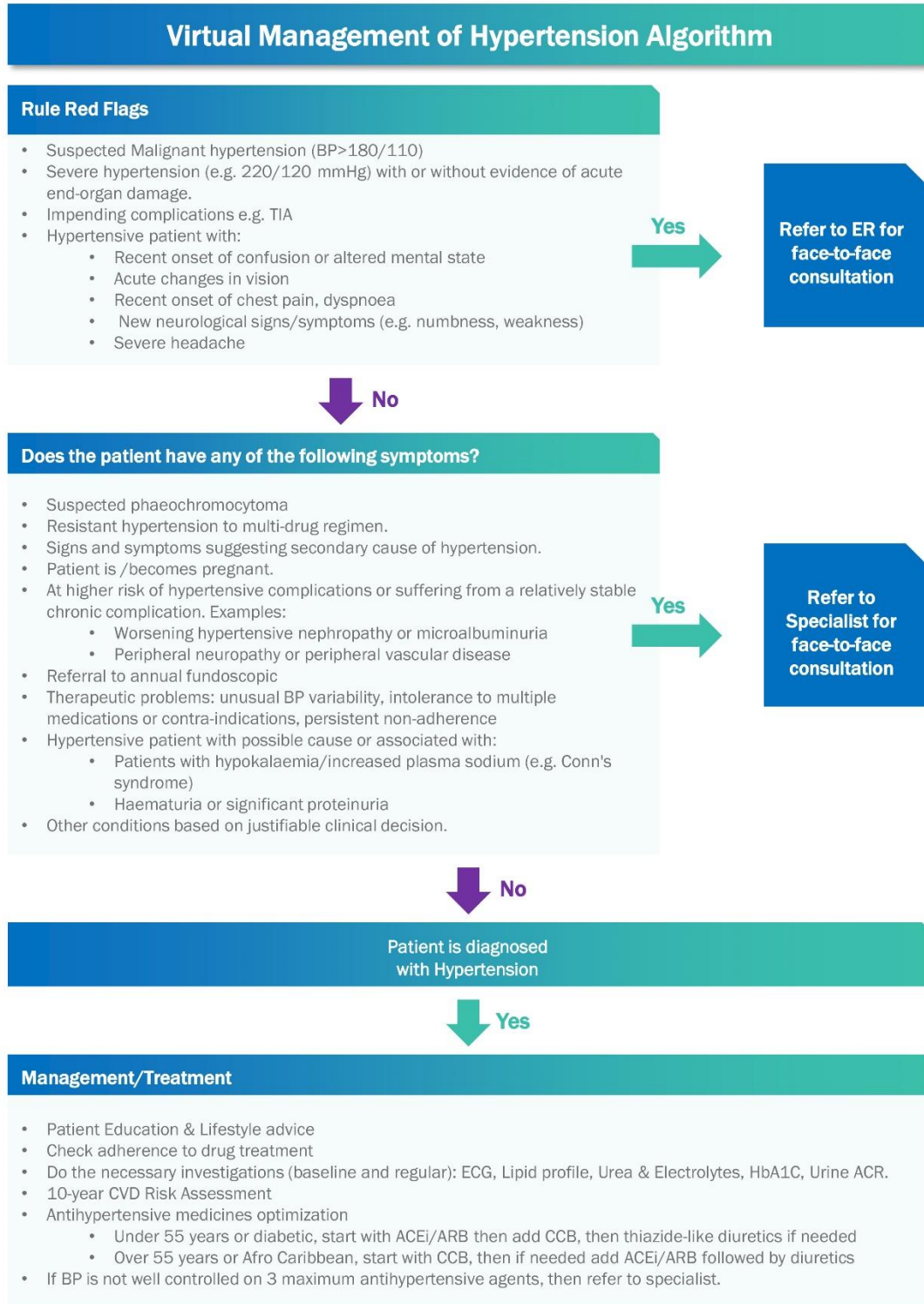
APPENDIX 1 – TYPE OF TESTS REQUIRED FOR PATIENTS WITH HYPERTENSION

Ensure patient has the following baseline investigations are done (see the table below). If these investigations are done, or results are unknown, then arrange for the following to be done before prescribing chronic medications:

