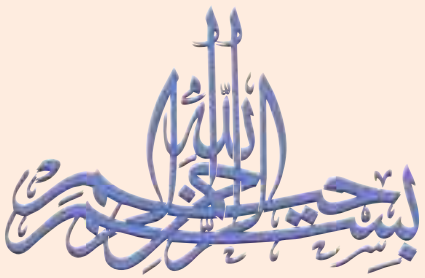
وزارة الصحة
Ministry of Health

Cardiometabolic Risk Management Guidelines in Primary Care

دليل معالجة منذرات أمراض القلب والسكر في الرعاية الصحية الأولية

Guideline Developing Team

Third Edition, 2013



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بسم الله الرحمن الرحيم

الحمد الله رب العالمين والصلاة والسلام على خاتم الانبياء والمرسلين سيدنا محمد وعلى آلة وصحبه أجمعين

تولي قيادتنا الحكيمة وعلى رأسها خادم الحرمين الشرفين وسمو ولي عهده الأمين يحفظهما الله جل عنايتها واهتمامها من أجل الارتقاء بالخدمات الصحية وتوجيها التوجه الصحيح لتخدم المواطنين والمقيمين في كافة أنحاء المملكة.

ان من أهم أسباب النهضة الصحية التي تشهدها المملكة في المجال الصحي التخطيط السليم للبرامج الصحية المختلفة وحتى تكون هذه البرامج الصحية أكثر فاعلية فإنها تحتاج الى أدلة وطنية مدروسة ومراجعة وتتناسب مع إنسان المكان وتتماشى مع أحدث وسائل العلاج المبنية على البرهان ليرتكز عليها لمساعدة المعالجين في مجال الرعاية الصحية لتقديم خدمة أفضل وذات جودة عالية .

وفي هذا السياق يأتي هذا الدليل العلمي الذي تم أعداده من فبل وزارة الصحة ليساعد في إكتشاف منذرات الأمراض القلبية والوعائية والسكر في الرعاية الصحية الأولية في المملكة العربية السعودية كخطوه علمية للمساهمة في علاج هذه الأمراض بحيث يمكن لأي طبيب في الرعاية الصحية استخدام هذا الدليل والاستفادة منه .

وختاما أسأل الله العلي القدير أن يوفقنا جميعا الى ما يحبه ويرضاه وأن يجعل عملنا كلة خالصا لوجهة الكريم والله ولي التوفيق.

وزير الصحة

د عبدالله بن عبد العزيز الربيعة

In the name of Allah the most gracious, the most merciful

Praise is to Allah, and prayers and peace upon Prophet Muhammad and all his family and companions.

Our prudent leadership led by the custodian of the two holy mosques and his highness the heir and crown prince, have given a great deal of attention and care to promote and improve health services in order to deliver optimal healthcare to all residents of the Kingdom of Saudi Arabia.

Effective planning is one of the most important factors for the advancement of health services in the kingdom. In order to make the health services more efficient, it is vital to have reliable clinical guidelines that are adapted to the local needs, aids in the rational decision making and evidence based to improve the patients' outcomes.

In this context, guidelines for the primary prevention of cardiovascular diseases in primary health care was prepared by the Ministry of Health to help in the detection of predisposing factors to cardiovascular diseases and diabetes at the primary health level in the kingdom. This is a huge step that contributes to the control of these diseases where any physician in the primary health system can use this evidence guide and benefit from it.

In conclusion, I ask Allah the almighty to guide us all to what pleases him, and to let all our scientific endeavors solely for his satisfaction. And Allah is the guardian of conciliation.

Minister of health

Dr. Abdullah Abdul Aziz Alrabia

اسماء اللجان

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Testimonial

«The CMR guidelines present a formidable document and a large amount of work. Congratulations to the authors on a great effort and I wish well in its implementation.»

Lawrie Beilin
Professor of Medicine
University of Western Australia

«It is a very comprehensive, stepwise approach, for the management of CV diseases (prevention and treatment). Congratulations to the team who worked on this project.»

Denis Drouin
Clinical Professor of Family Medicine
Faculté de médecine, Université Laval
Quebec, Canada

«I was really impressed by the whole process and by the quality of the document. I congratulate you and your colleagues for this very impressive work. Your document is excellent and reflects a monumental amount of work.»

Jean-Pierre Després, Ph.D., FAHA
Scientific Director
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Contents

Chapter 2

Introduction & Methods

Cardiometabolic Risk Management Guidelines

Background: are these guidelines necessary?

Cardiometabolic risk factors (CMR) consist of a cluster of modifiable classic and emerging risk factors and markers that identify individuals these increased risk of cardiovascular disease (CVD) and type 2 diabetes mellitus (DM). It includes factors that make up the definition of metabolic syndrome (MetSyn;) in addition to four other factors: smoking, elevated LDL-C, inflammatory markers and insulin resistance.[1-3]

Cardiometabolic Risk[1-3]

Metabolic Syndrome
- Abdominal obesity
- Elevated BP (≥130/85)
- Elevated FBS (≥ 110)
- Elevated S. Tg (> 150)
- Low HDL (< 40)

Elevated LDL (≥ 130)
Smoking
Inflammatory markers
Insulin resistance

This cluster is very common worldwide and in Saudi Arabia, as well.[4-6] Collectively, these factors form the biggest health problem facing the world today. [7] Their presence is associated with significantly increased CVD morbidity, including coronary heart disease, MI, and stroke.[8] Both total mortality and CV mortality are also significantly more prevalent in subjects with MetSyn compared with subjects without MetSyn.8 In addition, many non-CV morbidities, such as cancer and arthritis are associated with obesity.

Prevalence of CMR factors – KSA 2006 [4-7]

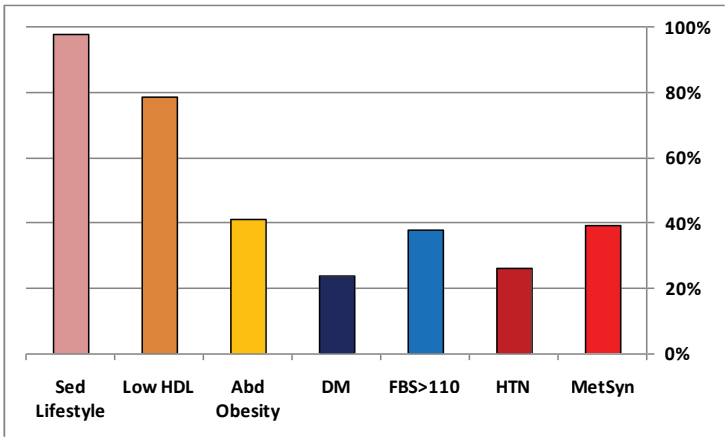

FIGURE 1. PREVALENCE OF CARDIOMETABOLIC RISK FACTORS IN SAUDI ARABIA, 2006

CMR Guideline adapts international evidence-based guideline for better adoption in primary care

Nevertheless, management programs relating to CMR factors were reported to have poor access and effectiveness in Saudi Primary Health Care (PHC).9-11

As part of a quality improvement initiative in Qatif PHC, chronic care services, delivered to hypertensive and diabetic patients, were evaluated using the "Chronic Care Model" (CCM). This model entails a thorough assessment of the current situation, including through the views of both the service providers and the patients.[12]

Chronic Care Model (CCM)[12]

CCM is a blueprint for high patient-centered chronic care. It addresses six elements:
1. Community
2. Health Care Delivery System
3. Self-Management Support
4. Delivery System Design
5. Decision Support
6. Clinical Information System

As a result, primary care providers claim that it is difficult to follow multiple guidelines for the same patient, who will usually have multiple CMR factors,and in addition, a there is hesitancy to follow guidelines developed for non- primary care providers. They advocate for the development of common guidelines which address this issue, and considers the the difficulties that nurses face in following guidelines written in non-native languages.[13]

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Scope and Target Population

1. To provide a comprehensive approach to the management of CMR factors in non-pregnant adults.
2. To include nutrition therapy, physical activity recommendations, pharmacologic therapy, self-management, as well as prevention and diagnosis of CMR-associated complications.
3. To provide suggestions for the management of the delivery system, the clinical information system and the quality of care.
4. The information contained in these CMR Guidelines is intended primarily for PHC providers including physicians, nurses, and other health care professionals.
5. These CMR Guidelines are designed to assist clinicians by providing a framework for the evaluation and treatment of CMR patients, and are not intended to replace a clinician's judgment.

Clinical Highlights and Recommendations

1. Focus on cardiovascular risk (CVR) reduction (blood pressure control, statin use, aspirin use, and tobacco cessation).
2. Self-management support is necessary for people with CMR to manage their disease.
3. Prevent microvascular complications through annual eye exams, foot risk assessments and foot care counseling, and through annual screening for renal function.
4. Screen for renal function using more sensitive tools including albumin creatinine ratio (ACR) and estimated glomerular filtration rate (eGFR).
5. Screen every individual > 45 years of age and obese individuals for CMR factors.
6. Involve other community nurses (those involved in vital signs measurement and laboratory results) in chronic care.
7. Use clinical information to identify individuals with a higher need for care.
8. Use quality indicators and electronic data management for monitoring the performance.
9. Build a nurse-led chronic care program.
10. Offer multiple tools for assessing lifestyle and self-management.
11. Screen for depression.
12. Weight reduction is pivotal in managing cardiometabolic risk.

Priority Aims

A multi-factorial intervention targeting hyperglycemia and cardiovascular risk factors is the most effective approach to control the disease and prevent complications. Both individual measures of care as well as comprehensive measures of performance on multifactorial interventions are recommended.

1. Decrease the percentage of patients with poorly controlled blood sugars, and/or blood pressure (BP) and low density lipoproteins (LDL).
2. Decrease the percentage of patients with cardiovascular risk.
3. Increase the percentage of patients for whom recommended work-ups (including.glycated hemoglobin (A1c) and LDL) are done.
4. Increase the percentage of patients for whom recommended treatment goals aremet.
5. Improve self-management skills, including the adoption of a healthy lifestyle and weight reduction.
6. Increase the percentage of patients for whom CVR is estimated.
7. Increase the percentage of general patients for whom BP is measured in every visit.
8. Increase the percentage of general patients for whom BMI is calculated once a year at minimum.
9. Increase the percentage of general patients aged ≥ 45 years or with BMI > 30 that are screened for CMR.
10. Increase the percentage of hypertensive -diabetic patients for whom ACEI has been prescribed.
11. Increase the percentage of high CVR patients for whom ASA has been prescribed.
12. Increase the percentage of high CVR patients for whom statin has been prescribed.

Methodology

(The process is outlined in page 14)

The development of these guidelines involved a broad group of primary health care professionals, including physicians, nurse practitioners, specimen-collection nurses, screening nurses, pharmacists, educators and dietitians [8].

Within the group, a number of people had considerable experience of guideline development, and of health-care administration, as well as of primary health care development and delivery of service.

In general, the evidence analyses used were published evidence-based guidelines, concerned with the screening, management and prevention of hypertension (HTN), DM, dyslipidemia and obesity, from the year 2001 to 2010.

However, members of the group were asked to identify any more recent publications relevant to the section of the guideline allotted to them, and encouraged to review details of papers referred to in the published guidelines. Key evidence-based reviews and meta-analyses are also referenced.

National guidelines were reviewed and matched with particular attention to quality measures and information management.

Each review undergoes peer review before submission to the Steering Committee for their review. The Steering Committee develops a consensus statement that considers clinical evidence,

applicability, cost effectiveness and cultural values.

The recommendations within these guideline are

concordant with those made by most international guidelines, with some minor adaptations for the national health care system.The process of adaptation is concordant, as well, to that described by the Canadian Medical Association (Adapte, www.adapte.org).

On the other hand, these guidelines were evaluated, repeatedly, using the agreed instrument (www.agreecollaboration.org).

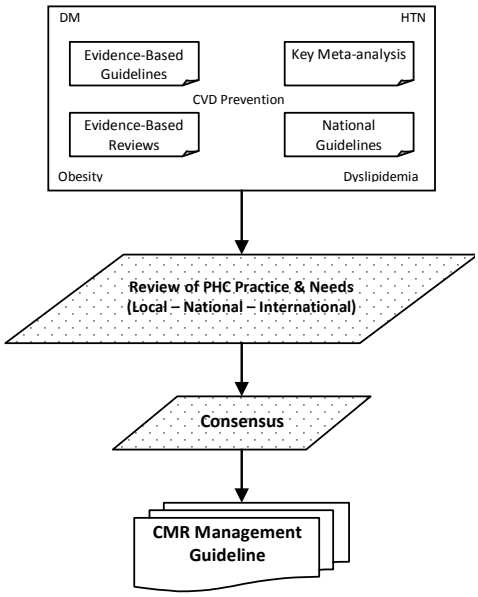


FIGURE 2. DATA SYNTHESIS IN CMR GUIDELINES.

All references are shown at the bottom of each section.

Review Process

These guidelines have been reviewed and endorsed by many eminent experts and medical societies, including the Saudi Hypertension Management Society (SHMS), the National Guideline Clearinghouse (NGC) in the USA, and the International Chair on Cardiometabolic Risk in Canada.

It has been accepted for presentation in multiple international conferences in Berlin, Istanbul, Abu Dhabi, Jeddah, Vancouver, Singapore and Cancun.

Update plan

Updating these guidelines is a major task of the developing and steering team. It has been agreed that a full review will be carried out every three years. However a six-monthly review has been suggested for the online edition.

Readers and users of the guidelines are encouraged to submit their comments and suggestions. Major suggestions and contributions will be discussed and seriously considered for inclusion in the next edition. Acknowledgments for such contributions will also be included.

Language of the guideline

English is the main language of these gnidelines. However, many pages have been written or translated into Arabic, to facilitate their implementation by users, especially nurses. These include recommendations related to lifestyle management and information management.

On the other hand, users are woelcome to translate the entire guide lines should be one word into Arabic or any other language. Their contribution, in this regard, will be appreciated and their names will be included in future editions.

Implementation Tools

Multiple implementation tools are provided. These include:

1. Encounter Forms: These can be found in chapter 6 (Non-pharmacological Management), chapter 7 (Extra Tools) and chapter 9 (Information and Quality Management)
2. Registers Diaries: These can be found in chapter 9 (Information and Quality Management)
3. Quality Indicators: Found in chapter 9 (Information and Quality Management)
4. Patient Educational and Self Management Resources: Found in chapter 6 (Non-pharmacological Management) and chapter 7 (Extra Tools)
5. Quick Reference Guide is supplemented, by electronic access in PDF format with dynamic links, online or in the supplemented compact disc.
6. Clinical Algorithms are found in multiple places in these guide lines whice contain algorithms for:
   a. Cardiometabolic Risk Screening.
   b. Chronic Management of CMR.
   c. Assessing Renal Function in CMR.
   d. Foot Care in Diabetes Mellitus.
   e. Initial Approach to High BP in PHC.
   f. BP Control: Chronic Management.
   g. Initial Management of Symptomatic Hyperglycemia.
   h. Glycemic Control: Chronic Management
   i. LDL Control: Initiation of Drug Treatment
   j. Lifestyle Management (in Arabic only)
   k. Patient Recall System.
7. Training Plan: Training modules have been developed to orient and train health care providers on the skills required to manage cardiometabolic risk. These include competency exams and certificates to ensure acquirement of the necessary skills.

Expected barriers in implementation

A Few barriers may hamper the dissemination and implementation of these guidelines. These include difficulties in affording stable trained staff assigned for chronic care; laboratory tests such as ACR, A_{1C} and lipid profile; medications such as statin; apparatus such as

proper cuffs, tuning forks and sensory monofilaments; and stationery such as guideline printings, educational material and encounter forms.

Good coordination with ophthalmologists and dentists for routine eye and oral screenings is crucial. In addition, barriers to effective referrals to specialists including cardiologists,

Conflict of Interest

There are no financial or other conflict of interest matters to disclose.

How to use these guidelines?

- ***If you are looking for the background to or details of a specific procedure or subject:***
  1. Locate the procedure or the subject in the general algorithm, pages 10 and 19 or locate it in the table of contents.
  2. Follow through, as directed.
  3. Red-colored superscript numbers refer to page numbers in this guideline.
- ***If you are starting the care for a patient:***
  1. Start in the general screening algorithm[10], or the chronic management algorithm[19].
  2. Find the procedure that you want to start from.
  3. Follow through the flow chart.
  4. Refer to the pages (shown in red-colored superscript) for further explanation for each procedure.
- ***If you are looking for the explanation of a term:***
  - Try to find it in the section "abbreviations and glossary".[10]
- ***Red-colored page numbers are hyperlinked.***

Outline of the Guideline Development

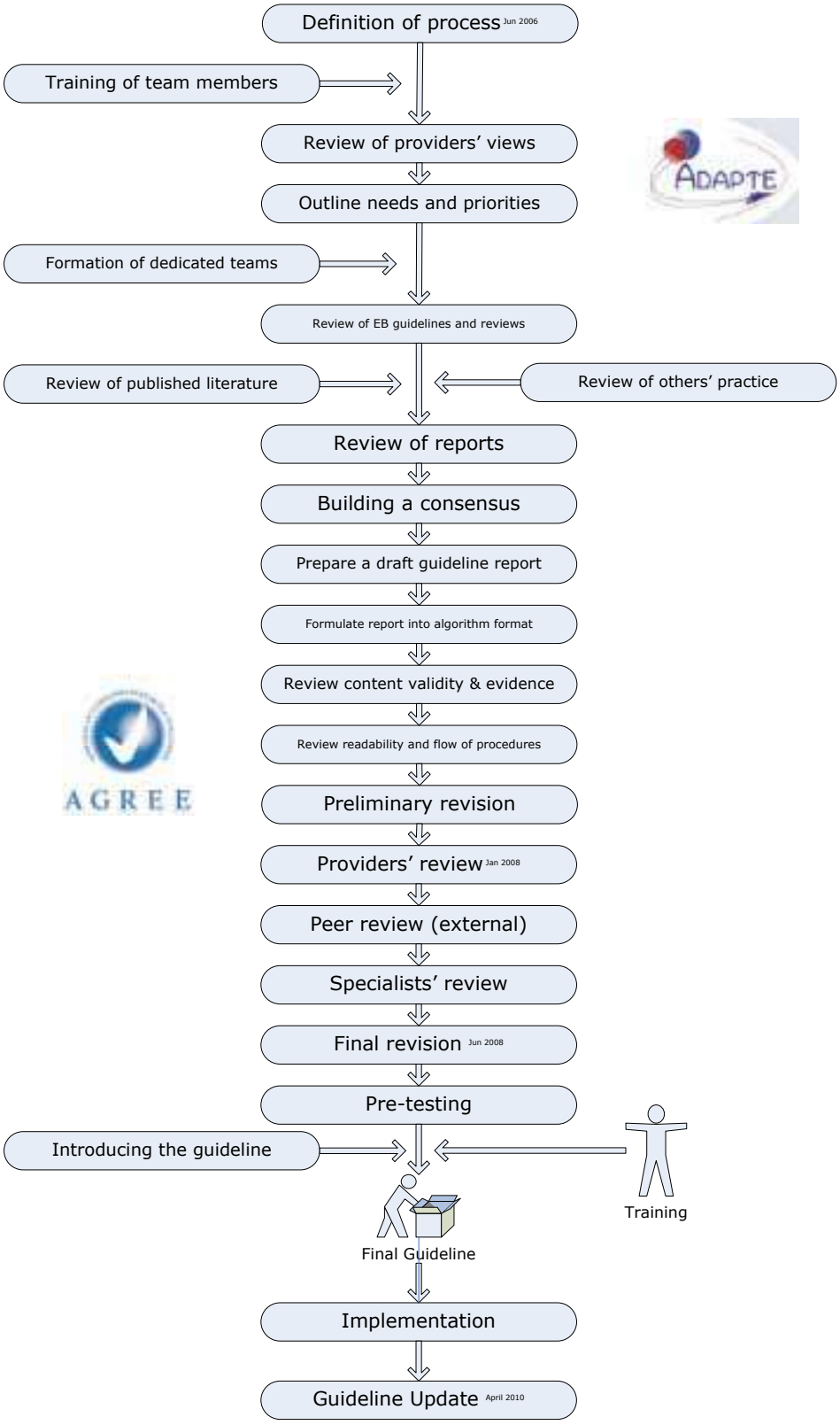
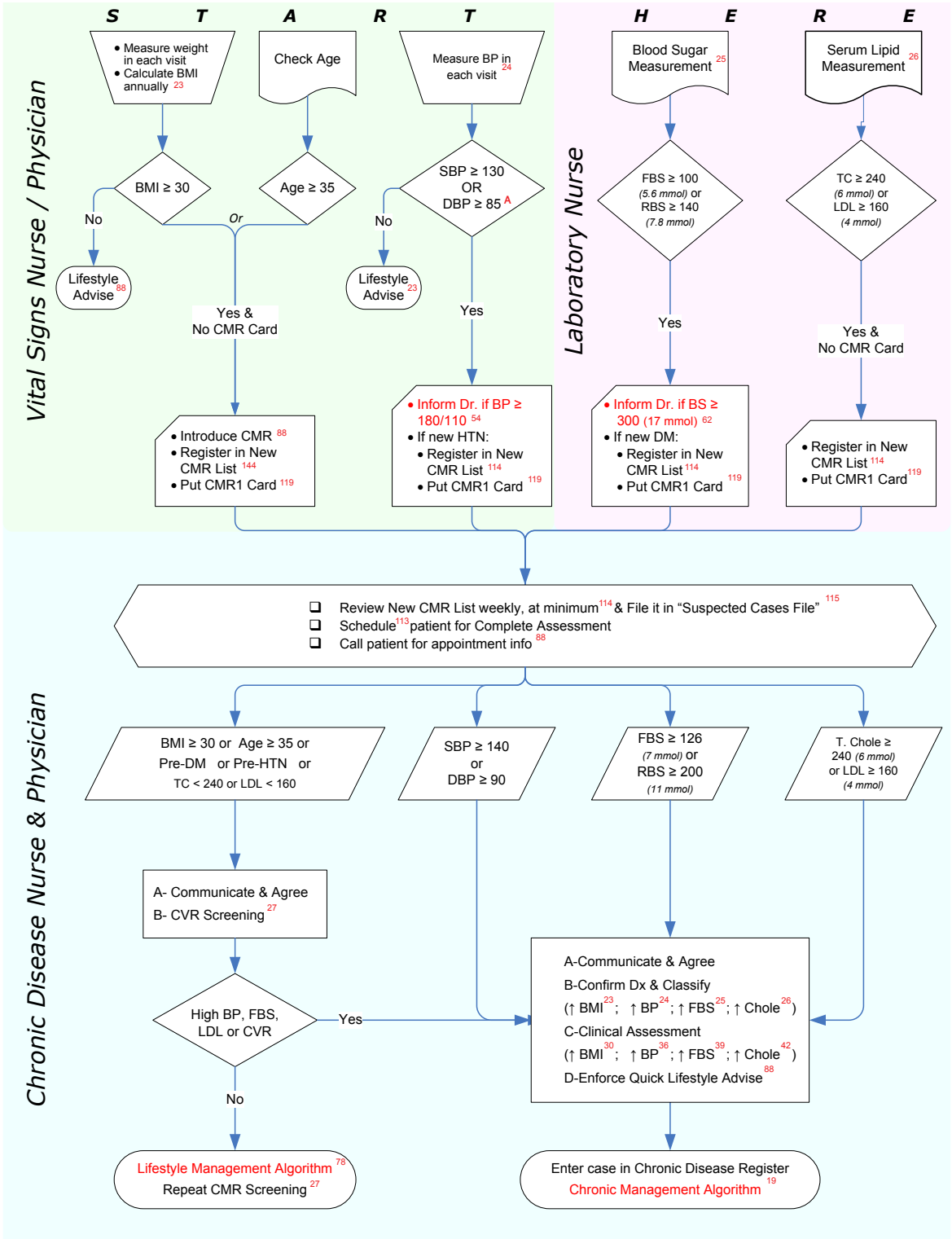


FIGURE 3. CMR GUIDELINE DEVELOPMENT PROCESS

Chapter 3

Screening

Case Identification Algorithm



A- Consider BP ≥ 130/80 as high in patients having DM, CKD (Chronic Kidney Disease), HF (Heart Failure) or CAD (Coronary Artery Disease).

- **Superscript numbers ([99]) refer to page numbers in this guideline.**
- **Superscript alphabets ([A]) refer to a note in the same page.**
- **Underscript italic letters between large brackets ($_{[A]}$) refer to level of recommendation.**
- **CVR: CardioVascular Risk.**

Obesity: Screening & Classification

1. Measure weight in each clinic visit.[A]
2. Calculate body mass index (BMI) at least once each year.[C]

   $BMI = weight \div height^2$ OR $BMI = kg \div m \div m$

   Example: Weight = 70 kg and Height = 1.60 m. Then,

   $BMI = 70 \div 1.6^2$ OR $BMI = 70 \div 1.6 \div 1.6 = 27.34$
3. Waist Circumference (WC) should be measured, at least, in overweight persons to better classify obesity.[C]

Table 1: Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risk*

Obesity Class	BMI (kg/m²)	Disease Risk* (Relative to Normal Weight and Waist Circumference)		Action
		Men ≤40 in (≤ 102 cm)# Women ≤ 35 in (≤ 88 cm)#	> 40 in (> 102 cm) > 35 in (> 88 cm)	
Underweight	< 18.5	-	-	Advise for Good Lifestyle [88]
Normal†	18.5–24.9	-	-	Advise for Good Lifestyle [88]
Overweight	25.0–29.9	Increased	High	Advise for Lifestyle Change [78]
Obesity I	30.0–34.9	High	Very High	Evaluate within 2 months[27]
Obesity II	35.0–39.9	Very High	Very High	Evaluate within 2 months[27]
Obesity III	≥ 40	Extremely High	Extremely High	Evaluate within 2 months[27]

* Disease risk for type 2 diabetes, hypertension, and CVD.
† Increased waist circumference can also be a marker for increased risk even in persons of normal weight.
# These values have not been validated in Middle Eastern population.

How is waist circumference measured?

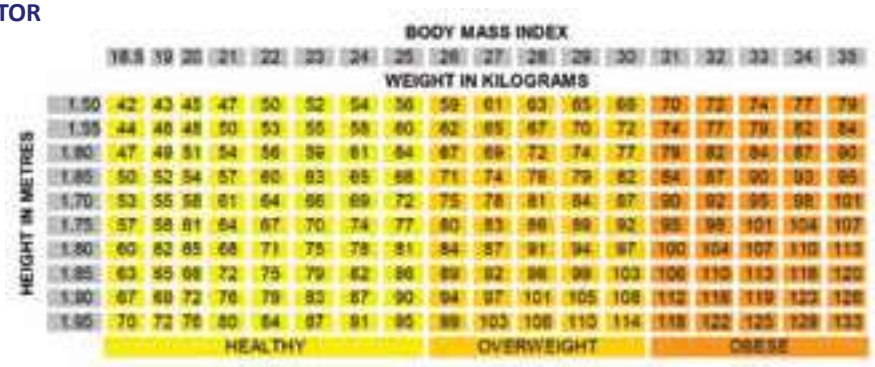
1. Locate the top of the hip bone. Place the tape measure evenly around the bare abdomen above the level of this bone (mid - point between the lower margin of the least palpable rib and the top of the iliac crest).
2. Use a stretch-resistant tape, with the tape parallel to the floor.
3. Read the tape measure and record the waist circumference in inches or centimeters.
4. The subject should stand with feet close together, and arms at the side and should wear little clothing.
5. The subject should be relaxed, and the measurements should be taken at the end of a normal expiration.
6. Each measurement should be repeated twice; IF the measurements are within 1 cm of one another, the average should be calculated. IF the difference between the two measurements exceeds 1 cm, the two measurements should be repeated.

What is the cut-off level for waist circumference?

Two action levels are recommended:

1. **Action level 1: WC ≥ 94 cm in men and ≥ 80 cm in women represents the threshold at which no further weight should be gained.**
2. **Action level 2: WC ≥ 102 cm in men and ≥88 cm in women represents the threshold at which weight reduction should be advised.**

BMI CALCULATOR



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2. J Perk et al. European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal 2012;33;1635–1701.
3. Waist circumference and waist–hip ratio: report of a WHO expert consultation, Geneva, 8–11 December 2008.

Hypertension: Screening, Classification & Diagnosis

1. Blood pressure should be measured in each visit to the clinic.
2. If an elevated blood pressure reading has been obtained, the blood pressure level should be re-checked.
3. Confirmation of hypertension (persistent high BP) is based on the initial visit plus two follow-up visits over a period of one to several weeks, with at least two blood pressure readings at each visit

Definitions, classification and actions of blood pressure levels (mmHg)

Category [A]	*Systolic*	*Diastolic*	Action
Optimal	< 120	< 80	Advise for Good Lifestyle [88]
Normal	120 – 129	80 – 84	Advise for Good Lifestyle [88]
High normal (Pre-Hypertension)	130 – 139	85 – 89	Advise for Lifestyle Change [88]
Grade 1 hypertension (mild)	140 – 159	90 – 99	Evaluate and Confirm [36] within 2 months
Grade 2 hypertension (moderate)	160 - 179	100 – 109	Evaluate and Confirm [36] within 1 month
Grade 3 hypertension (severe)	≥ 180	≥ 110	Evaluate and treat [36] immediately
Isolated systolic hypertension	≥ 140	< 90	B
Hypertensive Urgency: *Grade 3 HTN without signs of Acute TOD*	≥ 180	≥ 110	Evaluate and treat [54] immediately
Hypertensive Urgency: *Grade 3 HTN without signs of Acute TOD*	≥ 220	≥ 120	Evaluate, treat and consider admission [54]
Hypertensive Emergency: ***Grade 3 HTN with suspicious signs of Acute TOD***	≥ 180	≥ 110	Evaluate, Call Ambulance, Stabilize, treat immediately and refer immediately [54]

A When a patient's systolic and diastolic blood pressures fall into different categories, the higher category should apply.
B Isolated systolic hypertension can also be graded (grades 1, 2, 3) according to systolic blood pressure values in the ranges indicated, provided diastolic values are < 90 mmHg.

N.B.: Diabetic patients found to have repeat systolic blood pressure 130 mmHg or diastolic blood pressure 80 mmHg confirms a diagnosis of hypertension.

References:

1. ICSI Health Care Guideline: Hypertension Diagnosis and Treatment. Institute for Clinical Systems Improvement. 14th Ed. Oct 2012.
2. U.S. Preventive Services Task Force. Screening for High Blood Pressure: USPSTF Recommendations. December 2007. http://www.ahrq.gov/clinic/uspstf/uspshype.htm.
3. European Society of Hypertension-European Society of Cardiology Guidelines Committee. 2007 Guidelines for the management of arterial hypertension. J of Hypertension 2007;25:1105-1187.
4. S Mendis, P Puska, B Norrving. Global Atlas on Cardiovascular Disease Prevention and Control. World Health Organization, Geneva 2011.
5. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66

Diabetes Mellitus: Screening, Classification & Diagnosis

Criteria for testing for diabetes in asymptomatic adult individuals:

1. Testing for diabetes should be considered in all individuals at age 45 years and above, particularly in those with a BMI ≥ 25 kg/m^2 [B], and, if normal, should be repeated at 3-year intervals. [C]
2. Testing should be considered at a younger age or be carried out more frequently in individuals who are overweight (BMI ≥ 25 kg/m^2) and have additional risk factors [B] i.e. those who:
   - are habitually physically inactive;
   - have a first-degree relative with diabetes;
   - have delivered a baby weighing ≥ 4 kg or have been diagnosed with GDM;
   - are hypertensive (≥ 140/90 mmHg), or on anti-HTN medications;
   - have an HDL cholesterol level < 35 mg/dl (0.9 mmol/L) or a triglyceride level > 250 mg/dl (2.8 mmol/L);
   - on previous testing, had IGT, IFG or A1C ≥ 5.7%;
   - have other clinical conditions associated with insulin resistance (e.g., polycystic ovary syndrome (PCOS) or acanthosis nigricans); or
   - have a history of vascular disease (e.g., stroke, CHD, PVD).

Definitions, classification and actions of blood sugar levels (mg/dL)

Category	Fasting Blood Sugar (FBS)	Oral Glucose Tolerance Test (OGTT)	Random Blood Sugar (RBS)	A1c	*Action*
Normal	< 100 mg/dL (5.6 mmol/l)	< 140 mg/dL (7.8 mmol/l)	A	< 5.7 %	Advise for Good Lifestyle [7-1]
Pre-diabetes	100 – 125 mg/dL (5.6–6.9 mmol/l) [D]	140 – 199 mg/dL (7.8–11 mmol/l) [E]	A	5.7–6.4 %	Advise for Lifestyle Change [7-1]
Diabetes Mellitus					
Asymptomatic[B]:	≥ 126 mg/dL [B] (6.9 mmol/l)	≥ 200 mg/dL [B] (11 mmol/l)	≥ 200 mg/dL [B] (11 mmol/l)	≥ 6.5 % [B]	Evaluate [4-3] and Confirm within 1 week
Symptomatic[C]:	≥ 126 mg/dL (6.9 mmol/l)	≥ 200 mg/dL (11 mmol/l)	≥ 200 mg/dL (11 mmol/l)	≥ 6.5 %	Evaluate [5-7] immediately
How Performed:	Blood sugar is measured after at least an 8 hour fast (no caloric intake)	75-gram glucose load (drink) is ingested after at least an 8 hour fast; blood sugar is measured at 2 hours	Blood glucose is measured at any time regardless of eating	Blood glucose is measured at any time regardless of eating	

A Not appropriate for ruling out DM
B Test must be confirmed by repeating on a different day
C The classic symptoms of diabetes include polyuria, polydipsia, and unexplained weight loss.
D Impaired fasting glucose
E Impaired glucose tolerance

The American Diabetes Association endorse the use of A1c of 6.5% or higher as the primary criterion for the diagnosis of diabetes. However, the use of A1c for the diagnosis of diabetes has several limitations. These are:

- It is not recommended for diagnosing DM-I or gestational DM.
- It may be misleading in the setting of various hemoglobinopathies, iron deficiency, hemolytic anemias, thalassemias, spherocytosis, and severe hepatic and renal disease. Review page 66 for further details.

References:

1. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
2. Wisconsin Diabetes Mellitus Essential Care Guidelines, 2012. Wisconsin Diabetes Program. www.WisconsinDiabetesInfo.org.

Dyslipidemia: Screening, Classification & Diagnosis

1. Complete lipoprotein profile (T. Chole, S. Tg, LDL and HDL) must be obtained after a 12-hour fast.
2. Keeping tourniquet in place longer than 3 minutes may cause a 5% variation in lipid values.
3. If lipid measurement is high, further measurement should be taken, within 1-12 weeks, prior to classifying risk, initiating drug treatment or starting an intensive lifestyle treatment.
4. If the total cholesterol level varies more than 30 - 40 mg/dL (1 mmol) in the two measurements, a third measurement should be taken and the average of the three measurements should be used as the baseline measure.
5. Diagnosis and reason for re-test must the to be noted on the lab request.
6. LDL is recommended as the target of treatment.[A]
7. No specific targets for HDL or Tg levels have been determined in clinical trials, although increases in HDL-C predict atherosclerosis regression, and low HDL is associated with excess events and mortality in CAD patients, even when LDL is lower than 1.8 mmol/L or 70 mg/dL.

Desirable LDL levels in each category of cardiovascular risk, and intervention strategy.

CV Risk	LDL levels				
	< 70 mg/dL < 1.8 mmol/L	70 - < 100 mg/dL 1.8-< 2.5 mmol/L	100-< 160 mg/dL 2.5-< 4 mmol/L	160-< 190 mg/dL 4-< 4.9 mmol/L	> 190 mg/dL > 4.9 mmol/L
Average risk	Healthy Lifestyle[C]	Healthy Lifestyle[C]	Lifestyle intervention[C]	Lifestyle intervention[C]	Lifestyle intervention + consider Drug[A]
Low-Moderate added risk	Lifestyle intervention[C]	Lifestyle intervention[C]	Lifestyle intervention + consider Drug[A]	Lifestyle intervention + consider Drug[A]	Lifestyle intervention + consider Drug[A]
High added risk	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]
Very high added risk	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]	Lifestyle + Drug intervention [A]

References:

1. Z Reiner et al. ESC/EAS Guidelines for the management of dyslipidaemias. European Heart Journal 2011;32:1769–1818.
2. New Zealand Guidelines Group. New Zealand Primary Care Handbook 2012. 3rd ed. Wellington 2012.
3. Screening for Lipid Disorders in Adults: Recommendations and Rationale. U.S. Preventive Services Task Force June 2008. http://www.ahrq.gov/clinic/uspstf/uspschol.htm
4. MA Williamson, LM Snyder. Wallach's Interpretation of Diagnostic Tests 2011. 9th Edition. Lippincott Williams & Wilkins; 2011.

