



**World Health  
Organization**



Ministry of Health and Wellness

Republic of Mauritius

# **NATIONAL SERVICE FRAMEWORK FOR NON-COMMUNICABLE DISEASES (NCDs)**

**2023-2028**

**June 2023**

# Table of Contents

<b>ACKNOWLEDGEMENT .....</b>	<b>I</b>
<b>ACRONYMS .....</b>	<b>II</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>III</b>
<b>CHAPTER 1: COUNTRY ASSESSMENT .....</b>	<b>1</b>
1.1. INTRODUCTION .....	1
1.2. BACKGROUND .....	2
1.3. THE QUALITY CARE REQUIREMENTS (QCRs) FOR NCDs .....	3
1.4. HEALTH SYSTEM IN MAURITIUS.....	4
1.5. NCD EPIDEMIOLOGY IN MAURITIUS.....	5
1.5.1. DEMOGRAPHIC RATIONALE FOR NSF FOR NCDs.....	5
<b>CHAPTER 2: APPROACH AND METHODOLOGY.....</b>	<b>17</b>
<b>CHAPTER 3: AIM, OBJECTIVES AND IMPLICATIONS FOR NCDs SERVICE PLANNING .....</b>	<b>21</b>
3.1. AIM OF THE NSF FOR NCDs.....	21
3.2. OBJECTIVES OF THE NATIONAL SERVICE FRAMEWORK FOR NCDs.....	21
3.3 GENERAL STANDARDS OF CARE FOR NCDs.....	23
3.4 APPLICATION OF NCD SERVICE FRAMEWORKS.....	25
3.5 PRE-REQUISITES TO ESTABLISHING EFFECTIVE MODELS OF NCD SERVICE DELIVERY.....	26
<b>CHAPTER 4: NCDs SERVICE PROTOCOLS .....</b>	<b>30</b>
4.1. NCD PROTOCOL 1: CARDIOVASCULAR DISEASES (CVD) .....	32
4.2. NCD PROTOCOL 2: DIABETES.....	43
4.3. NCD PROTOCOL 3: CHRONIC RESPIRATORY DISEASES .....	60
4.4. NCD PROTOCOL 4: CANCER – EARLY DIAGNOSIS .....	67
4.5 NCD PROTOCOL 5: MENTAL, NEUROLOGICAL AND SUBSTANCE ABUSE FRAMEWORKS.....	74
4.6 NCD PROTOCOL 6: ORAL HEALTH .....	79
4.7. NCD PROTOCOL 7: DISABILITY, ACCIDENTS, VIOLENCE, AND INJURIES.....	83
4.8. NCD PROTOCOL 8A: HEALTHY LIFESTYLE COUNSELLING .....	84
4.8. NCD PROTOCOL 8B: SELF CARE .....	86
4.8. NCD PROTOCOL 8C: PALLIATIVE CARE .....	89
4.8. NCD PROTOCOL 8D: REHABILITATIVE CARE .....	90
4.9 NCD PROTOCOL 9: TEAM-BASED CARE.....	92
<b>CHAPTER 5: POLICY INSIGHTS &amp; CONCLUSIONS.....</b>	<b>94</b>
<b>REFERENCES.....</b>	<b>96</b>

<b>ANNEX A: IMPLEMENTATION PLAN FOR NSF FOR NCDS.....</b>	<b>99</b>
<b>ANNEX-B: NCD INTERVENTIONS THAT CAN BE SPREAD ACROSS APPROPRIATE LEVELS OF THE HEALTH CARE SYSTEM TO INCREASE ACCESS .....</b>	<b>106</b>

# ACKNOWLEDGEMENT

This National Service Framework for NCDs could not have been completed without the contribution of a large number of individuals who each made unique and often unrecognized contributions to its realization.

First and foremost, we wish to express our sincere thanks to Dr the Honourable Kailesh Kumar Singh Jagutpal, Minister of Health and Wellness, for his unflinching support and guidance for the development of this document.

We remain thankful to Mrs D.C.A.R. Seewooruthun, Senior Chief Executive, Mrs Z.B. Lallmahomed, Permanent Secretary, Mr D. Conhye, Permanent Secretary and Mr D. Dassaye, Permanent Secretary, for their invaluable support and collaboration since the beginning of this project.

We would like to express our indebtedness and heartfelt thanks to Professor K. Mashhadi and Dr S. Aboobakar who both provided the groundwork for the NSF for NCDs.

Our gratitude also goes to Prof P. Zimmet AM AO, Monash University, Australia, Prof J. Tuomilehto, University of Helsinki, Finland, Prof S. Soderberg, Umea University Hospital, Sweden and Prof Sir KGMM Alberti, Imperial College, London, UK.

We also want to convey our sincere gratitude to Mrs S. Kalasopatan-Chellen, Ag Deputy Permanent Secretary and Mr D. Bhujoharry, Assistant Permanent Secretary for their invaluable guidance and teamwork.

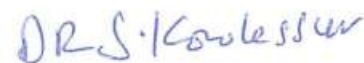
We extend our sincere thanks and gratitude to all those who assisted with the development of this document, namely, all Directors Health Services, Dr. I. Ramdhin, Director Dental Services, Dr. J. Sonoo, Director Laboratory Services, Regional Health Directors, NCD Coordinators and Diabetologists.

We also wish to acknowledge the continuous support and collaboration of Dr S. Bundhoo, Advisor in Primary Health and Public Health Care, Mr N. Jeeanody, Chief Health Statistician, Dr Y. Ozeer, Endocrinologist/Diabetologist, Dr K. Beedassy, Ag Regional Public Health Superintendent, Dr. Dr S.B.M Gaya, Consultant-in-Charge Internal Medicine and Mrs A. Doomun, Chief Nutritionist throughout the edition of this document.

Overall, we are deeply grateful to all those who were instrumental in providing valuable information, leading to the completion of this document.



**Dr B. Ori**  
**Director General Health Services**



**Dr S. Kowlessur, CSK**  
**Director Health Promotion and Research**

# ACRONYMS

<b>AHC</b>	<b>Area Health Centre</b>	<b>NCD</b>	<b>Non -Communicable Disease</b>
<b>BPMD</b>	Blood Pressure Measuring Device	<b>NEDL</b>	National Essential Drugs List
<b>CHC</b>	Community Health Centres	<b>MOHW</b>	Ministry of Health and Wellness
<b>CIHD</b>	Chronic Ischemic heart disease	<b>NINAP</b>	National Integrated NCDs Action Plan
<b>COPD</b>	Chronic Obstructive Pulmonary Disease	<b>NCD</b>	Non-communicable disease
<b>CRD</b>	Chronic Respiratory Diseases	<b>NSF</b>	National Service Framework
<b>CVD</b>	Cardio-vascular diseases	<b>PA</b>	Physical activity
<b>DCP</b>	Disease Control Priorities	<b>PBP</b>	Priority Benefit Package
<b>DM</b>	Diabetes Mellitus	<b>PHC</b>	Primary Health Care
<b>EPI</b>	Expanded Programmed of Immunization	<b>PEF</b>	Peak Expiratory Flow
<b>GAP</b>	Global Action Plan	<b>PEFR</b>	Peak Expiratory Flow Rate
<b>GDM</b>	Gestational Diabetes Mellitus	<b>PEN</b>	Package of Essential NCDs
<b>GINA</b>	Global Initiative for Asthma	<b>PICOT</b>	Population, Intervention, Comparator, Outcome, Time
<b>GRADE</b>	Grading for Standards Assessment, Development and Evaluation	<b>QR</b>	Quality Requirements
<b>HiAP</b>	Health in All Policies	<b>SAMU</b>	Service d'Aide Medicale Urgente
<b>HIV</b>	Human Immunodeficiency Virus	<b>SDG</b>	Sustainable Development Goals
<b>HPV</b>	Human Papilloma Virus	<b>SMD</b>	Standardized Median Difference
<b>HSSP</b>	Health Sector Strategic Plan	<b>TIA</b>	Transient Ischemic Attacks
<b>KIIs</b>	Key informant interviews	<b>UHC</b>	Universal Health Coverage
<b>MCH</b>	Maternal and Child Health	<b>UN</b>	United Nations
<b>MD</b>	Mean dose	<b>UNGA</b>	UN General Assembly
<b>MDT</b>	Multi-disciplinary team	<b>WHO</b>	World Health Organization
<b>MNS</b>	Mental, Neurological & Substance Use	<b>WHO</b>	World Health Organization

# EXECUTIVE SUMMARY

The Government of the Republic of Mauritius and Country Office of the World Health Organisation (WHO) commissioned the development of a 5-year NCD Integrated National Action Plan and National Service Framework for Mauritius based on voluntary global targets set in the WHO Global Action Plan for the prevention and control of Non-communicable Diseases (NCD-GAP 2013-20), in two interlinked volumes.

Non-communicable diseases (NCDs) and Injuries in Mauritius are estimated to account for 84% and 7% respectively of the total burden of disease (HSSP 2020-24). According to Health Statistics Report 2021, heart diseases (21.3%) and diabetes mellitus (20.0%) were the first two principal underlying causes of mortality, followed by cancer and other neoplasm of all sites taken together (10.6%), diseases of respiratory system (9.2%) and cerebrovascular diseases (8.0%). As per the National NCD Survey 2021, the prevalence of type 2 diabetes in the Mauritian population aged 25-74 years was 19.9%: 21.6% (Male) 18.5% (Female) and prevalence of hypertension was 27.2%. High prevalence level of NCDs risk factors, including overweight/obesity (36.0%/36.2%), harmful alcohol consumption (15.4%), tobacco use (18.1%) and prevalence of physical activity (40.2%) are cause for concerns despite successful gains in previous years.

The **purpose** of the National Service Framework (NSF 2023-28) for NCDs is to deliver NCD services by implementing the National Integrated NCD Action Plan (NINAP 2023-28), WHO General Programme of Work (GPW 13) and align it with ‘Mauritius Vision 2030’ and Sustainable Development Goals (SDGs). Nine NCD Service Modules explain the protocols, standards and clinical governance guidelines for service provision. **Strategic Objectives** of the NSF for NCDs (2023-28) aim to achieve prevention, control and management of NCDs by providing strategic direction and engaging in Multi-Disciplinary Teams (MDTs) and partnerships, shaping the service provision at the Primary Health Care (PHC) level and referral at higher levels. It sets norms and standards, monitoring and conducting implementation research, articulating ethical and evidence-based service options, scaling up proven technical interventions to improve health situation.

A **PHC Assessment and Readiness Survey** was conducted for the NSF for NCDs, and it elaborated the enormous efforts undertaken and proud achievements by the Government of the Republic of Mauritius and the Ministry of Health and Wellness (MOHW), for NCD service provision. These include implementation of Diabetes Service Framework (NSFD), Diabetes retinopathy and foot clinics, screening programmes for cervical cancer, mobile clinics, counselling services for nutrition, alcohol, smoking and physical activity. The assessment survey identified strategic needs and service delivery gaps for inclusion in the NSF for NCDs.

The NSF 2023-28 **Country Assessment** presents with a situation analysis and explains leading service practices to improve NCD service provision through primary health care as part of Universal Health Coverage (UHC). It also helped in designing the NSF for NCDs **methodology** that includes mixed methods research including desk reviews, surveys, key informant interviews (KII), consultative workshops with various stakeholders and feedback from three levels of WHO experts. NSF for NCDs applies WHO's *Package of Essential NCDs* (PEN) for a Priority Benefit Package in 9 NCD protocols.

The NSF for NCDs **Implementation Plan** focuses on a roadmap to improve health and wellbeing across the life-course of people by making healthy choices and maximizing PHC outcomes. A stepwise and methodological approach is stressed for interventions to tackle the disease burden (Diabetes, Cardiovascular Diseases, Chronic Respiratory Diseases, Cancer, Mental, Neurological & Substance Abuse) by addressing unhealthy life/dietary patterns, malnutrition, food contamination, overweight & obesity, tobacco & alcohol consumption, environmental factors, violence, accident and injury.

Finally, NSF for NCDs (2023-28) recommends clinical governance actions to improve quality of NCD services, Rehabilitative, Palliative & Self-care and articulate all interventions to Government policy for NCD service provision in order to ascertain a direction towards improved health and well-being for all Mauritians.

# CHAPTER 1: Country Assessment

## 1.1. Introduction

This document constitutes the National Service Framework (NSF) for Non-Communicable Diseases (NCDs) in Mauritius (2023-28). It includes technical protocols, service standards and aligns them with the National Integrated NCD Action Plan (NINAP) developed in tandem with this document.

A National Service Framework for Non-Communicable Diseases (NCDs) is a policy set by the national health authorities to define standards of care for non-communicable diseases enshrined in a service protocol by setting appropriate quality standards. The four main purposes of this NSF are to:

- Align Mauritius' existing NCD Services at the Primary Health Care (PHC) level with conceptual framework of WHO's integrated Package of Essential Non-communicable (PEN) Diseases.
- Set clear General, Technical, Clinical and Quality standards of NCD care based on the best available evidence of which treatments and services work most effectively for patients in PHC and beyond.
- Offer strategies and support to MOHW and multi-sectoral partners to meet these requirements.
- Align NSF for NCDs with the NINAP.

This chapter presents the background and quality of NCD care requirements in the backdrop of the country profile, situation analysis and the NCD risk factors that need to be addressed by this framework.



## 1.2. Background

Effective approaches to reducing the non-communicable disease (NCD) burden in countries with a similar socio-demographic profile as Mauritius include a mixture of population-wide and individual interventions. Such cost-effective interventions are already available and include methods for early detection of NCDs and their diagnoses using inexpensive technologies, non-pharmacological and pharmacological approaches for modification of NCD risk factors and affordable medications for prevention and treatment of heart attacks, strokes, diabetes, cancer and asthma. However, due to limited health system capacities, there are substantive gaps in their implementation particularly in collaboration with other sectors of the country.

The National Service Framework (NSF) for NCDs in primary care settings is an innovative and action-oriented response to the above challenges. It is a prioritized set of cost-effective interventions that can be delivered to an acceptable quality of care. It will reinforce the health system by contributing to its building blocks and by empowering primary care physicians as well as allied health workers to contribute to NCD care. It should not be considered as yet another package of basic services but, rather, an important step for upgrading the integrated NCD services in PHC and for reforms that need to cut across the established boundaries of health and non-health sectors.

This document sets minimum NSF standards for NCDs to strengthen national capacity to scale-up the care of heart disease, stroke, cardiovascular risk, diabetes, cancer, asthma, and chronic obstructive pulmonary disease in primary health care settings. Most importantly, it defines a minimum set of essential NCD interventions for Mauritius that has embarked to initiate a process of Universal Health Coverage (UHC) reforms to ensure that health systems contribute to health equity, social justice, community solidarity and human rights with a Health in All Policies (HiAP), and a whole-of-the- government and whole-of-the-society approach.

### 1.3. The Quality Care requirements (QCRs) for NCDs

The key focus of all NSF for NCDs standards and practices in this document is on the provision of best quality care to all Mauritians. Some standards are best for the PHC level service delivery – the settings that have limited resources and scope of services. The other standards focus on NCD care beyond PHC. The Quality Requirements (QRs) are based on currently available evidence from various countries.

- **Quality requirement 1:** A person-centred service - People with NCDs are offered integrated assessment and planning of their health and social care needs. They are to have the information they need to make informed decisions about their care, treatment and rehabilitation, where appropriate, to support them to manage their condition themselves and benefit from digital health.
- **Quality requirement 2:** Early recognition, prompt diagnosis, treatment and rehabilitation - People suspected of having an NCD are to have prompt access to specialist expertise for an accurate diagnosis and treatment as close to home as possible.
- **Quality requirement 3:** Emergency and acute management - People needing hospital admission for an NCD emergency are to be assessed and treated in a timely manner by teams with the appropriate skills and facilities.
- **Quality requirement 4:** Early and specialist rehabilitation - People with NCDs who would benefit from rehabilitation are to receive timely, ongoing, high quality rehabilitation services in hospital or specialist settings (e.g. physiotherapy) to meet their continuing and changing needs. When ready, they are to receive the help they need to return home for ongoing community rehabilitation/support.
- **Quality requirement 5:** Community rehabilitation and support - People with NCDs living at home are to have ongoing access to a comprehensive range of rehabilitation, advice and support to meet their continuing and changing needs, increase their

independence and autonomy and help them to live as they wish (please refer to NCD Protocol-8 for further details of rehabilitative care).