Baseline tests required during onboarding	Tests to be done after onboarding (i.e. as part of Follow-up)
<p>Minimum requirements for hypertensive patients include:</p> <ul style="list-style-type: none"> • If patients are on ACE inhibitors, ARBs, or diuretics, then the following tests are required as baseline and if the results are not available OR not done within the past 3 months then TD24 team to request the lab test. <ul style="list-style-type: none"> ○ Serum potassium and creatinine levels (for patients on ACE inhibitors, ARBs, or diuretics only). ○ Serum sodium if patient is on diuretics • The following tests will be accepted (i.e. do not need to be repeated) if they were normal and were done within the last one year: <ul style="list-style-type: none"> ○ Fasting lipid profile, ○ Spot urinary albumin-to-creatinine ratio (ACR) 	<p>The following tests should be done every 3 months:</p> <ul style="list-style-type: none"> • Serum potassium and creatinine levels in patients on ACE inhibitors, ARBs, or diuretics. • Serum sodium if patient is on diuretics <p>The following tests will be repeated at 12 months (if baseline/previous results were normal). However, these tests need to be done more frequently in patients with known CKD, after initiation medication, changing medication dosages that affect these laboratory values (e.g. BP medication, cholesterol medication) or had previous abnormal tests:</p> <ul style="list-style-type: none"> • Fasting lipid profile, including total, LDL, and HDL cholesterol and triglycerides, as needed • LFT (if on statin) • Spot urinary albumin-to-creatinine ratio (ACR) • Kidney function including Serum creatinine

<ul style="list-style-type: none"> ○ Electrolytes & kidney function including serum creatinine, sodium, potassium, calcium. ○ Complete blood count (CBC) ○ Fasting blood glucose or HbA1C ○ LFT (if on statin medication) ○ ECG ● If the tests below are not performed/available within the past year or the latest lab results were abnormal, then the following tests need to be done/repeated by TD24 team: <ul style="list-style-type: none"> ○ Fasting lipid profile, as needed ○ Spot urinary albumin-to-creatinine ratio (ACR) ○ Electrolytes & Kidney function test including Serum creatinine, sodium, potassium, calcium ○ Fasting blood sugar or HbA1C ○ ECG ○ LFT (if on statin) 	
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APPENDIX 2 – VIRTUAL MANAGEMENT OF HYPERTENSION ALGORITHM



APPENDIX 3 – DRUG CHOICE

Steps 1 -3
<p>Patients Under 55 years old (or diabetic) start with:</p> <ol style="list-style-type: none"> 1. ACEi/Low cost ARB then add if not controlled 2. Calcium Channel Blocker then add if not controlled 3. Thiazide like diuretic
<p>Patients Over 55 years old or Afro Caribbean, then give:</p> <ol style="list-style-type: none"> 1. Calcium Channel Blocker 1st line then add if not controlled 2. ACE/Low cost ARB then add if not controlled 3. Diuretic
Step 4
<p>If patient is still uncontrolled then, any age you can add:</p> <ol style="list-style-type: none"> 1. Spironolactone if K <4.5 (unlicensed, document), or higher dose thiazide if K >4.5. 2. Then alpha or beta blocker if not tolerated/doesn't work.

Note:

For patients with Gout the following need to be noted:

1. Calcium Channel Blocker or Losartan - as Diuretic, ACE or beta-blocker therapy increases uric acid levels.
2. Calcium Channel Blocker can worsen proteinuria
3. Chortalidone or Indapamide are the diuretic of choice

APPENDIX 4 - MONTHLY REVIEW WITH TREATMENT CHANGE UNTIL BP BELOW TARGET, THEREAFTER REVIEW EVERY 3 TO 6 MONTHS BASED ON CLINICAL DECISION.

Co-morbidity	Target
HT or IHD, age < 80 Years	<140/90
HT or IHD, age >80	<150/90
TIA/CVA	<130/80
DM	<140/80
CKD3	<140/85
If CKD+ DM	<130/80

APPENDIX 5 - SUMMARY OF HYPERTENSION BLOOD TESTS (AND WHEN TO DO BLOOD TESTS BEFORE PRESCRIBING CHRONIC MEDICATIONS)

Chronic Condition	Blood tests to be done at the time of the diagnosis (or if the baseline results are unknown (if patient's previous lab reports are unavailable and chronic medications need to be prescribed)	3 monthly Review	6 Monthly and Annually
Hypertension	FBS, Total chol/ HDL. U/E*, urine ACR.	N/A (Provided the baseline lab results were satisfactory/normal)	U/E (only if on ACEi , ARB or Thiazide)

U/E* = Urea and Electrolytes