Cardiovascular Risk (CVR) Screening

- Assess CVR for:
  1. Individuals aged > 45 years (for males, preferably, aged > 35 years).
  2. All obese individuals.
  3. All hypertensive, diabetic or dyslipidemic individuals.
- Repeat CVR assessment:
  - Every 10 years for low risk individuals.
  - Every 5 years for intermediate risk individuals.
  - Annually for high risk individuals and hypertensive, diabetic or dyslipidemic individuals
- Use CMR1 (CMR Encounter Form no. 1) to help you in the assessment. [119]

Aim:

To identify individuals at high risk of developing cardiovascular disease (CVD). These include individuals with DM, hypertension, hypercholesterolemia, morbid obesity and multiple risk factors for CVD.

Rationale:

Early detection and intervention help to reduce morbidity, improve quality of life and lower CV mortality.

How:

1. Take a history of:
   - Sedentary lifestyle (assess level of exercise).[81]
   - DM, HTN, dyslipidemia and vascular disease.
   - Smoking.
2. Is there a family history of premature cardiovascular disease/death (males aged <55; females aged<65 years)?
3. Measure:
   a. BMI ± waist circumference b. BP c. FBS and Lipid profile
4. Stratify CVR risk:
   - Management of hypertension, hypercholestrolemia and obesity are related to the quantification of total CV risk; i.e. the chance of developing a major CV event (stroke or MI) in 10 years.

Stratification of CVR to quantify prognosis.

Other risk factors and disease history	Blood pressure (mmHg)				
	Normal: SBP 120–129 or DBP 80–84	Pre-HTN: SBP 130–139 or DBP 85–89	Grade 1: SBP 140–159 or DBP 90–99	Grade 2: SBP 160–179 or DBP 100–109	Grade 3: SBP > 180 or DBP > 110
No other risk factors [A]	Average risk	Average risk	Low added risk	Moderate added risk	High added risk
1-2 risk factors [A]	Low added risk	Low added risk	Moderate added risk	Moderate added risk	Very high added risk
3 or more RF [A], MetSyn [D], TOD [B] or DM [27]	Moderate added risk	High added risk	High added risk	High added risk	Very high added risk
CVRD [C]	High added risk	Very high added risk	Very high added risk	Very high added risk	Very high added risk

CVRD, established CV or renal Disease; DBP, diastolic blood pressure; SBP, systolic blood pressure; MetSyn, Metabolic syndrome; TOD, target organ damage.
Note: Alternatively, other CVR calculators or tables may be used, to estimate the risk.

A. Risk Factors (RF)

- Age (M > 55 years; F > 65 years)
- Systolic and diastolic BP levels
- Pulse pressure (SBP>160 + DBP<70 in elderly)
- Obesity (WC > 100 M, > 90 F) or BMI ≥ 30 [22]
- Smoking
- Family history of premature CV disease (M <55 ; F <65 years)
- Impaired FBS or Impaired GTT [24]
- Dyslipidemia:
  - TC ≥ 200 mg/dl (5.1 mmol/L); or
  - LDL-C ≥ 130 mg/dl (3.3 mmol/L); or
  - HDL-C: M < 40 mg/dl (1 mmol/L); F < 45 mg/dl (1.1 mmol/L); or
  - TG >150 mg/dl (1.7 mmol/L)

B. Sub-clinical Target Organ Damage (TOD)

- LVH (by ECG or Echo)
- Ankle/brachial BP index < 0.9 (if available)
- S. creatinine > 1.2
- Low eGFR or CrCl <60 [45]
- 24hr-microalbuminuria ≥30, or ACR>30 [45]

C. Established CV or Renal Disease (CVRD)

- CVA: ischaemic stroke; cerebral hemorrhage; TIA
- Heart disease: MI; angina; coronary revascularization; heart failure
- Renal disease: DM nephropathy; renal impairment (S. Cr > 1.4); proteinuria (> 300 mg/24 h)
- Peripheral artery disease
- Advanced retinopathy: hemorrhages or exudates, papilloedema

D. Metabolic Syndrome (MetSyn)

The cluster of 3 out of the following risk factors indicates the presence of MetSyn:

- Abdominal obesity [22]
- BP ≥ 130/85 mmHg
- Impaired FBS ≥ 100 mg/dL (5.6 mmol/l) [24]
- High TG > 150 mg/dl (1.7 mmol/L)
- Low HDL-cholesterol < 40 mg/dl (1 mmol/L)

References:

1. Saudi Hypertension Management Guidelines, 3rd Edition. Saudi Hypertension Management Society, Riyadh 2011.
2. European Society of Hypertension-European Society of Cardiology Guidelines Committee. 2007 Guidelines for the management of arterial hypertension. J of Hypertension 2007;25:1105-1187.
3. MT Cooney, AL Dudina, R D'Agostino, IM Graham. Risk Prediction in Cardiovascular Medicine. Circulation. 2010;122:300-310.
4. M Volpe, G Tocci. 2007 ESH/ESC Guidelines for the management of hypertension, from theory to practice: global cardiovascular risk concept. Journal of Hypertension 2009;27:S3-S11.

Chapter 4

Assessment

Assessment of Obesity

This assessment has to be done in the initial and the annual assessment visits.

Assessment helps to find answers to the following questions:

1. What is the class of the obesity?
2. What other CV risk factors does the patient have? [27]
3. What is the risk of developing CVD? [27]
4. Is there any comorbid condition? e.g., depression [41], eating disorders [29], sleep apnea [R], arthritis, or use of medication. [31]
5. Is it a secondary obesity? [32]
6. How much does the obesity affect the individual's quality of life? e.g., mobility, self-esteem, socializing.
7. Discuss Lifestyle. [78]
8. Discuss environmental, social and family factors, including family history of obesity and comorbidity.
9. Is the individual aware of the health consequences of obesity, and the benefits of treatment? [31]
10. Has there been any attempt to lose weight? If so, why was it not effective?
11. Is the individual ready to start changing? [34]
12. Is the individual a candidate for medication therapy or surgical interventions? [52]
13. Is there any indication for specialist referral? [52]

Classify Obesity

14. Waist Circumference [23] should be measured, at least, in overweight persons to better classify obesity.

Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risk*

Obesity Class	BMI (kg/m^2)	Disease Risk* (Relative to Normal Weight and Waist Circumference)	
		Men ≤40 in (≤ 102 cm)# Women ≤ 35 in (≤ 88 cm)#	> 40 in (> 102 cm) > 35 in (> 88 cm)
Underweight	< 18.5	-	-
Normal†	18.5–24.9	-	-
Overweight	25.0–29.9	Increased	High
Obesity I	30.0–34.9	High	Very High
Obesity II	35.0–39.9	Very High	Very High
Obesity III	≥ 40	Extremely High	Extremely High

* Disease risk for type 2 diabetes, hypertension, and CVD.
† Increased waist circumference can also be a marker for increased risk even in persons of normal weight.
# These values have not been validated in Middle Eastern population.

Binge-eating Disorder Questionnaire

Referral for specialist psychological assessment should be considered where binge-eating disorder is suspected and the patient answers "Yes" to all of the following four questions: [C]

1. Are there times during the day when you could not have stopped eating, even if you wanted to?
2. Do you ever find yourself eating unusually large amounts of food in a short period of time?
3. Do you ever feel extremely guilty or depressed afterwards?
4. Do you ever feel more determined to diet or to eat healthier after the eating episode?

References:

1. Institute for Clinical Systems Improvement. Prevention and Management of Obesity (Mature Adolescents and Adults). 5th Ed., Apr 2011.
2. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
3. J Perk et al. European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal 2012;33;1635–1701.

Comorbidities associated with overweight and obesity

Cardiovascular • Hypertension (17%) • Heart failure • Coronary artery diseases (17%) • Varicose veins • Pulmonary embolism	**Musculoskeletal** • Osteoarthritis (knee and hip) (24%) • Immobility • Low back pain • Hyperuricemia and gout
Endocrine • Metabolic syndrome • DM-2 (61%) • Dyslipidemia • Polycystic ovarian syndrome • Reduced fertility and menstrual disorders • Breast (11%) and uterine cancer (34%) • Pregnancy complications	**Respiratory** • Dyspnea • Obstructive sleep apnea • Hyperventilation syndrome • Pickwickian syndrome • Asthma
Gastrointestinal • Gastro-esophageal reflux diseases • Fatty liver disease • Cholelithiasis (30%) • Hernias • Pancreatitis • Colonic cancer	**Cutaneous** • Stretch marks • Status pigmentation of the legs • Lymphedema • Cellulitis • Intertrigo and carbuncles • Acanthosis nigricans • Skin tags
Genitourinary • Urinary stress incontinence • Obesity related glomerulopathy	**Psychological** • Depression/ low self esteem • Body image disturbances • Social stigmatization
Neurologic • Stroke • Idiopathic intracranial hypertension • Meralgia parasthetica • Dementia	**Surgical** • Increased surgical risk • Increased post operative complications

Health benefits of weight loss in adult

- Improved lipid profile.
- Reduced osteoarthritis-related disability.
- Reduced BP.
- Improved glycemic control.
- Reduction in risk of DM-2.
- Reduced all-cause, cancer and diabetes related mortality.
- Improved lung function in patients with asthma.

References:

1. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
2. Institute for Clinical Systems Improvement. Prevention and Management of Obesity (Mature Adolescents and Adults). 5th Ed., Apr 2011.
3. J Perk et al. European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal 2012;33;1635–1701.
4. S Klein et al. Waist Circumference and Cardiometabolic Risk. Obesity 2007;15(5):1061–67.
5. Waist circumference and waist–hip ratio: report of a WHO expert consultation. Geneva, December 2008.

Secondary causes of obesity

1. Hypothyroidism.
2. Cushing syndrome.
3. Insulinoma.
4. Hypothalamic obesity.
5. Polycystic ovarian syndrome.
6. Genetic syndromes (e.g., Prader-Willi syndrome, Alström syndrome, Bardet-Biedl syndrome, Cohen syndrome, Börjeson-Forssman-Lehmann syndrome, Fröhlich syndrome).
7. Growth hormone deficiency.
8. Oral contraceptive use.
9. Medication-related (e.g., phenothiazines, sodium valproate, carbamazepine, tricyclic antidepressants, lithium, glucocorticoids, megestrol acetate, thiazolidinediones, sulphonylureas, insulin, adrenergic antagonists, serotonin antagonists [especially cyproheptadine]).
10. Eating disorders (especially binge-eating disorder, bulimia nervosa,and night-eating disorder)
11. Hypogonadism.
12. Pseudohypoparathyroidism.

Diagnostic evaluation of obese patient

All obese patients	• BP measurement & heart rate. • FBS and lipid profile. • TSH • Liver and renal function tests
Suspected **Obstructive Sleep Apnea** (daytime sleepiness, loud snoring, gasping or choking episodes during sleep and awakening headaches)	• Measurement of neck circumference (>17 inches in men, >16 inches in women) • Polysomnography for oxygen desaturation, apnea and hypopneic events. • ENT examination for upper airway obstruction
Suspected **Alveolar Hyperventilation (Pickwickian) syndrome** (Hypersomnolence, right sided heart failure including elevated JVP, hepatomegaly and lower limb edema)	• Polysomnography (to rule out obstructive sleep apnea) • CBC to rule out polycythemia. • Blood gases (Pco2 often elevated) • Chest X-ray (enlarged heart and elevated hemi-diaphragm) • ECG: right atrial and right ventricular enlargement • Pulmonary Function Test: reduced vital capacity and respiratory reserve volume.
Suspected **Hypothyroidism**	• TSH
Suspected **Cushing's syndrome** (moon face, thin skin that bruise easily, severe fatigue, striae)	• Elevated late-night salivary cortisol level (>7.0 nmol/L diagnostic, 3.0-7.0 nmol/L equivocal) • Repeatedly elevated measurements of cortisol secretion (late night salivary cortisol or urine free cortisol, upper normal 110-138 nmol/dL)
Suspected **Polycystic Ovarian Syndrome** (oligomenorrhea, hirsutism, enlarged ovaries may be palpable, hypercholesterolemia, impaired glucose tolerance, persistent acne and androgenic alopecia)	• Morning blood draw for total testosterone, free and weakly testosterone, DHEAS, prolactine, TSH and early morning 17-hydroxyprogesteron.

References:

1. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
2. J Perk et al. European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal 2012;33;1635–1701.
3. Institute for Clinical Systems Improvement. Prevention and Management of Obesity (Mature Adolescents and Adults). 5th Ed., Apr 2011.
4. The 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children. CMAJ 2007;176(S8):1–117

Medications that interfere with weight loss or induce weight gain

Medication Class	Alternatives
Antipsychotics/ Mood Stabilizers • Phenothiazines • Atypical antipsychotics: Clozapine > olanzapine > risperidone = quetiapine • Lithium	Ziprasidone, Aripiprazole.
Antidepressants: • Sedating tricyclics: Amitriptyline > imipramine • Monoamine oxidase inhibitors (non-selective): Isocarboxazid, Phenelzine, tranylcypromine • Selective serotonin reuptake inhibitors: Paroxetine > citalopram, fluvoxamine, sertraline • Mirtazapine	Nefazodone, Bupropion, Venlafaxine
Antiepileptics: • Gabapentin, Valproate, Carbamazepine, Pregabalin	Lamotrigine, Topiramate
Antiepileptics/antipsychotics used in bipolar disorder • Valproate, Carbamzepine, Clozapine, Olanzapine, Risperidone	Lamotrigine, Topiramate, Ziprasidone
Steroid hormones: • Hormonal contraceptives • Corticosteroids	Yasmin Barrier methods NSAIDs
Progestational steroids: • Megestrol acetate	Weight loss, Aromatase inhibitors
Antidiabetic agents: • Insulin • Sulfonylureas • Thiazolidinediones	Metformin, Acarbose
Antihypertensives: • Beta and alpha-1 adrenergic blocking agents	ACEI, ARB, diuretics, CCB
Antihistamines: • Cyproheptadine	Diphenhydramine, Decongestants, inhaler

References:

1. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
2. Institute for Clinical Systems Improvement. Prevention and Management of Obesity (Mature Adolescents and Adults). 5th Ed., Apr 2011.

Assessment of patient readiness to lose weight

1. Determine patient's interest and confidence; tick the appropriate number:

How important is it for you to lose weight at this time?

Not important										Very important
0	1	2	4	3	5	6	7	8	9	10

How interested are you in losing weight at this time?

Not interested										Very interested
0	1	2	4	3	5	6	7	8	9	10

How confident are you to lose weight at this time?

Not confident										Very confident
0	1	2	4	3	5	6	7	8	9	10

2. Ask targeted questions:

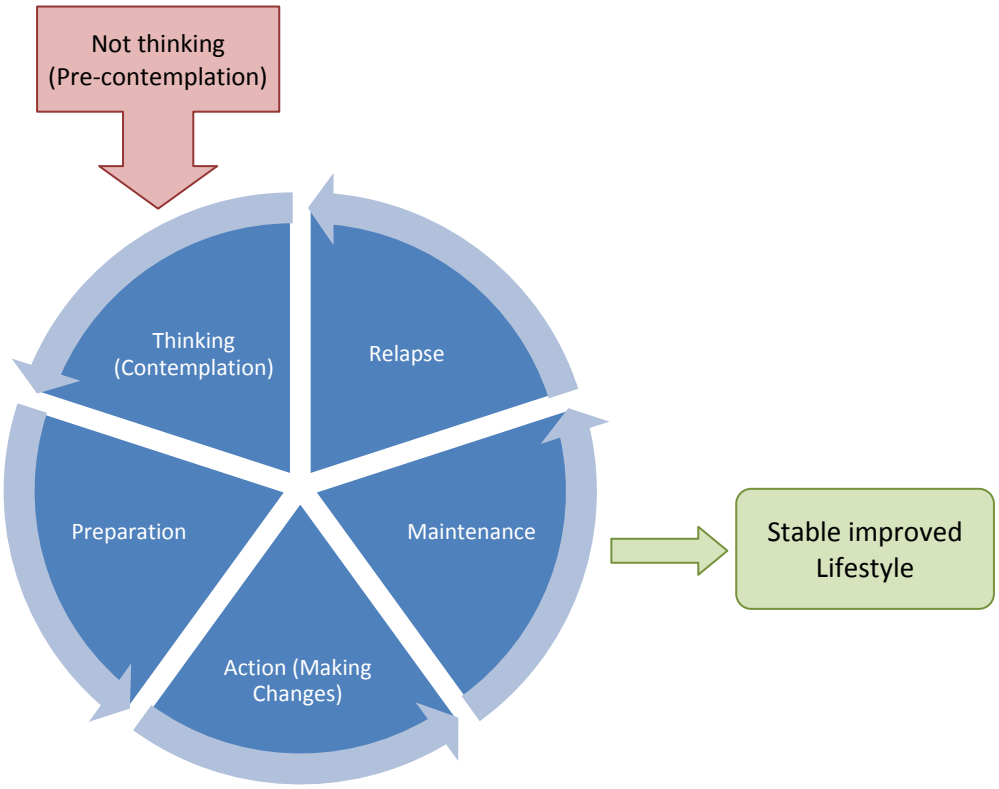
aiming to gain more information about your patient and to involve him/her in a self-reflection process that may facilitate readiness to change. For example:

- What is difficult about managing your weight?
- How does being overweight affect you?
- What can you not do, now, that you would like to do if you weighed less?

References

1. Institute for Clinical Systems Improvement. Prevention and Management of Obesity (Mature Adolescents and Adults). 5th Ed., Apr 2011.
2. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
3. Bridle C, et al. Systematic review of the effectiveness of health behavior interventions based on the Transtheoretical Model. Psychol Health 2005;20(3):283-302.

Stages of Change Model to assess Readiness to Loose Weight



Applying the stages of change model to assess readiness to loose weight

Stage	Characteristics	Patient verbal cues	Appropriate intervention	Sample dialogue
Pre-contemplation الغفلة	Unaware of problem; No interest in change	I am not really interested in weight loss. It is not a problem.	I am not really interested in weight loss. It is not a problem.	Would you like to read some information about the health aspects of obesity?
Contemplation التأمل	Aware of problem, beginning to think of changing	I know I need to lose weight but with all that's going on my life right now, I am not sure I can.	Help resolve ambivalence, discuss barriers	Let>s look at the benefit of weight loss, as well as what you may need to change
Preparation الإعداد	Realizes benefits of making changes and thinking about how to change.	I have to lose weight and I am planning to do that	Teach behavior modification; provide education	"Let's take a closer look at how you can reduce some of the calories you eat and how
Action العمل	Actively taking steps toward change	I am doing my best; this is harder than I thought.	Provide support and guidance, with a focus on the long term	"It is terrific that you are working so hard. What problems have you had so far? How have you solve them?
Maintenance الالتزام	Initial treatment goals reached	I've learned a lot through this process	Relapse control	What situations continue to tempt you to over eat? What can be helpful for the next time you face such a situation.

References

1. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
2. Institute for Clinical Systems Improvement. Prevention and Management of Obesity (Mature Adolescents and Adults). 5th Ed., Apr 2011.
3. Bridle C, et al. Systematic review of the effectiveness of health behavior interventions based on the Transtheoretical Model. Psychol Health 2005;20(3):283-302.

Assessment of Hypertension

This assessment has to be done in the initial and the annual assessment visits. It may be repeated as necessary

Use CMR Encounter Form no. 2 (CMR-2) to help you in this assessment.[120]

Assessment helps to find answers to the following questions:

1. What is the level of the BP? [24]
2. Is it a secondary HTN? [36]
3. What other CV risk factors does the patient have?
4. Is there any complication (TOD)?
5. What is the current management, if any?
6. How is the quality of life?
7. What is the risk or developing CVD? [27]

Medical history

- Duration and previous levels of high BP.
- Previous admissions and visits to the ER.
- History of target organ damage (sub-clinical TOD/CVRD).[27]
- Symptoms of TOD:
  - **Brain and eyes:** headache, vertigo, impaired vision, transient ischemic attacks, sensory or motor deficit;
  - **Heart:** palpitation, chest pain, shortness of breath, swollen ankles;
  - **Kidney:** thirst, polyuria, nocturia, hematuria;
  - **Peripheral arteries:** cold extremities, intermittent claudication.
- Risk factors for CVD.[27]
- Lifestyle (including amount of physical exercise, dietary habits and psychosocial factors that might influence the management of hypertension).[78]
- Previous antihypertensive therapy: drugs used; efficacy and adverse effects; herbs and other traditional therapy.
- Use of other medications that might raise the BP.[36]
- Features of secondary hypertension.[36]
- History of snoring and sleep apnea.
- Family history of HTN, premature CVD, premature sudden death (M<55;F<65 years) and chronic kidney or endocrine diseases.

Physical examination

- Measure BP correctly (2 or more BP measurements separated by 2 minutes with the patient seated). [89]
- Measure BP after standing for at least 2 minutes, in elderly and diabetic patients.
- Verify BP in the contralateral arm; if values are different, the higher value should be used. This arm will be your reference arm in subsequent visits.*[C]*
- Measure BMI and waist circumference. [23]
- Look for signs of target organ damage .
  - **Brain**: murmurs over neck arteries, motor or sensory defects, gait and cognition.
  - **Retina**: Refer to ophthalmology for fundoscopic abnormalities.
  - **Heart**: location and characteristics of apical impulse, abnormal cardiac rhythms, ventricular gallop, pulmonary rales or bronchospasm, dependent edema.
  - **Peripheral arteries**: diminished or absent peripheral arterial pulsations, carotid bruits, radio-femoral pulse delay and edema; cold extremities and ischemic skin lesions.
- Look for features of secondary hypertension.[36]
- In suspected white-coat HTN (WCH) [81], use home BP measurement (HBPM) [90] or refer the patient for ambulatory (24-hr) BP measurement (ABPM) [90]. Please note that cut-off values for high BP are, in these measurements, different from clinic-based values.[90]

Laboratory work up

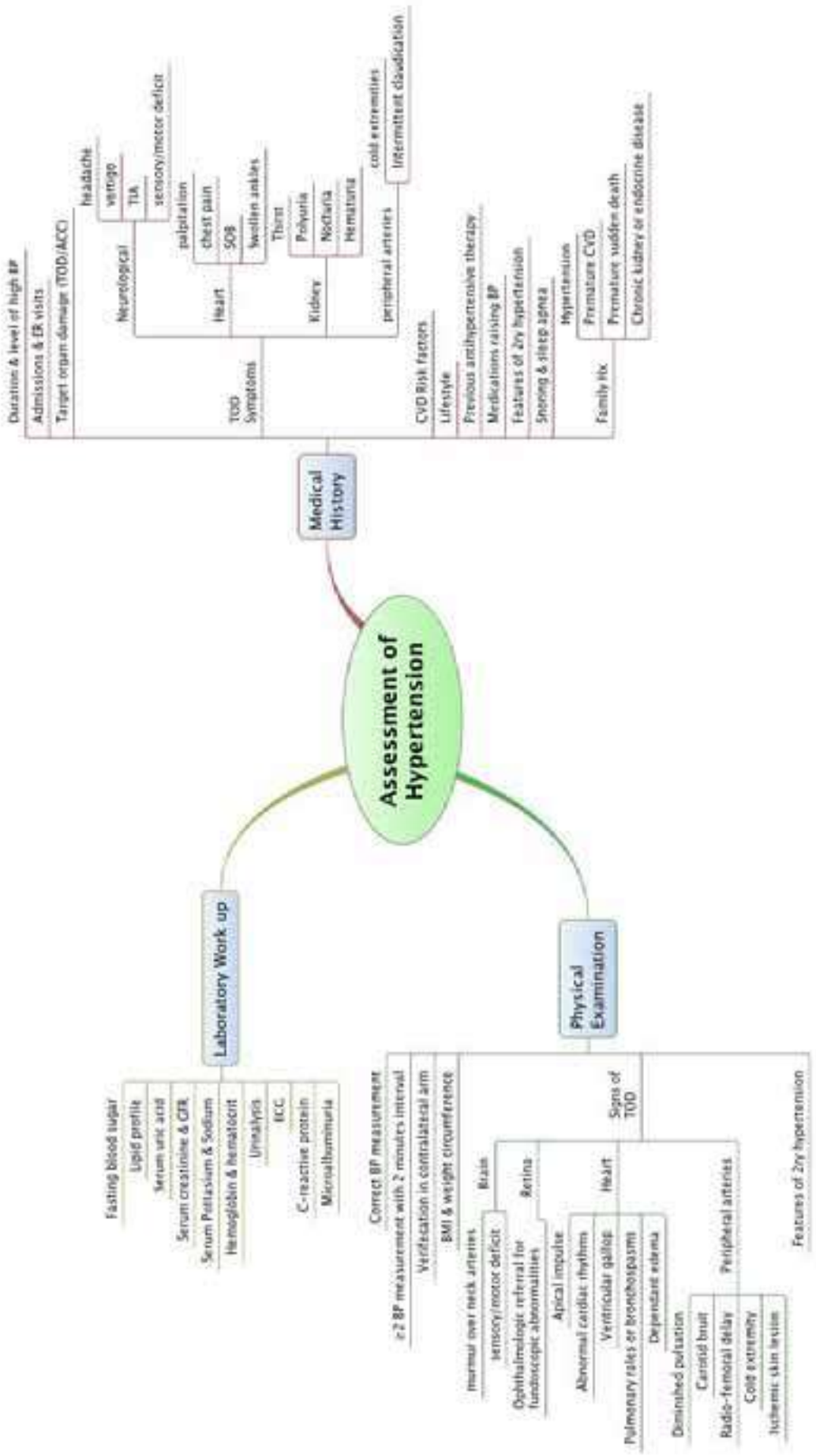
- Fasting blood sugar.[D]
- Lipid profile (total cholesterol, LDL, HDL and s. triglyceride).[D]
- Serum creatinine and GFR estimation.[45]
- Serum potassium and sodium.[D]
- Urinalysis.[D]
- Serum uric acid.
- Hemoglobin and hematocrit.
- Electrocardiogram.[C]
- Microalbuminuria.

A: Secondary Hypertension: Causes and Clinical Features.

Causes	Clinical Features
Nephropathy	☐ Kidney disease in the family (polycystic kidney disease) ☐ Episodes of blood or proteins in the urine, urinary infections, swelling of body ☐ Elevated S. creatinine, urinary sediment or casts. ☐ Abnormal renal USS.
Renovascular HTN	☐ Initial onset before age 30 or after age 50 years. ☐ BP over 180/110. ☐ Hemorrhages and exudates in the fundi. ☐ Presence of abdominal bruit over renal arteries. ☐ Diminishing BP control. ☐ Women of child bearing age. ☐ Sudden worsening of previously controlled hypertension. ☐ Unexplained episodes of pulmonary edema. ☐ Acute decline in renal function (↑ S. Cr.) with ACEI or ARB. ☐ Unexplained decline in renal function.
Pheo-chromocytoma	☐ Episodic symptoms: headache, flushing, sweating and palpitations. ☐ Extremely labile BP. ☐ Skin stigmata of neurofibromatosis.
Cushing's syndrome	☐ Typical general appearance: truncal obesity, stretch marks
Conn's syndrome	☐ Weakness, cramps, polyuria. ☐ K^+ < 3.5 or diuretic-induced ↓K^+ (< 3.0). ☐ Incidental adrenal mass.
Acromegaly	☐ Tall stature, typical facies with prominent lower jaw, broad spade shaped hands
Coarctation of the aorta	☐ High BP in upper limbs but not in lower limbs. Delayed or weak femoral pulses
Drugs	☐ Contraceptive pill, anti-inflammatory drugs, steroids, sympathomimetics, nasal decongestants, appetite suppressants, cyclosporine, erythropoietin, licorice, antidepressants, tacrolimus, cocaine, amphetamines, other illicit drugs, dietary supplements and medicines (e.g., ephedra, ma huang, bitter orange)
Thyroid disease	☐ Symptoms and signs of hyper- or hyopthyroid. ☐ Thyromegaly or thyroid nodule

References:

1. The 2012 Canadian Hypertension Education Program Recommendations for the Management of Hypertension: Blood Pressure Measurement, Diagnosis, Assessment of Risk, and Therapy. Canadian Journal of Cardiology 28(3)2012:270–287.
2. Institute for Clinical Systems Improvement. Health Care Guideline: Hypertension Diagnosis and Treatment. 14th Ed. Oct 2012.
3. Giuseppe Mancia et al. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. Journal of Hypertension 2009, 27:2121-58.


Assessment of Hypertension
Medical History
Duration & level of high BP
Admissions & ER visits
Target organ damage (TOD/ACC)
TOD symptoms
Neurological
headache
vertigo
TIA
sensory/motor deficit
Heart
palpitation
chest pain
SOB
swollen ankles
Kidney
Thirst
Polyuria
Nocturia
Hematuria
peripheral arteries
cold extremities
Intermittent claudication
CVD Risk factors
Lifestyle
Previous antihypertensive therapy
Medications raising BP
Features of 2ry hypertension
Snoring & sleep apnea
Family Hx
Hypertension
Premature CVD
Premature sudden death
Chronic kidney or endocrine disease
Laboratory Work up
Fasting blood sugar
Lipid profile
Serum uric acid
Serum creatinine & GFR
Serum Potassium & Sodium
Hemoglobin & hematocrit
Urinalysis
ECG
C-reactive protein
Microalbuminuria
Physical Examination
Correct BP measurement
≥2 BP measurement with 2 minutes interval
Verification in contralateral arm
BMI & weight circumference
Signs of TOD
Brain
normal over neck arteries
sensory/motor deficit
Retina
Ophthalmologic referral for fundoscopic abnormalities
Heart
Apical impulse
Abnormal cardiac rhythm
Ventricular gallop
Pulmonary rales or bronchospasm
Peripheral arteries
Dependent edema
Diminished pulsation
Carotid bruit
Radio-femoral delay
Cold extremity
Ischemic skin lesion
Features of 2ry hypertension

Assessment of Diabetes Mellitus

This assessment has to be done in the initial and the annual assessment visits. It might be repeated as needed.

Use CMR Encounter Form no. 2 (CMR-2) to help you in the assessment.[120]

Assessment helps to finding answers for the following questions:

1. What is the type of DM?
2. Is it secondary?
3. What other CVD risk factors does the patient have?
4. What complications does the patient have?
5. What is the current management, if any?
6. Is the patient's DM controlled?
7. How is the patient's quality of life?
8. What is the risk of developing CVD? [27]

Medical History

1. Symptoms and results of laboratory tests.
2. Current treatment of diabetes, including medications, meal plan, and results of glucose monitoring.
3. Frequency, severity, and cause of acute complications such as ketoacidosis and hypoglycemia (incl. ER visits and admissions).
4. Prior or current infections, particularly skin, foot, dental, and genitourinary infections.
5. Specific system history:
    - Symptoms and treatment of chronic eye, kidney or nerve disease.
    - Genitourinary and gastrointestinal function.
    - Heart, peripheral vascular, foot, and cerebrovascular complications associated with DM.
6. Use of medications and herbs that may affect blood glucose levels.
7. Risk factors for CVD, including smoking, hypertension, obesity, dyslipidemia, and family history.
8. History and treatment of other conditions, including endocrine and eating disorders.
9. Assessment for mood disorder.[43]
10. Family history of diabetes and other endocrine disorders.
11. Cultural, psychosocial, educational, and economic factors that might influence the management of diabetes.[78]
12. Nutritional habits, weight history and physical activity. [78]
13. Tobacco, alcohol, and/or controlled substance use. [78]
14. Contraception and reproductive and sexual history.
15. Immunization against influenza and pneumococcus.

Physical examination

1. BMI and waist circumference. [23]
2. Blood pressure determination, including orthostatic measurements (sitting and standing).
3. Inspect eyes for xanthelasmata, cataract or ophthalmoplegia.
4. Fundoscopic examination, by an ophthalmologist.
5. Oral examination (for signs of redness, bleeding, halitosis, accumulation of debris around the teeth, gingival recession with exposed root surfaces, separation of teeth, and tooth mobility.)
6. Thyroid palpation.
7. Cardiac examination.
8. Abdominal examination (e.g. for organomegaly).
9. Evaluation of pulses by palpation of dorsalis pedis and post. tibial; and auscultation of carotids.
10. Hand/finger examination.
11. Foot examination.[46]

12. Skin examination (for acanthosis nigricans, insulin-injection sites, infections, and dyslipidemia).
13. Neurological examination.
14. Signs of diseases that can cause secondary diabetes (e.g. hemochromatosis, pancreatic disease).

Laboratory evaluation

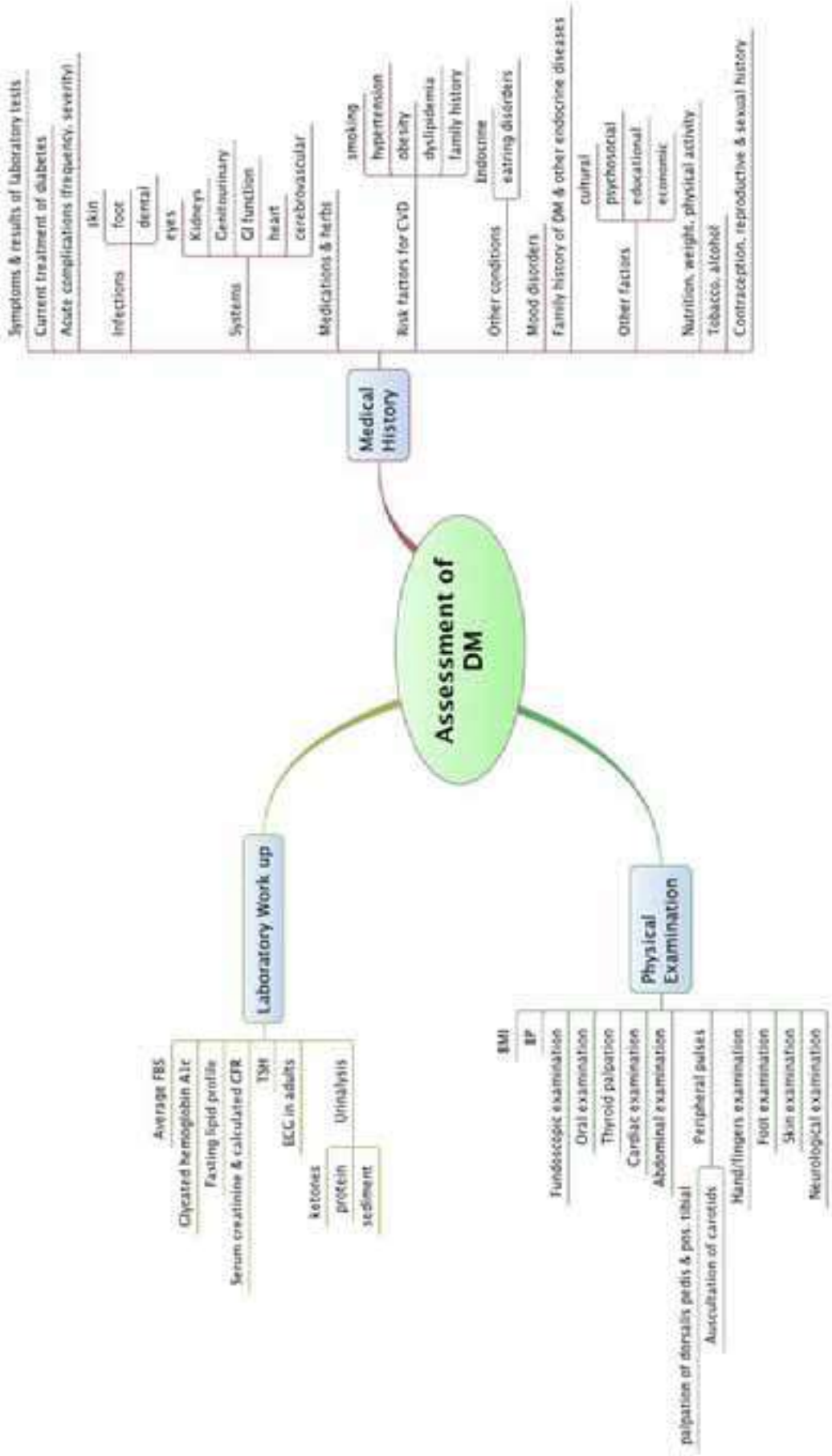
1. Average FBS (≥ 3 readings in the last one week).
2. Glycated hemoglobin (A1C).
3. Fasting lipid profile (total cholesterol, HDL, triglycerides, and LDL), LFT (with further evaluation for fatty liver or hepatitis, if abnormal).
4. Serum creatinine and calculated GFR (eGFR) or Cr. clearance; ± ACR (albumin-creatinine ratio).[45]
5. Thyroid-stimulating hormone (TSH), if clinically indicated.
6. Electrocardiogram in adults.
7. Urinalysis for ketone, protein, and sediment.

Etiologic classification of diabetes mellitus

1. Type 1 diabetes (β-cell destruction, usually leading to absolute insulin deficiency).
2. Type 2 diabetes (with variable degree of insulin resistance and secretory defect).
3. Other specific types:
    a. Genetic defects of β-cell function.
    b. Genetic defects in insulin action.
    c. Diseases of the exocrine pancreas.
    d. Endocrinopathies.
    e. Drug- or chemical-induced.
    f. Infections.
    g. Uncommon forms of immune-mediated diabetes.
    h. Other genetic syndromes sometimes associated with diabetes.
    i. Gestational diabetes mellitus (GDM)

Reference:

1. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
2. Wisconsin Diabetes Mellitus Essential Care Guidelines. Wisconsin Diabetes Program, 2012.
3. IDF Clinical Guidelines Task Force. Global guideline for Type 2 diabetes. International Diabetes Federation, 2012.