- **Quality requirement 6:** Vocational rehabilitation - People with NCDs are to have access to appropriate vocational assessment, rehabilitation, and ongoing support, to enable them to find, regain or remain in work and access other occupational and educational opportunities.
- **Quality requirement 7:** Providing equipment and accommodation - People with NCDs are to receive timely, appropriate assistive technology/equipment and adaptations to accommodation to support them to live independently, help them with their care, maintain their health and improve their quality of life.

#### **1.4. Health System in Mauritius**

In the island of Mauritius, as at the end of 2021, there were five regional hospitals, two district hospitals namely Souillac Hospital and Mahebourg Hospital and two community hospitals. There were also 6 Specialised hospitals, namely, one psychiatric hospital, one for chest diseases, one for eye diseases, one for ear, nose and throat (E.N.T.) diseases, one Cardiac Centre and a National Cancer Centre.

In the private sector as at the end of 2021, there were 18 private health Institutions. There were 3,803 beds in Government Institutions and 776 bed in the private sector at the end of 2021. There were also six mediclinics, 19 Area Health Centres (AHC) and 114 Community Health Centres (CHCs) which delivered out-patient services.

In Mauritius, public health services at all levels are offered free of cost. The public sector caters for around 73% of total health care requirements and the remaining 27% is catered by the private sector. Each of the five regional hospitals comprises an emergency departments and well-equipped cardiology services.

**Human Resources for Health** – At the end of 2021, there were 3,775 Doctors (29.9/10,000 population), 449 Dentists, 555 Pharmacists, and 4,386 nurses and midwives (34.7/10,000 population). The Mauritius Institute of Health (MIH) is a parastatal body that caters to training needs of the health professionals.

## **1.5.NCD Epidemiology in Mauritius**

Current epidemiological evidence indicates that four non-communicable diseases (NCDs) make the largest contribution to mortality in Mauritius, namely: cardiovascular disease, diabetes, cancer, and chronic respiratory disease. There is growing recognition that the country faces the problem of an ageing population.

### **1.5.1. Demographic rationale for NSF for NCDs**

To achieve Second Economic Miracle and Vision 2030, Mauritius must tackle the increase in NCDs accounting for substantial increased morbidity and medical costs as a heavy burden on health systems.

### **1.5.2. Mortality due to NCDs**

In Mauritius, heart diseases and diabetes mellitus were the first two principal underlying causes of mortality in 2021, with 2,772 (21.3%) and 2,593 (20.0%) deaths respectively. Cancer and other neoplasm of all sites taken together was in the third position with 1,376 (10.6%) deaths. Deaths due to cerebrovascular diseases which amounted to 1,041 (8.0%) was in the fifth position. Hypertensive diseases were the cause of 629 deaths (4.8%). Mortality due to “Diabetes Mellitus” followed a decreasing trend from 26.5% in 2012 to 20.0% in 2021.

### **1.5.3. Morbidity**

#### **Prevalence of Diabetes**

In 2021, the prevalence of diabetes (age and sex standardised to the national population of Mauritius in 2008) in adults aged 25-74 years was 19.9%:21.6% for men and 18.5% for women. The proportion of newly diagnosed diabetes (NDM) was 26.2% for all: 27.5% for men and

24.9% for women. The age and sex standardised prevalence of pre-diabetes (IFG and IGT combined) was 15.9%: 14.4% for men and 17.1% for women. The prevalence of IFG was 5.8%: 6.1% for men and 5.6% for women, and the prevalence of IGT was 10.0%: 8.2% for men and 11.5% for women. Thus, the prevalence of diabetes, pre-diabetes and IGT has thus gone down numerically since 2015. Type 1 diabetes register showed that by the end of 2021, there were 880 T1DM patients, of whom 55% are females and 41% were aged less than 25 years.

## **Cancer Incidence**

In 2021, 2,866 new cases of cancer (1185 males and 1681 females) were registered by the Mauritius National Cancer Registry (MNCR). The age standardized incidence rate among men was 130 per 100,000 and 168 per 100,000 among women.

As per cancer registry 2021, the five main sites in males were as follows: Prostate 18.7%, Colorectal 13.8%, Lung 9.3%, Lymphoma 6.1% and Bladder 4.7%. Main cancer sites amongst females were Breast 35.2%, Colorectal 8.7%, Uterus 8.0%, Ovary 6.7% and Cervix uteri 5.5%. Breast cancer age standardized incidence rate (ASR (W)) was 59.3 per 100,000 in 2021. The mean age for cancer incidence was 63.8 years in males and 60.2 years in females. 60% of all male & female cancers occurred in age group of > 60 years.

## **Kidney disease**

The standardized prevalence of reduced kidney function (<60 ml/min) was 3.9% in 2021: 3.7% in men and 4.1% in women. Albuminuria (ACR  $\geq$ 3mg/mol) as index of kidney disease, was 6.3% of the survey population in 2021: 6.4% men and 6.2% women.

Of those with diabetes, 16.3% had reduced kidney function compared to 5.8% in people with pre-diabetes. Of those with hypertension or previous CVD, 14.0% and 24.8%, respectively had reduced eGFR. Of those with diabetes, 16.8% had albuminuria and the same was observed in 6.7% of people with pre-diabetes. Of those with hypertension or previous CVD, 14.4% and 15.2%, respectively had albuminuria. Reduced kidney function and micro-albuminuria are common in subjects with known CVD, hypertension, and diabetes.

At the end of 2021, there were 1,208 patients on dialysis in the public hospitals; another 250 public hospital patients were on dialysis in private centres, making a total of 1,458 patients.

## **Asthma**

In 2021, the prevalence of asthma in adults was 7.5%: 6.8% in men and 8.0% in women. The prevalence was similar between non-smokers (7.3%), ex-smokers (9.0%) and smokers (8.3%).

## **Amputations and Blindness Resulting from NCDs**

In 2021, 658 amputations (including re-amputations) were performed in 507 patients (89% of these patients were diabetic). The number of attendances for retinal screening was 21,189. Sight threatening diabetic retinopathy (STDR) cases detected accounted for 10.6% of all screenings in 2016.

### **1.5.4. Physical Disability**

In 2015, physical disability (defined as requiring some assistance with activities of daily life such as washing and dressing) was reported by 9.8% of the survey population aged 50 years and above: 6.7% in men and 12.5% in women.

### **1.5.5. Metabolic Risk Factors**

#### **Hypertension**

In 2021, the prevalence of hypertension was 27.2%: 26.9% (Male) 27.5% (Female). Of those with hypertension, only 60.5% of individuals were currently on medication for hypertension.

#### **Lipids**

In 2021, the overall prevalence of elevated total serum cholesterol ( $\geq 5.2$  mmol/l) was 34.8 % (39.6% for men and 30.8% for women). It has decreased compared to the NCD Survey 2015 (44.1%).

## **Overweight and Obesity**

In 2021, the prevalence of overweight was 36.0%: 38.7% in males and 33.8% in females. The prevalence of obesity was 36.2%: 29.9% in males and 41.6% in females. Women were more often obese than men in all age groups. Similarly, 62.8% had a large waist circumference: 54.7% in men and 69.9% in women.

### **1.5.6. Behavioural Risk Factors for NCDs and Other Determinants**

WHO has identified and highlighted 5 highly influential and reversible risk factors which are important in the development of NCDs. These are:

#### **Tobacco Smoking**

Tobacco is one of the main causes of premature deaths in the world. In 2021 the prevalence of smoking was 18.1 % (35.3% in men and 3.7% in women). Highest prevalence was noted in the younger age-groups with 48% of men aged 25-34 years reporting smoking. Some 19% of students aged 13 to 15 years in Mauritius (28.5% boys and 10.2% girls) were current users of tobacco products (Global Youth Tobacco Survey 2016). According to GSHS 2017, 15.3% of students age 13-15 years and 21.8% of students aged 16-17 years currently smoked cigarettes at the time of the survey.

#### **Alcohol Consumption**

Alcohol has been associated with all the main NCDs. In 2021, the prevalence of heavy drinkers (those who drink on two or more days per week and have at least 3 peps/day or those who drink once a week but have more than 5 drinks per day) was 15.4%: 26.3% in men and 4.5% in women. If diseases and/or hospital admissions due to alcohol were included, the prevalence was 16.9% (30.4% in men and 5.4% in women). The prevalence of ex-drinkers was 3.2%: 3.8% in men and 2.7% in women and harmful alcohol consumption was 19.0% (31.3% in men and 8.7% in women).

The Global School-based Student Health survey (GSHS) in June 2017 showed that 21% of students aged 13-15 years and 34.5% age 16-17 years consumed alcohol during the past 30 days preceding the survey.

### **Physical Activity (PA)**

Physical inactivity has been estimated to cause 6% of the global burden of disease from coronary heart disease, 7% of T2DM, 10% of breast cancer, and 10% of colon cancer. Inactivity causes 9% of premature mortality. NCD 2021 altogether showed 14.0% and 38.8%, respectively, reported vigorous and moderate intensive PA at work, and 11.6% and 39.5%, respectively, reported vigorous and moderate intensive PA during leisure time. In GSHS 2017, 19.9% of students aged 13-15 years and 17.6% of students aged 16-17 years were physically active for at least 60 minutes per day on all 7 days during the 7 days before the survey.

### **Unhealthy Diet**

Many low- and middle-income countries suffer from the coexistence of undernutrition along with overweight, obesity, or diet-related NCDs. Mauritius Nutrition Survey in 2012 showed that in the age group 20-49 years and 50 to 64 years, 29.2% and 26.9% respectively reported not eating any fruit daily. In the age group 12 to 19 years, 26.5 % did not consume any fruit daily as compared to 38.4% in 2004. Almost 37.0% and 31.2% among 20-49- and 50-64-year age-groups respectively reported not eating any vegetable or only once daily. Consumption of soft drinks was observed in two thirds of the respondents taking these drinks on one or more days in a week with the highest (75%) among adolescents aged 12-19 years. Mauritius salt intake study 2012 showed mean salt intake was 7.9 g daily (WHO rec = < 5.0 gm/day).

### **1.5.7. PHC Frontline Service Readiness Assessment Survey– Summary of Findings**

The survey was conducted between October 2020 and January 2021 through a structured questionnaire in order to collect baseline information on the services provided by the First Level Care Facilities to the NCD patients and clients.



- A snapshot of 5 primary health care facilities was drawn through survey questionnaire to which the staff of 4 of these facilities responded.
- Out of the 4, all are public facilities, 2 are in rural areas and 2 are urban.
- 2 facilities have specialist doctors (1 rural and 1 urban, and others did not respond to this question).
- General physician and nurses are present in all of them.
- Health Educator and diabetic specialised nurse are present in most of the facilities.
- Doctors are required to attend Continuing Professional Development events since 2016 and accumulate 12 points yearly for their practice license to be renewed.
- Furthermore, NCD clinics are usually carried out by Community Physician who have completed their Master in Public Health or by senior medical health officers who have worked in several departments of regional hospitals, namely the Medical Unit.
- Most facilities do not have peak flow meters and spacers, few lack pulse Oximeter and health education material.
- Blood Pressure Measuring Devices (BPMDs), thermometers, stethoscopes, glucometers, weighing machines, measuring tapes, nebulizers, ECG machines are available and functional.
- BPMDs are tested rarely for accuracy and are sent back to government store for repair.
- Peak flow tests are not conducted at any of these facilities.

- Administration of Intravenous (IV), Intramuscular (IM) and sub-cutaneous (SC) injections, ECG, cardiopulmonary resuscitation, visual acuity examination, ophthalmoscopy, manual ventilation with a bag valve mask resuscitator, examination for neuropathy with knee hammer/tuning, administration of oxygen and intravenous fluids are performed at these health facilities.
- Testing for urine albumin, urine glucose and blood sugar can be done at all facilities.
- Blood ketone bodies and troponin tests are performed only at the referral level facilities, but blood is collected for blood cholesterol and serum creatinine tests, which is then sent to regional hospitals and results are consequently dispatched back to the primary health care facilities.
- Most of these have a bed or a couch to stabilize an ill patient before transfer to referral facility.
- Disposable needles are used with safe disposal containers.
- Counselling and education of patient along with family members regarding smoking, alcohol, diet and physical activity are carried out at these facilities.
- Counselling and education of patients for diabetes self-management and self-administration of insulin are also done.
- The main medications for NCDs are available at all primary health care facilities. It may be possible that some drugs are out of stock at a time or delay in reaching the health institution but dispensing of medicines is done at all primary health care facilities.
- Some drugs such as Morphine as mentioned in survey questionnaire are not dispensed at primary health care as they are closely monitored.

- Most of the listed medicines are available except very few are in short supply.
- On average 600 -2500 patients visit these facilities each month.
- 50-150 patients visit on daily basis.
- 7-13 patients visit daily on average for heart diseases, high B.P, stroke, failure.
- 10-30 patients visit for diabetes daily and 2-8 visit for asthma.
- No cancer patients visited these facilities.
- Distance to the nearest referral facility is 8-12km on average which takes 20mins to 1 hour for transfer of a patient.
- Facilities do not own an ambulance, but arrangements can be made to shift a patient through ambulance which is the most frequent mode of transportation in most of them.
- Patients with/without NCDs are referred for specialist consultation and will be referred back for follow up to most of these facilities.
- Patients can access these health facilities by a combination of appointments and walk-in clinics.
- These facilities maintain all the records in individual patient files which are consulted when necessary.

- Most facilities have logbooks for medicines and consumables which are routinely and currently updated, but in very few, financing and administration details are not available.
- All public health services are free of cost in Mauritius.
- Health facilities did not report any community activities that support NCD work.

### **Policy Insights from PHC Frontline Service Readiness Assessment Survey**

This study has captured some fundamental areas for reflection regarding the PHC system in the respective geographical areas - first, regarding overall effectiveness, and secondly, in relation to readiness of PHC facilities to achieve the expected effect for NCDs. It is evident from the findings that there are some prevailing health system gaps at the PHC level and appropriate reforms are needed to overcome these. In addition, while the PHC system captures most essential components, there are a few gaps in relation to readiness, evident in the training of human resources and actual availability of medicines, equipment and services such as physiotherapy.

One option would be to segregate solutions—reform for overall functioning of PHC facilities on the one hand and reform of existing NCD services in PHC, on the other. Addressing staffing and medicine availability, alignment of inputs with the needs on ground, and a real focus on accountability-both the health facilities as well as those that supervise them, will further both overall PHC and NCD objectives. Further emphasis is required on the gate keeping role of PHC and recording of clients' satisfaction. The study provided useful insights, which can help with a revision of the questionnaire to be used in future surveys. For example, questions about

infrastructure need to be expanded to take into account access to PHC facilities, cleanliness, waiting times, and patient satisfaction feedback. Similarly, the question regarding availability of medicines should factor in medicines that are meant to be available at respective PHC facilities, as stipulated by the NEDL. Furthermore, unique insights such as turnaround time for equipment repair, requests for reagents and staff time on various initiatives EPI, etc., should be ascertained in any future assessment. Moreover, a qualitative patient stakeholder assessment and Patient Exit Interview component must be introduced in the facility readiness assessment.

The current reform model should be continued and provides a base for enhancing integration of NCDs into PHC, the impact of which should be experimentally assessed, potentially through a case-control, pre-test, post-test quasi-experimental analysis. Overall, the level of implementation generally follows the standards. Staff in PHC facilities will be encouraged if NCDs are accorded a priority by the government. Public sector PHC infrastructure is an asset, which can be strengthened with the right reform approaches.

#### **1.5.8. Gap Analysis for NCD National Service Framework and Standards**

Overall, Mauritius has shown a high political commitment to improve health and support the NCD agenda. However, sustaining high-level political commitment through effective budgetary support and improved co-ordination across government agencies is an ongoing challenge. There are multiple areas that require further considerations, such as:

- Interagency cooperation is not fully functional despite a new mechanism for more effective coordination. There is little synergy through joint government/NGO efforts.
- The population is not engaged actively in decision-making processes (both around policy issues as well as individual treatment options/plans).
- The high-risk populations, disadvantaged groups (including the increasing elderly population) are not adequately targeted for more tailored health promotion and health education.

- PHC is not playing its gatekeeping role effectively.
- Follow-up/tracking of patients screened positive on routine screening programmes is lacking.
- Coordination between Ministry of Social Security and MOHW around domiciliary NCD care for the elderly is lacking. There is currently no effective interoperable clinical data transfer system.
- The roles and responsibilities for management of NCDs at the different health service delivery levels are not clearly defined. National NCD registries have not yet been institutionalised.
- There are insufficient incentives for rewarding good professional competencies and quality care at institutional levels. Modern information solutions are unavailable for NCD prevention/control.
- There are inadequate incentives for enabling health behaviour change in the population and for better self-management of patients with chronic diseases.
- There is no process for updating and monitoring of the NCD management guidelines & protocols.
- There is no quality assurance framework in place in public hospitals and rehabilitation centers.
- There exists no Health Human Resource (HRH) planning and assessment. There is limited up-to-date in-service training for service providers with regard to CVD, diabetes prevention and NCD surveillance.