Assessment of DM
Medical History
Symptoms & results of laboratory tests
Current treatment of diabetes
Acute complications (frequency, severity)
Infections
skin
foot
dental
Systems
eyes
Kidneys
Genitourinary
GI function
heart
cerebrovascular
Medications & herbs
Risk factors for CVD
smoking
hypertension
obesity
dyslipidemia
family history
Other conditions
endocrine
eating disorders
Mood disorders
Family history of DM & other endocrine diseases
Other factors
cultural
psychosocial
educational
economic
Nutrition, weight, physical activity
Tobacco, alcohol
Contraception, reproductive & sexual history
Laboratory Work up
Average FBS
Glycated hemoglobin A1c
Fasting lipid profile
Serum creatinine & calculated GFR
TSH
ECG in adults
Urinalysis
ketones
protein
sediment
Physical Examination
BMI
BP
Fundoscopic examination
Oral examination
Thyroid palpation
Cardiac examination
Abdominal examination
palpation of dorsalis pedis & pos. tibial
Peripheral pulses
Auscultation of carotids
Hand/fingers examination
Foot examination
Skin examination
Neurological examination

Assessment of Dyslipidemia

This assessment has to be done in the initial and the annual assessment visits. It might be repeated as needed.

Use CMR Encounter Form no. 2 (CMR-2) to help you in the assessment.[120]

Measurement:

- Two fasting lipoprotein measurements should be taken to classify the patient's CV risk, prior to initiating drug treatment or intensive lifestyle treatment [B]. If the total cholesterol level varies more than 30 - 40 mg/dL (> 16%) in the two samples a third sample should be taken and the average of the three samples should be used as the baseline measure.
- Abnormal lipid test results should always be confirmed with a new specimen within 1–8 weeks of the initial test,before beginning or changing therapy.
- The sample should not be performed during stress or acute illness, such as recent MI, stroke, pregnancy, trauma, weight loss or following the use of certain drugs, and should not be performed on hospitalized patients until 2-3 months after illness.

Secondary Dyslipidemia

It must be ruled out through medical, dietary, family history and physical evaluation to determine additional risk factors and any genetic factors. Laboratory testing including FBS, LFT, RFT, TSH (other endocrine function test if indicated), erythrocyte volume and urinalysis must be done in addition to clinical evaluation.

A: Selected Causes of Secondary Dyslipidemia

Increased LDL level	Increased triglyceride level	Decreased HDL level
• Diabetes mellitus • Hypothyroidism • Nephrotic syndrome • Obstructive liver disease • Anabolic steroids • Progestins • Beta-adrenergic blockers • Thiazides	• Diabetes mellitus • Hypothyroidism • Abdominal Obesity • Alcoholism • Renal insufficiency • Beta-adrenergic blockers • Bile acid binding resins • Estrogens	• Diabetes mellitus • Cigarette smoking • Abdominal Obesity • Hypertriglyceridemia • Uremia • Menopause • Puberty (in males) • Anabolic steroids • Beta-adrenergic blockers • Progestins

LDL=low-density lipoprotein; HDL=high-density lipoprotein.

Genetics disorders:

Consider the possibility of a genetic disorder if TC ≥ 300mg/dL (7.8 mmol/L) or if there is a family history of premature coronary heart disease.

B: LDL Cholesterol Goals.*

Risk category [26, 27]	LDL goal
Very High CV Risk	<70 mg/dL (1.8 mmol/L) [A]
High CV Risk	<100 mg/dL (2.5 mmol/L) [A]
Low/ Moderate added CV Risk	<200 mg/dL (5 mmol/L) [A]

* or 50% reduction of initial LDL-C in individuals for whom drug treatment is initiated.

References

1. Z Reiner et al. ESC/EAS Guidelines for the management of dyslipidaemias. European Heart Journal 2011;32:1769–1818.
2. J Perk et al. European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal 2012;33;1635–1701.
3. Screening for Lipid Disorders in Adults: Recommendations and Rationale. U.S. Preventive Services Task Force June 2008.
4. PS Jellinger et al. AACE Guidelines for the Management of Dyslipidemia and Prevention of Atherosclerosis. Endocrine Practice 2012;18(S1):1-78.
5. MA Williamson, LM Snyder. Wallach's Interpretation of Diagnostic Tests 2011. 9th Edition. Lippincott Williams & Wilkins; 2011.

Screening for Depression

Why do we screen for depression?

1. Depression is the most frequently cited psychological disorder associated with diabetes. It is roughly three times more prevalent in those with diabetes (15-20% of people) than in those without diabetes.
2. Depression has been linked to poor glycemic control, less optimal lifestyle and self-care habits, higher obesity, and higher morbidity and mortality.
3. Screening improves the accurate identification of depressed patients in PHC.
4. Providers may mislabel lack of attention to self-care as non-compliant behavior when, in fact, it may indicate the need to screen for depression.
5. Early recognition of depression symptoms,and prompt treatment, and referral lead to improved self-care and quality of life and decrease clinical morbidity.

How do we screen for depression?

1. Asking two simple questions about mood and anhedonia may be as effective as using any of the longer screening instruments:
    a. "Over the past two weeks have you felt down, depressed, or hopeless?" and
    b. "Over the past two weeks, have you felt little interest or pleasure in doing things?"
2. Use formal screening tools, such as PHQ-9 [44]

Interpreting PHQ-9 Depression Screening Tool:

1. Identify whether answers to questions 1 and 2 are shaded.
2. Count the number of shaded answers, all over.
3. Identify the type of depression in the table.
4. Identify and monitor the severity of depression every 2-4 weeks, as below. Consult a specialist if there is no improvement.

Identify the type of depression:

No. of shaded answers	Q1 or Q2 is shaded	Q1 & Q2 are not shaded
≥ 5 answers	Major depressive disorder (Refer to Specialist)	No Depression
2-4 answers	Other depressive disorder (Discuss result with pt. & monitor severity)	No Depression
0-1 answers	No Depression	No Depression

Severity of depression:

Total Score	Depression Severity
1 – 4	Minimal depression
5 – 9	Mild depression
10 – 14	Moderate depression
15 – 19	Moderately severe depression
20 – 27	Severe depression

References:

1. Wisconsin Diabetes Mellitus Essential Care Guidelines. Wisconsin Diabetes Program, 2012.
2. Spitzer, Williams, Kroenke, et al. *Patient Health Questionnaire – PHQ-9*. PRIME-MD TODAY. Pfizer, Inc., 1999.
3. B Arroll et al. Validation of PHQ-2 and PHQ-9 to Screen for Major Depression in the Primary Care. Ann Fam Med 2010;8:348-353.
4. Screening for Depression in Adults: U.S. Preventive Services Task Force Recommendation Statement. Ann Intern Med 2009;151:784-792.

PHQ-9 Quick Depression Assessment Questionnaire

استبانة تقصي الكآبة

الاسم: ..... التاريخ: ..... رقم الملف: .....

خلال الأسبوعين الماضيين، كم مرة تعرضت لأي من هذه المصاعب ؟ (ضع علامة ✓ عند إجابتك)	ولا مرة	بعض الأيام	أكثر من منتصف الأيام	تقريباً كل يوم
١- فقدان الرغبة والمتعة في عمل الأشياء.	٠	١	٢	٣
٢- الشعور بالإحباط ، أو الاكتئاب ، أو فقدان الأمل.	٠	١	٢	٣
٣- صعوبة في النوم أو النوم أكثر من المعتاد.	٠	١	٢	٣
٤- الشعور بالتعب أو قلة النشاط.	٠	١	٢	٣
٥- فقدان الشهية أو كثرة الأكل.	٠	١	٢	٣
٦- الشعور بعدم الرضا عن النفس أو الشعور بالفشل أو الشعور أنك تسببت في خذلان نفسك أو عائلتك.	٠	١	٢	٣
٧- صعوبة في التركيز على الأشياء، كقراءة الجريدة أو مشاهدة التلفزيون.	٠	١	٢	٣
٨- البطء أثناء الحركة أو الكلام لدرجة يلاحظها الآخرون، أو العكس (الحركة والنشاط أكثر من المعتاد).	٠	١	٢	٣
٩- التفكير في أن الموت أفضل لك أو التفكير في إيذاء نفسك بطريقة ما.	٠	١	٢	٣

إجمع الأعمدة : [ ] + [ ] + [ ]

المجموع: [ ]

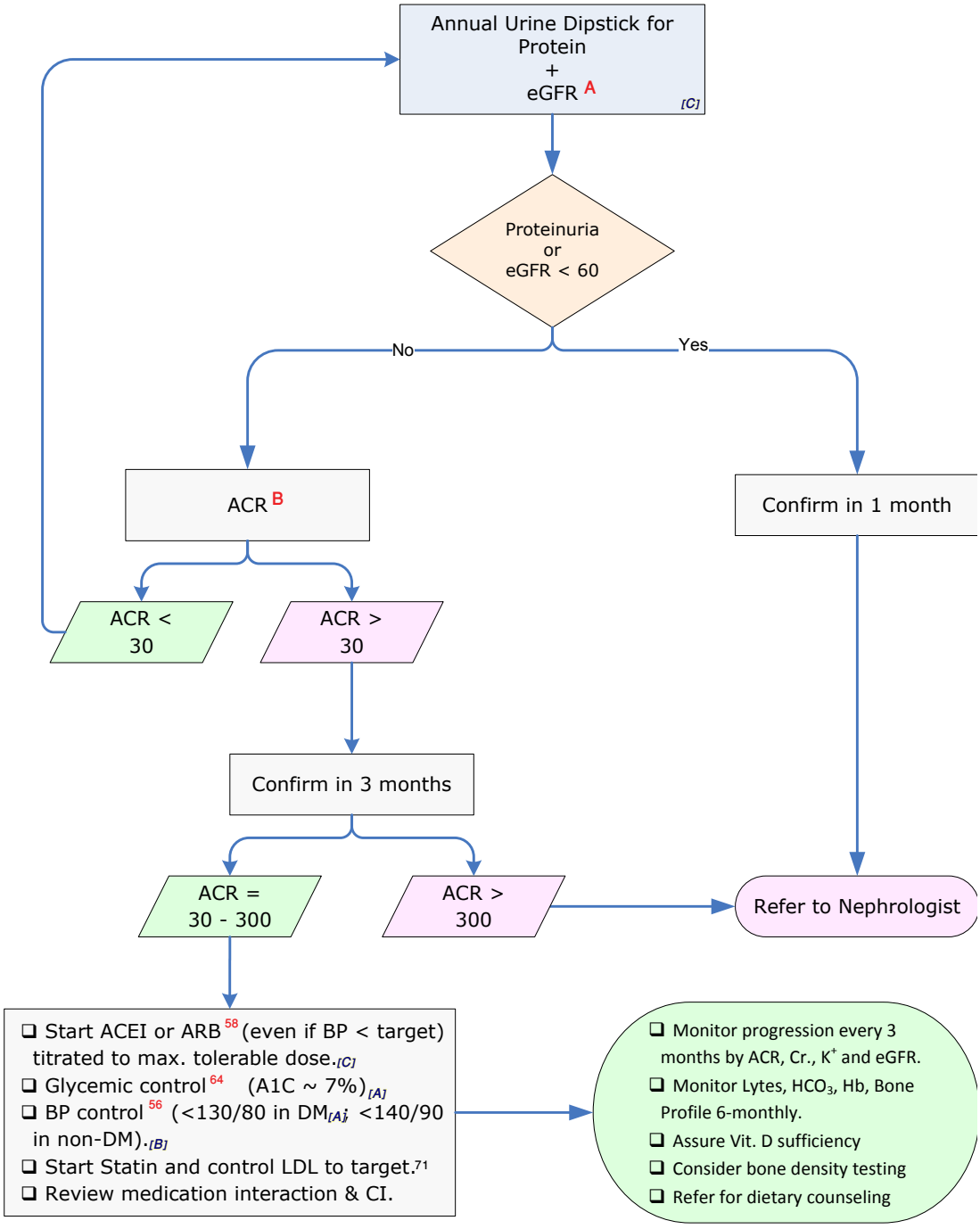
١٠- في حال واجهتك أي المصاعب أعلاه، ما مدى صعوبة تأثير هذه المصاعب على أدائك لعملك، أو الاهتمام بأمور المنزل، أو التعامل مع الآخرين ؟

- لا يوجد أي تأثير
- يوجد بعض التأثير
- مؤثره جدا
- بالغة التأثير

Refer to page 42 in this guideline for the interpretation of this questionnaire.

Adapted from Spitzer, Williams, Kroenke, et al. Patient Health Questionnaire – PHQ-9. PRIME-MD TODAY. Pfizer, Inc., 1999.
Translated and validated by the CCCQI Quality Improvement Team, Qatif Primary Health Care, Saudi Arabia 2009.

Assessing Renal Function in CMR



Stages of Chronic Kidney Disease (CKD): ***A Clinical Action Plan***

CKD Stage	eGFR	Action *(Including action from preceding stages)*
Stage 1: Kidney damage* with normal or ↑ eGFR	> 90	Dx + treat, treat comorbidities, slow progression, ↓ CVD risk
Stage 2: Kidney damage with mild ↓ eGFR	60-89	Monitor progression
Stage 3: Moderate ↓ eGFR	30-59	Evaluate + treat complications; refer to a nephrologist
Stage 4: Severe ↓ eGFR	15-29	Prepare for kidney replacement therapy
Stage 5: Kidney failure	< 15	Kidney replacement therapy

* most commonly microalbuminuria.

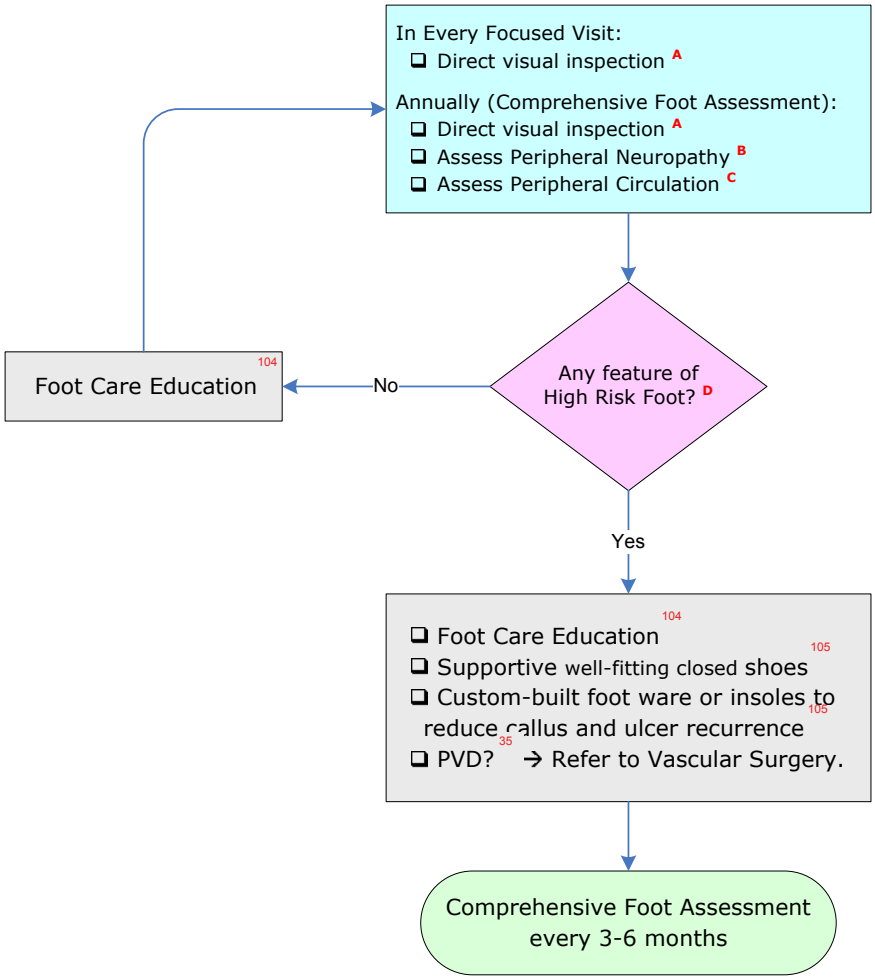
A- Estimated GFR (MDRD method) from S. Cr.:
eGFR mL/min/1.73 m^2 = 186 x Scr -1.154 x Age -0.203
(x 0.742 if Female) (x 1.21 if African)

B- ACR = Urinary Albumin-Creatinine Ratio, expressed as mg/g.

References:

1. KDOQI Clinical Practice Guideline for Diabetes and CKD: 2012 Update. American Journal of Kidney Diseases 2012;60(5):850-86.
2. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
3. Wisconsin Diabetes Mellitus Essential Care Guidelines. Wisconsin Diabetes Program, 2012.

Foot Care in Diabetes Mellitus



Comprehensive Foot Assessment

A- Direct Visual Foot Inspection

Any foot deformity:
- Toe deformity
- Bunions
- Charcot foot
- Foot drop
- Prominent Metatarsal Heads

Note Skin condition:
- Callus
- Ulcer
- Redness
- Warmth
- Maceration
- Fissure
- Swelling
- Dryness

B- Assessing Peripheral Neuropathy

1- Use either the Semmes-Weinstein monofilament or a tuning fork.

2- Have the patient look away or close eyes.

3- Hold the filament perpendicular to the skin.

4- Avoiding any ulcers, calluses or sores, touch the monofilament to the skin until it bends. Hold in place for approximately 1.5 seconds, then gently remove it.

5- Test the sites shown on the diagram.

6- Lack of sensation at any site may indicate diabetic neuropathy.

C- Assessing Foot Circulation

Palpate:
- Posterior tibial B/L
- Dorsalis pedis B/L

D- High Risk Foot

Any features of:
- Peripheral Neuropathy R1
- Peripheral arterial disease R2
- Previous amputation R3
- Previous/Current Ulceration R3
- Structural foot deformity R2
- Extensive Plantar callus R2

R1-3 refers to Risk Category

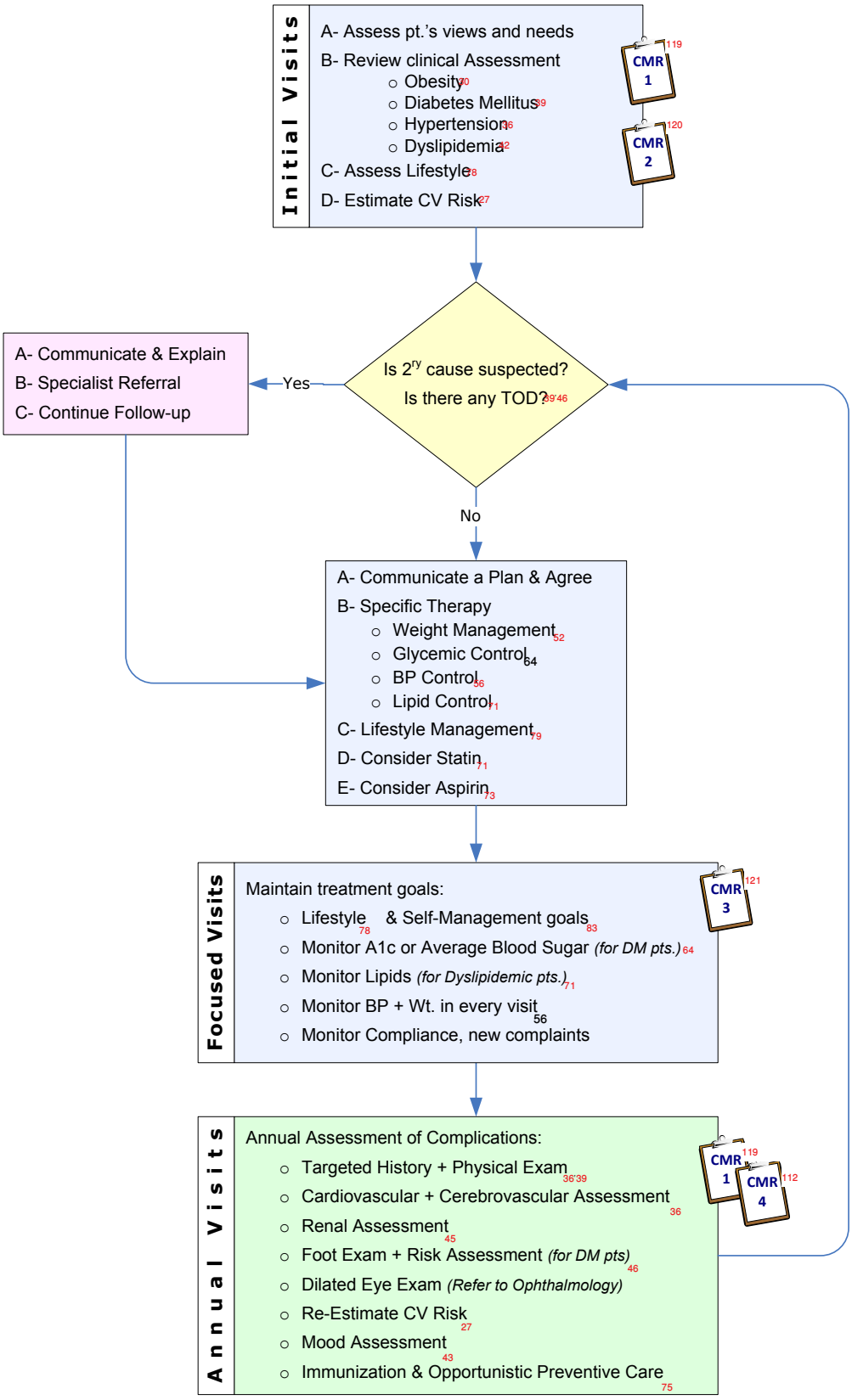
References:

1. Diabetes Prevention and Control Program. Foot inspection and monofilament use guide. Massachusetts Guidelines For Adult Diabetes Care, Jun 2009.
2. Health Resources and Services Administration. Level One Foot Screening. Lower Extremity Amputation Prevention LEAP. http://www.hrsa.gov/leap.
3. Wisconsin Diabetes Mellitus Essential Care Guidelines. Wisconsin Diabetes Program, 2012. www.WisconsinDiabetesInfo.org.

Chapter 5

Control

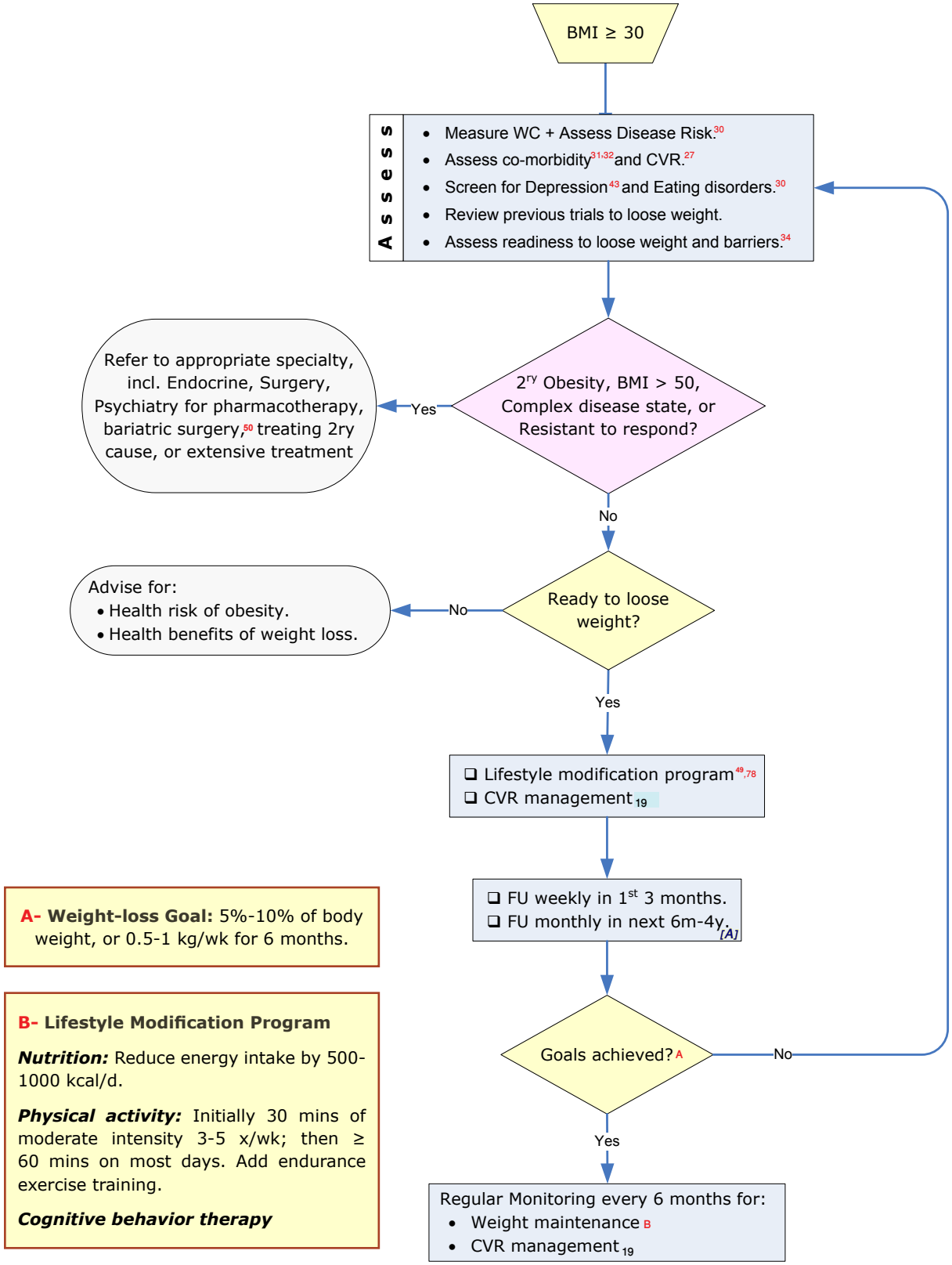
Chronic Management Algorithm



The encounter form that may be used at this step [119,120,121,122]

CVR, Cardiovascular Risk; RF, Risk Factor; TOD, Target Organ Damage

Obesity Management Algorithm



A- Weight-loss Goal: 5%-10% of body weight, or 0.5-1 kg/wk for 6 months.

B- Lifestyle Modification Program

Nutrition: Reduce energy intake by 500-1000 kcal/d.

Physical activity: Initially 30 mins of moderate intensity 3-5 x/wk; then ≥ 60 mins on most days. Add endurance exercise training.

Cognitive behavior therapy

References

1. U.S. Preventive Services Task Force. Screening for and Management of Obesity in Adults. AHRQ Publication No. 11-05159-EF-2. June 2012. http://www.uspreventiveservicestaskforce.org/uspstf11/obeseadult/obesers.htm
2. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
3. DC Lau. 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children. CMAJ 2007;176(S8):1–117
4. Institute for Clinical Systems Improvement. Prevention and Management of Obesity. 5th Ed., Jan 2011. www.icsi.org

Management of Obesity

Management aims to:

- **Improve pre-existing obesity-related comorbidities.**
- **Reduce the future risk of obesity-related comorbidities.**
- **Improve physical, mental and social wellbeing.**

Health care providers need to collaborate with patients to develop eating habits, physical activities and life long skills to initiate and sustain weight reduction.

A realistic target should be emphasized aiming, initially, at:

- **5-10% aver all reduction of original weight and**
- **Maximum weekly weight loss of 0.5-1 kg.**

Physical activity

- Physical activity refers to all types and intensities of body movement, including activities of daily living.
- Physical activity can be accumulated over the course of the day in multiple small sessions (of at least 10 minutes duration each) and does not need to be performed in a single session.
- Sedentary individuals should build up to their physical activity targets over several weeks, starting with 10-20 minutes of physical activity every other day during the first week or two of the programm, to minimaze potential muscle soreness and fatigue.
- The recommended duration of activity for fitness effects is 30 minutes of moderate-intensity activity (e.g. brisk walking) on most days per week or 60 minutes a day of total physical activity time to control body weight.[B]

Markers of moderate intensity physical activity

- Increase the rate of breathing
- Increased body temperature
- Comfortable conversation
- Increased heart rate in the range of 55%-70% of age-predicted maximum (220-age)

Dietary advice

- Dietary interventions for weight loss should be calculated to produce a 600 kcal/ day energy deficit. This result in a progressive weight loss of 0.5-1 g per week.[A]
- Dietary advice should be tailored to the preferences of the individual patient.
- Emphasize the importance of eating breakfast daily and regulating meal times.
- Encourage patient to read food labels when purchasing food items.
- Provide lower calorie substitution to the patients usual diet.
- Encourage pre planning of food and snacks.
- Avoid places and situation that encourage weight gain.

Behavioral modifications

Behavioral modifications are useful adjunct to diet and physical activity. They facilitate the assessment of patient motivation and readiness to implement a management plan and encourage the patient for take steps toward treatment.

- **Goal sitting:** allows patients to develop realistic expectations and aim at practical individualized strategies for weight loss.
- **Self–monitoring:** regular self-weighing.
- **Stimulus control:** environmental modification to enhance behavior that support weight management.
- **Slowing rate of eating.**
- **Problem solving:** allows patients to identify the problem, propose options, devise a solution, implement it and evaluate its effectiveness.
- **Cognitive restructuring:** aiming at increase awareness of one's self and one's weight as well as replacing negative thinking with more positive and constructive self statements.

Pharmacological treatment

- Pharmacological treatment should be considered only after dietary, exercise and behavioral approaches have been started and evaluated.
- Patients considered for pharmacotherapy should have:[A]
  - BMI ≥ 30, or BMI ≥ 28 with concomitant obesity-related risk factors or diseases (hypertension, dyslipidemia, CHD, DM-2 or sleep apnea.
  - Therapy shoud be continued beyond 3 months only if the person has lost at least 5% of their initial body weight since starting drug treatment.

Bariatric surgery

- Bariatric surgery should be considered on an individual case basis following assessment of risk and benefit in patients who fulfill the following criteria:[C]
  - BMI ≥ 35 kg/m2.
  - Presence of one or more severe comorbidities which are expected to improve significantly with weight reduction (e.g., severe mobility problems, arthritis, DM-2).
  - Evidence of completion of a structured weight management program involving diet, physical activity, and behavioral and drug interventions,which did not result in significant and sustained improvement in the comorbidities.
- Health care professionals should undertake the following in all patients post bariatric surgery:
  - Simple clinical assessments of micronutrient status (e.g., ask about hair loss, neuropathic symptoms, skin and oral lesions, muscle weakness), and
  - Simple blood tests (e.g., full blood count, calcium, magnesium, phosphate and albumin).
- Calcium and vitamin D supplements (800 IU per day cholecalciferol) should be considered for all patients undergoing bariatric surgery. Baseline calcium and vitamin D should be measured to avoid iatrogenic hypercalcemia.
- Bariatric surgery should not be performed unless systematic follow-up is available and unless the patient has made a commitment to participate in such care. As in the preoperative evaluation, postoperative management requires a coordinated approach involving expertise in medicine, surgery, psychology, and nutrition.

Types of Bariatric Procedures

- Restrictive (e.g., vertical banded gastroplasty, laparoscopic adjustable gastric band)
- Resective (stand alone sleeve gastrectomy)
- Malabsorptive (e.g., gastric by Bass procedures, bili-pancreatic diversion)

References

1. National Collaborating Centre for Primary Care. Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. National Institute for Health and Clinical Excellence. London (UK) Dec 2006.
2. Scottish Intercolllegiate Guidelines Network. Management of obesity: A national clinical guideline. Edinburgh (UK) Feb 2010.
3. Institute for Clinical Systems Improvement. Prevention and Management of Obesity. 5th Ed., Jan 2011. www.icsi.org
4. AMA, Roadmaps for clinical practice.. Assessment and management of adult obesity, Booklet 4 Dietary management 2003.
5. Eric J. DeMaria. Bariatric surgery for morbid obesity. N Engl J Med 2007; 357:1158-1160, Sep 13, 2007.

Initial Approach to Very High Blood Pressure in PHC

SBP ≥ 180
or
DBP ≥ 110

↓

-Recheck BP manually using appropriate cuff size[89]
-Call Doctor
-Measure BP in both arms

↓

- Review current Symptoms & Signs[A]
- Evaluate Heart, Lungs, neck veins, and Lower Limbs for Heart Failure; Fundi; Pulses for Aortic Dissection; Brief mental status; Gross motor exam

↓

Any Acute TOD?[A]
Or
BP ≥ 220/120

Yes →

Hypertensive Emergency

- ❑ Relax in quite dim room
- ❑ Stabilize the pt.
- ❑ Refer to ER for inpatient Mgx
- ❑ Review plan after discharge from the hospital[19]

No →

Hypertensive Urgency

- ❑ Relax in quite dim room.
- ❑ Resume dose, if missing, or initiate Oral Long-acting Anti-HTN[57] , or Immediate-acting Anti-HTN.[B]
- ❑ Monitor vital signs Q 15-30 mins for 1-3 hrs.
- ❑ Re-evaluate for BP level & Acute TOD before discharge.
- ❑ Start/ Review CMR work-up within 1 week.[19]
- ❑ Advise for low salt diet& Stress avoidance.
- ❑ F/U daily & Adjust dose till initial target BP < 180/110 within 24-72 hrs.

A: Symptoms & Signs of Acute TOD

Neurologic: Unusual headache, Confusion, Somnolence, Stupor, Visual loss, Seizure, Dysarthria, Focal Neurologic deficit, Coma

Cardiac: SOB, Chest pain/ Inter-scapular/ epigastric, Nocturia, Pulmonary Edema

Renal: Oliguria, Azotemia, Proteinuria, Hematuria

GI: Nausea, Vomiting

Fundoscopic: Wide cup, Papilloedema

B: Drugs for hypertensive urgencies

Drug	Dose	Time to peak	Half life	Side effects
Captopril	12.5-25 mg PO	15-60 min	1.9 h	Renal failure in patients with renal artery stenosis
Labetalol	200-400 mg PO	20 –120 min	2.5-8 h	Bronchospasm, depression of myocardial contractility, A-V block, nausea, elevation of liver enzymes
Furosemide	20-40 mg PO	1-2 h	0.5-1.1 h	Volume depletion
Amlodipine	5-10 mg PO	1-6 h	30–50 h	Headache, tachycardia, flushing, peripheral edema

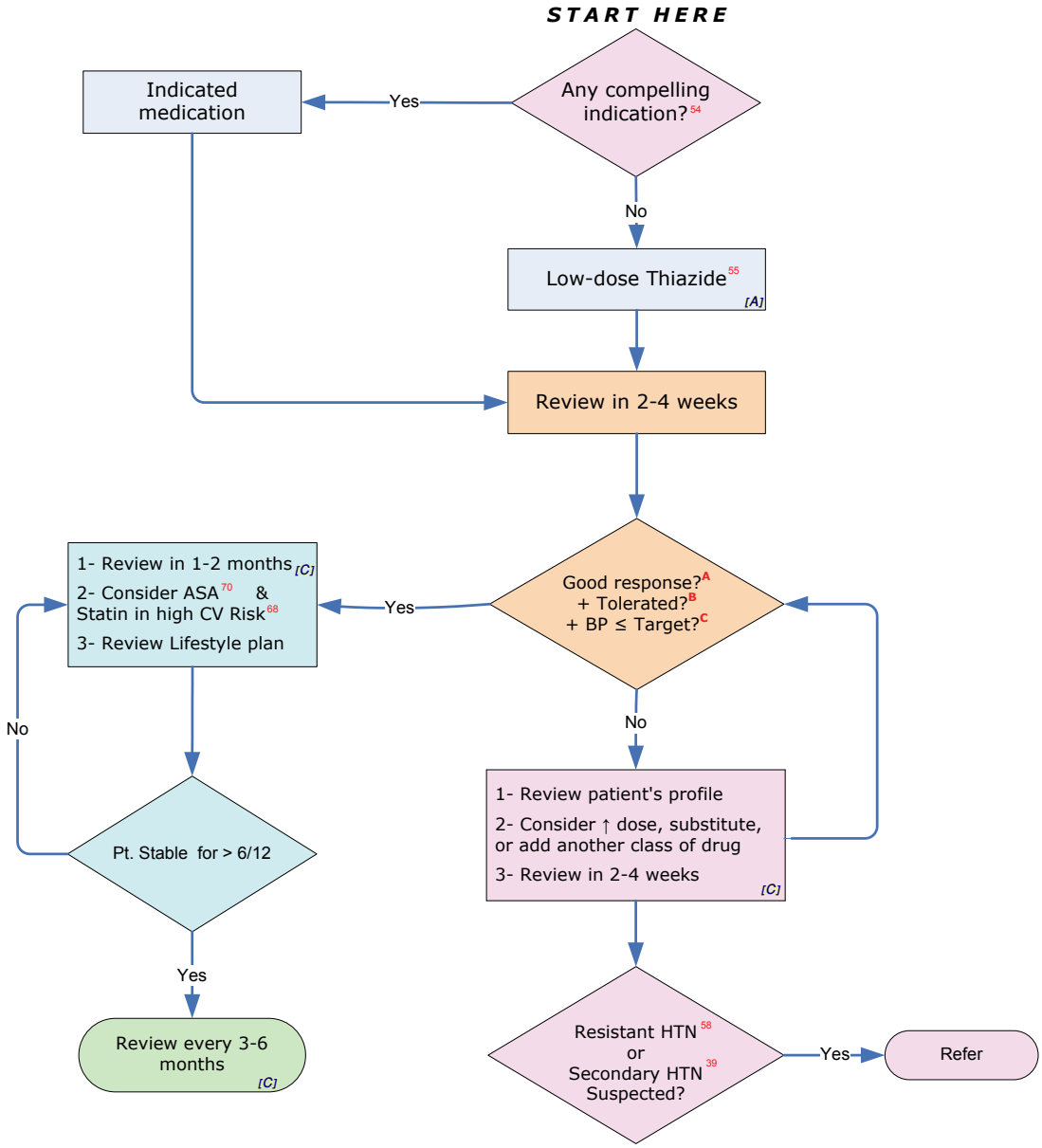
Notes:

1. Take average of 2 successive measurements, 1-3 mins apart. If the successive measurement is > 10 mmHg different, then repeat.[89]
2. Aggressive lowering of BP (>25%) may induce cerebral, myocardial or renal ischemia.
3. Avoid short-acting Nifidipine (oral and sublingual).

References:

1. MA Rodriguez, SK Kumar, M De Caro. Hypertensive Crisis. Cardiology in Review 2010;18(2):102-107.
2. J Varon. Treatment of acute severe hypertension: current and newer agents. Drugs 2008;68(3):283-97.
3. CJ Hebert, DG Vidt. Hypertensive Crises. Primary Care: Clinics in Office Practice 2008:35(3):475-487.
4. TJ Burton and IB Wilkinson. The dangers of immediate-release nifedipine in the emergency treatment of hypertension. J Human Hypertension 2008;22:301-2.

Blood Pressure Control: Chronic Management



A- Good response is judged by BP decrease of > 5 mm Hg in SBP and DBP.
B- Patient has tolerated any adverse event of the drug.[55]
C- Target BP values:

Condition	SBP	DBP
HTN (No TOD; No CVRD) < 80 yrs	< 140	< 90
HTN (No TOD; No CVRD) ≥ 80 yrs	< 150	< 90
DM or Very-high CVR	< 130 [C]	< 80 [A]
Non-DM Chronic Kidney Disease	< 140 [B]	< 90 [B]
Proteinuria > 1 g/day	< 125	< 75

References:

1. ESH/ESC Guidelines Committee. 2007 Guidelines for the management of arterial hypertension. J of Hypertension 2007;25:1105-1187.
2. Giuseppe Mancia et al. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. Journal of Hypertension 2009, 27:2121-58.
3. The 2012 Canadian Hypertension Education Program Recommendations. Canadian Task Force on Preventive Health Care.
4. Saudi Hypertension Management Society. Saudi Hypertension Management Guidelines; Third Edition, 2011.
5. European Guidelines on Cardiovascular Disease Prevention in Clinical Practice. European Heart Journal 2012;33:1635–1701.
6. Clinical management of primary hypertension in adults. National Institute for Health and Clinical Excellence (NICE), 2011.

BP Control: Choice of a Plan

Choice of a plan for BP control depends on the level of the CVR:

1. Stratify the level of CVR using table 1, below. For more details refer to page [27].
2. Match the level in table 1 with its corresponding plan in table 2.
3. Refer to page [79] for lifestyle change; page [54] for drug treatment; and page [61] for glycemic control.
4. Refer to the appropriate specialist for the management of TOD and CVRD, and continue treatment.

Table 1: Stratify CVR

Other risk factors and disease history	Blood pressure (mmHg)				
	Normal: SBP 120–129 or DBP 80–84	**Pre-HTN:** SBP 130–139 or DBP 85–89	**Grade 1:** SBP 140–159 or DBP 90–99	**Grade 2:** SBP 160–179 or DBP 100–109	**Grade 3:** SBP > 180 or DBP > 110
No other risk factors	Average risk	Average risk	Low added risk	Moderate added risk	High added risk
1-2 risk factors	Low added risk	Low added risk	Moderate added risk	Moderate added risk	Very high added risk
3 or more RF, MetSyn, TOD or diabetes[27]	Moderate added risk	High added risk	High added risk	High added risk	Very high added risk
CVRD	High added risk	Very high added risk	Very high added risk	Very high added risk	Very high added risk

CVRD, established CV or renal Disease; DBP, diastolic blood pressure; SBP, systolic blood pressure; MetSyn, Metabolic syndrome; TOD, target organ damage.

Table 2: Match CVR with its corresponding plan

Other risk factors and disease history	Blood pressure (mmHg)				
	Normal: SBP 120–129 or DBP 80–84	**Pre-HTN:** SBP 130–139 or DBP 85–89	**Grade 1:** SBP 140–159 or DBP 90–99	**Grade 2:** SBP 160–179 or DBP 100–109	**Grade 3:** SBP > 180 or DBP > 110
No other risk factors	No BP intervention	No BP intervention	Lifestyle changes for several months, then drug treatment if BP uncontrolled	Lifestyle changes for several weeks, then drug treatment if BP uncontrolled [A]	Immediate drug treatment and lifestyle changes * [A]
1-2 risk factors	Lifestyle changes	Lifestyle changes	Lifestyle changes for several weeks, then drug treatment if BP uncontrolled [A]	Lifestyle changes for several weeks, then drug treatment if BP uncontrolled [A]	Immediate drug treatment and lifestyle changes * [A]
3 or more RF, MetSyn, TOD or diabetes[27]	Lifestyle changes	Drug treatment and lifestyle changes * [A]	Drug treatment and lifestyle changes * [A]	Drug treatment and lifestyle changes * [A]	Immediate drug treatment and lifestyle changes * [A]
CVRD	Drug treatment and lifestyle changes *	Immediate drug treatment and lifestyle changes * [A]	Immediate drug treatment and lifestyle changes * [A]	Immediate drug treatment and lifestyle changes * [A]	Immediate drug treatment and lifestyle changes * [A]

CVRD, established CV or renal Disease; DBP, diastolic blood pressure; SBP, systolic blood pressure; MetSyn, Metabolic syndrome; TOD, target organ damage.

* Consider the use of statin [68] and aspirin [70] in these risk groups.

References:

1. Saudi Hypertension Management Society. Saudi Hypertension Management Guidelines; Third Edition, 2011.
2. European Society of Hypertension-European Society of Cardiology Guidelines Committee. 2007 Guidelines for the management of arterial hypertension. J of Hypertension 2007;25:1105-1187.
3. The 2012 Canadian Hypertension Education Program Recommendations. Canadian Task Force on Preventive Health Care.
4. Giuseppe Mancia et al. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. Journal of Hypertension 2009, 27:2121-58.

Which Anti-Hypertensive Agent to use?

Risk factor / Disease	1st Choice	Second-line Choice	Cautions/Notes
Hypertension without compelling indications for specific agents	Thiazide diuretics, β-blockers, ACEI, ARBs, or long-acting CCBs (consider ASA and statins in selected patients)	Combination of 1st choice drugs	α-blockers are not recommended as initial therapy. β-blockers are not recommended as initial therapy in those >60 years of age. Hypokalemia is avoided by using K^+-sparing agents in those prescribed diuretic monotherapy. ACEI are not recommended as initial monotherapy in Blacks.
Isolated systolic hypertension without compelling indications for specific agents	Thiazide diuretics, ARBs or long-acting DHP-CCBs	Combination of 1st choice drugs	Hypokalemia should be avoided by using K^+-sparing agents in those prescribed diuretics
Diabetes mellitus with nephropathy	ACEI or ARBs	Addition of thiazide diuretics, cardio-selective β-blockers, or long-acting CCBs	If serum creatinine level is >2 mg/dL, a loop diuretic should be used as a replacement for low-dose thiazide diuretics if volume control is required.
Diabetes mellitus without nephropathy	ACEI, ARBs or thiazide diuretics	Combination of 1st choice drugs or addition of cardio-selective β-blockers ± long-acting CCBs	
Metabolic syndrome	ACEI or CCB	ARB	
Atrial Fibrillation	Recurrent AF: ACEI, ARB	Permanent AF: BB, NDHP-CCB	
Angina	Beta-blockers and ACEI	Long-acting CCBs	Avoid short-acting nifidipine
Established atherosclerotic disease	ACEI added to other therapy		
Previous myocardial infarction	Beta-blockers and ACEI	Combination of additional agents	
Heart failure	ACEI, β-blockers and spironolactone	ARBs; thiazide or loop diuretics, as additive therapy	Avoid non-DHP CCBs (diltiazem, verapamil)
Previous CVA or TIA	ACEI/diuretic combination		Blood pressure reduction reduces recurrent cerebrovascular events
Chronic kidney Disease; Microalbuminuria	ACEI (diuretics as additive Rx)	ARB	Avoid ACEIs in bilateral renal artery stenosis
Left ventricular hypertrophy (LVH)	ACEI, ARBs, long acting CCBs, thiazide diuretics (β-blockers for those under 60 years)		Avoid hydralazine and minoxidil
Peripheral arterial disease	ACEI added to other therapy	CCB	Avoid β-blockers with severe disease
Dyslipidemia	No special recommendation		
Elderly (isolated Syst HTN)	Diuretic; CCB		No definite evidence of an increase in risk of aggressive treatment (a J-curve) unless DBP is lowered to <55 or 60 mmHg by treatment
Lactating	Propanolol and labetolol are preferred if a BB is indicated		Diuretics may reduce milk volume.
Pregnancy	Methyldopa, labetolol, CCB		ACEIs and ARBs should be avoided (associated with adverse fetal and neonatal renal effects.)
Smokers			Interferes with the beneficial effects of β-blockers
Bronchospasm; 2nd / 3rd degree heart block			BBs should generally be avoided
Hyperthyroidism; Anxiety; S. Tachycardia	β-blockers		

Anti-Hypertensive Agents

Class Of Drug	Drugs	Usual Dose (mg/Day)	Frequency	Compelling Indications	Possible Indications	Caution	Compelling Contraindications	Potential Side Effects
Thiazides or thiazide-like Diuretics	Chlorthalidone Indapamide Hydrochloro-thiazide (HCTh)	12.5-25 1.25–2.5 12.5-25	1 1	• Elderly patient, isolated systolic hypertension, • Heart failure, secondary stroke prevention	• Renal insufficiency (loop diuretics for Cr > 2) • Edema states	• Action blocked by NSAID • Cardiac arrhythmia • Glucose intolerance; ↑Tg • Hypertrophic cardiomyopathy	• Gout [A] • Anuria	• Periodic electrolyte, uric acid, Ca^{+2}, FBS • Hypokalemia • Hyperuricemia • Hyponatremia • Hyperglycemia • Dizziness • Fatigue • Impotence • Dry mouth • Nausea • Constipation • Orthostatic Hypotension • Rash
Angiotensin converting enzyme inhibitors (ACEI)	Captopril Enalapril Lisinopril Perinodpril	25-150 5-40 10-40 4-8	2-3 1-2 2 1	• Heart failure • Left ventricular dysfunction • Post-MI or established coronary heart dis. • Diabetic nephropathy • Secondary stroke prevention [B]	• Chronic renal disease [C] • Type 2 diabetic nephropathy • Proteinuric renal disease • Unilateral Renovascular hypertension	• Renal impairment† • Peripheral vascular disease [D] • Antacids and NSAID ê effect of ACEI • Allopurinol; Digoxin; K^+; K^+-sparing diuretics	• Pregnancy • Renovascular disease [E]	• Periodic Cr., Electrolyte, WBC • Angioedema • Cough • Tachycardia • ↑ Cr. + K^+ • Nausea • Hypotension • Diarrhea • Fatigue • Taste disorders • Agranulocytosis
β blockers (BB)	Atenolol Metoprolol Propranolol Bisoprolol ***BB and α blockers:*** carvedilol	25-100 50-100 40-160 2.5-10 12.5–50	1 1 2 1 2	• Angina pectoris; • Post-MI; congestive heart failure • Pregnancy • Tachyarrhythmias	• Heart failure [F]; PVC; Supraventricular arrhythmia • Anxiety; essential tremor; migraine • Glaucoma	• Heart failure [F] • Peripheral vascular dis. • Diabetes • Rhinitis; Dyslipidemia; Pheochromocytoma; Depression; Mild Asthma • nicotine reduce bio-availability • may increase warfarin activity	• Asthma or chronic obstructive Lung disease • Heart block • Sinus Bradycardia	• Impotence • Fatigue • Light-headedness • Dizziness • Dyspnea • Wheezing • Cold extremities • Claudication • Confusion • Vivid dreams • Insomnia • Depression • Diarrhea • Bradycardia

Class Of Drug	Drugs	Usual Dose (mg/Day)	Frequency	Compelling Indications	Possible Indications	Caution	Compelling Contraindications	Potential Side Effects
Calcium channel blockers (CCB) (dihydropyridine DHP-CCB)	Amlodipine Nifedipine LA	2.5-10 30-60	1 1	• Elderly patient, isolated systolic hypertension • DM	• Angina • Esophageal spasm	Liver disease		• Dizziness • Peripheral edema • Headache • Flushing • Rash • Abnormal LFT • Hypotension
Angiotensin II receptor Blockers ARB	Valsartan (Diovan) Losartan (Cozaar) Olmesartan Telmisartan	80-320 25-100 20–40 20–80	1 1-2 1 1	• ACEI intolerance • Type 2 DM nephropathy • Hypertension with LVH • Heart failure in ACE intolerant patients, after MI	LV dysfunction after MI. Intolerance of other antihypertensive drugs. Proteinuric renal disease. Chronic renal disease. Heart failure.	• Renal impairment [C] • Peripheral vascular disease [D] • Fluconazole ↓ losartan level • NSAID ↓ effect of ARB	• Pregnancy • Renovascular disease	• Periodic Cr., K^+ • Tachycardia • Rare angioedema • Tachycardia • ↑ Cr. + K^+ • Hypotension • Fatigue
Centrally acting drugs	Methyldopa	250-1,000	2	Pregnancy				
α-blockers	Doxazosin Prazosin	1-16 2-20	1 2	Benign prostatic hypertrophy		• Postural hypotension • Heart failure [G]	Urinary incontinence	
Diuretics (loop)	Furosemide (Lasix [C])	20-80	2	• Renal insufficiency; • Congestive heart failure			• Renal failure • Hyperkalaemia	
Diuretics (anti-aldosterone)	Spironolactone (Aldactone [C])	25-50	1	• Congestive heart failure; • Post-myocardial infarction				
Calcium channel blockers CCB (rate limiting NDHP-CCB)	Verapamil Diltiazem	80-320	2	• Angina pectoris; • Carotid atherosclerosis; • Supraventricular tachycardia	• Elderly patient • Migraine	• Combination with β blockade • Mild Heart failure	• A-V block (grade 2 or 3) • Congestive heart failure	• Constipation • Heart block

A Thiazides or thiazide-like diuretics may sometimes be necessary to control blood pressure in people with a history of gout, ideally used in combination with allopurinol.
B In combination with a thiazide or thiazide-like diuretic.
C ACEI or ARB may be beneficial in chronic renal failure but should only be used with caution, close supervision, and specialist advice when there is established and significant renal impairment.
D Caution with angiotensin converting enzyme inhibitors and angiotensin II receptor blockers in peripheral vascular disease because of association with renovascular disease.
E ACEI and ARB are sometimes used in patients with renovascular disease under specialist supervision.
F β-blockers are used increasingly to treat stable heart failure but may worsen heart failure.
G In heart failure when used as monotherapy.

References:

1. Saudi Hypertension Management Society. Saudi Hypertension Management Guidelines; Third Edition, 2011.
2. Institute for Clinical Systems Improvement. Health Care Guideline: Hypertension Diagnosis and Treatment ; 14th Edition, November 2012. www.icsi.org
3. http://www.pdr.net. PDR Network, LLC, Montvale, NJ 07645. accessed 24 Jan 2013.
4. https://online.epocrates.com accessed 24 Jan 2013.

Change of Anti-HTN Medications

General Principles:

Changing therapy risks new side effects and it may take time to re-establish adequate control of blood pressure. A change of therapy is unlikely to be appropriate in patients on three or more antihypertensive drugs.

Once a hypertensive drug therapy is initiated, most patients should return for follow-up and medication adjustments at least at monthly intervals until the BP goal is reached.

If blood pressure goals are not met the clinician has three options for subsequent therapy:

1. Increase the dose of the initial drug toward maximal levels
2. Substitute an agent from another class
3. Add a second drug from another class

Individualized drug selection is based on several principles:

1. If the initial response to one drug is:
   - Adequate: continue the same drug.
   - Partial: increase the dose or add a second drug of a different class.
   - Little: substitute another single drug from a different class.
2. Consider low-dose diuretic use early or as a first addition.
   - Consider loop diuretic agents instead of thiazide or thiazide-like diuretics when creatinine is > 2.0 mg/dL or eGFR < 30.
3. Do not combine two drugs of the same class.
4. Combine agents at medium doses. this can be more effective than a high-dose single agent. and can result in fewer side effects.
5. A Combination is more effective if a medicine from column 1 is combined with another from column 2.[B]

Column 1	Column 2
Diuretics CC Blockers	ACE inhibitors AR blockers β-Blockers

Note on short-acting Nifidipine

Short-acting nifidipine was associated with the development of TIA in two studies, and has been implicated as a cause of cardiovascular morbidity and mortality.

References:

1. Giuseppe Mancia et al. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. Journal of Hypertension 2009, 27:2121-58.
2. D Cherney, S Straus. Management of patients with hypertensive urgencies and emergencies. J Gen Intern Med 2002;17:937-45.
3. Institute for Clinical Systems Improvement. Health Care Guideline: Hypertension Diagnosis and Treatment ; 14th Ed November 2012.
4. The 2012 Canadian Hypertension Education Program Recommendations. Canadian Task Force on Preventive Health Care.
5. Clinical management of primary hypertension in adults. National Institute for Health and Clinical Excellence (NICE), 2011.

Resistant Hypertension

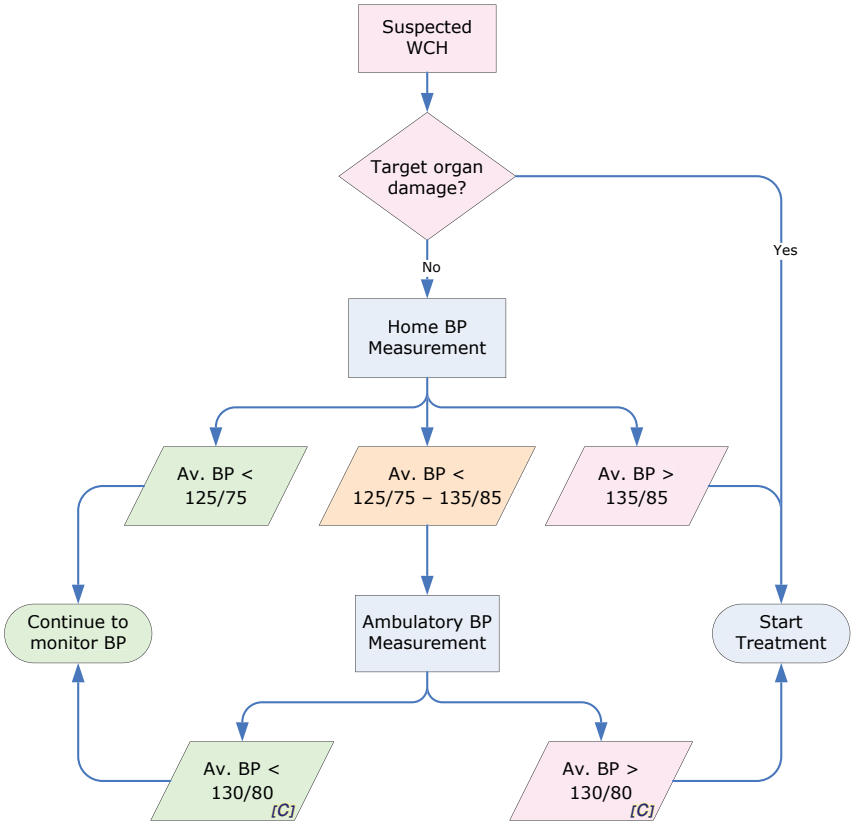
Hypertension may be termed resistant to treatment, or refractory, when a therapeutic plan that has included attention to lifestyle measures and the prescription of at least three drugs in adequate doses has failed to lower systolic and diastolic blood pressure sufficiently, after 6 months of follow-up. In these situations, referral to a specialist should be considered, as resistant hypertension is known to be often associated with target organ damage.

Causes of resistant hypertension

1. Improper blood pressure Measurment.
2. Volume overload
   - **Excess sodium intake**
   - **Volume retention from kidney disease**
   - **Inadequate diuretic therapy**
3. Drug-induced[37]
4. Other causes
   - **Non-adherence**
   - **Inadequate doses**
   - **Inappropriate combinations**
5. Associated conditions
   - **Obesity**
   - **Excess alcohol intake**
6. White coat hypertension

White Coat Hypertension

White-coat HTN (WCH) or "isolated office HTN" is a persistent elevation of BP in the physician's office with normal BP at home or by ambulatory BP monitoring. Once suspected, BP must be evaluated using home or ambulatory measurement. The following chart summarizes the approach recommended for managing WCH.



References:

1. Giuseppe Mancia et al. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. Journal of Hypertension 2009, 27:2121-58.
2. Institute for Clinical Systems Improvement. Health Care Guideline: Hypertension Diagnosis and Treatment ; 14th Ed., November 2010.
3. The Saudi Hypertension Management Guidelines. Saudi Hypertension Management Society, Third Edition, Riyadh 2011.
4. The 2012 Canadian Hypertension Education Program Recommendations. Canadian Task Force on Preventive Health Care.
5. Clinical management of primary hypertension in adults. National Institute for Health and Clinical Excellence (NICE), 2011.

Initial Management of Symptomatic Hyperglycemia

Symptoms sugesstive of Hyperglycemia

(Polyuria, Polydipsia, Unexplained weight loss)

- Vital signs
- History & General Exam
- Urine dipstick for ketones
- Random blood sugar

- Acute illness, or
- Sick looking, or
- Pegnancy, or
- Remarkable weight loss, or
- Ketonuria, or
- RBS ≥ 300 (17 mmol/L)

No

- Quick Lifestyle advise[88]
- Full evaluation within 1-5 day[19]
- Control of hyperglycemia[61]

Yes

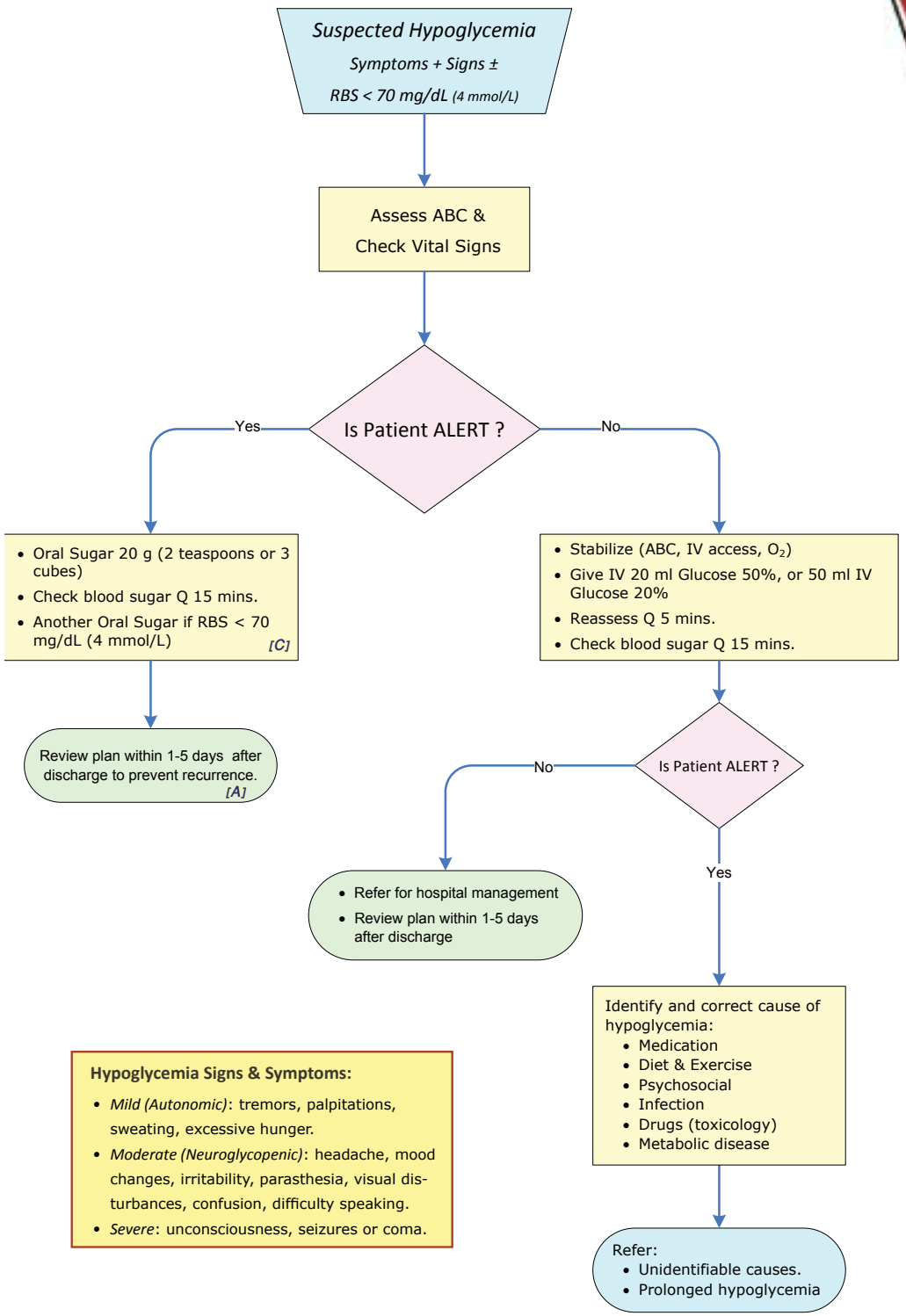
- Stabilize
- Start IVF 0.9% NaCl 1 L in 1st hr, then .5L/hr.
- Rapid- or Short- acting Insulin 0.15 iu/kg SQ.[67]
- Check blood sugar ½ hourly.
- Consider Referral if having acute illness or blood sugar remains > 300 (17 mmol/L) after 1 hr.

Review plan within 1-5 days after discharge[19]

References:

1. Abbas EK, et al. Hyperglycemic Crises in Adult Patients With Diabetes. DIABETES CARE 2009;32:1335-43.
2. David MN et al. Medical Management of Hyperglycemia in Type 2 Diabetes: A Consensus Algorithm for the Initiation and Adjustment of Therapy. Diabetes Care 2009;32:193–203.

Management of Hypoglycemia

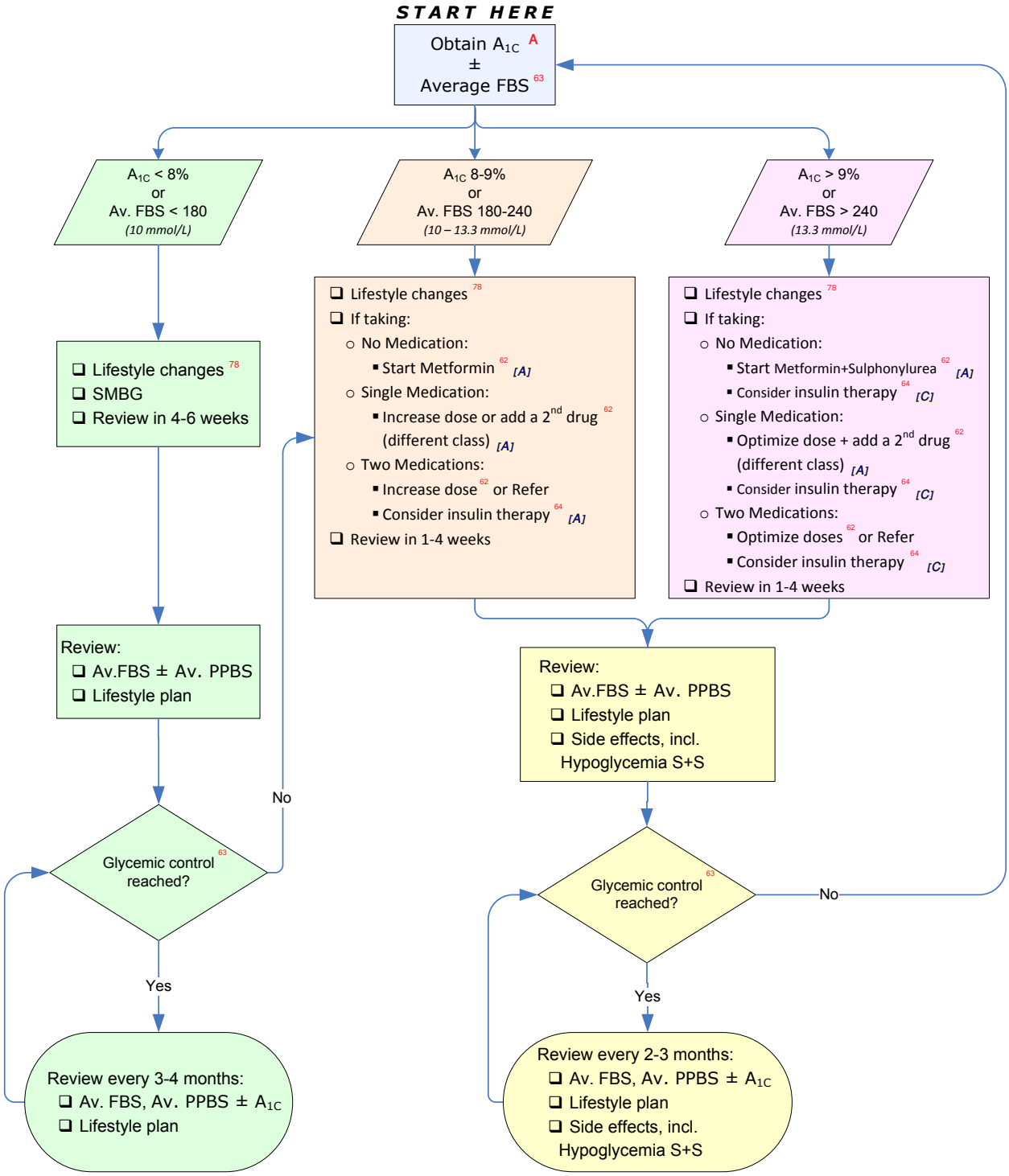


Severe hypoglycemia, particularly that caused by a sulfonylurea, is often prolonged. Subsequent glucose infusion and frequent feeding are often required.

References:

1. WRHA Primary Care Program. Emergency Management of Hypoglycemia in the Primary Care Setting. Ref PCPG2 June 2007.
2. Smeeks FC; Emergent Management of Acute Symptoms of Hypoglycemia. eMedicine, Jun 2011. accessed 4 Feb 2013.
3. Cryer et al. Evaluation and Management of Adult Hypoglycemia J Clin Endocrinol Metab, March 2009, 94(3):709–728.
4. Institute for Clinical Systems Improvement. Diagnosis and Management of Type 2 Diabetes Mellitus in Adults. 15th Ed., April 2012. www.icsi.org.

Glycemic Control: Chronic Management



At presentation, all patients should be instructed on blood glucose monitoring, hypoglycemia recognition and treatment, and when to seek medical help. Patients should check blood sugar frequently when insulin is initiated.

A: Not in hemoglobinopathies nor recent hemolysis or blood transfusion. They may interfere with A_{1c} accuracy. [63]

References:

1. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
2. IDF Clinical Guidelines Task Force. Global guideline for Type 2 diabetes. International Diabetes Federation, 2012.
3. National Reference For Diabetes Mellitus Guidelines In Primary Health Care in Saudi Arabia. Ministry of Health, Saudi Arabia 2011.
4. Institute for Clinical Systems Improvement. Diagnosis and Management of Type 2 Diabetes Mellitus in Adults. 15th Ed., April 2012.
5. S Inzucchi, et al. ManagementofHyperglycemiainType2 Diabetes: A Patient-Centered Approach. Diabetes Care June 2012 vol. 35 no. 6 1364-1379.

Anti-Glycemic Agents

Drug Class	Sulfonylureas	Biguanides	Meglitinides	α-glucosidase Inhibitors	PPAR-γ Agonists (Thiazolidinediones TZD)	Dipeptidyl Peptidase-4 Inhibitors (DPP4i)
Medications	Glipizide Glibenclamide Gliclazide Glimepiride (Amaryl)	Metformin	**Repa**glinide **Nate**glinide	Acarbose	**Pio**glitazone (Actos) **Rosi**glitazone (Avandia)	**Sita**gliptin (Januvia)
Actions	Stimulates insulin secretion	• Targets hepatic cells • Decreases hepatic glucose production • Does not stimulate insulin secretion	• Augments glucose-induced insulin output • More rapid onset of effect and shorter duration of action than sulfonylurea	• Slows absorption of carbo-hydrates • Reduces post-prandial blood sugar	• Regulates insulin responsive genes necessary for glucose and lipid metabolism. • Improves sensitivity to insulin in skeletal and adipose tissue.	• Increases insulin release • Decreases glucagon levels
Indications	DM-2 as monotherapy or in combination with insulin, metformin, or TZD	• DM-2 alone or in combination with sulfonylurea or insulin • Overweight • Dyslipidemic Children (Glucophage is approved for pediatric patients >10 years)	• DM-2 alone or in combination with metformin • Repaglinide may be used in combination with TZDs • Sulfa-allergic pts. • Hypoglycemia on low doses of sulfonylurea	• DM-2 alone or in combination with a sulfonylurea. • Combination with metformin or insulin • Post-prandial hyperglycemia	• DM-2 with failed conventional oral therapy. • Concurrent use with metformin, sulfonylurea, insulin and as monotherapy	• DM-2 monotherapy. • Combination with metformin or TZDs
Contraindications & Precautions	• Use with CAUTION in sulfa-allergic patients • Use caution with renal or hepatic insufficiency	• DO NOT USE with renal (Cr>1.4) or hepatic insufficiency, COPD. • Unstable Cong. Heart Failure • Excessive alcohol intake • Age > 80 years • Acetazolamide	Use caution with renal or hepatic insufficiency	• Chronic intestinal disease • Renal dysfunction (creatinine > 2.0) • Cirrhosis	• CHF III & IV • Abnormal LFTs • CAUTION in ladies @ ↑ risk of fracture. • May resume ovulation in anovulatory women.	• Use with CAUTION in renal insufficiency.. • May need lower dose of sulfonylurea to prevent hypoglycemia.
Common Side Effects	Hypoglycemia and weight gain	Diarrhea, nausea, abdominal bloating, anorexia, metallic taste	Hypoglycemia and weight gain	Flatulence, diarrhea, abdominal pain	Weight gain, fluid retention	Headache, URTI, nasopharyngitis
Lab Monitoring	None	Baseline creatinine, LFTs	None	LFTs every 3 months in 1st year, then annually	LFTs every 2 months in 1st year, then PRN (ALT)	Baseline creatinine
Usual Dose	• Glipiz: 5 od-20 mg bid ac • Gliben: 1.25 od- 10 mg bid ac • Glicl: 40 od–160 mg bd ac • Glimep: 1-4 mg od w/meal	500 mg od-1000 mg bid	• Repa: 0.5-2 mg tid w/each meal • Nate: 60-120 mg tid w/each meal	25 mg-100 mg tid	• Pio: 15 od-45 mg od • Rosi: 4 od-8 mg bid	• Sita: 100 mg od with or without food.
Maximum Daily Dose	• Glipiz: 40 mg • Gliben: 20 mg • Glicl: 320 mg • Glimep: 8 mg	2500 mg	• Repa: 16 mg • Nate: 360 mg	300 mg	• Pio: 45 mg • Rosi: 8 mg	• Sita: 100 mg od
Dose Adjustment	1-2 weeks	2-4 weeks	1-2 weeks	2-4 weeks	2-4 weeks	-
Cost (30 day supply)	Glipiz: Gliben: Glicl: Glimep:	Metformin:	Repa: Nate:	Acarbose: Miglitol:	Pioglitazone: Rosiglitazone:	Sitagliptin:

ac= before meal; pc= after meal.