- There is no dedicated quality control laboratory to monitor the quality of drugs.
- The absence of evidence-based guidelines linked to the medicine list to support clinical decision-making is a barrier to rational use of medicines.
- The institutional capacity of the pharmaceutical procurement unit at MOHW is limited.
- The current inventory management system does not allow real time monitoring of stocks at central warehouses and health facilities.
- There is a lack of clarity on reporting and accountability lines between various levels of the health system. There is inadequate patient feedback system to improve patient care and outcomes.
- Existing management system of health facilities cannot effectively be used as a tool for improving quality and outcomes. There is inadequate monitoring and evaluation of NCD interventions.

## CHAPTER 2: APPROACH AND METHODOLOGY

This chapter explains the methodology and approach used to develop both the NSF for NCDs and the NINAP, based on WHO's strategic direction and global best practices. The process for developing an NSF for NCDs in Mauritius has used a holistic, systematic approach anchored in using mixed-methods research and triangulation of findings to generate a comprehensive and comparative overview of the processes, experiences, and outcomes of the NCD interventions over the period of its implementation. The mixed methods approach employed quantitative, qualitative, participatory, and blended (e.g., quantifying qualitative data) approaches into evaluation, while integrating gender, human rights-based, and equity considerations into a multi-sectoral NINAP development process.

Initially it was planned to conduct a 'Societal Dialogue Approach', but due to COVID-19 restrictions, the process was restricted to several consultative workshops and 2 field surveys to feed stakeholders' inputs. Therefore, NSF for NCDs was formulated following a comprehensive analysis of the service delivery pathways conducted through an inclusive and participatory methodology to ensure involvement and contributions from a wide range of stakeholders, including key health partners and civil society organizations.

The methodology incorporates NCD documents reviews from Mauritius and countries with similar socio-demographic profiles to understand what works and what does not, in terms of PHC readiness and multi-stakeholder coordination for the implementation of National Service Framework for NCDs (2023-28).

### Document and Literature Review

Key documents, reference studies, background information, as well as progress reports have been scrutinised in the inception phase to inform the process of developing 2 survey tools for NSF for NCDs and NINAP. Further study material in the desk phase framed targeted inquiries for Key Informant Interviews (KIIs), as well as reconciliation of survey data, forming a well-grounded first draft.



## **NCD Stakeholders' Workshop in Mauritius**

As part of the preparation of the National Service Framework for NCDs and the National Integrated NCD Action Plan for Mauritius, a half-day stakeholders' workshop was held on Tuesday 21 December 2021, by the Ministry of Health and Wellness (MOHW) in collaboration with the World Health Organization Country Office (WCO) in Mauritius.

The objective of the workshop was to assess the existing capacity of stakeholders for responding to NCDs in terms of policies and programmes, and both Government institutions and NGOs were invited to participate. Three presentations formed part of the programme:

- The Mauritius Response to the NCD epidemic
- Global Response to NCDs
- Promoting a coordinated and multi-sectoral approach to tackle NCDs

Following the presentations, a standard questionnaire was distributed to the participants. This questionnaire enabled the analysis of country capacities and responses to NCDs.

## **Methodological Framework**

Based on the document and literature review, we developed a comprehensive Design Framework, that provided details of the line of inquiry for each of the given criteria, indicators, their standards if any, sources of information, types of information to be collected, methods of data collection and alternate strategies in NCDs case-studies information if not available in the form sought.

## **Key Informant Surveys and Interviews**

The International NCD Consultant conducted structured surveys and added semi-structured interviews based on a standard questions list with the representatives of partner organisations, Ministry of Health & Wellness (MOHW) both at central and regional levels, technical agencies and by visiting various health facilities.

This NINAP methodology has been designed to address the primary health system's readiness to prevent and manage NCDs, including integration with other sectors of the society, and eventually help to guide public health decisions from a demand and supply sides of the NCD spectrum.

The purpose of the KIIs is to gain insights from different stakeholders' experience of NCD coordination mechanisms, in particular coordination across actors in decentralized settings, to discuss and identify factors promoting and/or constraining effective coordination, based on practical NINAP delivery experiences and in different geographical contexts. Both health facility and stakeholder surveys are based on WHO PEN and HEARTS Technical Package, and country readiness assessments.

## **Country Case Studies and Surveys**

The purpose of the case studies from WHO-EURO countries with similar socio-demographic profiles is to examine where, how, and why NSF for NCDs implementation has been effective in specific contexts. In addition to 2 Mauritius specific NCD consultancy surveys, documented examples of NINAP and NSF for NCDs implementation and identified modalities that have been tried & tested in different countries, were also reviewed.

By undertaking two surveys on (a) a sample of PHC centres and (b) NCD stakeholder, we investigated demand and supply side factors to assess the healthcare system readiness for NCDs (i.e., medicine, amenities, medical products and technologies) as per WHO Frontline Service Readiness Assessment and PEN interventions.

## Analysis of Results

The survey findings and KII notes, as well as country document reviews were coded using qualitative data analysis software. The code list was aligned with the core questions and outputs of this analysis were consolidated according to the overarching framework. This enabled the answering of the questions within each case-study, and relevance to Mauritius.

## Consultative Workshops

Three stakeholders' consultative workshops were held in Port Louis in April 2022, to ensure that the specificities of the health profiles and needs of the population were well captured in the National Action Plan and Service Framework. The draft document was presented to stakeholders for comments and reviews as well as additional inputs from local and international technical experts from Sweden, UK, and Australia.

## Synthesis of Findings and Final Report

After the workshops in April 2022, a synthesis of core expert evidence was undertaken that aimed to identify and highlight examples of successful approaches, clinical protocols, and national treatment guidelines to NSF for NCDs.

### **A note for NCD Clinic Health Staff - How to use this manual as a job aid**

This publication not only highlights the technical and academic features of NCDs, but as a job-aid and operations manual it is designed to support the health planners and workers to use it as a job aid in their NCD consultations. Each module graphically depicts the steps of diagnosis and management that follow detailed understanding of the concepts and process from empirical and theoretical explanatory text. In short, this tool can be placed beside a health worker inside NCD clinics to perform the highest standards of clinical practice with a handy resource showing state-of-the-art illustrations based on current scientific evidence. Poster sized prints can be used as selected wall posters inside NCD clinics for education and information purposes

# CHAPTER 3: AIM, OBJECTIVES AND IMPLICATIONS FOR NCDs SERVICE PLANNING

This NSF for NCDs in Mauritius would be a key policy and implementation tool for delivering a real change in the way health and social care bodies and their local partners will work with people with long-term conditions to plan and deliver the services which they need to make their lives better.

## 3.1. Aim of the NSF for NCDs

The overall aim of the MOHW and its partners is to improve the health and social wellbeing of the people of Mauritius.

## 3.2. Objectives of the National Service Framework for NCDs

Its main objective is to support people with prevention and management of NCDs, maintaining independence and achieving the best possible quality of life through an integrated process of education, information sharing, assessment, care planning and service delivery. NSF for NCDs can achieve better objectives when health & social care services work alongside local agencies involved in supporting people to live independently with population empowerment modalities.

The sub-objectives of NSF for NCDs are to help health and social care workers in:

- prompt diagnosis and providing information and inter-sectoral collaborative services.
- ensuring they are equipped with adequate training, medicines, and sufficient workforce.
- person-centred care and choice of preventive, curative & rehabilitative care.
- providing information and support for the safe and effective use of medicines.
- care planning and integrated service provision involving different agencies, including closer working between health and social services in UHC Priority Benefit Package based on Disease Control Priorities (DCP3) as shown in Annex-B.

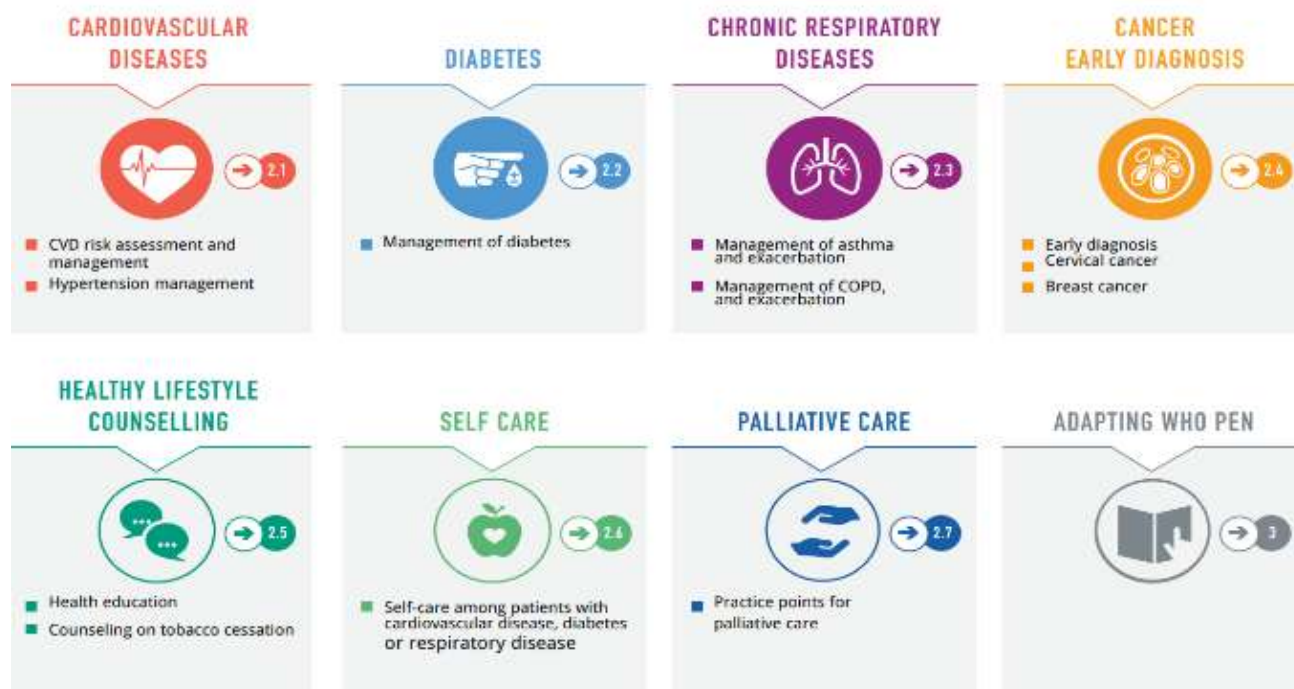
- planning and liaison when people make transitions between services.
- supporting self-care and considering health promotion needs.
- prompt access to treatment which complies with National Institute for Health guidelines and timely referral for appropriate specialist intervention.
- rehabilitation and support in the community and vocational rehabilitation.
- providing equipment and adapted accommodation.
- equitable assessment for MOHW continuing care and access to Services.
- providing palliative care to people who have conditions other than cancer.

**PURPOSE:** Service frameworks will help to strengthen the integration between health and social care services, improve health and social wellbeing by identifying people at risk of ill health, and preventing and protecting people and communities from harm and disease, promote care that is based on research evidence, focus on safe and effective care, improve working between different care professionals and different sectors (i.e., statutory/ government services; community services; charity services and private sector services). (Please see implementation plan as Annex-A and the weblinks for details).

### 3.3 General standards of care for NCDs

The following thirteen general standards have been applied together with the technical and clinical governance standards to develop individual modules of NCD service frameworks in the next section.

Figure 1: Elements of NCD Care



- ➔ **STANDARD 1:** Register clinical details of all people with NCDs - Ensuring establishment and functionality of National Computerised NCD Registers at NCD Clinics and Regional Hospitals.
- ➔ **STANDARD 2:** Prevention of NCDs - The formulation and implementation of a culturally sensitive NCD Prevention Programme with a view to preventing them, particularly in those at high risk e.g. those with a family history, past history, etc.
- ➔ **STANDARD 3:** Identification of people with NCDs - Development of a National Strategy for improving case ascertainment.
- ➔ **STANDARD 4:** Empowering people with NCDs - Development of a systematic culturally sensitive educational programme and community-based support for people with NCDs to empower them.

- ➔ **STANDARD 5:** Clinical care of people - Provision of culturally sensitive, evidence-based and protocol-driven clinical management and rehabilitative care of people in a health setting, community, workplace or any other setting, including improved control of hypertension, diabetes and chronic respiratory conditions for people on treatment of their NCDs.
- ➔ **STANDARD 6:** Clinical and rehabilitative care of people with NCDs - Provision of specific support and optimization of clinical care and rehabilitation programme for people with NCDs.
- ➔ **STANDARD 7:** Management of NCD related emergencies - Development, implementation and monitoring of agreed protocols for effective evidence-based management of NCD emergencies.
- ➔ **STANDARD 8:** Care of people with NCDs referred for hospital admission - Provision of appropriate and coordinated care and support to people with NCDs by multidisciplinary teams during their admission in hospitals. Enhancing skills of staff receiving referrals.
- ➔ **STANDARD 9:** NCDs and Pregnancy - Provision of specialised multidisciplinary diabetes / pregnancy clinics to improve care during pregnancy to enhance maternal and foetal pregnancy outcomes. Strengthen multi-disciplinary team collaboration for NCD management and referrals.
- ➔ **STANDARD 10:** Effective surveillance of NCD related complications - Establishing a mechanism for effective surveillance of complications by maintaining appropriate registers and records.
- ➔ **STANDARD 11:** Management of long term NCD complications - Establishment of evidence-based, protocol-driven effective management of long-term complications in order to reduce risk of disability.
- ➔ **STANDARD 12:** Multi-agency care - Setting-up of an integrated health, community and social care mechanism with joint operational plan and coordinated participation of NGOs.
- ➔ **STANDARD 13:** Research and Training - Establishment of the necessary framework for research and training.

### 3.4 Application of NCD Service Frameworks

The NSF for NCDs will ensure that people presenting with NCDs receive the correct diagnosis and appropriate treatment as soon as possible. People suspected of having an NCD are to have prompt access at the PHC level with accurate diagnosis and treatment as close to home as possible and specialist referral for higher level of care.

Service frameworks will set out the standards of care that patients, carers and their wider family can expect to get in order to help:

- prevent disease or harm.
- manage their own health and wellbeing (i.e., by knowing how to reduce their risk of poor health and knowing what to do if they become ill).
- be aware of the types of treatment and care they can get within health and social care; and,
- be clear about the standards of treatment and care they can expect to receive.

Service frameworks will also be used by several organizations involved in health and social care to plan services, measure performance, and monitor care. These organizations include:

- Health Managers who plan services for the public based on health and social needs.
- Ministries (other than the MOHW) to understand their role in delivering health and social care to people in their sphere of work, bringing horizontal and vertical integration for NCDs.
- National Quality Improvement Authorities and National Audit Office, which encourage improvement in the quality of health and social services through a programme of inspections and reviews.



These frameworks will set out clear and consistent standards of care. These standards have been written with the help of expert advice and seek to ensure that health and social care services are:

- Safe – health and social care which minimizes risk and harm to the public and staff.
- Effective – health and social care that has been shown to improve health and wellbeing for individuals, communities, and populations.
- Efficient – health and social care that is planned and delivered in a way that gives value for money and avoids waste.
- Accessible – health and social care that is timely, within a reasonable travel distance / travel time, and provided in a setting that is appropriate to the needs of the person in terms of skills and resources.
- Patient/client centred – health and social care that takes into account the needs and wishes of service users and carers, and the culture of their communities; and
- Equitable – every person gets the same quality of care regardless of age, sex, ethnicity, race, class or where they live.

### **3.5 Pre-requisites to Establishing Effective Models of NCD Service Delivery**

The NCD National Service protocols mentioned in Chapter-4 are grounded on the health priorities that focus on NCD service provision, with primary health care (PHC) based NSF for NCDs task profiles for the MOHW, that ensure new models of patient-centred care in light of the rising prevalence of NCDs.

In PHC, “relationship-based care” should be ongoing, regular, and proactive to:

- manage chronic conditions before and after acute events by using mechanisms to hand over patients seamlessly between levels of care with good flow of information

- facilitate early detection and proactive disease management, increase health literacy through explicit service protocols and strike balance between primary and hospital care appropriately
- overcoming language and gender barriers to patient empowerment through enduring health professional-patient relationship and providing patient education
- register NCD conditions and remind by phone or mail to attend for check-ups,
- cover diagnostic tests for NCDs screening and organise referral system for acute cases
- formalise the system or mechanism for referring patients back to the primary care level
- ensure patient clinical records travel in either direction or ensure coordination with specialists, make effective referrals to hospitals and reflect propriate evidence-based standards
- make connections to social services and promote peer-to-peer patient support groups
- harness effective multidisciplinary cooperation (between physicians, nurses, health educators)
- organise programme of palliative care, which is offered to patients in such cases
- understand the impact of guidelines to be strengthened, including the supply and prescription of medicines
- undertake public information campaigns or social marketing efforts to enlist patient and citizen support for positive health seeking behaviours.