References:

1. Wisconsin Diabetes Mellitus Essential Care Guidelines, 2012. Wisconsin Diabetes Program. www.WisconsinDiabetesInfo.org.
2. Management of Diabetes. Scottish Intercollegiate Guidelines Network, Mar 2010. www.sign.ac.uk
3. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
4. National Reference For Diabetes Mellitus Guidelines In Primary Health Care in Saudi Arabia. Ministry of Health, Saudi Arabia 2011

Use of oral hypoglycemic agents

- Once an oral hypoglycemic (OHG) drug therapy is initiated, most patients should return for follow-up and medication every 1-2 weeks until glycemic goal is reached.
- If glycemic goals are not met the clinician has three options for subsequent therapy:
  1. Increase the dose of the initial drug toward maximal levels
  2. Substitute an agent from another class
  3. Add a second drug from another class
- Start metformin early, or as a first addition, unless contraindicated. Begin with low dose and titrate weekly, to avoid GI intolerance; if not tolerated, lower the dose or consider a trial of extended absorption metformin tablets. *[A]*
- Do not combine two drugs of the same class.
- Combine agents at medium doses. this can be more effective than a high-dose single agent. In addition, it can result in fewer side effects.

Assessment of glycemic control

- Glycemic control is best assessed by A1C. Please note that:
  1. Hemoglobinopathies, hemolysis and blood loss interfere with its accuracy.
  2. Fructosamine (reflects glycemic control in the last 1-2 weeks) might be used instead, if available.
  3. Determining the average of multiple readings of FBS is a useful tool in achieving glycemic control (done daily or alternately). However, it reflects control over the measurement period, only.

Levels of Glycemic Control:

Target test
A1c < 7%
Average FBS 90 - 130 mg/dL (5 - 7.2 mmol/L)
Average 2hr-PBS < 180 mg/dL (10 mmol/L)
Average bedtime < 120 mg/dL (6.7 mmol/L)

Limitations on use of A_{1C} in DM

- In people who have hemoglobin variants such as HbS (sickle cell trait), some A_{1C} tests give falsely high or low readings that can lead to the over-treatment or under-treatment of diabetes.
- Laboratories use many different methods for measuring A_{1C}, but some of these methods can give inaccurate results when the patient has a hemoglobin variant such as sickle cell trait.
- The National Glycohemoglobin Standardization Program in America (www.ngsp.org) provides information about which assay methods are appropriate for patients with hemoglobinopathies.
- **Shortened Erythrocyte Survival:** Any condition that shortens erythrocyte survival or decreases mean erythrocyte age (e.g., recovery from acute blood loss, hemolytic anemia, transfusion, HbSS, HbCC, HbSC) will falsely lower HbA1c test results ***regardless of the assay method used***.

References:

1. Wisconsin Diabetes Mellitus Essential Care Guidelines, 2012. Wisconsin Diabetes Program. www.WisconsinDiabetesInfo.org.
2. IDF Clinical Guidelines Task Force. Global guideline for Type 2 diabetes. International Diabetes Federation, 2012.
3. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
4. Bry L, Chen PC, Sacks DB. Effects of hemoglobin variants and chemically modified derivatives on assays for glycated hemoglobin. Clin. Chem. 2001;47:153-63. http://www.ngsp.org/factors.asp
5. Goldstein DE, Little RR, Lorenz RA, Malone JI, Nathan D, Peterson CM: American Diabetes Association Technical Review on Tests of Glycemia. Diabetes Care 18:896-909, 1995. http://www.ngsp.org/factors.asp
6. David MN et al. Medical Management of Hyperglycemia in Type 2 Diabetes: A Consensus Algorithm for the Initiation and Adjustment of Therapy. Diabetes Care 2009;32:193–203.

Insulin Therapy in T2DM: General Guideline

- Type 2 DM is a progressive disease in which ß-cell function deteriorates. Many patients will eventually need insulin.
- Early initiation of insulin would be a safer approach for individuals presenting with weight loss, severe symptoms and RBS > 250 mg/dl (14 mmol/L).
- Insulin might be added to the oral regimen if glycemic control is not achieved, after the use of two different classes.[A] This must has to be done by an expert physician.

Types of insulin

Insulin	Onset	Peak	Effective duration
Rapid-acting (Aspart - Lispro)	5–15 min	30–90 min	< 5 hours
Short-acting (Regular)	30–60 min	2–3 hours	5–8 hours
Intermediate (basal - NPH)	2–4 hours	4–10 hours	10–16 hours
Long-acting (basal - Glargine)	2–4 hours	No peak	20–24 hours
Premixed (70% NPH+30% regular)	30–60 min	Dual	10–16 hours

Types of insulin regimen

Characteristics \ Regimen	Basal-Only	Mixed	Basal-Bolus
Blood Sugar Pattern	↑ FBS + minimal ↑ PPBS	Any FBS + ↑ PPBS	Any blood sugar level
Diet Pattern	Small, regular meals	Isocaloric meals or larger lunches	Any diet pattern
Lifestyle	Reluctance to have MDI	Consistent daily routine, reluctance to do MDI	Erratic schedule, motivated to achieve tight glycemic control
Monitoring	Fasting	Fasting and pre-supper (if twice daily)	Before meals and bedtime
Insulin types	NPH - Glargine	NPH+Regular	Glargine+Rapid

MDI: multi dose insulin

- Preferably begin with human NPH insulin, taken at bedtime or twice daily according to need.
- Consider, as an alternative, using insulin glargine for:[A]
  - **Persons who experience significant nocturnal hypoglycemia, while using NPH insulin.**
  - **Persons who require assistance from a carer or health care professional to administer their insulin injections.**
  - **Persons whose lifestyle is significantly restricted by recurrent symptomatic hypoglycemic episodes.**
  - **Persons who would otherwise need once daily basal insulin injections in combination with oral glucose-lowering medications.**

Is the PHC setting ready for insulin therapy?

When starting insulin therapy, use a structured Program employing active insulin dose titration that includes:[A]

1. **Structured education by a Certified Diabetes Educator**
2. **Continuing easy-access support (including telephone).**
3. **Frequent self-monitoring.**
4. **Dietary understanding and review.**
5. **Management of hypoglycemia.**
6. **Management of acute changes in blood sugar control.**
7. **Support from an appropriately trained and experienced physician.**

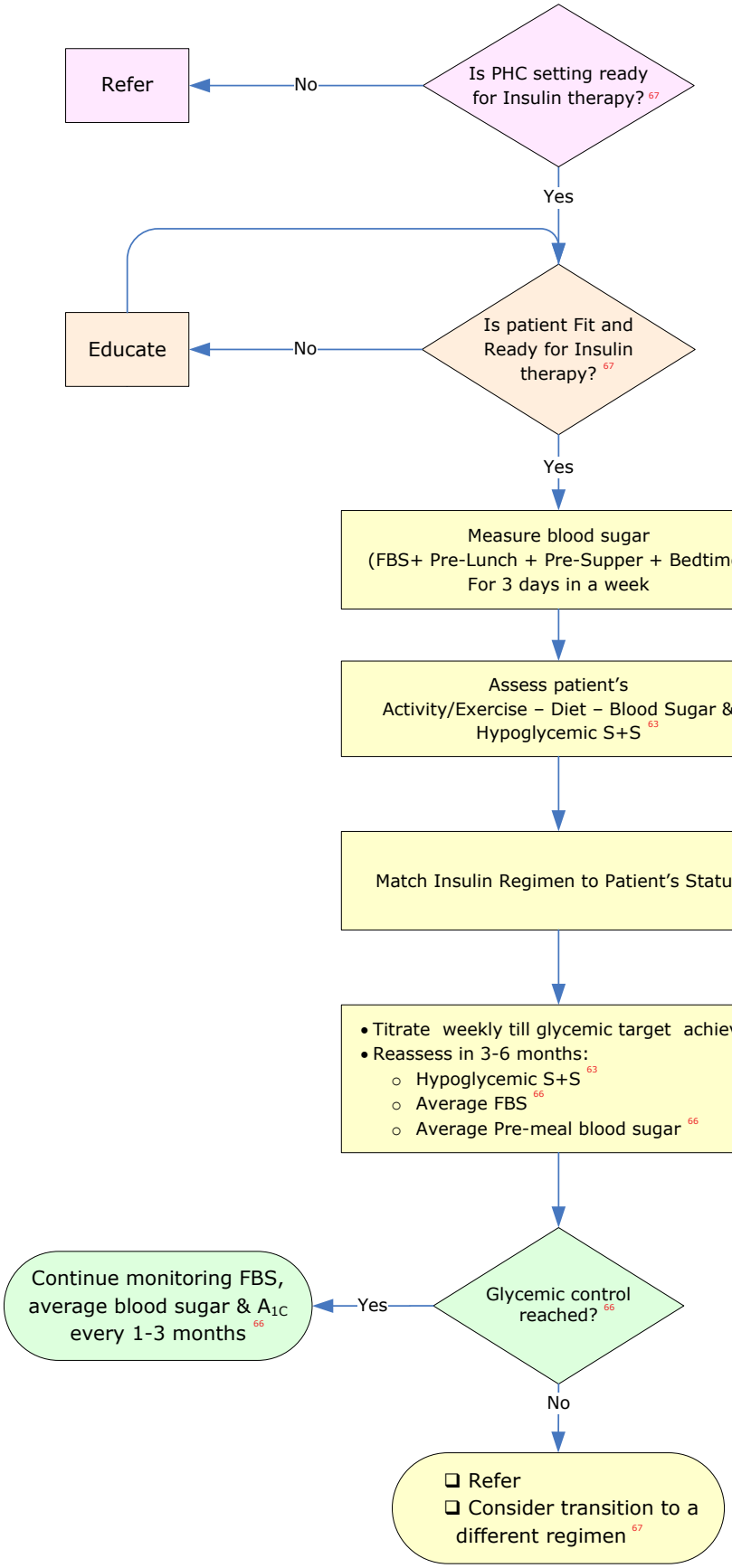
Is the patient fit and ready for insulin therapy?

1. **New patients with extreme hyperglycemia (FBS > 250 mg/dl - 14 mmol/L).**
2. **Patients who are unable to achieve A_{1C} goals using oral agents.**
3. **Patients educated by a Certified Diabetes Educator to:**
   - **Ensure proper administration and understanding of the insulin regimen.**
   - **Discuss the benefits and risks of insulin therapy.**
4. **Patient and care giver agree on starting insulin therapy.**

References:

1. The National Collaborating Centre for Chronic Conditions. Type 2 Diabetes: National clinical guideline for management in primary and secondary care (update). Royal College of Physicians, London 2008.
2. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
3. Wisconsin Diabetes Mellitus Essential Care Guidelines. Wisconsin Diabetes Program, 2012. www.WisconsinDiabetesInfo.org.
4. Management of Diabetes. Scottish Intercollegiate Guidelines Network, Mar 2010. www.sign.ac.uk
5. Irl B. Hirsch et al. A Real-World Approach to Insulin Therapy in Primary Care Practice. Clinical Diabetes 23(2):78-86, 2005.

Insulin Therapy: General Algorithm

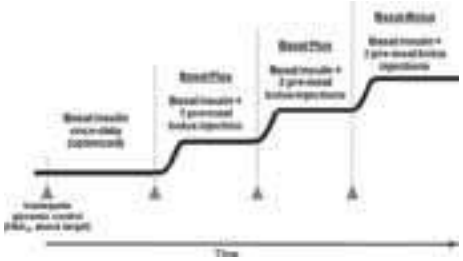


Notes on the use of Insulin Therapy

Stepwise approach

Insulin therapy is commonly initiated, to increase the endogenous basal insulin level, with injected basal insulin, such as long-acting insulin analogue, or intermediate-acting human insulin.

The progressive nature of DM suggests that a stepwise intensification of therapy would be a logical approach to treatment.



The next step involves the introduction of bolus (regular or rapid) mealtime doses.

The simplest means of introducing bolus mealtime insulin is to begin with a single injection before the largest meal of the day.

Self-monitoring of blood glucose levels (SMBG) 2 hours after meals for a period of up to 1 week before adding bolus insulin doses will help the physician to target which meal has the largest impact on postprandial blood sugar.

The decision to escalate in the stepwise approach from one pre-meal bolus dose to two, and then possibly three doses, should be made on the basis of A_{1C} levels.

When intensifying insulin therapy by adding bolus insulin, review and discontinue sulphonylurea therapy, especially if hypoglycemia occurs.

Titration & Intensification of Insulin Therapy

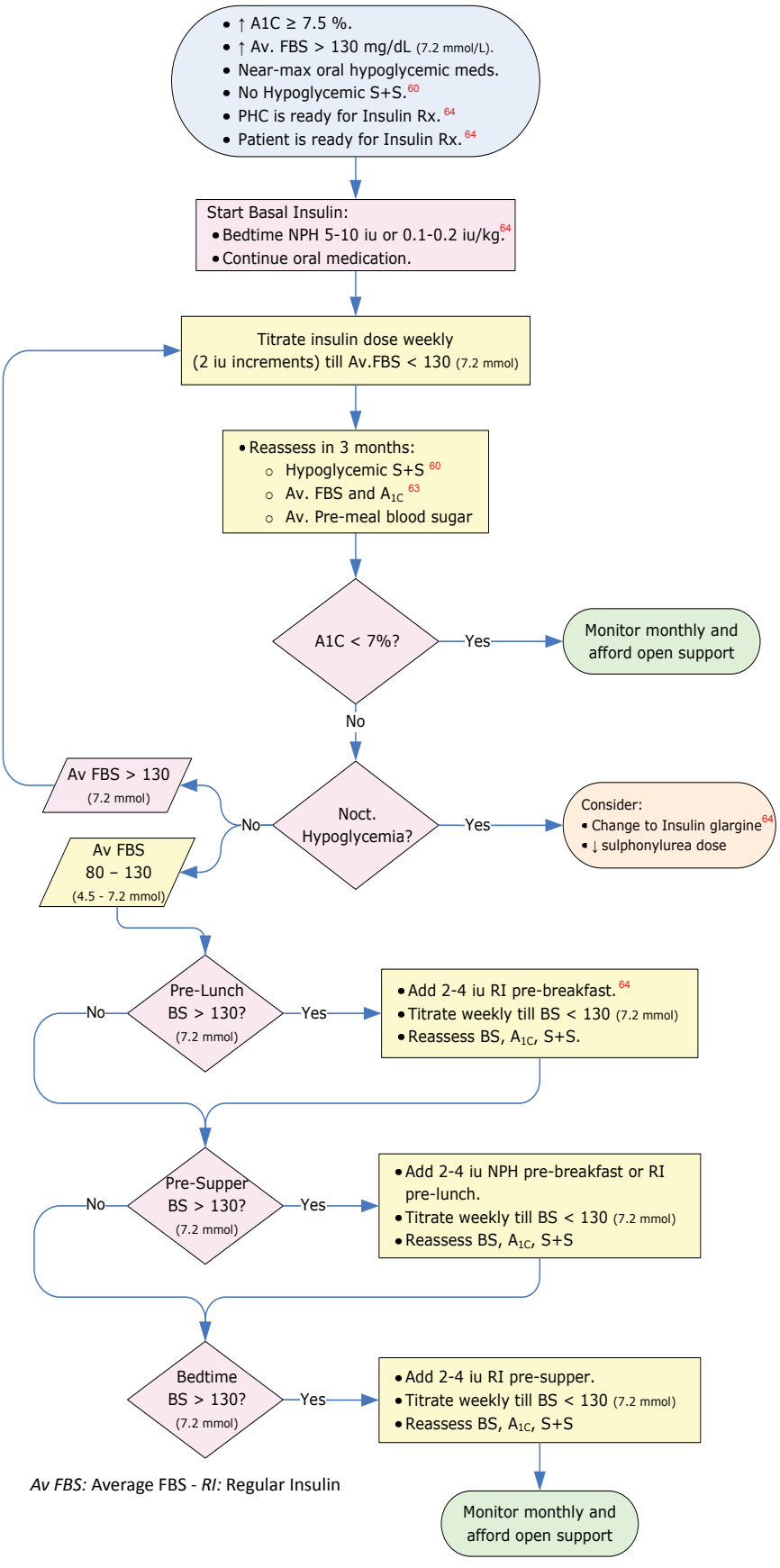
Dose titrations of 1–2 units increment, or decrement, or no change, can be made according to the next pre-meal SMBG results or bedtime SMBG if bolus insulin is given before dinner. The following table guides this task.

Meal	Pre-meal Blood Sugar	Change either in	
		bolus dose in current meal	or if correction is consistently needed, consider change in prior insulin dose
Breakfast	< 90 mg/dL (5 mmol/L)	- 2 iu	Basal insulin
Lunch	90-130 mg/dL (5-7.2 mmol/L)	no change	Bolus insulin @ Breakfast
Supper	> 130 mg/dL (7.2 mmol/L)	+ 2 iu	Bolus insulin @ Lunch

References:

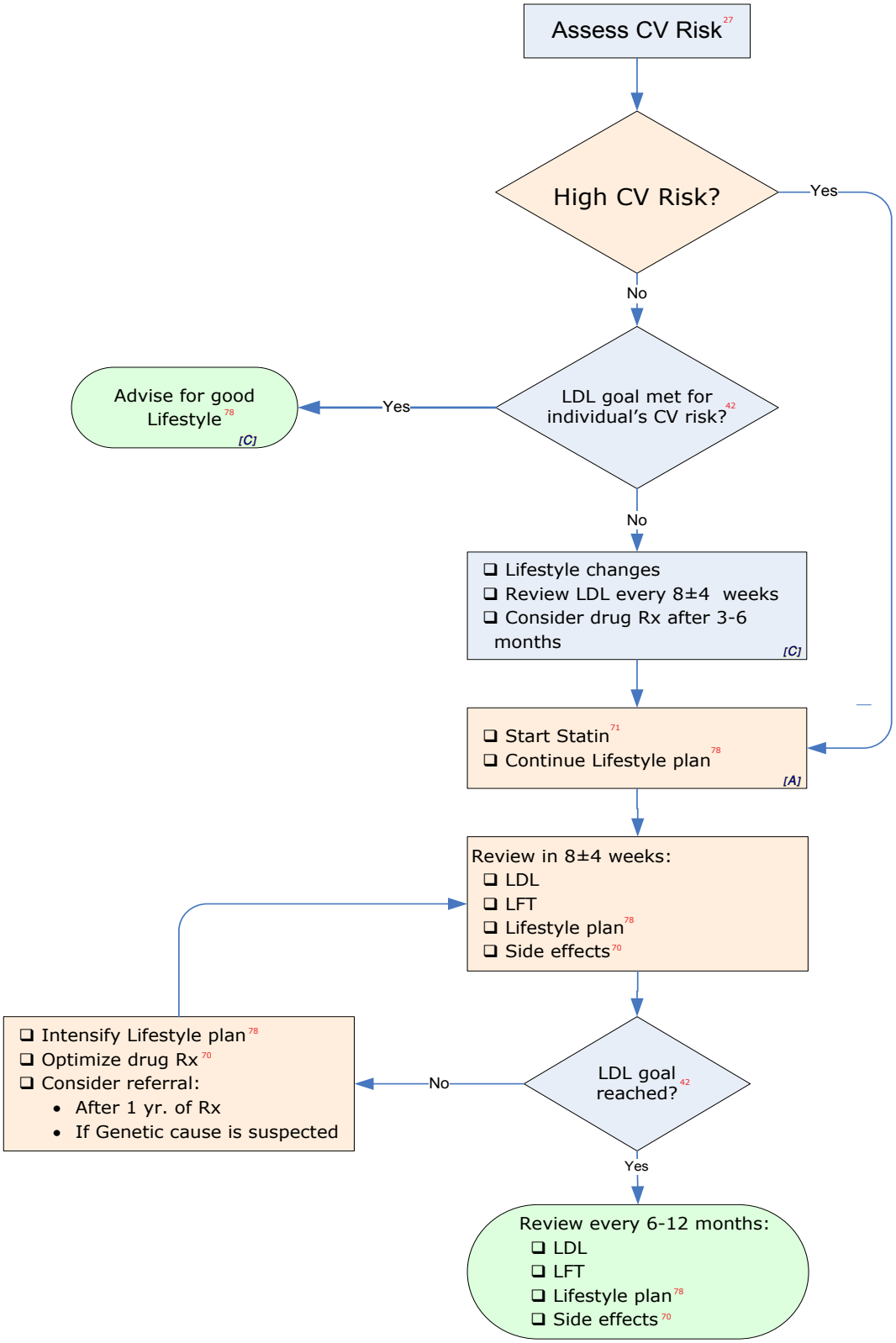
1. M Abrahamson & A Peters. Intensifi cation of insulin therapy in patients with type 2 diabetes mellitus: An algorithm for basal-bolus therapy. Annals of Medicine 2012;44:836–846.
2. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
3. Wisconsin Diabetes Mellitus Essential Care Guidelines, 2012. Wisconsin Diabetes Program. www.WisconsinDiabetesInfo.org.
4. The National Collaborating Centre for Chronic Conditions. Type 2 Diabetes: National clinical guideline for management in primary and secondary care (update). Royal College of Physicians, London 2008.
5. Irl B. Hirsch et al. A Real-World Approach to Insulin Therapy in Primary Care Practice. Clinical Diabetes 23(2):78-86, 2005.

Insulin Therapy: Suggested Regimen



Av FBS: Average FBS - *RI:* Regular Insulin

Lipid Control & Statin Therapy



References:

1. Z Reiner et al. ESC/EAS Guidelines for the management of dyslipidaemias. European Heart Journal 2011;32:1769–1818.
2. ICSI Health Care Guideline: Lipid Management in Adults. Institute for clinical systems improvement. Eleventh Edition, Oct 2009.

Lipid Lowering Agents

Drug Class	HMG CoA Inhibitors (Statins)	Fibrates
Medications	**Simvastatin; Atorvastatin; Pravastatin Lovastatin; Fluvastatin; Rosuvastatin**	**Gemfibrozil** (600 mg bid) **Fenofibrate** (200 mg od)
Physiologic outcomes		
• **LDL**	↓ 20-50%	↓ 10-15%
• **HDL**	↑ 5-15%	↑ 10-15%
• **Triglycerides**	↓ 10-30%	↓ 20-50%
Indications	Lower LDL cholesterol in patients with: CHD, multiple risk factors, or very high LDL	TG > 400 mg/dL (5 mmol/L)
Contraindications		
• **Absolute**	Active or chronic liver disease	Pregnancy
• **Relative**	Concomitant use fibric acid derivatives, pregnancy	Severe Liver or Renal disease, cholelithiasis
Common Side Effects	Mild GI complaints, Not common: Myopathy Rare: Hepatotoxicity	Mild GI complaints, Not common: Gallstones Rare: Hepatotoxicity
Liver enzyme monitoring	0, 3, 6 months, then q 6 month	0, 3, 6 months, then annually
CPK monitoring	Complaints of muscle aches/pains/cramps	Complaints of muscle aches/pains/cramps

Notes on the use of Statins:

1. The clinical benefit is largely independent of the type of statin used, but depends on the extent of LDL lowering.[A]
2. Calculate the percentage reduction of LDL-C required to achieve the set goal. Choose a statin that, on average, can provide this reduction.
3. The response to statin treatment is variable, up-titration to reach the target is mandatory.
4. A Bedtime or evening dose of statin is more effective (higher cholesterol synthesis).
5. Dosage adjustments should not be made more often than every 4 weeks after a fasting lipid profile.
6. If patients are intolerant to a statin, clinicians are encouraged to have the patient try the other statins in reduced doses before ruling out all statins.
7. If patients are unable to take a statin, then fibric acids and other lipid lowering agents may be used.
8. Safety Considerations:

DO

- Check baseline renal function and TSH prior to initiating statin therapy.
- Check ALT and AST levels prior to prescribing a statin and prior to any planned increase in statin dose.
- Consider the potential for drug-drug interactions when prescribing statins. Vitamin E intake may reduce the benefit of statins.
- Counsel patients to discontinue statin therapy during a short course of a macrolide antibiotic (erythromycin, azithromycin, and clarithromycin).
- Be alert for patient characteristics that may increase the risk for myopathy during statin therapy, such as advanced age, renal or liver impairment, diabetes with evidence of hepatic fatty changes, hypothyroidism, surgery, trauma, ischemia-reperfusion, debilitated status,and heavy exercise.
- Provide patient education regarding recognition and reporting of symptoms of myopathy during statin therapy.
- Suspect myopathy when a statin-treated patient complains of unexplained, generalized muscle pain, tenderness, or weakness. Joint pain, nocturnal leg cramps, or localized pain are not symptoms of myopathy.
- Assess for signs of dehydration or renal compromise in patients with myopathy.
- Check CK levels when a patient reports symptoms of myopathy.
  - If CK levels are less than 5 times the upper limit of normal, repeat measurement in 1 week.
  - If CK levels are elevated to 5 times the upper limit of normal or greater, discontinue statin therapy and monitor serum CK levels.
- Consider referral for patients requiring combination lipid-lowering therapy.

DON'T

- Prescribe high-dose statin for elderly patients and patients with renal insufficiency, or in combination with fibrates.
- Do not exceed 20 mg simvastatin daily with amlodipine.

LDL reduction, cost and usual doses of different statins.

Statin	LDL Reduction		Cost	Usual Starting Dose (Dosage Range)
	~ 35%	~ 45%		
Atrovastatin	10 mg	20 mg	$$$	10 mg (10 - 80 mg) od
Simvastatin	20 mg	40 mg	$	20 mg (5 - 40 mg) od
Lovastatin	40 mg	80 mg	$$	20 mg (10 - 80 mg) od
Pravastatin	40 mg	80 mg	$	20 mg (10 - 80 mg) od
Fluvastatin	80 mg	-	$$$$$	40 mg (20 - 80 mg) od
Rosuvastatin	-	5 mg	$$$$$	10 mg (5 - 40 mg) od

References

1. PS Jellinger et al. AACE Guidelines for the Management of Dyslipidemia and Prevention of Atherosclerosis. Endocrine Practice 2012;18(S1):1-78.
2. Z Reiner et al. ESC/EAS Guidelines for the management of dyslipidaemias. European Heart Journal 2011;32:1769–1818.
3. J Perk et al. European Guidelines on cardiovascular disease prevention in clinical practice. European Heart Journal 2012;33;1635–1701.
4. MA Williamson, LM Snyder. Wallach's Interpretation of Diagnostic Tests 2011. 9th Edition. Lippincott Williams & Wilkins; 2011.
5. ICSI Health Care Guideline: Lipid Management in Adults. Institute for clinical systems improvement. Eleventh Edition, Oct 2009.
6. Characteristics of the Various Statins. Pharmacist's Letter/Prescriber's Letter. May 2012.

Aspirin Therapy

- Aspirin (ASA) reduces the risk of cardiovascular events by about 25% over 5 years, in both sexes.
- The decision to use ASA should be based on a balance of the risks and benefits for each person, taking into account their absolute risk of an event.

ASA Indications:

- Very High CV Risk:[27]
  - **Commence low-dose ASA (75-150 mg).[A]**
- High CV Risk:[27]
  - **Commence low-dose ASA (75-150 mg) unless contraindicated. Low-dose ASA is as effective as higher daily doses and may be associated with fewer side effects.[C]**
- Low-Medium CV Risk:[27]
  - **The risk of a significant adverse effect (bleeding) outweighs the benefits of ASA for the prevention of CVD.**

ASA Contraindications:

- ASA allergy:
  - **Patients with documented ASA allergy may consider clopidogrel (75mg/day) as an alternative.**
- ASA intolerance.
- Uncontrolled blood Pressure.
- Active peptic ulceration.
- Any major bleeding risk.

Adverse Effects:

- Bleeding is the most serious side effect:
  - **Intracranial bleeding: absolute excess risk ≈ 2/1000 people treated/year.**
  - **Extracranial bleeding: absolute excess risk ≈ 1-2/1000 people treated/year. Most are not fatal.**
  - **Upper GI bleeding/perforation: regular ASA < 300 mg/day is associated with a two-fold increased risk.**
- Notes on Monitoring Adverse Effects:
  - **Monitor stool for occult blood or change in color.**
  - **Monitor hemoglobin ± hematocrit for drop due to bleeding or hemolysis (esp. in G6PD deficiency).**
  - **Monitor bilirubin for rise due to hemolysis (in G6PD deficiency).**

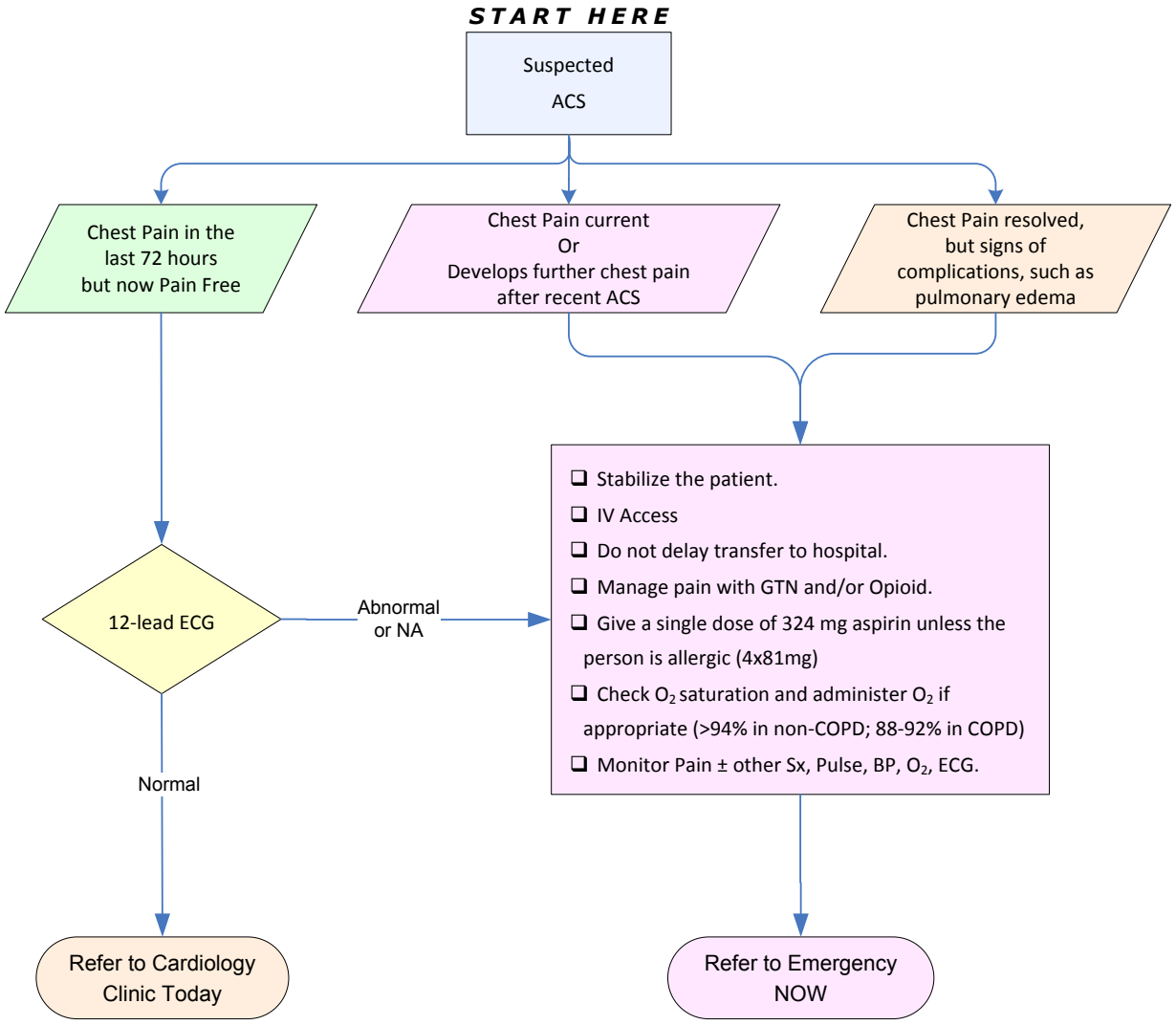
References:

1. New Zealand Guidelines Group. New Zealand Primary Care Handbook 2012. 3rd ed. Wellington 2012.
2. US Preventive Services Task Force. Aspirin for the Prevention of Cardiovascular Disease: USPSTF Services Task Force Recommendation Statement. Ann Intern Med. 2009;150:396-404.
3. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
4. Beutler E. Glucose-6-phosphate dehydrogenase deficiency: a historical perspective. Blood 2008;111(1):16-24.
5. H Brenner, U Haug. Low-Dose Aspirin Use and Performance of Immunochemical Fecal Occult Blood Tests. JAMA 2010;304(22):2513-2520.
6. Y Hirata, et al. Incidence of gastrointestinal bleeding in patients with cardiovascular disease: buffered aspirin versus enteric-coated aspirin. Scandinavian Journal of Gastroenterology 2011;46:803-809.

References:

1. New Zealand Guidelines Group. New Zealand Primary Care Handbook 2012. 3rd ed. Wellington 2012.
2. US Preventive Services Task Force. Aspirin for the Prevention of Cardiovascular Disease: USPSTF Services Task Force Recommendation Statement. Ann Intern Med. 2009;150:396-404.
3. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
4. Beutler E. Glucose-6-phosphate dehydrogenase deficiency: a historical perspective. Blood 2008;111(1):16-24.
5. H Brenner, U Haug. Low-Dose Aspirin Use and Performance of Immunochemical Fecal Occult Blood Tests. JAMA 2010;304(22):2513-2520.
6. Y Hirata, et al. Incidence of gastrointestinal bleeding in patients with cardiovascular disease: buffered aspirin versus enteric-coated aspirin. Scandinavian Journal of Gastroenterology 2011;46:803-809.

Acute Coronary Syndrome in Primary Care



Symptoms and Signs which may indicate an Acute Coronary Syndrome (ACS)

- Pain in the chest and/or other areas (for example, the arms, back or jaw) lasting longer than 15 minutes.
- Chest pain associated with nausea and vomiting, marked sweating, breathlessness, or particularly a combination of these.
- Chest pain associated with haemo dynamic instability.
- New onset chest pain, or abrupt deterioration in previously stable angina, with recurrent chest pain occurring frequently and with little or no exertion, and with episodes often lasting longer than 15 minutes.

Definition of Angina

- **Typical angina** : Pain or discomfort that is 1) substernal, 2) provoked by exercise and/or emotion, and 3) relieved by rest and/or nitroglycerin.
- **Atypical angina** : Pain or discomfort that has two of the three features listed for typical angina.
- **Non-anginal chest pain** : Pain or discomfort that has one or none of the three features listed for typical angina.

ECG changes indicative of new Ischaemia

- New ST-T changes, or
- New left bundle branch block (LBBB), or
- Development of pathological Q waves in the ECG

References

1. ICSI Health Care Guideline: Diagnosis and Treatment of Chest Pain and Acute Coronary Syndrome. Institute for clinical systems improvement. 8th Edition, Nov 2012.
2. Cooper A, et al. Chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin. National Clinical Guideline Centre for Acute and Chronic Conditions, London 2010.

Immunization & Opportunistic Preventive Care

Influenza vaccine:[C]

- Annual vaccination is recommended for all adults without contraindications in the following groups and their household contacts:
  - **Persons aged 50 years and older;**
  - **Women who will be pregnant during the influenza season;**
  - **Persons who have chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, cognitive, neurologic/neuromuscular, hematological or metabolic disorders (including diabetes mellitus); and**
  - **Persons who have immunosuppression.**
- Annual vaccination is recommended for all health-care personnel.

Pneumococcal vaccine:[C]

- Vaccinate all previously unvaccinated adults aged 65 years.
- Vaccinate all adults who smoke cigarettes, have chronic CVD (e.g., congestive heart failure, cardiomyopathy), chronic pulmonary disease (e.g., COPD, emphysema, adults with asthma), diabetes mellitus, chronic renal failure or sickle cell disease.
- Revaccinate after 5 years, any person above 65 years and at high risk of serious pneumococcal disease.

Oral & Dental Examination:

- Diabetic persons are more susceptible to oral infections such as periodontal disease, particularly if not controlled.
- The presence of active periodontitis can, in turn, impair glycemic control and increase the risk of developing systemic complications of diabetes, particularly cardiovascular disease and stroke.
- People with DM must have a routine visual inspection of their gums and teeth for signs of periodontal disease at diagnosis and during each diabetes-focused visit, by the PHC physician.
- A dental exam is recommended at diagnosis and then every 6 months if dentate or every 12 months if edentate.
- Refer a person who is suspected of having periodontal disease to a dentist to ensure early and prompt diagnosis and treatment.
- Signs of periodontal disease
  - **Red, sore, swollen, receding, or bleeding gums;**
  - **Loose or sensitive teeth; separation of teeth;**
  - **Halitosis (bad breath);**
  - **Accumulation of food debris or plaque around teeth.**

Mammogram:

- Evidence supports a modest association between type 2 diabetes and the risk of breast cancer, which appears to be more consistent among postmenopausal than among premenopausal women.
- Screening mammography is recommended for all women aged 50 to 74 years, every two years. Consequently, it is wise to have mammograms done for all of the eligible population, and diabetic ladies in particular.

References:

1. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care January 2013;36:S11-S66.
2. Prevention & Control of Seasonal Influenza with Vaccines - Recommendations of the Advisory Committee on Immunization Practices (ACIP) 2009. MMWR 2009 Jul 24: 1-52.
3. ACIP Provisional Recommendations for Use of Pneumococcal Vaccines. October 22, 2008. http://www.cdc.gov/vaccines/recs/provisional/downloads/pneumo-oct-2008-508.pdf
4. Fei Xue and Karin B Michels. Diabetes, metabolic syndrome, and breast cancer: a review of the current evidence Am J Clin Nutr 2007;86(suppl):823S–35S.
5. U.S. Preventive Services Task Force. Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement. Annals of Internal Medicine; 17 November 2009;151:716-726.

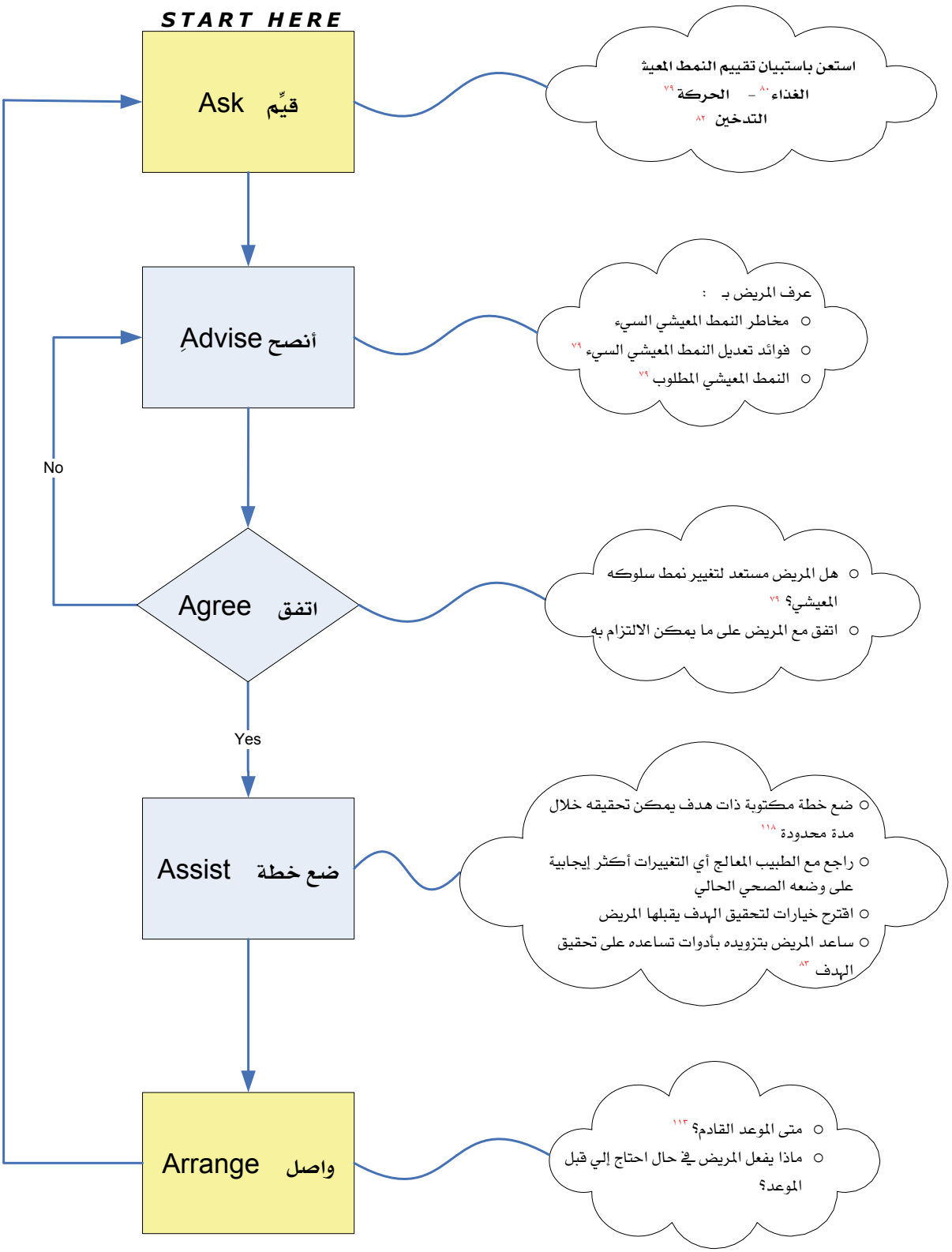
Chapter 6

Non-pharmacological Management

Lifestyle Management

تقييم وتصحيح النمط المعيشي

التغذية – الحركة – البدانة – التدخين



Lifestyle Change تصحيح نمط العيش (الحياة)

ماذا يعني تصحيح نمط العيش؟

تعليم المريض أن يفهم المرض، ويعرف كيف يتصرف معه، ويعرف كيف يتحكم فيه. ويهدف إلى العمل سوية مع المريض، وبشكل نشط، من أجل تصحيح سلوكه في عدة جوانب وهي:

١. التغذية:

تبني نظام داش DASH الغذائي:

- وجبة غذائه غنية بالخضار والفواكه.
- منتجات الألبان قليلة الدسم.
- تقليل الدهون المشبعة والدهون بشكل عام.
- إنقاص نسبة الملح في الطعام.
- تقليل وتوزيع استهلاك السعرات الحرارية (لمرضى السكر).

٢. النشاط البدني:

القيام بنشاط حركي لمدة ٢٠ إلى ٣٠ دقيقة في اليوم.

٣. إنقاص الوزن:

وذلك من خلال:

١. المحافظة على مؤشر الكتلة أقل من ٢٥.
٢. تقليل الوزن الحالي بمعدل ١٠ ٪ خلال ٦-١٢ شهر، من خلال تقليل السعرات الحرارية وزيادة الحركة، إضافة إلى الرعاية الذاتية.[٨٠]
٣. تحذير المريض من إتباع برامج غذائية خاصة بتخفيف الوزن ومخلّة بالنظام الغذائي.

٤. التدخين:

الامتناع عن التدخين.

٥. الكحول:

الامتناع عن الكحول.

فوائد تصحيح نمط العيش الجيد على منذرات أمراض القلب والشرايين:

١. تحسين مستوى الضغط الانبساطي والانقباضي.
٢. تحسين مستوى السكر والدهون في الدم.
٣. يقلل من خطر الإصابة بالسكتة القلبية والجلطة.

استبانة تقييم النمط الغذائي

Dietary Assessment Questionnaire

الاسم: ..... رقم الملف العائلي: ..... رقم الملف الفردي: .....

	إلى أي مدى تنطبق عليك العبارات التالية؟	أوافق بشدة	أوافق	لا أوافق	لا أوافق بشدة
١	أتناول وجباتي الغذائية في المطعم				
٢	أهتم كثيرًا بطعم الغذاء وليس محتوياته				
٣	عندما أشعر بالجوع لا أهتم لنوع الطعام الذي أتناوله				
٤	أفضل الوجبات السريعة				
٥	أتناول من الخضروات اقل من ٣ حصص يوميا				
٦	أتناول من الفواكه أقل من ٣ حصص يوميا				
٧	أتناول من اللحوم أكثر من ٢ حصة يوميا				
٨	لا أتناول الخبز الأسمر في وجباتي				
٩	أهمل الوجبات الرئيسية الثلاث				
١٠	في المناسبات الاجتماعية أتشجع على الأكل أكثر				
١١	عند شعوري بالتوتر أقبل أكثر على الطعام				
١٢	أفضل تناول الأطعمة المقلية في الوجبات				
١٣	أفضل إضافة الملح إلى الغذاء				
١٤	لا أرغب في تناول الأطعمة المشوية				
١٥	أتناول القهوة بعد كل وجبة				

مجموع النقاط

هل لديك رغبة في تصحيح نمط غذائك؟	١	٢	٣	٤
	لا	لست متأكداً	نوعاً ما	إلى حد كبير

النتيجة:

- ☑ ≤ ٤٥ نمط غذائي جيد، يشجع في الاستمرار عليه.
- ☑ ٣٦-٤٤ نمط غذائي مقبول، توجد فرصة لتصحيحه للأفضل.[١١٨]
- ☑ < ٣٥ ، نمط غذائي سيئ، يحتاج إلى تصحيح

كيفية استخدام الاستبانة:

١. يتم التقييم خلال شهر من تشخيص الحالة.
يلخص في استمارة المتابعة اللادوائية[٢-٦-٨] حقل "التقييم المبدئي"

٢. يحفظ في ملف خاص لدى ممرضة الرعاية المزمنة مرتب حسب رقم المريض.

٣. تتلف الاستمارة بعد مرور سنة من استخدامها.

٤. يتم جمع النقاط بالقيم التالية: أوافق بشدة = ١، أوافق = ٢، لا أوافق = ٣، لا أوافق بشدة = ٤

الممرضة/ الطبيب ..... بتاريخ ..... / ..... / .....

Exercise Assessment Questionnaire

استبانة تقييم النشاط الحركي

الاسم: ..... رقم الملف العائلي: ..... رقم الملف الفردي: .....

م	السؤال	١	٢	٣	٤
١	أشعر بصعوبة في التنفس عند صعود الدرج	أوافق بشدة	أوافق	لا أوافق	لا أبدًا
٢	التمارين الرياضية في حياة الإنسان	ليست مهمة	قد تكون مهمة	مهمة	مهمة جداً
٣	أمضي أكثر من ٣ ساعات في مشاهدة التلفزيون أو الكمبيوتر	أوافق بشدة	أوافق	لا أوافق	لا أبدًا
٤	أمارس الرياضة (المشي- الجري- السباحة- صعود الدرج- ركوب الدراجة ...)	لا أمارس أي نوع من أنواع الرياضة	في قليل من الأوقات	بعض الأوقات	معظم الأوقات
٥	أمضي من الوقت في ممارسة الرياضة المذكورة	أقل من ½ ساعة في الأسبوع	½ إلى < ٢ ساعة في الأسبوع	٢-٣ ساعة في الأسبوع	> ٣ ساعات في الأسبوع
٦	أحرص على مزاولة الرياضة بشكل منتظم بمعدل	> مرة واحدة في الأسبوع	مرة واحدة في الأسبوع	٢-٣ مرات في الأسبوع	> ٣ مرات في الأسبوع

مجموع النقاط

هل لديك رغبة في تغيير نشاطك الحركي؟	١	٢	٣	٤
	لا	لست متأكداً	نوعاً ما	إلى حد كبير

النتيجة:

١. ٢١ = نمط حركي جيد، يشجع في الاستمرار عليه.

٢. ١٧-٢١ = نمط حركي مقبول، توجد فرصة لتصحيحه إلى الأفضل.

٣. ≥ ١٦ = نمط حركي سيئ، يحتاج إلى تصحيح.

كيفية استخدام الاستبانة:

٤. يتم التقييم خلال شهر من تشخيص الحالة.
يلخص في استمارة المتابعة اللادوائية [١١٨] حقل «التقييم المبدئي».

٥. يحفظ في ملف خاص لدى ممرضة الرعاية المزمنة مرتب حسب رقم المريض.

٦. تتلف الاستمارة بعد مرور سنة من استخدامها.

٧. يتم جمع النقاط بالقيم التالية: أوافق بشدة = ١، أوافق = ٢، لا أوافق = ٣، لا أوافق بشدة = ٤.

الممرضة/ الطبيب ..... بتاريخ ..... / ..... / .....

Smoking Assessment Questionnaire

تقييم التدخين

الاسم: ..... رقم الملف العائلي: ..... رقم الملف الفردي: .....

م	السؤال	١	٢	٣	٤
١	أنا اعتقد أن التدخين	غير سيئ	ليس صحي وليس خطير	فيه خطورة	خطر جداً
٢	إذا أراد ابنك أو ابنتك التدخين فماذا يكون شعورك؟	لا مشكلة	اعلم بذلك ولكن لا أمنعهم	لا أشجعهم على الاستمرار في ذلك	أعمل على إيقافهم عن ذلك
٣	إذا كان هناك قانون يمنع التدخين في الدولة، فما هو موقفك؟	أعارض بشدة	أعارض	أوافق	أوافق بشدة
٤	هل تعتقد أن مخالطة المدخنين مضرة؟	غير مضرة أبداً	غير مضرة	مضرة	مضرة جداً
٥	كم عدد مرات مجالستك للمدخنين في الأسبوع؟	أكثر من ثلاث مرات	ثلاث مرات	مرتين أو أقل	ولا مرة
٦	كم عدد مرات التدخين (السيجارة) في اليوم	علبة كاملة أو أكثر	فوق ١٥ سيجارة	أقل من ١٠ سيجارات	غير مدخن
٧	كم عدد مرات التدخين (القدو) في اليوم	أكثر من ٣ مرات	٣ مرات	مرتين أو أقل	غير مدخن
٨	هل تدخن في أي وقت خلال اليوم؟	في معظم الأوقات	بعض الأوقات	أوقات قليلة	غير مدخن

مجموع النقاط

هل لديك رغبة في التوقف عن التدخين؟	لا	لست متأكداً	نوعاً ما	إلى حد كبير

النتيجة:

- ☑ ٢١-٢٨ جيدة. يستمر على ذلك.
- ☑ ١٧-٢٠ مقبول. وتوجد فرصة لتصحيحه إلى الأفضل.
- ☑ ≥ ١٦ سيئ. ويحتاج إلى تصحيح.

كيفية استخدام الاستبانة:

١. يتم التقييم خلال شهر من تشخيص الحالة.
يلخص في استمارة المتابعة اللادوائية [١١٨] حقل «التقييم المبدئي».

٢. يحفظ في ملف خاص لدى ممرضة الرعاية المزمنة مرتب حسب رقم المريض.

٣. تتلف الاستمارة بعد مرور سنة من استخدامها.

٤. يتم جمع النقاط بالقيم التالية: أوافق بشدة = ١، أوافق = ٢، لا أوافق = ٣، لا أوافق بشدة = ٤.

الممرضة/ الطبيب ..... بتاريخ ..... / ..... / .....

Self-Management

الرعاية الذاتية

الرعاية الذاتية تتضمن تعليم المريض فهم المرض المزمن وكيفية التصرف والتحكم فيه.

الأهداف:

١. تدريب المريض على استخدام مهاراته الذاتية (مثل: قياس سكر الدم في البيت وفحص القدم) وتطويرها للعناية بنفسه.
٢. مساعدة المريض على التأقلم مع الصعوبات والتحديات التي تواجهه.
٣. تقليل المضاعفات والأعراض المصاحبة.

كيف يتم تعليم المريض على الرعاية الذاتية:

١. بناء العلاقة بين مقدم الخدمة والمريض.
٢. تقييم رغبات الشخص (مدى قابلية الشخص للتغيير من عدمه).
٣. شرح العادات الصحية المرغوبة، والغير مرغوب فيها، وأثرها على الصحة العامة.
٤. وضع خطة للتغير وتنفيذها (ولا تغفل مشاركة المريض في الخطة الموضوعة ومناقشة توجهاته).
٥. متابعة المريض أثناء تنفيذ الخطة: إن التذكير والتشجيع من قبل أعضاء الفريق يساهمان في تحقيق أهداف العلاج والتحكم في المرض.
٦. توثيق الخطة وتطوراتها: يساهم التوثيق الجيد في تسهيل المتابعة وتذكير المريض بها. ويمكن استخدام بطاقة الرعاية الذاتية [٨١] لهذا الغرض.

أدوات مساعدة في الرعاية الذاتية:

- ☑ نظام داش لتصحيح النمط الغذائي.[٩٤]
- ☑ أنواع الرياضة.[٩٣]
- ☑ مذكرة غذائية (ماذا يوجد في طبقك؟) [٩٥]
- ☑ الهرم الغذائي.[١٠٢]
- ☑ صحن الغذاء.[١٠٢]
- ☑ معلومات خاصة بالملح.[٩٩]
- ☑ أعراض قصور القلب والدماغ [١٠٣]
- ☑ العناية بالقدمين [١٠٤]
- ☑ كيف تختار الحذاء والجوارب المناسبة؟ [١٠٥]

Self-Management Card

بطاقة الرعاية الذاتية

الغـرض:

توثيق خطة العلاج وتطويره,ومشاركة المريض في رفع الرعاية الصحية المقدمة.

الفـائدة:

١. رفع وعي المريض اتجاه احتياجاته في متابعة مشكلته الصحية.

٢. تساهم في تذكير المريض بأهداف العلاج، وتسهيل متابعة ذلك.

المعنيون بالبطاقة:

١. ممرضة الرعاية المزمنة.

٢. المريض: يأخذها معه للتذكر (خاصة أولئك الذين لديهم صعوبات متعددة، سواءً في حضور المواعيد أو تصحيح نمط عيشهم، أو الالتزام بالدواء، أو الوصول إلى مستويات تحكم مقبولة.

كيفية التسجيل:

١. يعبأ في كل زيارة تم فيها مراجعة وضع المريض، ورعايته لمشكلته الصحية.

٢. الوضع الحالي:

أ. يُدوّن مستوى الرعاية الذاتية التي يساهم بها المريض في علاج مشكلته الصحية، حيث الرقم ١ يشير إلى أداء ضعيف في الالتزام بالمؤشر المذكور، بينما يشير الرقم ٥ إلى التزام دائم.

ب. توضع دائرة حول الرقم الدّالْ على الوضع الحالي، لكل مؤشر سلوكي.

ج. في الزيارة المقبلة: توضع دائرة أخرى حول الرقم الدّالْ على الوضع آنئذ، فإذا كان نفس الوضع السابق، توضع الدائرة حول الدائرة السابقة.

٣. الهدف المتفق على الوصول إليه في الزيارة المقبلة، وتكتب في المربع الذي يعكس وضعه الحالي.

٤. جدول بالأدوية المستخدمة حالياُ وجرعاتها والغرض منها, وكذلك آثارها الجانبية المحتملة.

٥. جدول بالمؤشرات التي ينبغي قياسها دورياُ, والهدف الأمثل المطلوب.

٦. جدول المواعيد ومدى التزام المريض بها.

٧. تدوّن جميع البيانات ذات العلاقة في نماذج العيادة CMR-3 [١٣١] و CMR-5 [١٣٨] وسجل المواعيد.

انتظم في حضور مواعيد العيادة وعمل الفحوصات الدورية، والالتزام بتوصيات طبيبك

الدواء	الإفطار	الغداء	العشاء	قبل النوم	الغرض	ملاحظات وآثار جانبية
البرتقالي تنورمين	نصف حبة				تخفيض ضغط الدم	تعب سريع
المدور الصغير (ازدركس)	١ حبة				تخفيض ضغط الدم	إدرار بول
المدور الكبير (متفورمين)		١ حبة	١ حبة		منظم سكر الدم	غازات في البطن

المؤشرات يلزم مراجعة هذه المؤشرات دوريا، إضافة إلى فحص قاع العين والقدم ووظائف الكلى وتخطيط القلب كل عام

اليوم	الضغط	الوزن	مؤشر البدانة	السكر	خضاب السكر	دهون خفيفة الكثافة
١٢ / ١ / ١٤٢٩	٧٦/١٢٦	٧٦	٢٩	١٠٨	٦.٨٪	١١٧
/ /	/					
/ /	/					
/ /	/					
/ /	/					
المطلوب (أقل من:)	٨٥ /١٣٠		٢٥	١١٠	٧٪	١٣٠

المواعيد

اليوم	حضر	غاب
١٤٢٩/١/١٩	☑	☐
١٤٢٩/٢/٢٥	☐	☐
/ /	☐	☐
/ /	☐	☐
/ /	☐	☐
/ /	☐	☐

Self-Management Card:

Important Steps to Lower Cardiovascular Risk

CMR10

بطاقة الرعاية الذاتية

خطوات مهمة لتقليل الإصابة بأمراض القلب والشرايين

تعرف على وضعك الحالي، وما يمكنك عمله:

الاسم ..... رقم الملف .....

	1 غير ملتزم	2 قليل الالتزام	3 وسط	4 ملتزم غالبا	5 ملتزم جدا
الغذاء					
الرياضة	1	2	3	4	5
التدخين	1	2	3	4	5
الإنفعال	1	2	3	4	5
الدواء	1	2	3	4	5
القياس	1	2	3	4	5

انتظم في حضور مواعيد العيادة وعمل الفحوصات الدورية، والالتزام بتوصيات طبيبك

الدواء	الإفطار	الغداء	العشاء	قبل النوم	الغرض	ملاحظات وآثار جانبية

المؤشرات يلزم مراجعة هذه المؤشرات دوريا، إضافة إلى فحص قاع العين والقدم ووظائف الكلى وتخطيط القلب كل عام

اليوم	الضغط	الوزن	الكتلة	السكر	خضاب السكر	دهون قليل الكثافة
/ /	/					
/ /	/					
/ /	/					
/ /	/					
/ /	/					
المطلوب (أقل من:)	٨٥ /١٣٠		٢٥	١١٠	٧٪	١٣٠

المواعيد

اليوم	حضر	غاب
/ /	☐	☐
/ /	☐	☐
/ /	☐	☐
/ /	☐	☐
/ /	☐	☐
/ /	☐	☐

Chapter 7

Extra Tools

How to introduce CMR program? تعريف البرنامج للمراجعين

برنامج خاص للاكتشاف المبكر لمنذرات (مسببات) أمراض القلب والشرايين كارتفاع ضغط الدم، والدهون، والسكر، وزيادة الوزن.
هذا البرنامج يُقيّم الحالة الصحية للقلب بشكل خاص وللجسم بشكل عام. وهذه نشرة [٨٩] توضح بشكل مفصل البرنامج الذي تحدثت لك عنه,اطلع على النشرة، وسترى أنها تحتوي على معلومات مفيدة لك.
لو سمحت، اترك رقم هاتفك عندي وسوف تقوم ممرضة الرعاية المزمنة بالاتصال بك لتحديد موعد مناسب لك لفتح بطاقة تقييم خاصة بك، إذا رغبت بذلك.

How to introduce CMR program on phone? تعريف البرنامج للمراجعين من بعد

السلام عليكم ورحمة الله وبركاته
كيف الحال؟ أرجو أن تكون بألف خير ...
معكم آسية محمد من مركز صحي المحلة.
أخي أحمد تذكر أنك عملت تحاليل بالمركز قبل يومين وكان من ضمن التحاليل التي قمت بعملها تحليل للدهون, لقد كانت نسبة الدهون لديك مرتفعة قليلا، وهذا الارتفاع في الدهون قد يؤدي -على المدى البعيد- إلى الإصابة بمشاكل بالقلب.
ولكن هذا الأمر يمكن تداركه بعمل تقييم شامل لك، ولدينا برنامج خاص للأشخاص الذين لديهم ارتفاع بالدهون. إذا كنت ترغب في عمل هذا التقييم فسيكون لك موعد مع ممرضة الرعاية المزمنة يوم الأحد القادم ..../...../..... الساعة .....

How to deliver a quick life style advice?

- **After BP measurement:**

ضغط دمك ٧٠/١١٠ وهو ضغط طبيعي حاول أن تحافظ عليه في هذا المستوى (قلل الملح – أكثر من الحركة – أكثر من الخضروات).
ضغط دمك ١٣٠ /٨٥ وهو طبيعي ولكنه مرتفع قليلا، حاول تقليل الملح في أكلك (ابتعد عن الأطعمة المعلبة، مثلا).

- **After weight measurement:**

رسائل توعية قصيرة متفرقة

وزنك ٥٨ كيلو غرام وطولك ١٥٧سم وهما متناسبان مع بعضهما البعض وكذلك درجة السمنة لديك طبيعية فهي ٢٣,٥ حيث أن الدرجة الطبيعية أقل من ٢٥.
وزنك ٦٨ كيلو غرام وطولك ١٦٠ سم ودرجة السمنة لديك ٢٦,٥ . لديك زيادة في درجة السمنة حيث أن الدرجة الطبيعية أقل من ٢٥ . تحتاج إلى إنقاص وزنك من ٣-٤ كيلو حتى تصل إلى المعدل الطبيعي (قلل السعرات الحرارية من الدهون والسكريات - أكثر من الحركة – أكثر من الخضروات).

- **After high blood sugar measurement:**

سكر دمك ٧٨ وهو ضمن المستوى الطبيعي حاول أن تحافظ عليه في هذا المستوى (أكثر من الحركة – أكثر من الخضروات- قلل من السكريات)
سكر دمك ١٠٢ وهو أعلى من الطبيعي ودون مستوى مرض السكر، ويسمى باختلال السكر. ربما تحتاج إلى إنقاص وزنك (إن كان زائدا) حتى تصل به إلى المعدل الطبيعي، كما تحتاج أن تقلل السعرات الحرارية من الدهون والسكريات - وتُكثر من الحركة – وتُكثر من الخضروات).

Other Quick Life Style Advices:

١. الخضروات المعلبة بها كمية ملح كبيرة جداً. استخدم الخضروات الطازجة.
٢. وزنك تمام حافظ عليه.
٣. حاول تقليل كمية الملح في طعامك.
٤. قلل من تناول الأطعمة المقلية والدسمة.
٥. حاول التقليل من الحلويات.
٦. وزنك زايد حاول إنقاصه, حتى تحمي نفسك من الأمراض.
٧. مارس قليلا من المشي يوميا.
٨. ضغط دمك مرتفع قليلا، ولكن بتقليل الملح والأطعمة الدسمة في غذائك مع زيادة الحركة تستطيع المحافظة عليه في المستوى الطبيعي.

Standards for BP Measurement القياس المثالي لضغط الدم

Task	Rationale
Selecting Equipment • Use mercury manometer or a recently calibrated aneroid manometer with the center of the mercury column or aneroid dial at eye level. • Select appropriate cuff size. The width of the bladder should be 40% of the arm circumference and the length of the bladder should encircle at least 80% of the arm. • Use the bell of the stethoscope. Ideally the bell should be placed above the medial epicondyle and medial to the biceps tendon (brachial artery).	• If the meniscus of the Hg or aneroid gauge is not level with your vision, a reading may be read higher or lower. • A too small cuff will give falsely high readings. A too large cuff may give a false low reading but with less clinical significance. • The stethoscope bell is designed to listen to low-pitched sounds. • The early and late BP sounds are low-pitched.
Preparing The Patient • The patient should avoid eating, smoking, caffeine, exercise, and drinking alcohol ½-1 hour before BP measurement. • Have the patient sit quietly for a period at rest with both feet flat on the floor and back supported prior to measurement. • No clothing should be between the BP cuff and the arm. • The patient's arm should be supported or allowed to rest on a solid surface so the inner aspect of the bend of the elbow is level with the heart.	• Readings will vary after exercise, eating, smoking, drinking alcohol or having caffeine (e.g. differences of 5-15 mm Hg with cup of coffee or cola within 15 minutes). • Any change in posture or activity causes BP to change. • Extra noise from the bell of the stethoscope rubbing against clothing could cause a false BP reading. • The difference between lower and higher positions of the arm can cause differences in measurements of as much as 10 mm Hg systolic and diastolic. If the patient's arm is tense, measurement can vary by up to 15 mm Hg (systolic more than diastolic.)
Taking An Initial Measurement • Secure the BP cuff evenly and snugly around the arm, 2-4 cm above the antecubital space (at the elbow). Center the bladder (inflatable bag) over the brachial artery. • While inflating the bladder, palpate radial pulse to estimate systolic BP. • Inflate the cuff quickly to 30 mm Hg above the palpatory BP. • Deflate bladder at 2-3 mm Hg per second. • Record the first of at least two consecutive sounds as the systolic. • Diastolic is identified by the last sound heard. • Helpful hint: If the tones are difficult to hear, elevate arm while clenching and relaxing the fist, for 15 seconds to drain the veins. Then lower arm and repeat auscultation.	• A loose BP cuff results in a falsely higher level of systolic and diastolic BP. • Failure to center the cuff can result in a falsely high reading. • An auscultatory gap (absence of sound for 20-40 mm Hg) occurs in 5% of hypertensives. Palpatory BP will help to avoid incorrectly recording the systolic below the gap. • Inflating the cuff too high can cause pain and result in a falsely high reading. • If the pressure is released too quickly, you could record the systolic BP falsely low as the first systolic tap is missed and the diastolic falsely high. If you deflate too slowly, you could record the diastolic falsely high. • The last sound heard is easier than muffling for observers to accurately record. In some patients, for example, children or pregnant women, sounds are heard to near 0. In these cases, record both muffling and 0, e.g. 150/80/0. The muffling value is then considered the diastolic pressure.
Confirming Initial Elevation • If BP is elevated and the patient had initially waited quietly for five minutes, repeat BP in 1-2 minutes. • Record both measurements. • If BP is elevated but the patient had not initially waited quietly for five minutes, now allow for a five-minute rest. Re-measure BP and record it as the first reading. • If this BP is still elevated, repeat the measurement in 1-2 minutes, record it as the second measurement.	• Because BP normally varies up to 10 mm Hg it is necessary to take two readings to obtain the most accurate present BP. The 2 readings must be < 10 mmHg variant, otherwise repeat till you obtain 2 successive readings < 10 mmHg variant. • A time interval of 1-2 minutes between cuff inflations is necessary to reduce forearm engorgement.

Adapted from ICSI 2005 Park Nicollet Health Services.

Home BP Measurement (HBPM)

The available evidence supports that the prognostic value of HBPM is equal to or higher than that of the clinic, which remains the point of reference for prognostic stratification and clinical decision making in hypertension.

Self-monitoring is usually performed by the patient with a digital (oscillometric) manometer. Home readings of 135/85 mm Hg correspond to clinic readings of 140/90 mm Hg. Multiple readings should be taken over a prolonged period of time.

Wrist sphygmomanometers are widely used by patients, but they are less reliable because minimal position changes can result in variable readings.

Advantages of HBPM

- Multiple measurements during days and nights over several days.
- No alarm reaction to BP measurement.
- Good reproducibility.
- Good prognostic value.
- Relatively low cost.
- Patient-friendly.
- Involvement of patient in management.
- Availabilty of digital storage, printouts, PC downloads, and tele-transmission of BP values.
- Improvement of patients' compliance
- Improvement of BP control rates.

How often should measurments be taken?

- Initial use: 12 readings in one week (AM + PM).
- On change of treatment: 12 readings in one week (AM + PM).
- On follow-up: 2 readings in one day per week (AM + PM).

Limitations

- Need patient training.
- Possible use of inaccurate devices.
- Measurement errors.
- Limited reliability of BP values.
- Induction of anxiety.
- Treatment changes made by patients.
- No doctor guidance.
- Definitions of ranges still debated.
- Lack of recordings during sleep.

Criteria for valid HBPM

- Certified, validated manometer using established protocols. This may be traced from http://www.dableducational.org.
- Auscultatory devices are not recommended.
- Arm devices are the recommended choice.
- Finger devices are not recommended.
- Wrist devices may be unreliable.
- Correct cuffs should be used.

Clinical Indications

- Suspected white-coat HTN (WCH).
- Suspected nocturnal HTN.
- Resistant hypertension.
- Elderly patient.
- Guides anti-HTN drug treatment.
- Hypertension of pregnancy.
- Evaluation of hypotension.
- Autonomic failure.

Ambulatory BP Monitoring (ABPM)

BP measurement and recording can be done by an automated device with a portable recorder over a period of 24 hours or more.

Thresholds for ambulatory hypertension are 135/85 mm Hg for awake average, 120/70 mm Hg for asleep average and 130/80 mm Hg for 24-hour average blood pressure.

Indications of ABPM

- Suspected white-coat hypertension.
- Suspected nocturnal hypertension.
- Suspected masked hypertension.
- To establish dipper status.
- Resistant hypertension.
- Hypertension of pregnancy.

References:

1. The JNC 7 report. JAMA 2003;289:2560-72. www.nhlbi.nih.gov/guidelines/hypertension.
2. Institute for Clinical Systems Improvement. Health Care Guideline: Hypertension Diagnosis and Treatment ; Thirteenth Edition, November 2010. www.icsi.org
3. The Saudi Hypertension Management Guidelines. Saudi Hypertension Management Society, Third Edition, Riyadh 2011.
4. 2010 CHEP Recommendations for the Management of Hypertension.
5. The European Society of Hypertension Working Group on Blood Pressure Monitoring. Practice guidelines of the European Society of Hypertension for clinic, ambulatory and self blood pressure measurement. Journal of Hypertension 2011, 29:189–193.

Home Blood Pressure & Sugar Log Diary

- Use these diaries (self-managemnt tools) to monitor home blood pressure and sugar, for 3 weeks.

Note: You may download a soft copy, or order hard copies of this brochure from www.ketoshealth.

How to Prescribe Exercise?

كيف تصف الحركة؟

الخطوات الواجب إتباعها في النشاط الحركي:

١. استخدام الملابس القطنية الخفيفة عند ممارسة التمارين الرياضية لكي لا ترتفع درجة حرارة الجسم.
٢. عمل تمارين إحماء لتنشيط الدورة الدموية مثل القفز أو الجري في مكان ثابت.
٣. عمل تمارين الاستطالة (مثل مط أوتار العقب) قبل ممارسة الرياضة بهدف تليين العضلات، وإزالة التقلص والتصلب، وتفاديهما. وتمارس لمدة ٣٠ إلى ٦٠ ثانية ثم الاسترخاء بهدوء (تنفس بهدوء وعمق أثناء ممارسة تمارين الاستطالة).
٤. عمل تمارين استرخاء (تبريد) مثل أخذ نفس عميق وحبسه ثم محاولة إخراجه وتكرار ذلك.
٥. البدء بالرياضة الخفيفة الغير مجهدة، والتدرج منها إلى أنشطة بدنية أكثر جهداً.
٦. البدء بالرياضة بمعدل ٣ إلى ٥ دقائق ومن ثم ١٠ إلى ١٥ دقيقة متواصلة مع عدم زيادة الشدة.
٧. الوصول إلى ٣٠ دقيقة على الأقل من الرياضة بجهد متوسط (شدة متوسطة)، أو الوصول إلى ٨٠٪ من الحدّ الأقصى المسموح لنبضات القلب بالوصول إليه، وذلك باستخدام المعادلة التالية:

الحدّ الأقصى لنبضات القلب = ٢٢٠ - العمر

مثال: شخص عمره ٤٠ سنة، يحتاج للوصول إلى ٨٠٪ من الحد الأقصى لنبضات قلبه (يساوي ٢٢٠-٤٠=١٨٠) أي ١٤٤ نبضة في الدقيقة.

عند تقديم الاستشارة في الرياضة يؤخذ في الاعتبار حالات القلب التالية، والتي تحتاج إلى استشارة متخصصة:

- فشل في وظائف البطين الأيسر من القلب.
- ضيق في الصمام.
- عدم انتظام في ضربات البطين .
- مريض شخص حديثا باعتلال في عضلة القلب لفترة أقل من ٦ أسابيع.
- ضيق في الشريان التاجي.

لذا ننصح ذوي الحالات السابقة بإتباع الآتي:

- الإكثار من التمارين الهوائية (الاسترخاء).
- التدرج في مستوى الجهد الرياضي خلال ممارسة النشاط البدني.
- الامتناع عن رياضة حمل الإثقال.
- البدء بتقليل النشاط إذا شعر الفرد بالتعب أو الاجتهاد.
- التوقف عن التمارين الرياضية إذا شعر الفرد بألم في الصدر أو غثيان.
- استشارة الطبيب في حالة ظهور أعراض مثل ضيق التنفس، دوخة، أو ذبحة جهدية تزول بالراحة.

Levels of Exercise

مستويات ممارسة الرياضة البدنية

CMR20

مستويات ممارسة الرياضة البدنية

المستوى	أمثلة على أنواع الرياضة
الخفيفة	• المشي البطيء (٣- ٤) كم/ساعة • ركوب دراجة هوائية ثابتة (٥٠ واط) • ركوب دراجة هوائية للتسلية (١٦ كم/ساعة) • المشي المتوسط (٥ كم/ساعة) • أعمال منزلية- مثل (مسح الأرضيات وتكنيس المنزل) • العناية بالحديقة (تعديل، ترتيب الحديقة، وريّ الحديقة) • الرياضة المائية • حمل الأثقال الخفيفة
المتوسطة	• ركوب دراجة هوائية ثابتة درجة قوتها (١٠٠ واط) • ركوب دراجة هوائية للتسلية جهد قليل (١٦- ٢٠ كم/ساعة) • رياضة الجري والمشي مع بعض. • المشي على مستوى مائل مرتفع. • القيام بالأعمال الزراعية (مثل سقي الزراعة، جز الحشيش، لعب التنس الأرضي)
الشديدة	• المشي السريع • ركوب الدراجة الهوائية ثابتة درجة قوتها (١٥٠ واط) • صعود الدرج • الجري غير السريع (هرولة) • الجري (٩,٥ كم/الساعة) • التمارين السويدية مثل الإحماء (المط) • لعب التنس (الطاولة)

ملاحظة: لمرضى القلب: يلزم أخذ الحيطة والتدرج في الرياضة تحت إشراف طبي.

DASH Dietary Recipe

نظام داش للوجبات الغذائية

- Uses: Educating patient about proper choice of healthy diet for CMR.