## Success Story from Mauritius



*Many reforms targeting diabetes care and management have been undertaken by MOHW which include the National Service Framework for Diabetes in 2007, the setting up of a center of excellence for diabetes care, management and training namely the Diabetes and Vascular Health Center at Souillac in 2008, the provision of Digital Retinal Screening Service in all five health regions since 2010, setting up of a structured Diabetic Foot Care Service in 2011, decentralisation of laboratory services for diabetes care (glycosylated haemoglobin or HbA1c testing), creation of new cadres namely diabetologist (for providing specialized care at Primary level), diabetes specialist nurse and specialised nurse (diabetes foot care) to better monitor patients with diabetes.*

### NEEDS IDENTIFIED

National Action Plan | Risk stratification at PHC | Screening & early detection  
PHC Task Profile-NCD focus | Multi-profile PHC Teams | Dedicated agency for QOC  
Education & self-monitoring | Standardized protocols

## NSFD - Pursuing a Mauritian success story

The National Service Framework for Diabetes (NSFD), initiated in 2007, reviewed, strengthened and re-engineered primary, secondary and tertiary prevention strategies with well-defined ten-year targets to reduce complications of diabetes (blindness and end-stage diabetic renal failure by at least one third, amputations related to diabetes by half, and reduce morbidity and mortality from coronary heart disease).

Some of the key service standards identified under the NSFD for implementation include (inter-alia):

- Establishment of national computerized diabetes register
- Implementation of a culturally sensitive diabetes prevention programme
- Development of a national strategy for improving case ascertainment
- Provision of evidence-based and protocol-driven clinical management
- Provision of specific support and clinical care programme for young people with type 1 & 2 diabetes
- Development of a protocol-driven effective management of diabetic emergencies and long-term complications

- Provision of multidisciplinary gestational diabetes clinics to improve care during pregnancy to enhance maternal and foetal pregnancy outcomes

Over the last 10 years, most of the milestones have been achieved. The last NCD Survey (2021) has demonstrated stabilization of the prevalence of diabetes and pre-diabetes and a fall in the proportion of undiagnosed cases of diabetes.

Over the last 5 years, mortality from diabetes has stabilized and mortality from renal failure has almost been halved.

One of the objectives of the NSFD initiated in 2007 was to undertake a vast empowerment programme for people living with diabetes and to reorganize primary, secondary, and tertiary prevention strategies.

The health literacy of the population has improved over the last decade and is reflected in increased awareness of potential health risks associated with smoking, alcohol consumption, unhealthy diet and physical inactivity.

# CHAPTER 4: NCDs SERVICE PROTOCOLS

## Protocol 1: Cardio-vascular diseases

- Cardiovascular risk assessment and management
- Hypertension (sub-protocol)
- Guidelines for Prevention of Heart Attacks, Strokes and Kidney Disease through Integrated Management of Diabetes and Hypertension
- Recommended clinical governance actions for MOHW and partners to implement Cardiovascular Service Framework

## Protocol 2: Diabetes

- Diabetes protocol
- Post-partum follow-up of gestational diabetes mellitus
- Technical Standards for diagnosis and management of diabetes
- Recommended clinical governance actions for MOHW and partners to implement Diabetes service framework

## Protocol 3: Chronic Respiratory Diseases

- Management of Asthma
- Management of Exacerbation of Asthma
- Management of Chronic Obstructive Pulmonary Disease
- Recommended clinical governance actions for MOHW and partners to implement Chronic Respiratory disease service framework

## Protocol 4: Cancer- Early Diagnosis

- Assessment and referral of women with suspected breast cancer at primary health care
- Assessment and referral of women with suspected cervical cancer at primary health care
- Cancer screening services and management of cancer cases
- Recommended clinical governance actions for MOHW and partners to implement Cancer service framework

### Nine NCD Service Protocols

**Protocol 1:** Cardiovascular Diseases

**Protocol 2:** Diabetes

**Protocol 3:** Chronic Respiratory Diseases

**Protocol 4:** Cancer- Early Diagnosis

**Protocol 5:** Mental, Neurological & Substance Abuse Disorders

**Protocol 6:** Oral Health

**Protocol 7:** Disability, Accidents, Violence, and Injuries

**Protocol 8:** Ancillary Non-clinical Services

**Protocol 9:** Team Based Care

## **Protocol 5: Mental, Neurological and Substance abuse disorders**

- History, assessment, management, and treatment
- Individual and population interventions for priority MNS conditions

## **Protocol 6: Oral Health**

- Assessment, diagnosis and treatment in the Public Dental Services
- Assessment and diagnosis of Oral Cancer

## **Protocol 7: Disability, accidents, violence and injuries**

- Disability definition
- Global Action Plan on Road Safety
- Violence definition

## **Protocol 8: Ancillary non-clinical services**

- 8A - Healthy Lifestyle Counselling
- 8B - Self-Care
- 8C - Palliative Care
- 8D - Rehabilitative Care

**Protocol 9: Team-based Care** (Applies to all protocols as a cross-cutting theme).

## 4.1. NCD Protocol 1: CARDIOVASCULAR DISEASES (CVD)

### Cardiovascular disease risk assessment and management



#### WHEN TO USE THIS PROTOCOL

- aged over 40 years
- history of tobacco use
- overweight
- known hypertension
- known diabetes mellitus (DM)
- history of premature CVD in first-degree relatives
- History of DM or kidney disease in first-degree relatives

#### CVD RISK ASSESSMENT AND MANAGEMENT

##### 1. Ask about

- Diagnosed heart disease, stroke, Transient Ischaemic Attack (TIA), DM, kidney disease
- Angina, breathlessness on exertion and lying flat, numbness or weakness of limbs, loss of weight, increased thirst, polyuria, puffiness of face, swelling on feet, passing blood in urine, etc.
- Medicines that the patient is taking
- Current tobacco use (yes/no) (answer yes if tobacco use during the last 12 months)
- Alcohol consumption (yes/no) (if "Yes", frequency and amount)
- Occupation (sedentary or active)  
Engaged in 150 minutes of moderate intensity physical activity per week (yes/no)
- Family history of premature heart disease or stroke in first-degree relatives



##### 2. Assess (physical exam)

- Measure blood pressure
- Look for pitting oedema
- Palpate apex beat for heaving and displacement
- Auscultate heart rhythm and murmurs
- Auscultate lungs (bilateral basal crepitations)
- Examine abdomen (tender liver)
- In DM patients examine feet, sensations, pulses, and ulcers

# DIAGNOSE



Calculate CVD risk using  
a lab-based chart

## Have the following information ready:

- age
- sex
- smoker\* or non-smoker
- presence or absence of diabetes†
- systolic blood pressure
- total blood cholesterol‡

## Using the charts

**STEP 1:** Select the section of the chart as relevant for people with or without diabetes.

**STEP 2:** Select the table for men or women, as appropriate.

**STEP 3:** Select smoker or non-smoker column.

**STEP 4:** Select age-group.

**STEP 5:** Within the selected box find the cell where the person's systolic blood pressure and total blood cholesterol intersect.

**STEP 6:** The colour of the cell indicates the 10-year risk of a fatal or non-fatal CVD event. The value within the cell is the risk percentage. Colour coding is based on the grouping.

	Green	<5%
	Yellow	5% to <10%
	Orange	10% to <20%
	Red	20% to <30%
	Deep red	≥30%

**STEP 7:** Record CVD risk percentage in person's chart.

**STEP 8:** Counsel, treat and refer according to risk level

For more details, please refer to: HEARTS – Technical package for cardiovascular disease management in primary health care – Risk-based CVD management

[Hearts: technical package for cardiovascular disease management in primary health care \(who.int\)](#)

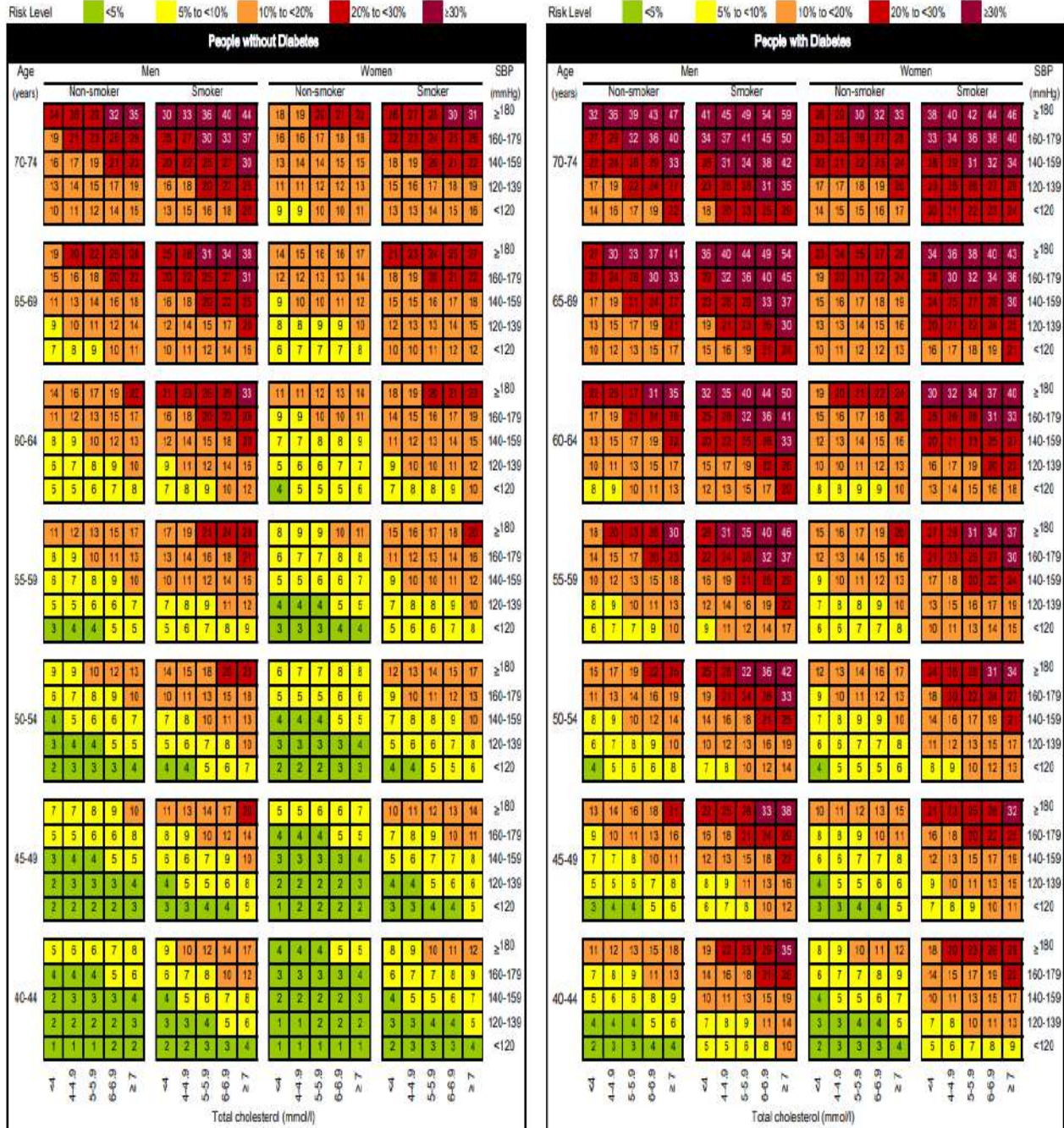
\* For more details, please refer to: HEARTS –Technical package for cardiovascular disease management in primary health care – Risk-based CVD management. [Hearts: technical package for cardiovascular disease management in primary health care \(who.int\)](#)



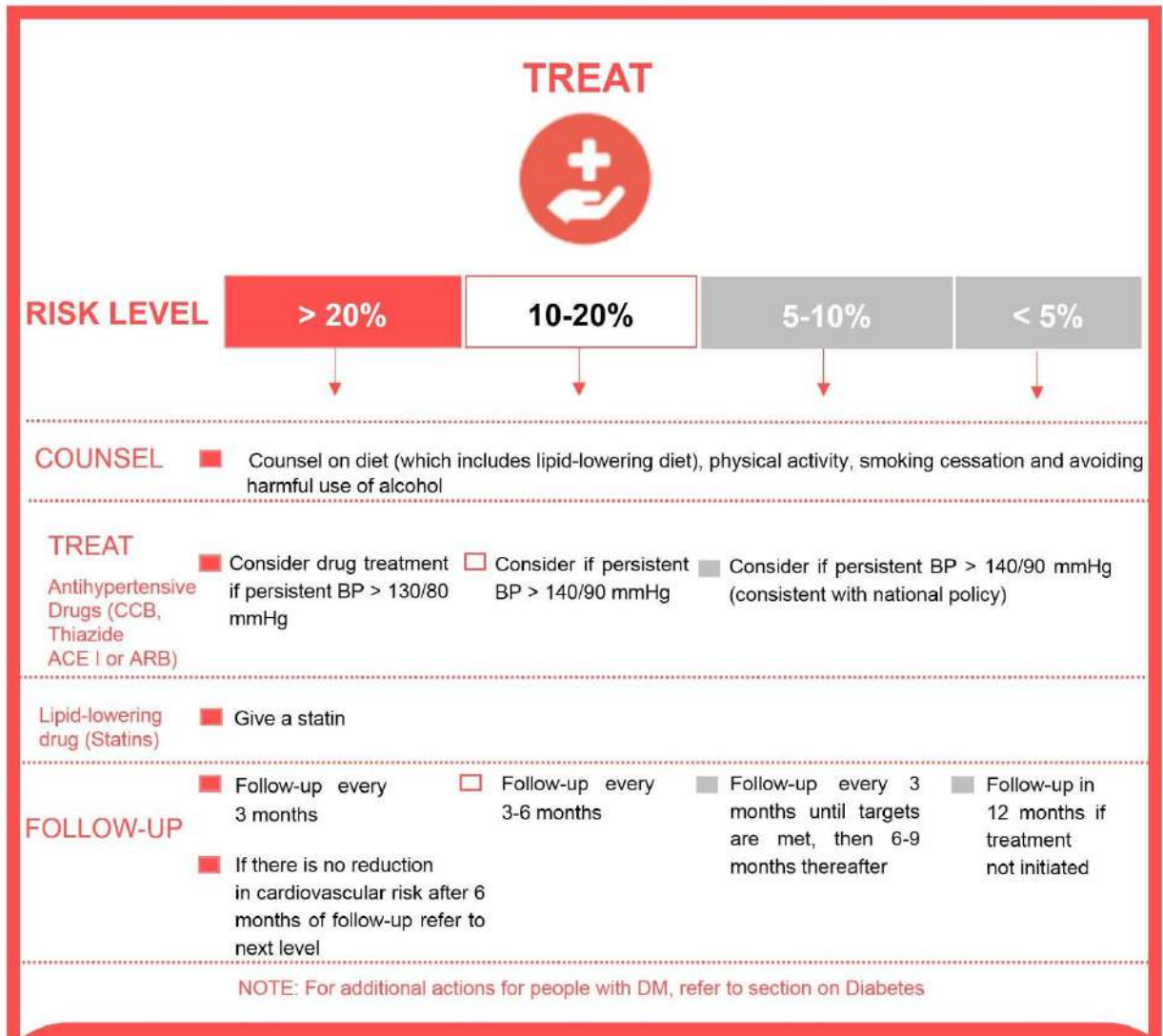
# WHO cardiovascular disease risk laboratory-based charts

## South-East Asia

Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Maldives, Mauritius, Myanmar, Philippines, Seychelles, Sri Lanka, Thailand, Timor-Leste, Viet Nam



NOTE: There is a mobile app available to make cardiovascular risk calculations online: WHOPEN on the App Store (apple.com)



**WHEN CAN TREATMENT DECISIONS BE MADE WITHOUT THE USE OF WHO CVD RISK-PREDICTION CHARTS?**

Some individuals are at very high cardiovascular risk because they have already experienced a cardiovascular event or have very high levels of individual risk factors. Risk stratification is not necessary for making treatment decisions for these individuals as they belong to the high-risk category; all of them need intensive lifestyle interventions and appropriate drug therapy. Risk prediction charts may tend to underestimate cardiovascular risk in such individuals, who include the following:

- patients with established angina pectoris, coronary heart disease, myocardial infarction, transient ischaemic attacks, stroke, or peripheral vascular disease, or who have had coronary revascularization or carotid endarterectomy.
- those with left ventricular hypertrophy (shown on electrocardiograph) or hypertensive retinopathy (grade III or IV);
- individuals without established CVD who have a total cholesterol  $\geq 8$  mmol/L (320 mg/dl) or low-density lipoprotein (LDL) cholesterol  $\geq 6$  mmol/L (240 mg/dl) or TC/HDL-C ratio  $> 8$ .
- individuals without established CVD who have persistent raised blood pressure ( $> 160/100-105$  mmHg);
- For individuals with blood pressure above 140/90 mmHg, management may be provided as per nationally agreed protocols.
- patients with type 1 or 2 diabetes, with overt nephropathy or other significant renal disease.
- patients with known renal failure or renal impairment.