CMR11

نظام داش للوجبات الغذائية

الخطة الغذائية التالية معدة بموجب نظام داش للتحكم في ارتفاع ضغط الدم

عدد الحصص اليومية يختلف باختلاف الاستهلاك اليومي للسعرات الحرارية (٢٠٠٠ أو ١٥٠٠ أو ١٢٠٠ سعرة حرارية في اليوم)

المجموعة الغذائية	فائدتها	أمثلة عليها	عدد الحصص الغذائية في اليوم الواحد	مقدار الحصة الغذائية (أو واحدة مما يلي)
الخبز والحبوب	مصدر رئيسي للطاقة والألياف	خبز بر، خبز أبيض، معكرون، الكعك، شوفان، [illegible] فشار غير مملح	٢٠٠٠ = ٧- ٨ حصص ١٥٠٠ = ٥- ٦ حصص ١٢٠٠ = ٣- ٤ حصص	شريحة واحدة من الخبز أو نصف كوب رقائق القمح المجفف أو نصف كوب أرز مطبوخ أو معكرونة
الخضار (الأخضر- الأحمر- البرتقالي)	مصدر غني بالبوتاسيوم والمغنيسيوم والألياف	بطاطس، طماطم، جزر، بازلاء خضراء، ملفوف، بروكلي، سبانخ، فاصوليا خضراء، بطاطا حلوة	٢٠٠٠ = ٤ — ٥ حصص ١٥٠٠ = ٣- ٤ حصص ١٢٠٠ = ٣- ٤ حصص	نصف كوب خضار غير مطبوخة أو نصف كوب خضار مطبوخة أو ثلاث أرباع كوب عصير خضار
الفواكه (بألوانها الأخضر والأحمر والبرتقالي)	مصدر مهم للبوتاسيوم والمغنيسيوم والألياف	مشمش، موز، تمر، برتقال، عنب، عصير برتقال، جريب فروت، مانجو، بطيخ، خوخ، أناناس، زبيب، فراولة	٢٠٠٠ = ٤- ٥ حصص ١٥٠٠ = ٣- ٤ حصص ١٢٠٠ = ٢- ٣ حصص	¾ كوب عصير فواكه، أو فاكهة متوسطة الحجم، أو ¼ كوب فواكه جافة، أو ½ كوب فواكه طازجة أو معلبة أو مجمدة
الحليب ومشتقاته	المصدر الرئيسي للكالسيوم والبروتين	حليب قليل الدسم أو لبن قليل الدسم أو روب مجمد قليل أو خالي من الدسم أو جبن قليل أو خالي الدسم أو حليب خالي الدسم	٢٠٠٠ = ٢- ٣ حصص ١٥٠٠ = ٢- ٣ حصص ١٢٠٠ = ٢ حصة	كوب حليب أو كوب روب أو حبة ونصف من الجبن الثلث
اللحوم والأسماك	مصدر غني بالبروتين والمغنيسيوم	اختيار لحم منزوع منه الشحم مطبوخ أو مشوي أو مسلوق أو دجاج منزوع الجلد	٢٠٠٠ = ٦ حصص ١٥٠٠ = ٣ حصص ١٢٠٠ = ٢ حصة	فخذ دجاج أو أسماك صغير أو سمكة واحدة متوسطة أو قطع لحم متوسطة
البقول والمكسرات	مصدر غني بالطاقة والمغنيسيوم والبوتاسيوم والبروتين والألياف	لوز أو مكسرات مشكلة أو فول سوداني أو جوز أو بذور عباد الشمس أو عدس أو ماش	٢٠٠٠ = ٤- ٥ حصص / أسبوع ١٥٠٠ = ٣- ٤ حصص / أسبوع ١٢٠٠ = ٢- ٣ حصص / أسبوع	ثلث كوب أو أربع ملاعق طعام مكسرات أو ٢ ملعقة طعام بذور أو نصف كوب مطبوخ فاصوليا جافة أو بازلاء
الدهون والزيوت*	تشكل الدهون ٢٧% من السعرات الحرارية في نظام DASH	زبدة نباتية أو مايونيز قليل الدسم	٢٠٠٠ = ٢- ٣ حصص ١٥٠٠ = ٢- ٣ حصص ١٢٠٠ = ١- ٢ حصص	ملعقة صغيرة زبدة أو ملعقة كبيرة مايونيز قليل الدسم أو ٢ ملعقة كبيرة صلصة السلاطة قليلة الدسم أو ملعقة صغيرة زيت نباتي
السكريات	السكريات يجب أن تكون قليلة الدسم	سكر أو جلي أو مربى أو جلاتين نباتي أو عصير فواكه [illegible] أو حلويات أو شراب سكري	٢٠٠٠ = ٥ حصص / أسبوع ١٥٠٠ = ٤ حصص / أسبوع ١٢٠٠ = ٣ حصص / أسبوع	ملعقة طعام سكر أو ملعقة شاي جيلي أو مربى أو ٢ ملعقة جيلي أو كوب ليمون محلى

Diet Diary

مذكرة غذائية

- Uses: To gather information about diet behavior in a full week. To be filled by the patient, and returned in the next appointment..

مذكرة غذائية

CMR12

يستخدم هذا النموذج لـ :

١. لمتابعة عادات الأكل قبل البدء بنظام داش (DASH).

٢. لقياس أثر هذا النظام على الشخص وعلى وجباته بعد استخدامه بأسابيع قليلة.

طريقة استخدامه:

ينسخ هذا النموذج لتسجيل أكثر من يوم واحد ، ويتم جمع كل من المجموعات الغذائية خلال كل يوم ومقارنتها بما تم تناوله بموجب نظام داش (DASH).

الوجبة الغذائية	حجم الوجبة	عدد الوجبات (الحصص فى نظام داش)								
		حبوب	خضروات	فواكه	مشتقات الحليب	لحم دجاج سمك	المكسرات والبقوليات	دهون زيوت	حلويات
الفطور									
الغداء									
العشاء									
وجبة خفيفة									
مجموع الأيام									
قارن وبيتك بالخطة الغذائية لنظام DASH		٧- ٨ يومياً	٤- ٥ يومياً	٢- ٣ يومياً	٢ او اقل في الأسبوع	٤- ٥ في الأسبوع	٢- ٣ يوميا	٥ حصص في الاسبوع	

اقرأ محتويات الطعام على الأغذية لمعرفة نسبة تقليل كمية الصوديوم الموجودة في الطعام وتجد معلومات الصوديوم مسجلة على نشرة محتويات الأغذية.

Note: You may download a soft copy, or order hard copies of this brochure from www.ketoshealth.

Chapter 8

Patients' Educational Tools & Pamphlets

Cardiovascular Diseases Prevention Program برنامج الوقاية من أمراض القلب والشرايين

- Uses: Advertisement and notification of the cardiovascular preventive services for the public and the staff.

برنامج الوقاية من أمراض القلب والشرايين

الهدف من البرنامج:

١. الاكتشاف المبكر لأمراض القلب والشرايين.
٢. الاكتشاف المبكر لمنذرات الإصابة بهذه الأمراض، كارتفاع ضغط الدم والسكر والدهون والوزن والتدخين.
٣. معالجة هذه المنذرات والتحكم فيها.

مميزات البرنامج وخدماته:

١. التقييم الشامل لكل حالة.
٢. تقييم لمستوى الخطر المحتمل للإصابة بأمراض القلب والشرايين.
٣. خطة علاج تشمل تصحيح نمط العيش، والعلاج الدوائي.
٤. متابعة منتظمة لمراقبة تطور الحالة.
٥. أعادة التقييم الشامل سنويا ويشمل فحوصات سريريه ومختبريه لوظائف القلب والكلى والكبد والأعصاب والدهون وأملاح الدم ومستوى التحكم في السكر.
٦. نظام مواعيد ومتابعة.
٧. يخضع البرنامج لمتابعة مستمرة لجودة الأداء، من قبل فريق مختص.

Note: You may download a soft copy, or order hard copies of this brochure from www.ketoshealth.

Read the Dietary Card while shopping

إقرأ ملصق المحتوى الغذائي عند تسوقك

- Uses: Education of patient about the proper choice of low-salt diet while shopping.

إقرأ ملصق المحتوى الغذائي عند تسوقك

CMR13

قلّل من الملح لأن:

الذين يتناولون ملح طعام كثير معرضون بشكل أكبر للإصابة بارتفاع ضغط الدم وأمراض القلب والشرايين.

كيف تقلّل من الملح في طعامك؟

انظر إلى ملصق المحتوى الغذائي Nutrition Facts وتعرّف على كمية الصوديوم واختر الأطعمة التي فيها أقل من 25 من الاحتياج اليومي.

كم يحتاج الإنسان من الملح يوميًا؟

يجب أن لا يتناول أكثر من ٢٣٠٠ملغم لكل يوم (ملعقة تقريبًا من الملاعق العادية المستخدمة).

من هم الناس الأكثر تأثرًا بملح الطعام؟

١. المصابين بارتفاع ضغط الدم.
٢. ذوو البشرة الداكنة جدًا.
٣. من تجاوز عمره الستين عامًا.

كل هؤلاء لابد أن يتناولون ملحًا أقل ولا يزيد عن ١٥٠٠ملغم في اليوم.

أي الوجبات تحتوي على ملح طعام أكثر؟

- وجبات المطاعم وخاصة الوجبات السريعة.
- الأطعمة المثلجة، والمعالجة، والمعلبة.

إقرأ ملصق (المحتوى الغذائي) قبل أن تشتري؟

- في العادة، تحتوي المعلبات على ملصق المحتوى الغذائي ويشمل ذلك كمية الصوديوم.
- إحرص على أن تتعرف على النسبة المئوية من الاحتياج اليومي للصوديوم.

حاول أن تعرف ماذا تعني هذه المعلومة (إذا وجدتها على علب الأغذية):

- خالي من الصوديوم – أقل من ٥ ملغم من الصوديوم.
- ملح قليل جدا – أقل من ٣٥ ملغم من الصوديوم.
- ملح قليل – أقل من ١٤٠ملغم من الصوديوم.

نقاط مهمة عن الأكل من خارج المنزل:

توجد لدى مطاعم الوجبات السريعة الكبيرة نشرة غذائية عن المحتوى الغذائي للوجبات التي يقدمونها.

نقاط مهمة عن الأكل في داخل المنزل:

- لا تضع ملح الطعام على الطاولة (على الأقل تذوق الأكل أولاً).
- استخدم الملح باقتصاد (مثلا نصف ملعقة عند التحضير).
- كثير من الأطعمة يمكن تجهيزها بدون إضافة ملح.
- استخدم الليمون والأعشاب والتوابل بدلاً عن الملح.
- امتنع عن الملح بالتدريج لفترة أسابيع أو أشهر وبعدها سوف تلاحظ الفرق.
- تناول وجبات خفيفة أو فاكهة طازجة أو خضروات بدلاً من البطاطس المملحة أو الذرة

الحصة = المقدار الذي تتناوله في الوجبة الواحدة

Nutrition Facts

% Daily Value*

Total Fat 3g 20%

Saturated Fat 5g 25%

Cholesterol 0mg 0%

Sodium 100mg 28%

Dietary Fiber 0g 0%

Protein 5g

Vitamin A 4% • Vitamin C 2%

Calcium 15% • Iron 4%

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Salt in Your Diet

أين الملح في الطعام

- Uses: Education of patient about the proper choice of low-salt diet.

أين الملح في الطعام ٧/١

- الطعام الطبيعي يحتوي على كمية قليلة من ملح الصوديوم.
- معظم ملح الصوديوم يضاف خلال عملية الطبخ.
- معظم الناس يجب ان لا يتناولون اكثر من ٢٣٠٠ ملغم (٢ جم) في اليوم.

الطعام	الكمية	الصوديوم (ملغم في الحصة)	نسبته من الاحتياج اليومي للصوديوم
الوجبات السريعة			
بيتزا جبن	قطعة واحدة	٣٨٠ ملغم	١٧ ٪
بيض، ساندويتش جبن	٥ أونس	١٢٥٠ ملغم	٥٤٪
جبز برجر	ربع رطل	١١٥٠ ملغم	٥٠ ٪
دجاج مقلي	قطعة	١١٥٠ ملغم	٥٠ ٪
بطاطس مقلي وملح	٦ أونس (حجم كبير)	٢٢٠ ملغم	١٠٪
الوجبات الخفيفة			
ذرة	٢ وريق مكوب	٢٩٠ ملغم	١٢ ٪
بطاطس شيبي	١ أونس (٣٠جم)	١٨٠ ملغم	٨ ٪
زيدة الفول السوداني بالملح	١ أونس (٣٠جم)	٩٠ ملغم	٤ ٪
بسكويت وفير محشو بالبندق	٣٠ جم		١٪
محمول تمر بر	قطعة واحدة ٢١ جم	٢ملغم	١٪
خليط مكياج استر	علبة ٢٨٠ جم	٢٣جم	١٪
خليط مكياج ابيض	علبة ٢٩٠ جم	٢٣جم	١٪
بسكويت الشاي	١٠٠ جم	٣٠ملغم	١٪
اللحم			
الدجاج (فخذ أو صدر)	٩٠ جم	٩٠ -٣٠ ملغم	٢٢,٩
لحم خروف	٩٠ جم	٩٣٠ ملغم	٤٠ ٪
تقاقل	٥٥ جم	٤٣٠ ملغم	١٨ ٪
ارنة	١٠٠جم	٥٣٩ ملغم	٢٢٪
السمك	٣ سمكة صغيرة (٩٠ جم)	٩٠ -٣٠ ملغم	٢٢
الاجبان			
جبن امريكاني	١ قطعة (٢/٣ أونس)	٢٧٠ ملغم	١٢ ٪
زبدة مملحة	ملعقة طعام	٩٥ ملغم	١ ٪
حليب بودرة	١٠٠جم	٣٤١ ملغم	١١٪
زبادي	مكوب (٢١٠جم)	١٦٠ ملغم	٥٪
جبن	مكوب (١٨٠جم)	٣٠٠ -٧٠ ملغم	١٢٪
جبن مالح	مكوب (١٨٠جم)	٢٤٠٠ ملغم	٤١ ٪
ايسكريم فانيلا	١جم	٧٠ ملغم	٢٪
ايسكريم شوكولاتة	١جم	٨٠ ملغم	٣٪
ايسكريم فانيا	١جم	٥٥ ملغم	٢٪
ايسكريم ابيض	١جم	١٠٥ ملغم	١٪
السلطات			
سلطة	٢ ملعقة طعام	٢٣٠ ملغم	١٠ ٪
صلصة الصويا	ملعقة طعام	٩٢٠ ملغم	٤٠ ٪
سلطة البازيلكو	٢ ملعقة طعام	٢٣٠ ملغم	١١ ٪
سلطة السلطة	٣ ملعقة طعام	٣١٠ ملغم	١٣ ٪
مكشيب	١ ملعقة طعام	١٩٠ ملغم	٨ ٪
الوجبات الجاهزة			
معكرونة جاهزة	٤/٣ مكوب (١٠٠جم)	٢٤٠٠ ملغم	١٠٤ ٪
لزانيا مع اللحم بالصلصة	١ علبة (١٠ و١/٢ أونس)	٩٢٠ ملغم	٤٠ ٪
معكرونة مع الجبن	١ علبة (١٠ و١/٢ أونس)	٨٠٠ ملغم	٣٥ ٪
غذاء متكامل (دجاج مقلي)	١ علبة (١٣ أونس)	٢٠٣٠ ملغم	٨٨ ٪

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أين الملح في الطعام ٢/٢

- الطعام الطبيعي يحتوي على كمية قليلة من ملح الصوديوم.
- معظم ملح الصوديوم يضاف خلال عملية الطبخ.
- معظم الناس يجب أن لا يتناولون أكثر من ٢٣٠٠ ملغم (٢ جم) في اليوم.

الطعام	الكمية	الصوديوم (ملغم في الحصة)	نسبته من الاحتياج اليومي للصوديوم
المعلبات			
فاصوليا	نصف كوب (٤ أونس)	٣٤٠ ملغم	١٠٪
باستا حارة	١ كوب (٨ أونس)	١٠٢٠ ملغم	٤٤٪
باستا (معلبة باللحم والصلصة)	١ كوب (٨ أونس)	٨٥٠ ملغم	٣٧٪
شوربة خضروات	١ كوب (٨ أونس)	٧٩٠ ملغم	٣٤٪
صلصة الطماطم	نصف كوب (٤ أونس)	٥٦٠ ملغم	٢٤٪
القرع المطبوخ	١٢٥جم	٤ملغم	١,٧٪
الكمثرى المعلبة	١٢٥جم	١ملغم	١,٣٪
علبة بازلاء	١٠٠جم	٢٣٠ملغم	٩٪
علبة فول مقشور	١٥٠جم	٣٧٦ملغم	١٦٪
فاصوليا الحمراء	١٥٠جم	٥٠٧ملغم	٢٠٪
الأناناس المعلب	١٢٠جم	صفر	صفر
مخلل خيار	١٠٠جم	٤٩٦ملغم	٣٠٪
مخلل خضار مشكل	١٠٠جم	٣٣٠ملغم	١٤٪
سبانخ	١٠٠جم	٢٥ملغم	١٪
بازلاء مخلية	١٠٠جم	٨ملغم	٠,٣٪
زيتون أسود	١٥جم	٦١٠ملغم	٢٥٪
زيتون أخضر	١٥جم	١٩٠ملغم	٢٥٪
المعجنات			
بسكويت	١علبة (٦ أونس)	٥٥٠ ملغم	٠,٢٢٪
بسكويت مالح	٢٥٠ جم		١٠٪
بسكويت الشوفان بالزبيب	١١٥ جم		٥٪
عجينة البف باستري	١٨ ملغم		١٠٪
بريد (أبيض أو أسمر)	شريحة واحدة (١أونس)	١٣٠ ملغم	٦٪
عجينة الكرواتج	٤٠ جم	٢٥٠ملغم	١٠٪
عجينة البقلاوة	٢٥٠ جم		١٠٪
عجينة فطائر جاهزة	٨٠ جم		١٦٪
كورن فليكس	١٠٠ جم	٤٦٦ملغم	٢٠٪
شابورة بر	٨٠جم		٣٪
شابورة عادية	١٧٠ جم	٢٨٠ملغم	٧٪
شابورة بالحبوب	٥٠ جم		١٢٪
معكرونة بالسبانخ	٢٤٠ جم		٣٪
المشروبات			
الماء	١ كوب (٨ أونس)	صفر	صفر
عصير الطماطم	١ كوب (٨ أونس)	٦٨٠ ملغم	٣٠٪
صودا	١ كوب (١٢ أونس)	١٠٠ ملغم	٤٪
كولا	١ كوب (١٢ أونس)	٥٠ ملغم	٢٪
عصير برتقال	١ كوب (٨ أونس)	١٥	١٪
فواكه وخضروات			
خرشوف	١ ثمرة (٦ أونس)	٥٠ ملغم	٢٪
جزر	١ حبة متوسطة	٢٠ ملغم	١٪
تفاح	١ حبة متوسطة	صفر	صفر٪
برتقال	١ حبة متوسطة	صفر	صفر٪
موز	١ حبة متوسطة	صفر	صفر٪

المصادر:
١- [illegible]
2- Health Bulletin 3:2. New York City Department of Health and Mental Hygiene

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Diet Pyramid & Plate

الهرم الغذائي

- Uses: Education of patient about proper, healthy choice of diet portions.

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How to suspect early ischemia in the heart and the brain?

هل أنت بعيد عن الإصابة بقصور التروية في القلب أو الدماغ؟

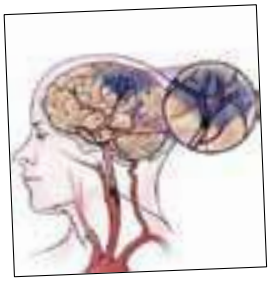
- Uses: Education of patient about early symptoms of heart attack and pre-stroke.

CMR14

هل أنت بعيد عن الإصابة بقصور التروية (الجلطة) في القلب أو الدماغ؟

لتعرف الإجابة تابع القراءة، وأجب على الأسئلة التالية:

أ. قصور تروية القلب:



١. هل شعرت في أي وقت سابق بألم أو عدم ارتياح ، أو ضغط أو ثقل في الصدر؟ ☐ نعم ☐ لا

❖ إذا أجبت بلا انتقل إلى السؤال ٨ ، وان أجبت بنعم تابع:

٢. هل كان الألم في منتصف الصدر ، أم في يساره ، أم في الذراع الأيسر؟ ☐ نعم ☐ لا

❖ إذا أجبت بلا انتقل إلى السؤال ٨ ، وان أجبت بنعم تابع:

٣. هل شعرت بالألم عندما كنت تمشي؟ ☐ نعم ☐ لا

٤. هل قللت من الجهد المبذول عندما شعرت بالألم خلال المشي؟ ☐ نعم ☐ لا

٥. هل زال الألم عندما توقفت عن المشي، (أو عندما تناولت حبة تحت اللسان)؟ ☐ نعم ☐ لا

٦. هل زال الألم في غضون ١٠ دقائق؟ ☐ نعم ☐ لا

٧. هل شعرت في وقت سابق بألم شديد في الصدر استمر نصف ساعة أو مايزيد على ذلك؟ ☐ نعم ☐ لا

❖ إذا أجبت بنعم على أي من الأسئلة ٣،٤،٥،٦،٧ فربما تكون قد أصبت بقصور تروية القلب وتحتاج إلى استشارة الطبيب

ب. قصور تروية الدماغ:

٨. هل شعرت في وقت سابق بأي من الأعراض التالية:

☐ صعوبة في النطق

☐ ضعف بأحد ذراعيك أو ساقيك

☐ تنمل في أحد أجزاء جسدك؟

☐ نعم ☐ لا

❖ إذا أجبت بنعم على السؤال ٨ ، فربما تكون قد أصبت بقصور تروية الدماغ وتحتاج إلى استشارة الطبيب

Developed by the Quality Improvement Team, Qatif Primary Health Care, Saudi Arabia 2010. CCCQI.KSA@gmail.com

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Foot Care for Diabetic Patients

العناية بقدمي المصاب بالسكر

- Uses: Education of patient about proper home-care of foot for diabetic patients.

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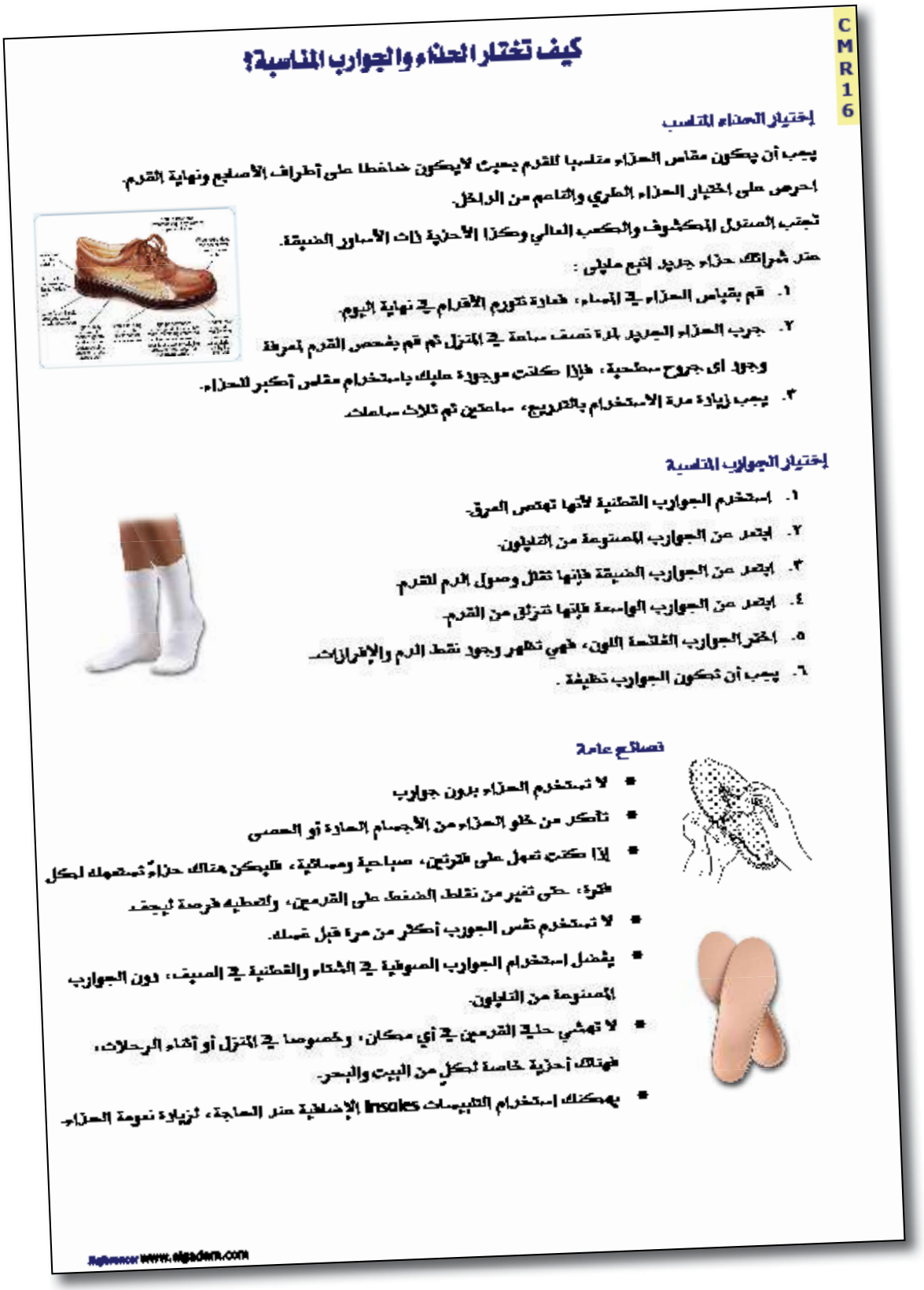
How to choose Your Shoes & Socks

كيف تختار الحذاء والجورب المناسبين؟

- Uses: Education of patient about the proper choice of shoes and socks.



كيف تختار الحذاء والجوارب المناسبة؟

CMR16

إختيار الحذاء المناسب

يجب أن يكون مقاس الحذاء مناسبا للقدم بحيث لايكون ضاغطا على أطراف الأصابع ونهاية القدم.
احرص على اختيار الحذاء الطري والناعم من الداخل.
تجنب الصنادل المكشوف والكعب العالي وكذا الأحذية ذات الأساور الضيقة.
عند شرائك حذاء جديد اتبع مايلي :

١. قم بقياس الحذاء في المساء، فمادة تورم الأقدام في نهاية اليوم.
٢. جرب الحذاء الجديد لمدة نصف ساعة في المنزل ثم قم بفحص القدم لمعرفة وجود أي جروح سطحية، فإذا كانت موجودة عليك باستخدام مقاس أكبر للحذاء.
٣. يجب زيادة مدة الاستخدام بالتدريج، ساعتين ثم ثلاث ساعات.

إختيار الجوارب المناسبة

١. استخدم الجوارب القطنية لأنها تمتص العرق.
٢. ابتعد عن الجوارب المصنوعة من النايلون.
٣. ابتعد عن الجوارب الضيقة فإنها تقلل وصول الدم للقدم.
٤. ابتعد عن الجوارب الواسعة فإنها تنزلق من القدم.
٥. اختر الجوارب الفاتحة اللون، فهي تظهر وجود نقط الدم والإفرازات.
٦. يجب أن تكون الجوارب نظيفة .

نصائح عامة

- لا تستخدم الحذاء بدون جوارب
- تأكد من خلو الحذاء من الأجسام الحادة أو الحصى
- إذا كنت تعمل على فترتين، صباحية ومسائية، فليكن هناك حذاءً تستعمله لكل فترة، حتى تغير من نقاط الضغط على القدمين، وأعطيه فرصة ليجف
- لا تستخدم نفس الجورب أكثر من مرة قبل غسله.
- يفضل استخدام الجوارب الصوفية في الشتاء والقطنية في الصيف، دون الجوارب المصنوعة من النايلون.
- لا تمشي حافي القدمين في أي مكان، وخصوصا في المنزل أو أثناء الرحلات، فهناك أحذية خاصة لكل من البيت والبحر.
- يمكنك استخدام التلبيسات Insoles الإضافية عند الحاجة، لزيادة نعومة الحذاء.

Reference www.elgadem.com

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Change Your LifeStyle: Diet & Weight غير أسلوب عيشك وحياتك: راقب وزنك وأكلك

- Uses: Education of patient about healthier alternatives in lifestyle.

CMR22

غيّر أسلوب عيشك وحياتك
من أجل قلب أكثر حيوية ونشاط

☒ إذا كنت	☑ فجرّب أن .....
☒ بديناً أو زائد الوزن	☑ تأكل كمية أقل من المعتاد، وأن تزيد نشاطك الحركي "تقليل الوزن وزيادة النشاط البدني يساعدان على تخفيض ضغط الدم والسكر والكولسترول"
☒ تأكل أطعمة مالحة	☑ تختار أطعمة قليلة الملح أو بدون ملح مضاف "اقرأ محتويات الأغذية المعلبة من الملح والصوديوم، واختر الأغذية التي تحتوي على أقل من ٥٪ من الملح"
☒ تضيف الملح أثناء الأكل	☑ تبعد المملّحة عن السفرة "يمكنك استخدام بدائل أخرى كالليمون أو البهارات"
☒ تشرب المشروبات الغازية	☑ تستبدلها بالماء أو الحليب قليل الدسم أو اللبن قليل الملح أو الروب
☒ لا تتناول الخضار والفاكهة بانتظام	☑ تتناول الخضروات والفاكهة الطازجة في كل وجبة
☒ تتناول أغذية غير صحية بين الوجبات كالبطاطس المعلب والحلويات	☑ تستبدلها بالفاكهة والخضار، أو الفشار والمكسرات الغير مملحة
☒ تضيف الملح إلى الطعام المطبوخ	☑ تقلل الملح إلى الحد الأدنى أو تتركه، وتستبدله بالبهارات والبصل والثوم (إن كان مناسباً)
☒ تتناول اللحم الأحمر (البقر والغنم) يومياً	☑ تستبدله، بعض الأيام، باللحم الأبيض كالسمك والدواجن
☒ تتناول منتجات الألبان كاملة الدسم	☑ تستبدلها بقليلة الدسم أو المنزوع دسمها
☒ تأكل الأطعمة السريعة كالبيتزا والفطاير والهمبرجر والبطاطس المقلية	☑ تقللها إلى الحد الأدنى (ليس أكثر من مرة في الأسبوع)
☒ تأكل الأطعمة الجاهزة كالشوربة والنودلز	☑ تتفادى ذلك، وإن لزم، فتأكد من محتوى الملح والصوديوم فيها

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Change Your LifeStyle: Be Active

غير أسلوب عيشك وحياتك: كن نشطا

- Uses: Education of patient about the benefits of regular exercise, and how to start.

من أجل قلب أكثر حيوية ونشاط

غيّر أسلوب عيشك وحياتك

كن نشطاً

- ابدأ بزيادة قليلة في نشاطك اليومي.
- واصل بزيادة عدة دقائق من النشاط كل أسبوع، حتى تصل إلى هدفك.
- إنّ نصف ساعة من النشاط الحركي يُساعد على:
  - تقليل فرصة الإصابة بأمراض القلب وجلطات الدماغ.
  - زيادة نشاطك وحيويتك وإنتاجك.
  - تقليل الإجهاد النفسي وتحسين المزاج.
  - التحكم بالوزن.
  - تخفيض ضغط الدم.
  - تخفيض الكولسترول.
  - التحكم في السكر والوقاية منه.

فوائد المشي الرياضي

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Few Tips to Loose Weight

تغييرات بسيطة للتخلص من بعض الوزن

- Uses: Education of patient about loosing weight for overweight CMR patients.

CMR23

تغييرات بسيطة
تساعدك في التخلص من بعض الوزن

أذا كنت معتادا أن.....	فيمكنك التغير بأن	أذا أمكنك ذلك	تستطيع أن تتخلص من.....(كغم) خلال السنة
تستخدم المصعد أو السلم المتحرك	تستخدم الدرج لدقيقتين	كل يوم	١
تستخدم ملعقة من المايونيز أو كريمة الجبن في السندوتش	تستخدم خردل	٣ مرات في الأسبوع	٢
تأكل كمية كبيرة من الوجبات السريعة المقلية	تستبدلها بمشويات أو أخرى غير مقلية	مرة أسبوعيا	٢
تشاهد التلفزيون بكثرة	تعمل عمل منزلي قليل	نصف ساعة يوميا	٢
تشرب كأس من الحليب كامل الدسم	تشرب كأس من الحليب منزوع الدسم	مرة كل يوم	٣
تتنقل بالسيارة	أمشى مشيا سريعا لمدة ٢٠ دقيقة	كل يوم	٣
تأكل بين الوجبات قطعة شوكلاتة (٦٠ جم)	تأخذ قطعة من الفواكه	مرتين في الأسبوع	٣
تأكل ٣ بيضات مع الجبن (اوملت) مع الخبز أو البريد	تأخذ حبوب سيريال مع حليب منزوع الدسم	مرة في الأسبوع	٥
تأكل كأس اسكريم كل أسبوع	تقلل إلى نصف كأس	كل أسبوع	٦
تشرب علبة من الصودا أو المشروبات الغازية	تشرب كأس من الماء	كل يوم	٧

Note: You may download a soft copy, or order hard copies of this brochure from www.ketoshealth.

Chapter 9

Information & Quality Management

Quality Measures

The purpose of these guidelines is to control CMR. However, producing guidelines alone is insufficient to address this goal. There must be a continuous process of implementation involving education and audit, including a number of quality measures to be used nationally and worldwide. For this purpose, a dedicated team has been assigned to this task.[8] The team has paid many efforts to review and appraise the commonly used measures. As a result, the following measures have been selected. Selection has been based on the following criteria:

1. The measure is common among multiple guidelines and quality bodies.
2. The measure is recommended in the Saudi Quality references.
3. The measure is applicable in practice (convenient to measure and follow), as agreed by the team.
4. Measures are grouped in three categories (short, intermediate or long-term measure).

Measures selected:

(ST, IT and LT stand respectively for short, intermediate and long-term measure)

Screening:

5. Percentage of all patient visits with blood pressure (BP) measurement recorded. ***(ST)***
6. Percentage of adult patients who have their weight ± BMI documented in the medical record, at least once a year. ***(ST)***
7. Percentage of paramedical staff with documented initial and annual training in the correct technique for BP measurement. ***(ST)***
8. Percentage of patients who have been categorized as tobacco users or nonusers. ***(ST)***
9. Percentage of adults≥45 years of age or BMI≥30 attending the clinics and having their CVR been estimated. ***(ST)***
10. Percentage of CVR-screened adults with low, intermediate and high CVR. ***(ST)***

Obese Individuals:

11. Percentage of obese patients who have maintained stable BMI or achieved a reduction in BMI within a 12-month period. ***(IT)***
12. Percentage of obese patients who self-report they are physically active. ***(IT)***

Diabetic Individuals:

13. Percentage of patients who have with diabetes mellitus (DM), heart failure, coronary artery disease or renal disease and have BP < 130/80 mm Hg in their last clinic visit. ***(IT)***
14. Percentage of DM patients with A1c ≤ 7%. ***(IT)***
15. Percentage of DM patients who have MAU measured once or more. ***(ST)***
16. Percentage of DM patients with last readings of A1c > 8%, LDL > 130 mg/dl, or BP > 140/90 mm Hg. ***(IT)***
17. Percentage of DM patients who have had visual foot inspection in the last 3 months. ***(ST)***
18. Percentage of DM or HTN patients who have had dilated eye exam in the past 1 year. ***(ST)***
19. Percentage of DM patients who have had A1C measured once or more in the past 1 year. ***(ST)***
20. Percentage of DM patients with who have had an A1C test in the last year greater than 8%. ***(IT)***
21. Percentage of DM patients with microalbuminuria or proteinuria who have had ACEI prescribed. ***(ST)***
22. Percentage of DM patients with hypertension who have ACEI prescribed. ***(ST)***

Hypertensive Individuals:

23. Percentage of hypertensive patients whose most recent BP recording was ≤ 140/90. ***(IT)***
24. Percentage of visits from non-CMR (not diagnosed and labeled to have CMR) patients visits with BP ≥ 140/90 and with documented plans of care for hypertension. ***(ST)***

Smoking Individuals:

25. Percentage of Chronic Care tobacco users counseled to quit in last 1 year. ***(ST)***

ALL CMR Individuals:

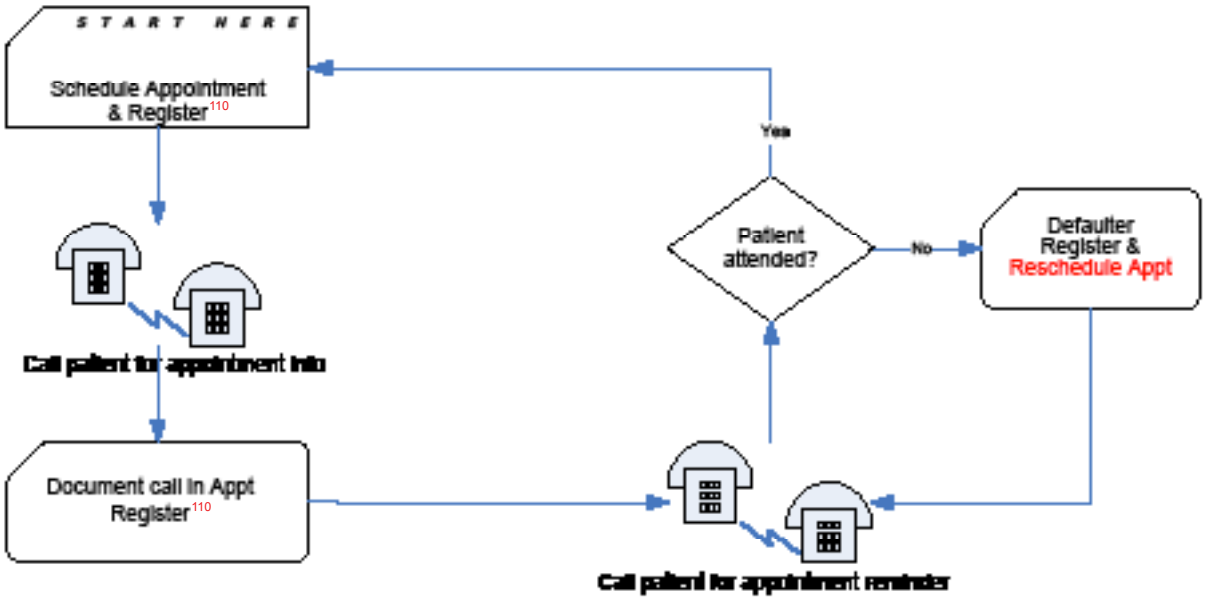
26. Percentage of CMR patient with < target LDL. ***(IT)***
27. Percentage of CMR patients who have LDL measured once or more in the past 1 year. ***(ST)***
28. Percentage of CMR patients who have eGFR measured once or more in the past 1 year. ***(ST)***
29. Percentage of high-CV risk patients who were prescribed Aspirin. ***(ST)***
30. Percentage of high-CV risk patients who were prescribed Statin. ***(ST)***
31. Percentage of admission to hospital for long and short complication. ***(LT)***
32. Percentage of CMR complications: ***(LT)***
    1) Myocardial infarction (MI)
    2) Stroke (CVA)
    3) Cardiovascular events.
    4) Nephropathy
    5) End-stage renal disease.
    6) Sexual Dysfunction
    7) Proliferative or Stage III hypertensive retinopathy
    8) Blindness (DM only)
    9) Lower extremity amputations. (DM only)
33. Percentage of CMR patients who have had a comprehensive foot assessment in the past 1 year. ***(ST)***
34. Level of satisfaction and QoL in CMR patients. ***(LT)***
35. Percentage of CMR patients who could not followed up follow up (for> 6 months or missed 3 successive visits.) ***(ST)***

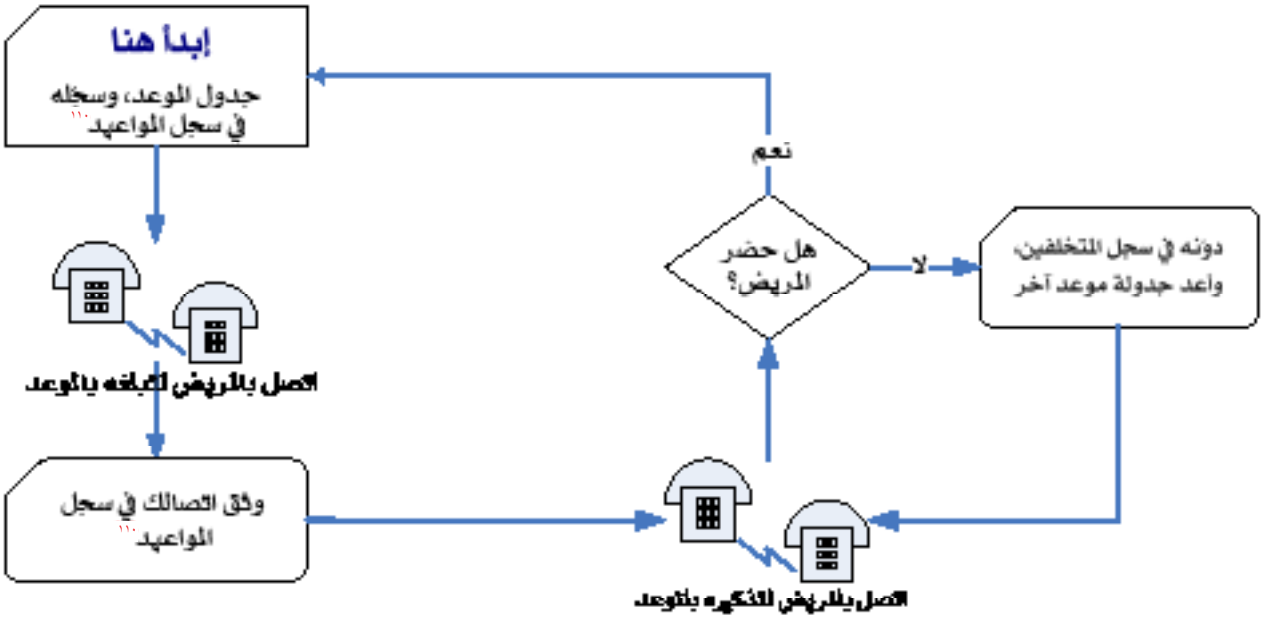
References:

1. Quality Indicators in Primary Health Care. Ministry of Health, Riyadh, Saudi Arabia, 2005.
2. National quality measures clearinghouse. Agency for Healthcare Research and Quality (AHRQ), 2007. www.qualitymeasures.ahrq.gov.
3. Standards of Medical Care in Diabetes. American Diabetes Association. Diabetes Care; 30: S1 Jan 2007.
4. Measuring Quality of Care in Health Systems. Oregon Population-Based Guidelines for Diabetes Mellitus, 4th edition 2006.
5. ICSI Health Care Guideline: Management of Type 2 Diabetes Mellitus. Institute for clinical systems improvement. 10th Edition, Nov 2005. www.icsi.org
6. The Wisconsin Diabetes Advisory Group. Wisconsin essential diabetes mellitus care guidelines, 2004.
7. ICSI Health Care Guideline: Hypertension Diagnosis and Treatment. Institute for clinical systems improvement. 10th Edition, Oct 2005. www.icsi.org
8. National institute for clinical excellence (NICE). Management of hypertension in adults in primary care, June 2006.
9. ICSI Health Care Guideline: Prevention and Management of Obesity (Mature Adolescents and Adults). Institute for clinical systems improvement. 2nd Edition, Nov 2005. www.icsi.org
10. ICSI Health Care Guideline: Lipid Management in Adults. Institute for clinical systems improvement. Eighth Edition, June 2005. www.icsi.org

CMR Patient Recall Algorithm

نظام جدولة مواعيد الرعاية المزمنة





CMR Screening Register

استمارة حصر الحالات المكتشفة

الهدف:

- رصد وتوثيق حالات منذرات أمراض القلب والشرايين المكتشفة يومياً.

الفائدة:

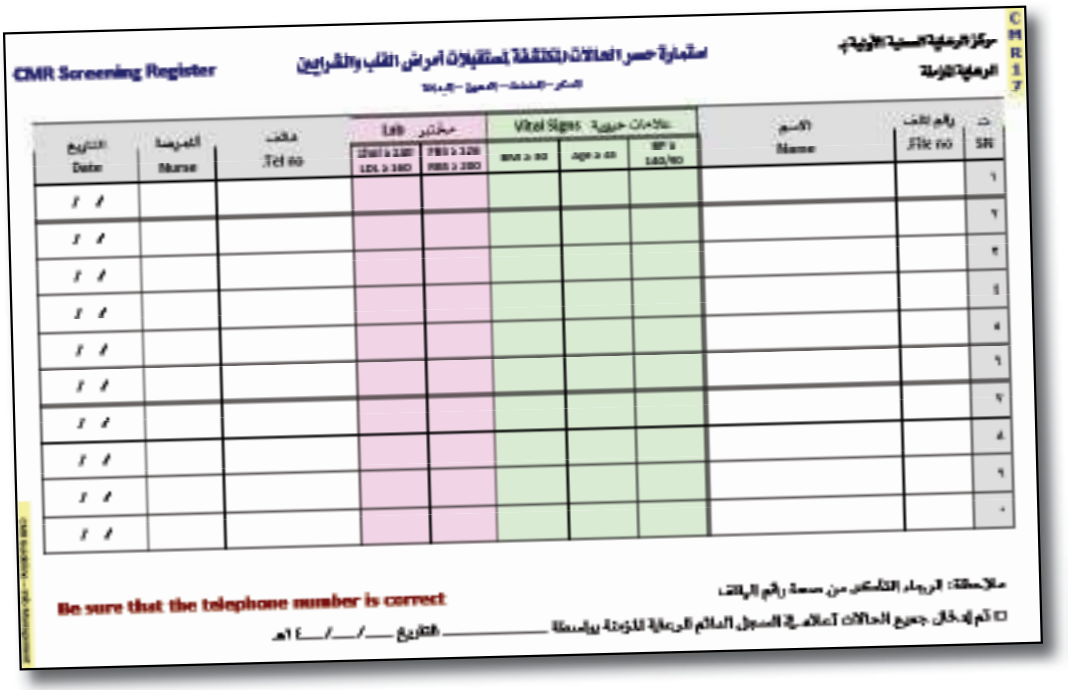
- ربط الحالات المكتشفة لدى العلامات الحيوية والمختبر بمسار الرعاية المزمنة في المركز الصحي.
- خلق قناة اتصال بين الجهة المكتشفة للحالة(ممرضة العلامات الحيوية او ممرضة المختبر) وجهة تقيم ومتابعة الحالة (ممرضة الرعاية المزمنة). وذلك لغرض تقليل الحالات اللاتي لم تتلقى الرعاية الصحية المناسبة .

المعنيون بتسجيل الحالات في النموذج وقراءتها:

- ممرضة العلامات الحيوية.
- ممرضة المختبر.
- ممرضة الرعاية المزمنة.

كيفية التسجيل:

- توضع علامة (✓) عند اكتشاف أحد عوامل الخطورة من قبل ممرضة العلامات الحيوية أو ممرضة المختبر حسب ما هو مدون في صفحة ١٨.
- يتم تسليم الاستمارة لممرضة الأمراض المزمنة بشكل دوري (لا يزيد عن أسبوع) لتستكمل إجراءات الخدمة كما هو مبين في صفحة ١٨.
- تستكمل ممرضة الأمراض المزمنة تسجيل الحالات في السجل الدائم وتوثق ذلك في أسفل هذه الاستمارة.
- تحفظ الاستمارة في ملف خاص(مرتبة حسب التاريخ بحيث يكون التاريخ الأحدث هو الأعلى)لغرض التوثيق ومراجعة الأداء.
- تتم مراجعة صفحة ١٨ من قبل ممرضة الأمراض المزمنة (المربع الأزرق) لمعرفة ما يجب عمله للمريض.


CMR Screening Register

استمارة حصر الحالات المكتشفة لمستقبلات أمراض القلب والشرايين

CMR 17

SN	File no	Name	BP ≥ 140/90	Age ≥ 65	BMI ≥ 30	FBS ≥ 126	LDL ≥ 160	Tel no	Nurse	Date
١										/ /
٢										/ /
٣										/ /
٤										/ /
٥										/ /
٦										/ /
٧										/ /
٨										/ /
٩										/ /
١٠										/ /

Be sure that the telephone number is correct

ملاحظة: الرجاء التأكد من صحة رقم الهاتف

□ تم إدخال جميع الحالات أعلاه في السجل الدائم للرعاية المزمنة بواسطة _____ التاريخ ___/___/___ ١٤هـ

Note: You may download a soft copy, or order hard copies of this form from www.ketoshealth.

CMR Appointment Register السجل اليومي لمنذرات أمراض القلب والشرايين

الغرض:

حصر ومتابعة زيارات المراجعين لعيادة الأمراض المزمنة ومواعيدها.

الفائدة:

١. توثيق ومتابعة مواعيد العيادة، والتذكير بها.
٢. توثيق الزيارات الخاصة بالعيادة.
٣. حصر المتخلفين ومتابعتهم وتجديد المواعيد لهم.
٤. توثيق عدد الحالات التي يتم تثقيفها.
٥. استخراج الإحصائيات :

أ. عدد زوار العيادة بموعد وبدون موعد.

ب. عدد ونسبة المنتظمين والمتخلفين.

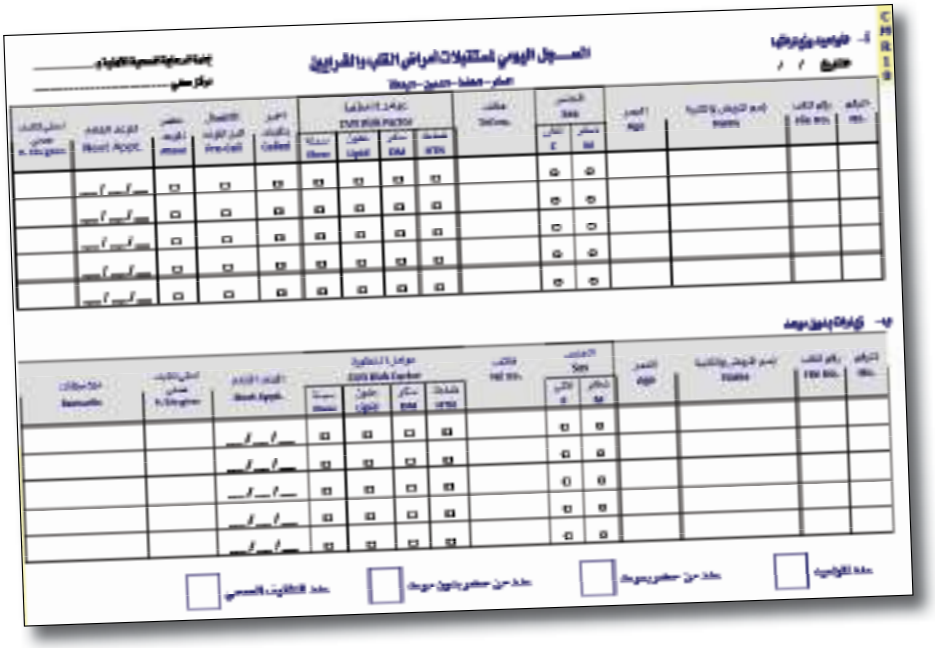
من الذي يسجل في السجل؟

ممرضة الرعاية المزمنة.

كيف يتم التسجيل فيه؟

أ - الزيارات بموعد:

١. دون بيانات المراجع.
٢. ضع علامة (✓) عند عامل الخطورة المصاب به ودون الموعد القادم.
٣. أخبر المراجع بالموعد سواء بالهاتف أو شخصياً، ووثق ذلك بعلامة (✓) في خانة (أُخبر بالموعد).



٤. اتصل بالمريض قبل الموعد بيوم واحد ووثق ذلك بعلامة (✓) في خانة الاتصال قبل الموعد بيوم.
٥. عند حضور الموعد ضع علامة (✓) في خانة "حضر الموعد"، أو علامة (×) في حال تخلفه.
٦. أعطي المراجع موعدًا قادمًا وسجله في خانة الموعد القادم, وكذلك في صفحة يوم الموعد.
٧. ضع علامة (✓) في خانة التثقيف الصحي إذا أُعطي، أو علامة (×) إذا لم يُعطى.

ب - الزيارات بدون موعد:

١. دون بيانات المراجع.
٢. ضع علامة (✓) عند عامل الخطورة المصاب به ودون الموعد القادم.
٣. أعطي المراجع موعدًا قادمًا وسجله في صفحة يوم الموعد.
٤. ضع علامة (✓) في خانة التثقيف الصحي إذا أُعطي، أو علامة (×) إذا لم يُعطى.

Note: You may download a soft copy, or order hard copies of this form from www.ketoshealth.

CVS & DM Electronic Management System

Cardiovascular & Diabetes Electronic Management System (CVDEMS) is a quality-improvement software that has been designed to assist providers in collecting information in a database and generating reports, through computer systems.

It was, originally, a freeware developed for organizations participating in chronic disease management programs of the Bureau of Primary Health Care and, HRSA/HHS. The local team, CCCQI, has modified the software and added new features, such as bilingual capability, an appointment system and local statistical reports.

Taking into account the significant role of information management in the management of chronic diseases, the CCCQI highly recommends such a program to be included in the service provided for CMR patients.

CVDEMS uses advanced methods that help in the provision of enhanced care and better management for cardiovascular disease and diabetic patients.

It collects different types of information (input) such as:

1. Demographic information.
2. Health profile, including complications.
3. Referrals and procedures.
4. Lab requests and results.
5. Services provided such as education, medication and vaccination.

The information that is entered into and stored in this system could be used to generate different types of reports (output) such as:

1. Registered summary reports for appointments and defaulters.
2. Statistics for number of cases detected or followed-up in CMR patients.
3. Quality indicators of services and outcome. Many reports could be traced and constructed.Through just a click, the following lists and reports can be traced to detail patients who have:
   - Had A1C done.
   - Had Documented a self-management goal.
   - Taken aspirin or statin.
   - Had smoking status documented.
   - Had BP < 140/90.
   - Had a lipid profile.
   - Had LDL < 130.
   - Had a foot or eye exam.
4. Visit notes (medical report) for latest investigations, treatment and complications.

Note: You may order a copy of this software from www.ketoshealth.

CMR-5: Non-pharmacological Follow-up Card بطاقة متابعة العلاج اللادوائي

الغرض:

- توثيق العلاج اللادوائي لحالات منذرات أمراض القلب والشرايين، ومتابعة ذلك في كل زيارة للمريض إلى عيادة الرعاية المزمنة.

الفائدة:

- تساعد مقدم الخدمة على معرفة ما يجب أن يقدمه للمريض في كل زيارة.

المعنيون بالبطاقة:

- ممرضة الرعاية المزمنة.

كيفية التسجيل:

١. تم تقسيم البطاقة حسب أنماط العيش وهى عوامل متغيرة يسعى مقدم الخدمة إلى تصحيحها.

٢. في كل عمود، دوّن تقييم الحالة في الجهة اليمنى، ونوع التثقيف المعطى في الجهة اليسرى من الحقل.

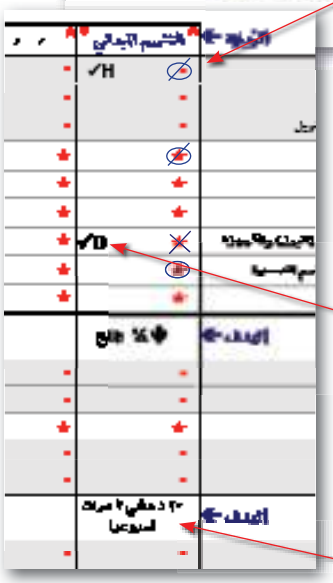
٣. ضع علامة (✓) على المشكلة الصحية.

٤. التقييم:

١- دوّن ذلك في الطرف الأيمن من كل خانة.

٢- استخدم الرموز المدونة في أسفل البطاقة.[A]

٣- استعن في تقييم الرعاية الذاتية بإفادة المريض.



٤- استعن في تقييم نمط العيش بالاستبيانات الخاصة بها ص ٨٠ التغذية،٨١ الرياضة، ٨٢ التدخين.

٥- استعن في تقييم الحالة النفسية باستبيان الاكتئاب ص ٤٤.

٦- استعن في تقييم الحالة الاجتماعية بملف المريض.

٥. التثقيف المعطى:

١- دوّن ذلك في الطرف الأيسر من كل خانة.

٢- استخدم الرموز المدونة في أسفل البطاقة.[B]

٦. التقييم العام:

- دوّن ذلك من واقع بطاقة التقييم السنوي CMR-4.[١٢٢]

٧. دوّن الهدف المتفق عليه مع المريض في خانة الهدف، لمتابعته في الزيارة المقبلة، علما بأن الهدف المثالي مدون في آخر عمود.

٨. تتكرر متابعة العلاج اللادوائي كلما دعت الحاجة وبحد أدنى مرتين سنوياً، وذلك عند استقرار الحالة.

٩. يُلخص وضع المريض والتثقيف المعطى في بطاقة المتابعة السريرية CMR-3[١٢١]

Note: You may download a soft copy, or order hard copies of this form from www.ketoshealth.

CMR-1: CVD Risk Screening Encounter Form نموذج تقدير خطر الإصابة بأمراض القلب والشرايين

CMR2

Cardio-metabolic Risk (CMR) Initial-visit Assessment

التقويم الأولي لمرضى منذرات القلب والسكر

File no. ..... Sex: ☐ M ☐ F

Name: .....

Tel: .....

DOB / Age ...../.....

Job: .....

Education .....

Income: .....

Use this encounter form (EF) to help you in the initial assessment and the periodic (e.g. annual) assessment of patients having HTN, DM or Dyslipidemia.

Current Symptoms: (For details, Refer to CMR Guideline section 4) **Presenting Symptoms:** ..... ○Asymptomatic Screening

○*Hirustism*	○*Palpitation + Sweating*	○Easy bruising	○*Sleep apnea*	○Headache	○Muscle cramps
○Fatigability	○Claudication	○Polyuria	○Polydepsia	○Polyphagia	○Blurred vision
○Dizziness	○Numbness	○Recurrent infections (UTI, Thrush, Tenia, …)		○Others:	

PMH: (When?) For details, Refer to CMR Guideline section 4

○Pre-eclampsia	○Gest. DM/ Big Baby	○DM	○Dyslipidaemia	○Angina	○Dyspnea	○*Thyroid Dysfunction*
○Syncope	○Stroke	○TIA	○Br.Asthma	○COPD	○HTN	○*Uropathy*
○CCU admission	○Coronary catherterization	○Gout	○Impotence	○Rec. Infections	○Others:	

Family Hx: (Who / at what age?) For details, Refer to CMR Guideline section 4

○HTN	○*Renal Disease*	○IHD	○Premature CV Death or CVD
○DM	○Dyslipidaemia	○Stroke	

Drug Hx: (Mark & write Drug & Dose) For details, Refer to CMR Guideline section 4

○Anti HTN	○*OCP*	○NSAID	○Corticosteroids	○Decongestants	○Anabolicss
○*Amphetamine (Job)*	○*Thyroid replacement*	○*Antidepressants*	○*Antipsychotics*	○.....	

Psychosocial Hx: For details, Refer to CMR Guideline page 6-1

○Dietary Habits (High Salt / High Fat / Low Fruit & Veg)	○Herbs	○Tobacco	○Alcohol	○Recent Weight gain
○Physical inactivity	○↑ Stress	○Sex Dysfunction	○Low Mood [4-6]	○.....

Physical Exam: For details, Refer to CMR Guideline section 4

BP	Lt. arm =	Rt. arm=	Standing (Elderly/DM) =	Pulse =		
General	Wt. =	Ht. =	BMI =		Waist =	
	○Xanthelasmata	○*Hirsutism*	○Neurofibromatosis	○*Cushinoid*	○*Acromegaly*	○*Thyroid* ○*Striae*
CVS	○Precordium	○Heart Sounds	○Carotid Bruit		○*Radio–femoral Pulses*	
Chest	○Bronchospasm	○HF				
Abd	○Bruit	○Masses	○Organomegaly			
LL	○Edema	○Pulses	○Vibration	○SW Filament	○Capil. Fill	
CNS	○Focal Neurologic deficit					

Investigations: For details, Refer to CMR Guideline section 4

☐CBC ☐FBS ☐Chol ☐LDL ☐HDL ☐Tg ☐*U+E* ☐Cr ☐Uric Acid ☐Ca ☐Urinalysis ☐ECG ☐TFT ☐

Mark ☐ with √ if done or requested. Mark ○ with √ if positive. Elaborate marked in space provided. Fill results in annual chart (CMR4) and flow chart (CMR3) where appropriate.
Use CMR1 for stratification of CVD risk. ***Italics indicates possible secondary cause.***

Primary Health Care

Done by ..... on ...../...../.....

CMR Assessment Chart (CMR-2)
Refer to Cardio-Metabolic risk management Guideline for more information

Note: You may download a soft copy, or order hard copies of this form from www.ketoshealth.

CMR-2: Initial-visit Encounter Form

نموذج الزيارة التقييمية الأولى

CMR 1

CVD Risk Screening

استقصاء منذرات أمراض القلب والشرايين

Use this encounter form (EF) to help you in the CVD risk estimation in the annual and the periodic visits of CMR patients, as well in screening.

File no.	Sex: ☐ M ☐ F	Name: .....
Tel:		DOB / Age ..... /.....

Indication for use of this chart (mark):
☐ BMI ≥ 30 ☐ T. Chole ≥ 240
☐ FBS ≥ 110 ☐ BP ≥ 140/90
☐ Age ≥ 45

للمراجعين ≤ ٤٥ سنة أو مؤشر البداية ≤ ٣٠، حدّد عوامل الخطر (منذرات الإصابة بأمراض القلب) في الجدول رقم ١. ثم استخدم الجدول رقم ٢، لحساب مستوى الخطر.

For patients Age ≥ 45 years or BMI ≥ 30, Mark applicable risk factors (RF) for your patient in table 1. Then, use table 2 to estimate risk of developing major CVD.

For patients having HTN, DM or Dyslipidemia, Mark applicable RF, scTOD and CVRD for your patient in table 1. Then, use table 2 to estimate risk of developing major CVD.

Table 1: Assess RF, scTOD and CVRD

Year:												
Risk Factors for CVD (RF) عوامل الخطر (منذرات أمراض القلب)												
• Age: M > 55 years; F > 65 years (Mark ✓ if Yes)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Grade of Blood Pressure (table 2 below)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
• High Pulse Pressure (SBP > 160 + DBP < 70 in elderly)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Obesity (BMI > 30) or Waist Circumference M ≥ 102; F ≥ 88 cm [3-1]	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Smoking	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Family history of premature cardiovascular disease (M<55; F<65)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Impaired FBS or GTT [3-3]	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Dyslipidemia T. Chole > 200 mg/dl or LDL > 130 or HDL M < 40; F < 45	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Sub-Clinical Target Organ Damage (scTOD) خلل في وظائف الأعضاء												
• Left ventricular hypertrophy (ECG or Echo)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• S. Cr. > 1.2 mg/dl	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Low eGFR or CrCl < 60 [4-8]	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• 24hr-Microalbuminuria ≥ 30 or ACR > 30 [4-8]	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Ankle/Brachial BP index < 0.9 (if available)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Established Cardiovascular or Renal Disease (CVRD) أمراض القلب والشرايين												
Cerebrovascular disease الدماغ												
• Ischaemic stroke	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Cerebral hemorrhage	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Transient ischaemic attack	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Heart disease القلب												
• Myocardial infarction	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Angina pectoris	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Coronary revascularization	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Congestive heart failure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Renal disease الكلى												
• Diabetic nephropathy	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Renal impairment (S. Cr > 1.4 mg/dl; proteinuria > 300 mg/ 24 h)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Peripheral Vascular disease الأوعية الطرفية												
• Dissection aneurysm	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Symptomatic peripheral arterial disease	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Advanced hypertensive retinopathy شبكية العين												
• Hemorrhages or exudates	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Papilloedema	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Total CVD Risk [B] مستوى خطر الإصابة بأمراض القلب والشرايين	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table 2: Estimate CVD Risk [C]

	Blood Pressure (mm Hg)				
	Normal SBP 120-129 or DBP 80-84	**High Normal** SBP 130-139 or DBP 85-89	**Grade 1** SBP 140-159 or DBP 90-99	**Grade 2** SBP 160-179 or DBP 100-109	**Grade 3** SBP ≥ 180 or DBP ≥ 110
No other Risk Factors [A]	Average Risk	Average Risk	Low Risk	Moderate Risk	High Risk
1-2 other Risk Factors [A]	Low Risk	Low Risk	Moderate Risk	Moderate Risk	V. High Risk
≥ 3 Risk Factors [A], MetSyn [3-5], scTOD [A] or DM	Moderate Risk	High Risk	High Risk	High Risk	V. High Risk
CVRD [A]	High Risk	V. High Risk	V. High Risk	V. High Risk	V. High Risk

[A] Use table 1 to identify risk factors, sub-clinical TOD and CVRD, then [B] Use table 2 to estimate CVD risk.
[C] Added risk to develop major CV event in 10 years is low (< 15%), medium (15-20%), high (20-30%) or very high (>30%).

Primary Health Care

 CMR Screening Chart (CMR-1) Refer to CMR Guideline for more information

Note: You may download a soft copy, or order hard copies of this form from www.ketoshealth.

CMR-3: Focused Visits Encounter Form

نموذج الزيارات الترددية

CMR 3

CMR Flow-Chart الزيارات الترددية

Name | File no. | This chart to be summarized annually in CMR4 (CMR Annual Chart) during month

Plot Average BP ± BS ± LDL here

220 / 200 / 180 / 160 / 140 / 120 / 100 / 80 / 60

Date	/14	/14	/14	/14	/14	/14	/14	/14	/14	/14	/14	/14	/14	/14
B.P.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Pulse														
B.P.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Weight														
[A]Urine	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S	K P S
[A]FBS / 2H-PPBS	/	/	/	/	/	/	/	/	/	/	/	/	/	/
[A]S.Cr / K^+	/	/	/	/	/	/	/	/	/	/	/	/	/	/
[A]T.Chole / S.Tg	/	/	/	/	/	/	/	/	/	/	/	/	/	/
[A]HDL / LDL	/	/	/	/	/	/	/	/	/	/	/	/	/	/
[A]Other inv.														
Drug 1 [B]														
Drug 2														
Drug 3														
Drug 4														
Drug 5														
Drug 6														
Drug 7														
[C,E] Compliance	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S
[C,F] H. Education	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S	D E M O S
Referral to														
Notes (such as reason for change of regimen) & related Symptoms														
Next visit														
Doctor's Initials														

Primary Health Care

[A] Mark right side of the column with ✓, once the test requested, in order to follow in the next visit. These tests are not mandatory in each visit. Their request is judged by degree of compliance and control and likelihood of adverse events.
[B] Fill in dose and frequency. Use ✓ = same as before; or D/C = Discontinue.
[C] D=Diet E=Exercise M=Medications O=Others (Foot Care, Oral Care, Self Monitoring, ...) S=smoking.
[E] Mark with X = Non-compliant, / = Semi-compliant, ○ = Compliant).
[F] ○ = Education offered to the patient.

 CMR Flow Chart (CMR-3)

CMR-4: Annual Assessment Encounter Form

نموذج التقييم السنوي

CMR 4

CMR Annual Assessment

التقويم السنوي لمنذرات القلب والسكر

File no. ..... Sex: ☐ M ☐ F

Name: .....

Tel: .....

®DOB / Age ...../.....

Job: .....

Diagnosis® 1	on ../../14	☐	☐
Diagnosis® 2	on ../../14	☐	☐
Diagnosis® 3	on ../../14	☐	☐
Diagnosis® 4	on ../../14	☐	☐
Diagnosis® 5	on ../../14	☐ Color Code	☐ Problem List

Family Hx:
☐ DM ☐ F
☐ HTN ☐ M
☐ ®Prem. CVD (Sudden Death, Stroke, MI, PAD) ☐ B ☐ S

Date (month / year)	Year /	Year /	Year /	Year /	Year /	Year /
®Smoking since ..... cig./day						
CSymptoms (complications & side effects); & Update Family Hx.						
®Weight / BMI (Ht =)	/	/	/	/	/	/
®Average BP (Last 3 mon)	/	/	/	/	/	/
CP.E. General						
®Peripheral pulses (radial, carotid, femoral, dorsalis pedis, posterior tibial)						
®Foot (Inspect; Cap. Fill, SW Filament, T. Fork)						
Oral / Dental Exam	☐	☐	☐	☐	☐	☐
Mood						
®Fundoscopy / Eye / V. Acuity	☐ *Referred*	☐	☐	☐	☐	☐
®ECG	☐	☐	☐	☐	☐	☐
®Average FBS / PPBS	/	/	/	/	/	/
HbA_{1C}						
®Cholesterol / Triglycerides	/	/	/	/	/	/
®LDL / HDL	/	/	/	/	/	/
ALT / AST	/	/	/	/	/	/
K^+ / Na^+	/	/	/	/	/	/
®Creatinine / BUN	/	/	/	/	/	/
Uric Acid / Ca^{+2}	/	/	/	/	/	/
®Urine dipstick	K P S	K P S	K P S	K P S	K P S	K P S
®eGFR / ACR	/	/	/	/	/	/
Hb / Hct	/	/	/	/	/	/
Others (if indicated)						
Compliance B	D ®E M O S	D ®E M O S	D ®E M O S	D ®E M O S	D ®E M O S	D ®E M O S
Other Complications						
CVD Risk A	L M H VH	L M H VH	L M H VH	L M H VH	L M H VH	L M H VH
Vaccination ± Mammogram ± DEXA						
Doctor's Initials						

CXR / IVP (...../...../ 14 .....) USS (...../...../ 14 .....) Ex.ECG / Echo (...../...../ 14 .....)

A Use CVD Risk Assessment Chart CMR1 to estimate CVD Risk. ® Needed for estimation of CVD risk. C Refer to CMR2 to help you exploring Hx and PE. ☐ Tick ☑ if referred.

B D=Diet E=Exercise M=Meds O=Others (Foot Care, Oral Care, Self Monitoring, ...) S=smoking. Mark with X = Non-compliant; / = Semi-compliant; O = Compliant. Refer to CMR3 to estimate compliance in the last 1 year.

Primary Health Care

 CMR Annual Work-up Chart (CMR-4)

Note: You may download a soft copy, or order hard copies of this form from www.ketoshealth.

Feedback Form

دليل معالجة منذرات أمراض القلب والسكر في الرعاية الأولية
Cardiometabolic Risk Management Guideline
Feedback Form

السادة فريق العمل المشرف على دليل معالجة منذرات أمراض القلب والسكر في الرعاية الأولية،

To: CMR Guidelines' Developing Team,
I have reviewed the following sections:

- ☐ Introduction & Methods
- ☐ General Algorithms
- ☐ Screening
- ☐ Assessment
- ☐ Control
- ☐ Non-pharmacological Management
- ☐ Extra Tools
- ☐ Educational Tools & Pamphlets
- ☐ Information & Quality Management

And found that the guidelines:

- ☐ Comply with the basics of clinical practice.
- ☐ Comply with the basics of clinical practice, provided the following modifications are done.
- ☐ Does not comply with the basics of clinical practice.

راجعت الأقسام التالية من الدليل:

- ☐ المقدمة ومنهج العمل
- ☐ الخرائط العامة
- ☐ اكتشاف الحالات
- ☐ التقييم
- ☐ العلاج والتحكم
- ☐ العلاج اللادوائي
- ☐ أدوات إضافية
- ☐ نشرات وأدوات تثقيفية
- ☐ إدارة الجودة والمعلومات

ووجدت الدليل بشكل عام:

- ☐ متوافق مع الأسس العامة للممارسة الطبية
- ☐ متوافق مع الأسس العامة للممارسة الطبية بشرط التعديلات أدناه
- ☐ لا يتوافق مع الأسس العامة للممارسة الطبية

S	Page No. or Section	Requirement for Addition/ Deletion/ Modification
1.		
2.		
3.		

Reviewer's name & signature:

Date:

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Feedback Form (Cont'd)

دليل معالجة منذرات أمراض القلب والسكر في الرعاية الأولية
Cardiometabolic Risk Management Guideline
Feedback Form

On the other hand, I suggest the following modifications/ additions/ deletions:

من جهة أخرى، أقترح التعديلات/ الإضافات التالية:

S	Page No. or Section	Suggestion to Add/ Delete/ Modify
1.		
2.		
3.		
4.		
5.		
6.		
7.		

Submit major suggestion & contribution to be a member of the developing team of next edition. We will be so glad.

سنكون سعداء أكثر لو شاركتنا الكتابة في هذا الدليل، وتك ون عضوًا معنا.

Reviewer's name & signature:

Date:

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King Fahd National Library Cataloging-in-Publication Data

Al-Mustafa, Bader Ali

Cardiometabolic Risk Management/ Bader Ali

Almustafa - 1. - Riyadh, 2013

124p ; 24cm

ISBN: 978-603-00-6957-6

(Book has also Arabic title: دليل معالجة منذرات أمراض القلب والسكر)

1- Cardiovascular system - Diseases - Risk factors

2- Cardiology - Diseases
I-Title

616.12071 dc
1432/2422

L.D. no. 1432/2422

ISBN: 978-603-00-6957-6

Citation:
Bader Almusafa, et al.
Cardiometabolic Risk Management Guidelines in Primary Care
Ministry of Health, Riyadh 2013

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First edition 2008
Reprinted 2009
Second edition 2011

Third edition 2013

UPS 793573900890

The electronic copy of these guidelines may be downloaded from www.Saudihtn.org. An updated version of the guidelines will be provided on the website.