# HYPERTENSION

Blood pressure measurement and control is particularly important in adults who:

- have had prior heart attack or stroke
- are obese
- have diabetes
- use tobacco
- have chronic kidney disease (CKD)
- have a family history of heart attack or stroke

## ASSESS

### Measuring blood pressure

Measuring blood pressure is the only way to diagnose hypertension, as most people with raised blood pressure have no symptoms.

Effective treatment algorithms for hypertension are dependent on accurate blood pressure measurement. The following advice should be followed for measuring blood pressure:

- Use the appropriate cuff size, noting the lines on the cuff to ensure that it is positioned correctly on the arm. (If the arm circumference is > 32 cm, use large cuff).

- Although at the initial evaluation it is preferable to measure blood pressure in both arms and use the arm with the higher reading thereafter, this may not be practical in a busy primary care environment.

- The patient should be sitting with back supported, legs uncrossed, empty bladder, relaxed for 5 minutes and not talking.

- For persons who are getting their blood pressure measured for the first time, it is preferable to take at least two readings and to use the second reading.

## DIAGNOSE

In general, hypertension is diagnosed if, on two visits on different days:

- Systolic blood pressure on both days is between 130-139 mmHg **and/or**
- Diastolic blood pressure on both days is between 80-90 mmHg
- Reference blood pressure measurements for 2 days: 130-80 mmHg and 140-90 mmHg.

## TREAT

### TREATMENT GOAL

- For most patients, blood pressure is considered controlled when SBP < 140 mmHg and DBP < 90 mmHg.
- However, for patients with diabetes or a high risk of CVD, certain guidelines recommend lower targets: SBP < 130 mmHg and DBP < 80 mmHg.

### NON-PHARMACOLOGICAL

- Lifestyle counselling (on healthy diet, physical activity, the harms of tobacco use, and harmful use of alcohol) is a critical component of good hypertension management and is often recommended as a first step for patients with blood pressure of SBP 130-139 mmHg and /or DBP 80-89 mmHg who do not have other CVD risk factors.

### PHARMACOLOGICAL

- There are four main classes of antihypertensive medications:
  1. angiotensin converting enzyme (ACE) inhibitors
  2. angiotensin receptor blockers (ARB)
  3. calcium channel blockers (CCB)
  4. thiazide and thiazide-like diuretics
- Any of these four classes of antihypertensive medication may be used unless there are specific contraindications. Proper treatment of hypertension usually requires a combination of hypertension medications.

## Guidelines for the prevention of Heart Attacks, Strokes and Kidney Disease through Integrated Management of Diabetes and Hypertension

<b>Action-1: Ask about</b>	
<ul style="list-style-type: none"> <li>• Diagnosed heart disease, stroke, TIA, DM, kidney diseases.</li> <li>• Angina, breathlessness on exertion, and lying flat, numbness or weakness of limbs, loss of weight, increased thirst, polyuria, puffiness of face, swelling of feet, passing blood in urine, etc.</li> <li>• Medicines that the patient is taking.</li> <li>• Current tobacco use (yes/no) in last 12 months.</li> </ul>	<ul style="list-style-type: none"> <li>• Alcohol consumption (yes/no) (if 'yes' frequency and amount).</li> <li>• Occupation (sedentary or active).</li> <li>• Engaged in more than 30 minutes of physical activity at least 5 days a week (yes/no).</li> <li>• Family history of premature heart disease or stroke in first degree relatives.</li> </ul>
<b>Action-2: Assess, physical exam and blood and urine test</b>	
<ul style="list-style-type: none"> <li>• Waist circumference. measure BP, look for pitting oedema.</li> <li>• Palpate apex beat for heaving and displacement.</li> <li>• Auscultate heart (rhythm and murmurs).</li> <li>• Auscultate lungs (bilateral basal capitations).</li> <li>• Examine abdomen (tender liver).</li> <li>• In DM patients, examine feet, sensations, pulses /ulcers</li> </ul>	<ul style="list-style-type: none"> <li>• Urine ketones (in newly diagnosed DM) and protein.</li> <li>• Total cholesterol.</li> <li>• Fasting or random blood sugar (point of care devices can be used for testing blood sugar if laboratory facilities are not available).</li> </ul>
<b>Action-3: Assessment of total CVD risk</b>	
<ul style="list-style-type: none"> <li>• Assessment of total CVD risk can be used for routine management of hypertension (HTN) and diabetes mellitus (DM), and for targeting the following categories of people:</li> <li>• age &gt;40 years</li> <li>• smokers</li> </ul>	<ul style="list-style-type: none"> <li>• obesity</li> <li>• known to have HTN</li> <li>• known to have DM</li> <li>• history of premature CVD in first-degree relative</li> <li>• history of DM or kidney disease in first-degree relative.</li> </ul>
<b>Action-4: Referral criteria for visits</b>	
<ul style="list-style-type: none"> <li>• BP &gt;200/&gt;120mmHg (urgent referral).</li> <li>• BP<math>\geq</math>140 or <math>\geq</math>90mmHg in people &lt; 40 yrs (to exclude secondary hypertension).</li> <li>• Known heart disease, stroke, transient ischemic attack, DM, kidney disease (for assessment, if not done).</li> <li>• New chest pain or change in severity of angina or symptoms of transient ischemic attack or stroke.</li> <li>• Target organ damage (e.g., angina, claudication, heaving apex, cardiac failure).</li> <li>• Cardiac murmurs.</li> <li>• Raised BP <math>\geq</math>140/90 (in DM above 130/80mHg) while on treatment with 2 or 3 agents.</li> </ul>	<ul style="list-style-type: none"> <li>Any proteinuria.</li> <li>• Newly diagnosed DM with urine ketones 2+ or in lean persons of &lt;30 yrs.</li> <li>• Total cholesterol &gt;8mmol/L.</li> <li>• DM with poor control despite with maximal metformin with or without sulphonylureas.</li> <li>• DM with severe infection and/or foot ulcers.</li> <li>• DM with recent deterioration of vision or no eye exam in 2 years.</li> <li>• High cardiovascular risk.</li> </ul>

**If referral criteria are not present, go to action 5**

**Action 5: Management of total CVD risk**

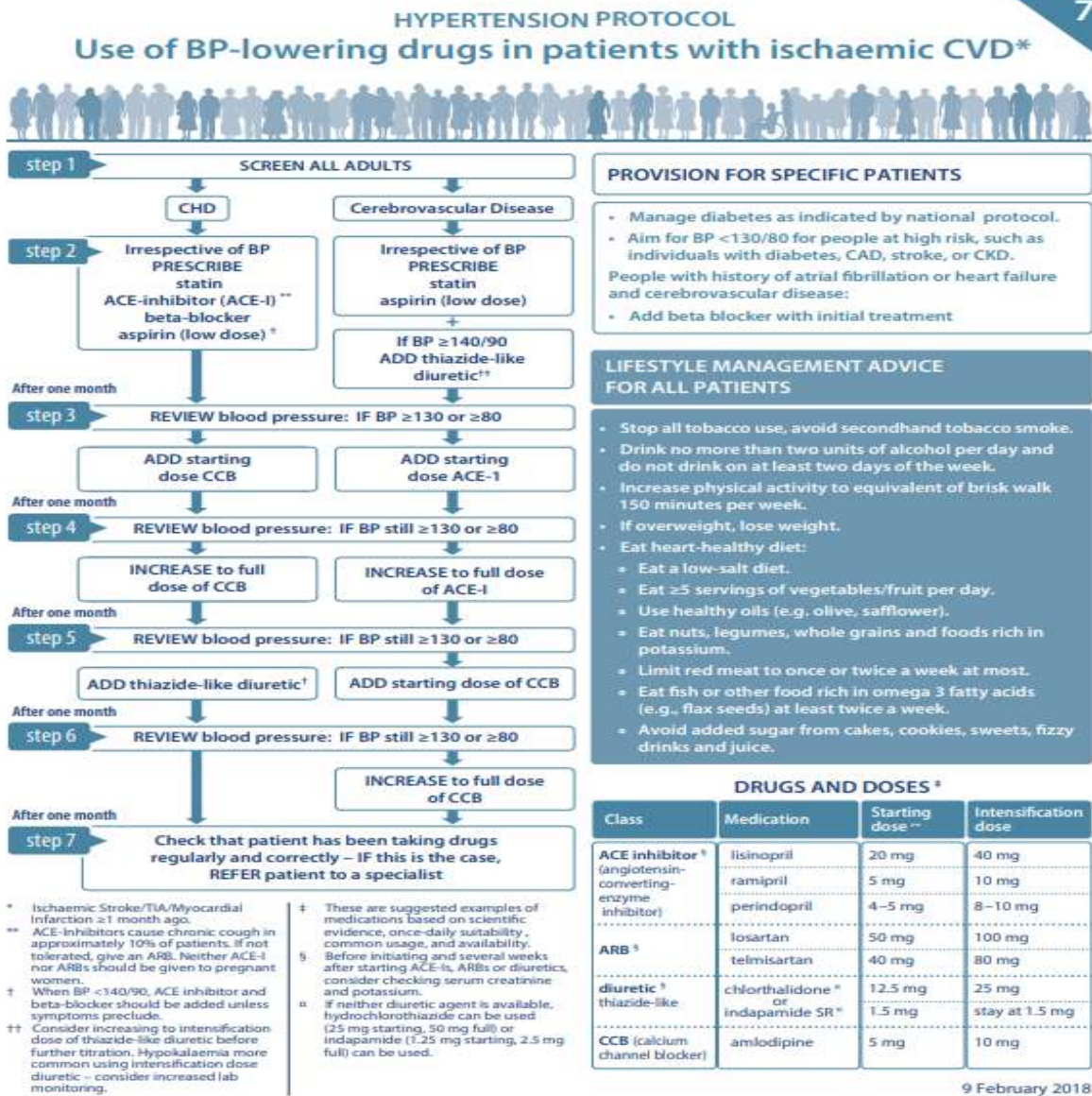
<b>Management of total CVD risk (adapted from WHO PEN Protocol 1)</b>	
<b>Risk &lt;10%</b>	Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol. If risk <5%, follow up in 12 months. If risk 5% to <10%, follow up every 3 months until targets are met, then 6–9 months thereafter.
<b>Risk 10% to &lt;20%</b>	Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol. Persistent BP $\geq$ 140/90 mmHg consider drugs (see below). Follow up every 3–6 months.
<b>Risk &gt;20%</b>	Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol. Persistent BP $\geq$ 130/80, consider drugs (see below). Give a statin. Follow up every 3 months. If there is no reduction in cardiovascular risk after six months of follow-up refer to next level.
<b>Important practical points</b>	<p>Management of hypertension and diabetes:</p> <ul style="list-style-type: none"> <li>• For management of hypertension refer to HEARTS technical package E module (18): <a href="https://www.who.int/cardiovascular_diseases/hearts/en/">https://www.who.int/cardiovascular_diseases/hearts/en/</a></li> <li>• For management of diabetes mellitus type 2, refer to the HEARTS module Diagnosis and management of diabetes (19): <a href="https://www.who.int/publications-detail/who-ucn-ncd-20.1">https://www.who.int/publications-detail/who-ucn-ncd-20.1</a></li> </ul>
	<p>Consider drug treatment for following categories:</p> <ul style="list-style-type: none"> <li>• All patients with established DM and CVD (coronary heart disease, myocardial infarction, transient ischaemic attacks, cerebrovascular disease or peripheral vascular disease), renal disease. If stable, should continue the treatment already prescribed and be considered as having risk &gt;20%.</li> <li>• People with albuminuria, retinopathy, left ventricular hypertrophy.</li> <li>• All individuals with persistent raised BP <math>\geq</math>160/100 mmHg.</li> <li>• All individuals with total cholesterol at or above 8 mmol/L (320 mg/dL).</li> </ul>
	<p>Follow-up visits:</p> <ul style="list-style-type: none"> <li>• Ask about: new symptoms, adherence to advice on tobacco and alcohol use, physical activity, healthy diet, medications etc.</li> <li>• Assess (physical exam).</li> <li>• Estimate cardiovascular risk.</li> <li>• Refer if necessary.</li> <li>• Counsel all and treat as shown in protocol.</li> </ul>

18 – HEARTS Link: [WHO-NMH-NVI-18.2-eng.pdf](https://www.who.int/publications-detail/who-ucn-ncd-20.1)

19 – HEARTS Link: <https://www.who.int/publications-detail/who-ucn-ncd-20.1>

## CRITERIA FOR THE REFERRAL OF HYPERTENSIVE PATIENTS

- Patients with controlled hypertension will be referred to Community Health Centers (CHCs) for follow-up by Community Physicians and Medical Health Officers and Senior Medical Health Officers.
- Diabetics who are being followed-up by a Diabetologist/Endocrinologist (as mentioned in the diabetic referral protocol, p.39) and are also hypertensive, will be followed-up by Diabetologist/Endocrinologist.
- Patients with resistant hypertension will be referred to physicians at Medicinics at the first instance.



## **Recommended clinical governance actions for MOHW and partners to implement Cardiovascular Service Framework with quality**

- MOHW should work with schools, workplaces and communities to increase the emergency life support (ELS) skills of members of the public.
- All adults should be advised on how to keep their blood pressure at the right level and have it checked every five years as from the age of 45.
- Drug treatment to reduce high blood pressure should be offered to all people under 80 years who have Stage 1 hypertension (and Stage 2 hypertension regardless of age), and organ damage, cardiovascular disease, kidney disease, diabetes or a one in five chance of getting cardiovascular disease over the next ten years.
- Everyone with a family history of familial hypercholesterolaemia (FH) should be identified and treated. Their names should be kept on a register to help identify, test and treat other family members who might be at risk. Set-up Obesity clinic//Weight management clinics at the PHC level.
- Anyone with an irregular heartbeat (atrial fibrillation) should have their risk of stroke assessed and treated as soon as possible.
- All patients diagnosed with chronic heart failure should be referred from PHC and managed by a specialist team from diagnosis to the end of their life.
- All patients with new chest pain suggesting angina should be examined at PHC and referred to a specialist clinic within a week of referral.
- All patients who need cardiac rehabilitation should get it from a specialist team, including the Systematic Renal Risk Assessment.
- All patients suffering from a heart attack should have the appropriate treatment within the recommended time for their condition.
- Anyone suspected of having a mini stroke and referred by the PHC should have rapid specialist assessment, diagnosis and treatment to avoid a major stroke and other cardiovascular problems.

- Anyone suspected of having a stroke and referred by the PHC should have rapid access to specialist assessment, brain scans and emergency treatment, including clot-busting drugs.
- Anyone who has had a stroke and referred by the PHC should have access to a specialist team as soon as he/she goes to the hospital.
- Anyone who has lymphoedema and referred by the PHC should have specialist treatment near to where he/she lives and be offered the right treatment within 2 weeks.
- Risk factor- Peripheral Arterial Disease (PAD) - Anyone diagnosed with PAD and referred by the PHC should have his/herr cardiovascular risk factors assessed and managed.
- Anyone with Chronic Kidney Disease (CKD) and referred by the PHC should receive fast diagnosis and effective treatment and follow-up.
- Anyone with cardiovascular disease and referred by the PHC should get medicines that help him/her to live as good and long a life as possible.
- People with terminal illnesses, together with their careers, should be supported to have a good death in the place they prefer.
- Develop, implement and monitor policies that reduce the prevalence of coronary risk factors in the population, and reduce inequalities in risks of developing heart disease.
- MOHW should contribute to a reduction in the prevalence of smoking in the local population.
- PHC teams should identify all people with established cardiovascular disease and offer them comprehensive advice and appropriate treatment to reduce their risks.
- PHC teams should identify all people at significant risk of cardiovascular disease but who have not yet developed symptoms and offer them appropriate advice and treatment to reduce their risks.
- People with symptoms of a possible heart attack should receive help from an individual equipped with and appropriately trained in the use of a defibrillator within 8 minutes of calling for help, to maximise the benefits of resuscitation should it be necessary.



- People thought to be suffering from a heart attack should be assessed professionally and, if indicated, receive aspirin. Thrombolysis should be given within 60 minutes of calling for professional help.
- MOHW should put in place agreed protocols/systems of care so that people admitted to hospital with proven heart attack are appropriately assessed and offered treatments of proven clinical and cost effectiveness to reduce their risk of disability and death.
- People with symptoms of angina or suspected angina should receive appropriate investigation and treatment to relieve their pain and reduce their risk of coronary events.
- People with angina that is increasing in frequency or severity should be referred to a cardiologist urgently or, for those at greatest risk, as an emergency.
- MOHW should put in place hospital-wide systems of care so that patients with suspected or confirmed coronary heart disease receive timely and appropriate investigation and treatment to relieve their symptoms and reduce their risk of subsequent coronary events.
- MOHW should arrange for people with suspected heart failure to be offered appropriate investigations (e.g. electrocardiography, echocardiography) that will confirm or refute the diagnosis. For those in whom heart failure is confirmed, its cause should be identified – the treatments most likely to both relieve symptoms and reduce their risk of death should be offered.
- MOHW should put in place agreed protocols/systems of care so that, prior to leaving hospital, people admitted to hospital suffering from coronary heart disease have been invited to participate in a multidisciplinary programme of secondary prevention and cardiac rehabilitation. The aim of the programme will be to reduce their risk of subsequent cardiac problems and to promote their return to a full and normal life.

## 4.2. NCD Protocol 2: DIABETES

### TYPE-1 DIABETES (juvenile, insulin-dependent)

A chronic condition where the pancreas produces little or no insulin. Characterized by increased thirst, frequent urination, hunger, sudden weight loss, and weakness. Elevated levels of blood glucose, which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. Urgent medical attention is usually recommended in severe cases. Type-1 diabetes can be life-threatening, but it is a treatable condition.

#### SYMPTOMS

- Increased thirst
- Frequent urination
- Extreme hunger
- Unintended weight loss
- Irritability and other mood changes
- Fatigue and weakness
- Blurred vision

#### CAUSES

- Exact cause of this condition is not known.
- Type 1 Diabetes is a result of an auto-immune destruction of pancreatic islet cells that produce insulin
- Genetics also plays a role in type 1 diabetes
- Pancreatic diseases can also be the cause of type 1 diabetes
- The risk factors include Age - The children between the ages 4 and 7 years old and also in 10 years and 14 years are at high risk, other risk factors: Genetics, Family history.

#### DIAGNOSIS

- Glucose hemoglobin test: Also known as HbA1c test, provides average blood sugar level of past 2-3 months.
- Fasting blood sugar (FBS): Usually performed after overnight fasting. Result of this test can confirm Random blood sugar (RBS); Performed any time of the day and it may be repeated to confirm high blood sugar.
- diabetes based on blood glucose level.



#### COMPLICATIONS

Type 1 diabetics are prone to a life-threatening condition called diabetic ketoacidosis requiring urgent hospital-based treatment. In addition, diabetes is a major risk factor for atherosclerosis. This causes blood vessels to become clogged causing both micro and macrovascular complications

- Microvascular complications affect eyes, kidneys, and nerves.
- Macrovascular complication affects heart, brain, and blood vessels.
- Kidney failure, stroke, heart disease, blindness, blood vessel blockages due to cholesterol plaques (requiring angioplasty/stent placement, amputations, or bypass operations).

#### PREVENTION OF COMPLICATIONS\*

##### FOOT COMPLICATIONS:

- Regular (3–6 months) visual inspection examine Patient's feet for the detection of risk factors for ulceration (foot sensation, palpation of foot pulses, deformity, inspection of footwear).

##### PREVENTION OF ONSET AND PROGRESSION OF CHRONIC KIDNEY DISEASE:

- Optimal glycaemic control
- Angiotensin-converting enzyme inhibitor for persistent albuminuria

##### PREVENTION OF ONSET AND PROGRESSION OF DIABETIC RETINOPATHY:

- Screening for diabetic retinopathy and referral for laser treatment if indicated
- Optimal glycaemic control and blood pressure control  
Optimal glycaemic control

##### PREVENTION OF ONSET AND PROGRESSION OF NEUROPATHY:

- Optimal glycaemic control

REHABILITATION – Please see the next page

# TYPE-2 DIABETES



Type-2 Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves.

## TREATMENT OPTIONS

- A healthy diet to achieve or maintain normal body weight and regular physical activity are the mainstay of diabetes management. All patients should be advised on avoidance of tobacco use and harmful use of alcohol.
- Management of risk factors and referral as appropriate.
- Oral hypoglycaemic agents for type 2 diabetes if glycaemic targets are not achieved with lifestyle modification.
- Metformin can be used as the first-line medicine.
- Other classes of antihyperglycemic agents, added to metformin if glycaemic targets are not met.
- Statins are recommended for all people with type 2 diabetes older than 40 years, but only if this does not negatively impact access to glucose-lowering and blood pressure lowering medication, if have CVS risk factor - conduct Cardio-vascular risk assessment

## MORE INFORMATION

HEARTS – D module on diagnosis and management of type 2 diabetes  
<https://www.who.int/publications-detail/who-ucn-ncd-20.1>

## PREVENTION OF COMPLICATIONS\*

### FOOT COMPLICATIONS:

- Regular (3–6 months) visual inspection and examination of patients' feet by for the detection of risk factors for ulceration (foot sensation, palpation of foot pulses, deformity, inspection of footwear).

### PREVENTION OF ONSET AND PROGRESSION OF CHRONIC KIDNEY DISEASE:

- Optimal glycaemic control
- Angiotensin-converting enzyme inhibitor for persistent albuminuria

### PREVENTION OF ONSET AND PROGRESSION OF DIABETIC RETINOPATHY:

- Screening for diabetic retinopathy and referral for laser treatment if indicated
- Optimal glycaemic control and blood pressure control Optimal glycaemic control

### PREVENTION OF ONSET AND PROGRESSION OF NEUROPATHY:

- Optimal glycaemic control

### REHABILITATION

- Gait therapy – to maintain coordinated lower extremity movement and posture.
- Visual therapy—to improve visual-motor skills and reaction time, attention & anticipation, peripheral visual awareness, hand-eye coordination, response to visual stimuli, and ability to perform neuro-cognitive tasks.
- Dysphagia—External electrical stimulation to help swallowing process by nerve stimulation.

# ASSESS

## RISK FACTORS

- Overweight
- Physical inactivity
- Having a first-degree relative with diabetes
- History of gestational diabetes or preeclampsia
- uHistory of CVD, hypertension, dyslipidaemia
- pre-diabetes mellitus, polycystic ovarian syndrome

### Symptoms

- Polyuria (excessive passing of urine)
- Polydipsia (excessive thirst)
- Unexplained weight loss
- Polyphagia (excessive hunger)
- Vision changes
- Fatigue
- Oligomenorrhoea, infertility

### Signs

- Acute metabolic deterioration and/or acute presentation of chronic complications
- Severe dehydration
- Kussmaul's respiration
- Altered level of consciousness
- Complications (acute coronary disease, stroke, kidney disease, vision loss, diabetic foot)
- Hirsutism, acne, Acanthosis Nigricans



# Chronic Kidney Disease

## ONCE A YEAR CKD SCREENING FOR HIGH RISK PATIENTS

<ul style="list-style-type: none"> <li>Diabetes</li> <li>Cardiovascular disease</li> <li>Age &gt;60</li> <li>Previous AKI</li> <li>Autoimmune disease</li> </ul>	<ul style="list-style-type: none"> <li>Hypertension</li> <li>Obesity</li> <li>Family CKD history</li> <li>Urological disease</li> <li>NSAIDs exposure.</li> </ul>	<p>Test early morning in absence of meat meal and exercise within 12h, fever, UTI, dehydration and menses:</p> <ul style="list-style-type: none"> <li>- Urinary ACR on early morning sample (preferred) OR a 24h protein excretion</li> <li>- Midstream urine for MC&amp;S and look for abnormal sediment (red/white blood cells, hyaline/cellular casts)</li> <li>- U+E, creatinine blood test</li> </ul>
--	---	--

## MANAGEMENT OF CKD

### LHC/AHC

Diabetic kidney disease with creatinine <200  
 Non diabetic CKD creat <200 if cause known and patient stable



### MOPD

Diabetic kidney disease 200 <Creatinine <300  
 Non diabetic CKD if 200<Creat <300  
 Non diabetic CKD if creat <200 and cause needs investigating



### ROPD

All CKD Creatinine >300  
 All kidney transplant and dialysis patients  
 Regardless of creatinine level:  
 -Glomerulonephritis or renal vasculitis suspected  
 -Nephrotic syndrome not attributable to DM  
 -Hereditary CKD (ADPKD, Alport's)  
 -Complicated nephrolithiasis  
 -Annual creatinine increase >50% of baseline



**Individualize** targets and agents (care with elderly patients)  
**BP goal** <130/80 for ACR > 3mg/mmol/l (proteinuria >150mg/24h) or CVD risk reduction. Either ACE-1 or ARB as first line but not together. Watch out for hyperkalaemia and AKI  
**Diet and lifestyle measures:** <5g of salt/day. Mild protein restriction <1.3 g/kg/day. Physical activity 150min/week. Healthy weight (BMI 20 to 25) Stop smoking.  
**Diabetes control** Target HbA1c ~7%. Continue metformin unless creatinine > 200umol/l. Watch out for hypoglycaemia with sulphonylureas (only use gliclazide) and insulin.  
**Statin-based therapy** for all CKD patients. **ASA** for secondary prevention.  
**Anaemia** should be thoroughly investigated as renal anaemia is rare if creatinine <200umol/l. Give up to 3 months of oral iron on an empty stomach .  
**No oral calcium** for CKD patients unless hypocalcaemic. Alfacalcidol should only be prescribed by the nephrology team.  
**Drug dosing** according to eGFR. **Avoid NSAIDs**. **Annual flu vaccination**

## REFER AKI IMMEDIATELY TO CASUALTY

AKI is present if creatinine rises by 50% within 7 days or patient is not passing little urine for 12 hours (urinary retention should be excluded)

Nephrology Guideline MIH

## FOLLOW NATIONAL GUIDELINES



## DIAGNOSE



- **Fasting plasma glucose (FPG)** is the most practical test for low-resource settings, given its low cost. HbA1c can also be used, but is more costly.
- **Plasma glucose 2 hours after a 75 g oral glucose load (OGTT)** can also be used to screen for and diagnose diabetes, but is less practical and more costly.
- **If patient is not fasting and has symptoms, a random plasma glucose (RPG) test** can also be performed. It is the least accurate of the diagnostic tests. It is useful to confirm the diagnosis in person with symptoms; however, a negative test does not rule out the diagnosis of diabetes.

TEST	mmol/L	mg/dl
Fasting plasma glucose (FPG) <sup>a</sup>	≥ 7	≥ 126
Random plasma glucose (RPG) <sup>b</sup>	≥ 11.1	≥ 200
Plasma glucose 2 hours after a 75 g oral glucose load-OGTT <sup>b</sup>	≥ 11.1	≥ 200
	mmol/L	%
Haemoglobin A1c	≥ 48	≥ 6.5%

<sup>a</sup> Fasting: no food and only water for 8-14 hours before the test

<sup>b</sup> Point of care devices can be used in diagnosing diabetes if laboratory services are not available.

### DIAGNOSTIC CRITERIA FOR GESTATIONAL DIABETES

**SIGNS AND SYMPTOMS** – increased thirst, frequent urination, excessive sweating, overweight, fatigue

**DIAGNOSIS** – Diabetes screening as part of pregnancy tests and tests for glucose levels before and after the meals





### TREATMENT GOAL

- HbA1c < 7% is generally considered to be adequate glycaemic control
- If HbA1c is not available, fasting plasma glucose (FPG < 7.0 mmol/L or < 126mg/dl)
- Women trying to conceive and have started the pre-conception clinic should have pre-conception Level of HbA1C < 6.5%.

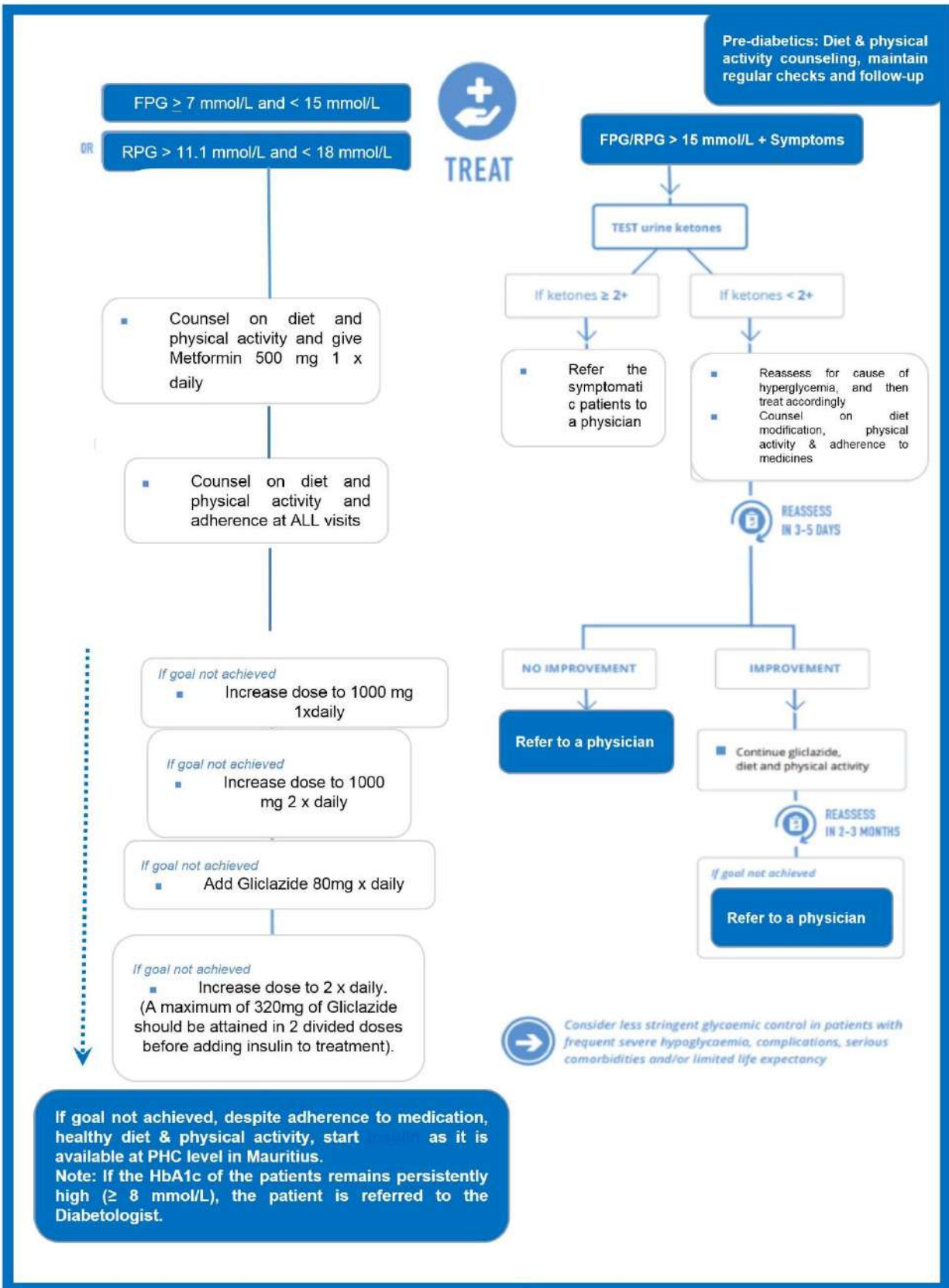
### PHARMACOLOGICAL

- **Metformin** is recommended as the first-line medicine in the treatment of diabetes. **Sulfonylurea (e.g., gliclazide)** is recommended as the second-line treatment, and **human insulin** as the third-line treatment.
- Patients may require two or three medicines. Although there is other medicine, including DPP-4 inhibitors, SGLT2 inhibitors, and GLP-1 receptor agonists, these medicines tend to be costly than metformin, sulfonylurea and insulin, with currently limited evidence of superior effectiveness. They may, however, be considered in the cases when treatment with metformin, sulfonylurea, and insulin is not possible. Insulin treatment should be introduced and monitored according to national practices.

**NOTE:** Hypertension treatment is indicated when SBP > 130 and/or DBP >80. Statins are recommended for all people with type 2 diabetes older than 40 years, but only if this does not negatively impact access to glucose lowering and blood pressure-lowering medication

### NON-PHARMACOLOGICAL

- Patients should receive counselling and support on lifestyle change including diet, physical activity, and smoking [cessation](#) at the time of diagnosis, then annually and whenever changes in treatment occur.
- Group education is effective and less costly than individual programmes.



# COMPLICATIONS

## SCREENING FOR CHRONIC COMPLICATIONS

- Measure blood pressure at every scheduled visit, review medication as per hypertension protocol
- REFER for dilated-pupil retinal exam upon diagnosis and every 2 years thereafter, or as per ophthalmologist recommendation
- Examine feet for ulcers, deformity, calluses. REFER to higher level of care if ulcer present (diabetic foot care clinic). Examine for any pathology (risk factors) present and REFER to Diabetes foot clinic.
- Assess risk of lower limb amputation annually (foot pulses, sensory neuropathy by monofilament, presence of healed or open ulcers, calluses). REFER to higher level of care if ulcer present or pulse absent. Also examine the footwear.
- Test for proteinuria annually (Albuminuria – Urine ACR ideally).
- REFER to higher level of care if positive Perform Kidney Risk Assessment Score (eGFR).

## MANAGEMENT OF ACUTE COMPLICATIONS

### SEVERE HYPOGLYCAEMIA OR SIGNS

(plasma glucose < 50 mg/dl or 2.8 mmol/L)

- **If conscious**, give a Glucose tablet(s)/15g if mealtime – turn away for snack to follow-up
- **If unconscious**, give 20–50 ml of 50% glucose (dextrose) IV over 1–3 minutes
- Assess patient status – if on (s/u or insulin)

### SEVERE HYPERGLYCAEMIA OR SIGNS AND SYMPTOMS

(Plasma glucose > 15 mmol/L and urine ketone 2+)

- Set up intravenous drip 0.9% NaCl 1 litre I/V
- Assess what treatment patient is on
- Drip should be individualized
- First pint – Fast
- Second pint – over half an hour time
- REFER to hospital
- Call SAMU

## FOLLOW UP

- When diabetes is diagnosed, monitor glycaemic control every 3 months until diabetes is controlled, then every 6 months after that.
- HbA1c is the most accurate measurement of long-term glycaemic control and represents the average blood glucose over the previous two to three months. HbA1c, 7% is generally considered to be adequate glycaemic control. In people with frequent severe hypoglycaemia, severe complications and low life-expectancy, the goal for HbA1c could be relaxed, e.g. to <8%. If the HbA1c of the patients remains persistently high ( $\geq 8$  mmol/L), the patient is referred to the Diabetologist.
- Fasting plasma glucose (FPG <7.0mmol/l or <126 mg/dl) can also be used to monitor control when HbA1c testing is not available.

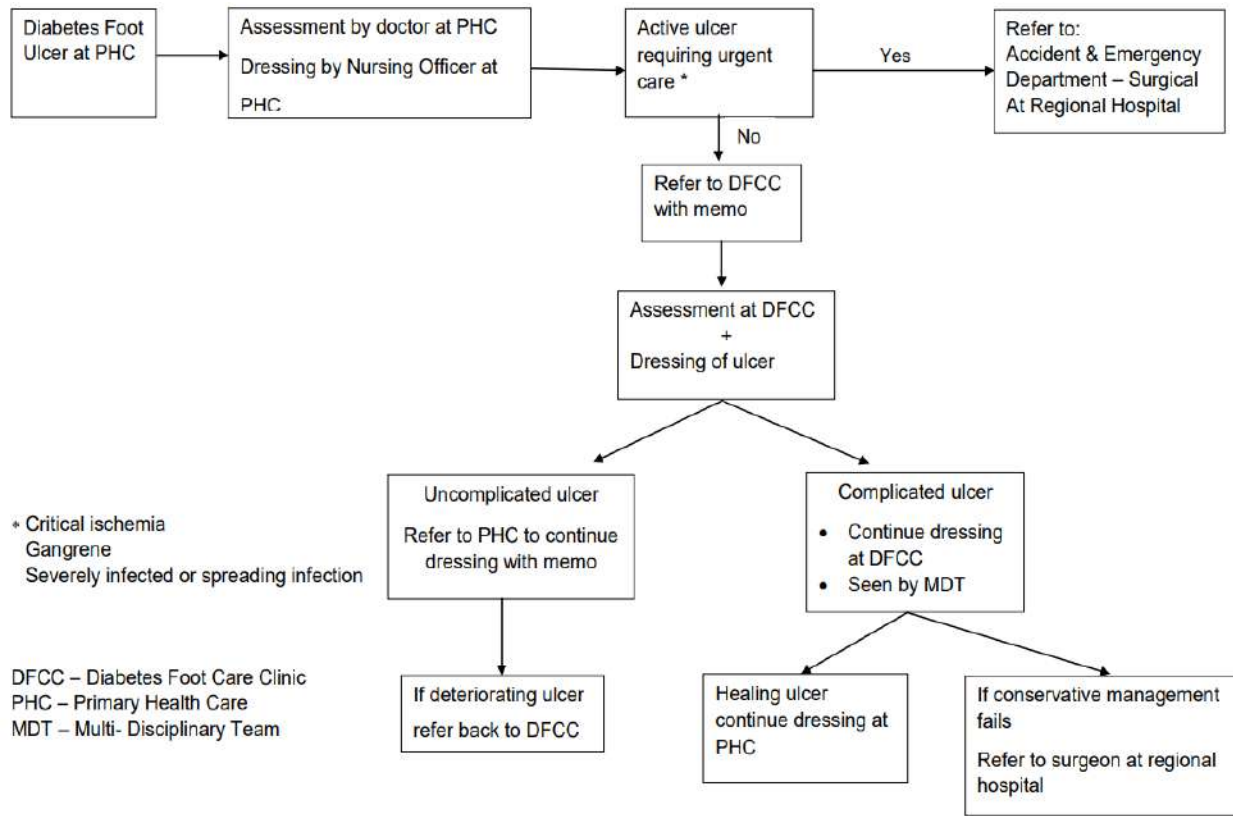


Refer to higher level of care if goal is not achieved in 3 months, if ketones are 2+, and if there is no improvement in urine ketones after pharmacological intervention, diet and exercise modification. (Note: If test for ketones not available at PHC level, look for appropriate options).

For further details, please refer to Diagnosis and management of type-2 Diabetes - [HEARTS\\_D\\_DIABETES.pdf](#)



## Pathway for the management of Diabetic foot ulcer at PHC level



Note: All healed ulcers are considered as “high-risk foot” and should be routinely referred to specialised nurses (Diabetes Foot Care Clinics) for ongoing surveillance.

## Protocol for the referral of Diabetic patients

- Poorly controlled diabetics with HbA1c > 8.0% will be referred to Diabetologist/Endocrinologist
- Diabetics with HbA1c between 7.0% to 8.0% will be referred to Area Health Centers (AHCs) and Medicinics to be followed by Community Physicians.
- Diabetics with HbA1c < 7.0% will be referred to Community Health Centers for follow-up.
- Diabetics with Chronic Kidney Disease and Creatinine < 30 µmol/L will be seen by Diabetologist/Endocrinologist in Area Health Centers and Medicinics. For those with Creatinine level > 300 µmol/L, they will be seen by a Nephrologist at the Regional Hospital.

## National Protocol Summary for the Diagnosis and Management of Type-2 Diabetes

### DIAGNOSTIC CRITERIA

1. HbA1C  $\geq$  6.5%. The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay OR
2. FPG  $\geq$  7.0 mmol/L (126 mg/dl). Fasting is defined as no caloric intake for at least 8 h OR
3. 2-h plasma glucose  $\geq$  11.1 mmol/L (200 mg/dl) during an OGTT. The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water OR
4. In a patient with classic symptoms of hyperglycaemia or hyperglycaemic crisis, a random plasma glucose  $\geq$  11.1 mmol/L (200 mg/dl).

### ASSESSMENT CRITERIA

**Medical Examination:** • Measurement of height, weight, waist, BMI • Measurement of blood pressure • Thyroid examination • Skin examination for acanthosis nigricans • Urine tested for albumin • Record made of current physical activity/recreational exercise levels, smoking history and alcohol consumption and salt intake • ECG as baseline

**Laboratory evaluation** • Glycosylated haemoglobin (HbA1C) • Fasting Plasma Glucose • Fasting blood lipids-cholesterol and triglycerides, HDL, LDL • Serum urea and creatinine • Liver function test • Full blood count.

**Screening for complications** • Retinal screening • ECG • Examination of feet for pulses, loss of sensation to touch/vibration, infections • Urine for microalbuminuria (albumin/creatinine ratio).

### MANAGEMENT OF TYPE-2 DIABETES

#### NON-PHARMACOLOGICAL MANAGEMENT:

Individualized nutrition plan by a dietician. Avoid pure sugars in food and drinks. Encourage whole meal cereals, vegetables and fresh fruits. Restrict the use of saturated fats. Use vegetable oils as part of a calorie-controlled diet. Consumption of oily fish, salt restriction, weight reduction, physical activity for 30 minutes on most days of the week.

#### PHARMACOLOGICAL MANAGEMENT:

**Metformin** - First line pharmacological therapy, but not indicated for patients with chronic kidney disease with an eGFR of  $\leq$ 30ml/min/1.73m<sup>2</sup>. Starting dose is 500mg, escalating up to 2000mg in divided doses over several weeks, based on patients' tolerability.

**Sulphonylureas** (Gliclazide) - Second line therapy as an add-on to metformin or as first line therapy in case of contraindications or intolerance to metformin. Precautions - should be taken with sulphonylureas in the following conditions: • Elderly • Renal impairment. Starting dose 40-80mg once a day, can be increased to a maximum dose of 320mg in 2 divided doses.

**Insulin** is indicated when • Combination therapy with other agents fails • Patient with symptomatic hyperglycaemia and an A1C level  $>$  9.0% who are either drug naive or on a treatment regimen • In pregnant women with Type 2 DM who fail to reach target glycaemic control with diet only or who were on oral hypoglycaemic agents prior to pregnancy. Refer to Algorithm for Insulin Therapy in the National Guidelines.

## Protocol: Postpartum Follow-up of women with Gestational Diabetes Mellitus (GDM)

1. Diabetes Specialised Nurses (DSN) based at the NCD Secretariat of each regional hospital will collect information (Name, address, contact number, date of delivery) from all GDM patients admitted in the postnatal wards. They will give a request form to these patients for a standard 75g OGTT to be carried out at 6 weeks post-partum at a health centre nearest to their place of residence. DSN will inform these patients about the importance of follow-up of GDM and will counsel these patients.
2. The DSN posted at the hospital will also compile and maintain a database on cases of GDM discharged from the hospital in their respective health region. A Gestational diabetes register with follow-up data will be kept at the NCD Secretariat.
3. The DSN will classify these patients according to the nearest primary health care service point and will send this list to the midwives and DSN based at these centres on a monthly basis. The latter will liaise with and give a copy of this list to the midwives based in the primary health care centres (Mediclinics/Area Health / Community Health Centres).
4. The first OGTT at 6 weeks post-delivery will be performed by the midwives in the Primary Health Care Centres, and a monthly return with results will be submitted to DSN based at these centres.
5. This first postpartum OGTT will be carried out at 0 hrs fasting and at 2 hrs after a dose of 75 gm of glucose.
6. In case GDM mothers do not attend for OGTT, midwives will recall them by telephone and letter until 8 weeks post-delivery and will carry out the OGTT. However, in case they still do not turn up by 8 weeks, then the DSN will take over the recall process up to 12 weeks for OGTT.
7. In case a GDM patient does not attend for the OGTT until 12 weeks after delivery, an HbA1C is recommended instead of an OGTT when the patient finally attends.
8. The DSN will follow up cases of GDM at 1 year postpartum and at every subsequent year for 5 years altogether. At these follow-up visits a HbA1C test will be carried out and women will receive one-to-one counselling about a healthy lifestyle for prevention of diabetes.
9. Any patient developing diabetes or pre-diabetes during the follow-up period will be referred for further management. All new cases of diabetes should be notified on the prescribed form.
10. In case past GDM mothers become pregnant within the 5 years' follow-up period, the existing antenatal protocol should be followed.
11. DSN from Primary Health Care Centres will submit a three-monthly report to the NCD Secretariat of their health region about the details of the GDM cases followed up. NCD coordinators from the NCD Secretariat will submit an annual report of GDM cases to the Director Health Services (NCD).
12. The proper implementation of the protocol will be supervised by the NCD Coordinator and the Diabetologist of the health region.

## Technical Standards: Diabetes – Standards and Evidence

### Evidence-based diagnosis and management of type 2 diabetes in primary health care and low-resource settings

#### Glycaemic control

##### EVIDENCE 1:

Lowering of plasma glucose towards normal values relieves symptoms of hyperglycaemia and has a beneficial effect on macrovascular and microvascular complications. There is evidence of moderate quality that lowering glycaemia has a modest beneficial effect on cardiovascular disease risk (9% reduction). The Diabetes Control and Complications Trial (DCCT) has shown that better glycaemic control reduces the risk of microvascular complications in type 1 diabetes and subsequent epidemiological follow-up of the trial cohort suggests that the risk of macrovascular complications is reduced as well by intensive glucose control.

Patients with newly diagnosed diabetes and urine ketones 2+ or with newly diagnosed diabetes in persons aged <30 years should be referred to the higher level of care. Even younger persons, who are overweight/obese in their 20s, develop complications early.

Reducing the risk of cardiovascular disease and diabetic nephropathy - Morbidity and mortality from cardiovascular disease (CVD) are two to five times higher in persons with diabetes compared to people without diabetes, and diabetes confers about a two-fold excess risk for a wide range of vascular diseases, independently from other conventional risk factors.

#### Giving statins to patients with type 2 diabetes for primary prevention

##### EVIDENCE 2:

Statins (3-hydroxymethyl-3-methylglutaryl coenzyme A reductase inhibitors) have been found to reduce CVD risk in persons at high risk. Statins have a beneficial effect on all-cause mortality, re-vascularization, risk of myocardial infarction and stroke, and cause relatively mild adverse events. There should be a policy to test HDL and LDL separately instead of only total cholesterol.

Conduct CVD risk assessment and give a statin to patients with type 2 diabetes aged  $\geq 40$  years. Statins used in clinical trials with diabetic patients included in the systematic review were of daily dosage (mg) Lovastatin 20-40 Simvastatin 40 Pravastatin 10-40 Atorvastatin. Contraindicated in HIV positive patients receiving protease inhibitors or ritonavir.

The UKPDS found a 25% relative risk reduction in aggregate microvascular endpoints in the intensively treated group.

### **Advice on diet and physical activity**

The majority of persons with Type 2 diabetes are overweight or obese, which further increases their risk of macrovascular and microvascular complications through worsening of hyperglycaemia, hyperlipidaemia and hypertension.

#### **EVIDENCE 3:**

Advice on diet and physical activity improve outcomes in diabetic patients. Individualized diet plans to be given to patients based on socio-economic status. Prescribe exercise and support from office of the Ministry of Sports and follow-up.

### **Measuring HbA1c**

There is some indication that better glycaemic control, as measured by glycated haemoglobin (HbA1c) could be achieved when dietary advice is combined with advice on exercise. Despite the low quality of the evidence, advice on diet and physical activity is recommended as the intervention is deemed feasible, is low-cost, has a low risk of adverse events and not been proven to be ineffective by high quality evidence. The standard on favouring foods with a low glycaemic index is based on a systematic review that found a favourable effect of such a diet on glycaemic control. However, no studies were conducted in low-resource settings and the concept of the glycaemic index might be too complex for this diet to be feasible in areas of low literacy and basic health services.

#### **EVIDENCE 4:**

Diabetes is a progressive illness. Introduction of oral hypoglycaemic agents (OHA) will often be necessary in patients on diet treatment only, and the dosage further increased to improve glycaemic control. In studies of where intensive glycaemic control was compared with less intensive control in patients with type 2 diabetes, there was no glycaemic control threshold effect for complications. However, it was shown that patients who achieved HbA1c values of 7% or below had a significantly lower risk of microvascular

complications than did less intensively treated patients who achieved a higher mean HbA1c value (7.9-9.4%) (18;19;24). An HbA1c value of approximately 7% is associated with fasting plasma glucose concentration of approximately 6.5mmol/l.

**EVIDENCE 5:**

### **Use of Metformin**

Metformin is used as first-line oral hypoglycaemic agent in patients with type 2 diabetes unless contraindicated or serious side effects.

**EVIDENCE 6:**

### **Use of Sulfonylurea**

Sulfonylurea is used as second-line oral hypoglycaemic agent in patients with type 2 diabetes, or first-line if Metformin is contraindicated.

**EVIDENCE 7:**

### **Reducing risk of cardiovascular disease and diabetic nephropathy**

Morbidity and mortality from cardiovascular disease (CVD) are two to five times higher in persons with diabetes compared to people without diabetes, and diabetes confers about a two-fold excess risk for a wide range of vascular diseases, independently from other conventional risk factors.

Treatment standards are based on the level of CVD risk as estimated by the WHO CVD risk-assessment tool. Diabetic nephropathy occurs in about 25% of people with type 2 diabetes, and a substantial proportion progresses to end-stage renal disease.

**EVIDENCE 8:**

### **Antihypertensive treatment**

Blood pressure lowering in diabetic patients reduces the risk of microvascular and macrovascular complications. Target blood pressure aims to improve outcomes in patients with type 2 diabetes.

**EVIDENCE 9:**

### **Prevention of lower limb amputations**

Diabetes is the leading cause of non-traumatic lower limb amputations. The lifetime risk of developing foot ulcers in persons with diabetes is about 15%. These lesions may become infected and ultimately result in amputation because of gangrene.

A high value is placed on avoiding lower limb gangrene and need for amputation. Patients with severe foot infection and/or foot ulcers should be referred to the Multi-Disciplinary Team of diabetologist, surgeon and a

vascular surgeon should be involved as and when indicated.

**EVIDENCE 10:**

**Prevention of blindness**

Diabetic retinopathy is a major cause of vision loss worldwide. The disease evolves through recognizable stages in its progression to blindness, is an important public health problem and there are effective and accepted screening tests. Timely laser photocoagulation therapy can prevent progression of vision loss.

**EVIDENCE 11:**

**Hypoglycaemic emergencies**

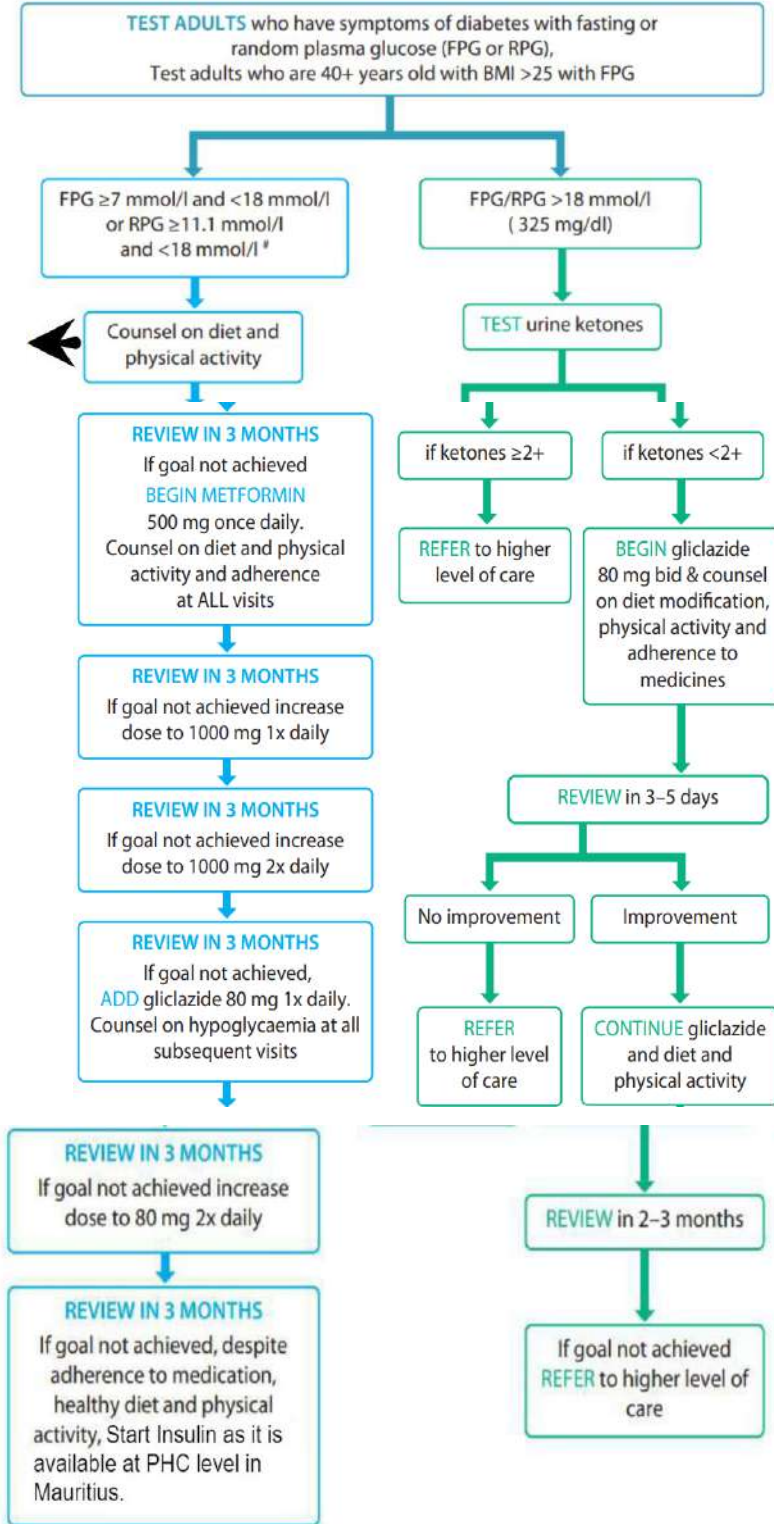
Hypoglycaemia (low blood glucose) is a frequent complication in diabetic patients receiving medication to lower blood glucose, particularly sulfonylurea and insulin. The brain requires a continuous supply of glucose and this is dependent on arterial plasma glucose concentrations. Severe hypoglycaemia is defined as hypoglycaemia where the patient is unable to self-treat. It can cause loss of consciousness and coma, lead to neuronal death and is potentially life-threatening. The leading functional brain failure caused by hypoglycaemia is corrected after blood glucose concentration is raised. This can be accomplished by ingestion of carbohydrates, if that is feasible or parenteral glucose if not feasible.

Parenteral therapy is necessary when the patient is unable or unwilling to ingest glucose or sucrose orally. However, evidence on the recommended oral or parenteral dosage and frequency is of very low quality, as the effects of various doses have not been investigated systematically.

## DIABETES PROTOCOL

### Type 2 diabetes management protocol derived from WHO-PEN

Give Metformin 500mg OD (Optional)



#### SCREENING FOR CHRONIC COMPLICATIONS

- Measure blood pressure at every scheduled visit, review medication as per hypertension protocol
- REFER for dilated-pupil retinal exam upon diagnosis, and every two years thereafter, or as per ophthalmologist recommendation
- Examine feet for ulcers at every visit. REFER to higher level of care if ulcer present
- Assess risk of lower limb amputation annually (foot pulses, sensory neuropathy by monofilament, presence of healed or open ulcers, calluses). REFER to higher level of care if ulcer present or pulse absent
- Test for proteinuria annually. REFER to higher level of care if positive.

#### MANAGEMENT OF ACUTE COMPLICATIONS

**Severe hypoglycaemia** (plasma glucose <50 mg/dl or 2.8 mmol/l) or signs:

- If conscious, give a sugar-sweetened drink
- If unconscious, give 20–50 ml of 50% glucose (dextrose) IV over 1–3 minutes.

**Severe hyperglycaemia** (plasma glucose >18 mmol/l (325 mg/dl) and urine ketone 2+) or signs and symptoms of severe hyperglycaemia:

- Set up intravenous drip 0.9% NaCl 1 litre in 2 hours; continue at 1 litre every 4 hours, REFER to hospital.

#### Goal for glycaemic control

#### Plasma glucose\*\*

Goal for glycaemic control	Plasma glucose**
Fasting	≤7.0 mmol/l (126mg/dl) <sup>†</sup>

# refer to table on diagnostic values for other tests which can be used to diagnose diabetes.

\* If they are more affordable than insulin, DPP4-inhibitors, SGLT2-inhibitors or pioglitazone can be used before insulin in cases of treatment failure with metformin and gliclazide. Introduce and titrate insulin treatment according to local practices.

\*\* HbA1c should be used where available.

† Consider less stringent glycaemic control in patients with frequent severe hypoglycaemia, advanced complications, serious comorbidities and/or limited life expectancy.



## Recommended clinical governance actions for MOHW and partners to implement Diabetes Service Framework with quality

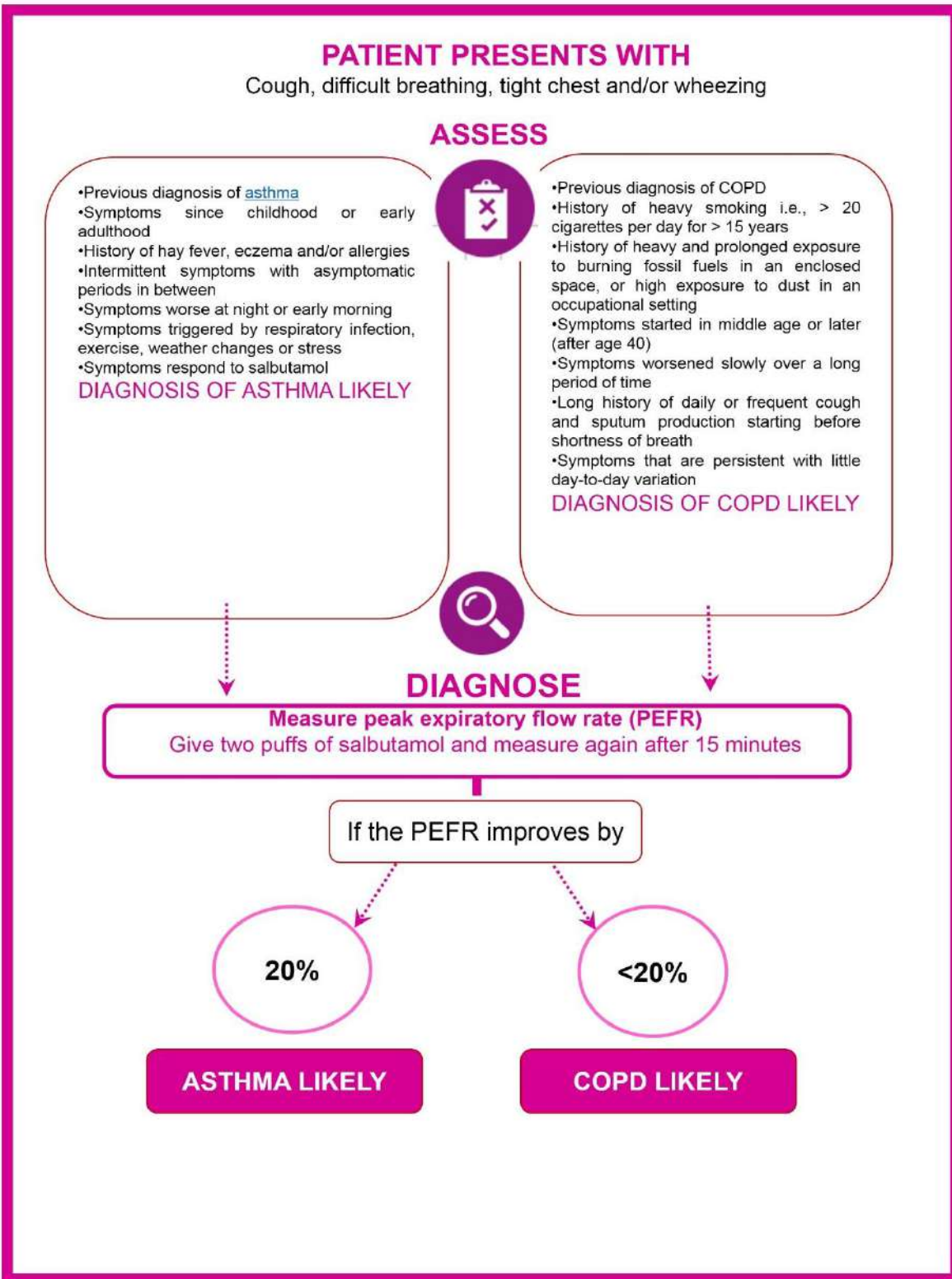
- MOHW should implement and monitor strategies to reduce the risk of developing Type 2 diabetes in the population as a whole and to reduce the inequalities in the risk of developing Type 2 DM.
- MOHW should develop, implement and monitor strategies to identify people who do not know they have diabetes.
- All children, young people and adults with diabetes should receive a service which encourages partnership in decision-making, supports them in managing their diabetes and helps them to adopt and maintain a healthy lifestyle. This should be reflected in an agreed and shared care plan in an appropriate format and language. Where appropriate, parents and carers should be fully engaged in this process.
- All adults with diabetes should receive high-quality care throughout their lifetime, including support to optimize the control of their blood glucose, blood pressure and other risk factors for developing complications of diabetes, management of those complications (i.e. amputation) and rehabilitation.
- All children and young people with diabetes should receive consistently high-quality care and they, with their families and others involved in their day-to-day care, and be supported to optimise the control of their blood glucose and their physical, psychological, intellectual, educational and social development.
- All young people with diabetes should experience a smooth transition of care from paediatric diabetes services to adult diabetes services, whether hospital or community-based, either directly or via a young people's clinic. The transition should be organised in partnership with each individual and at an age appropriate to and agreed with them.
- MOHW should develop, implement and monitor agreed protocols for rapid and effective treatment of diabetic emergencies by appropriately trained health care professionals. Protocols should include the management of acute complications and procedures to minimise the risk of recurrence.
- All children, young people and adults with diabetes admitted to hospital, for whatever reason, should receive effective care of their diabetes. Wherever possible, they should continue to be involved in decisions concerning the management of their diabetes.
- MOHW should develop, implement and monitor policies that seek to empower and support women with pre-existing diabetes and those who develop diabetes or pre-diabetes

during pregnancy, and follow-up after delivery, to optimise the outcomes of their pregnancy, and follow-up after delivery.

- All young people and adults with diabetes should receive regular surveillance for the long-term complications of diabetes.
- MOHW should develop, implement and monitor agreed protocols and systems of care to ensure that all people who develop long-term complications of diabetes receive timely, appropriate and effective investigation and treatment to reduce their risk of disability and premature death.
- All people with DM requiring multi-disciplinary support should receive integrated health & social care.
- Cases of Latent Autoimmune Diabetes Adults (LADA) which are being underestimated should be addressed (not at first-level healthcare facility).
- Early detection of diabetes mellitus and pre-diabetes, early optimization of treatment and early prevention of complications should be ensured.

4.3.

**NCD Protocol 3: CHRONIC RESPIRATORY DISEASES**



# MANAGEMENT OF ASTHMA

## SYMPTOMS OF BRONCHIAL ASTHMA

- Cough
- Chest tightness
- Difficult breathing
- Wheezing

*These symptoms are episodic or seasonal, vary over time and intensity and are worse during night and early morning*



## ASSESS

Is the asthma well controlled?

Ask if the patient exhibits ALL of the following:

- exhibits daytime asthma symptoms and uses a beta agonist one or two times a week;
- exhibits night time asthma symptoms one or two times per month

- puts no or only minimal limitations on daily activities;
- has had no severe exacerbation (i.e. requiring oral steroids or admission to hospital within a month);
- a PEFR, if available, above 80% predicted.

NO

YES

## Non pharmacological approach

This should be advised in all patients to help in better control of the disease.

### Exposure prevention

- Smoking cessation and avoid exposure to passive smoke
- Avoid asthma triggers if known
- Avoid dusty and smoke-filled rooms
- Avoid drugs like NSAIDs and beta blockers

### Patient and family education

#### Key educational messages include:

- The importance of physical activity and regular exercises
- Information on the reversible nature of the illness, and that asthma can be controlled but may need continuous therapy and regular follow up
- Rationale for inhaled drugs, different inhaler devices and inhalation techniques
- Information that inhalers are not habit-forming, and are safe and better than tablets or syrup
- Patients should to carry their device at each follow up visit
- The need for adherence to prescribed drugs to control the condition
- Advice regarding dealing with triggers/precipitants



## TREAT

### Stepwise approach Pharmacological approach

- 1** Inhaled salbutamol prn + Low inhaled corticosteroids
- 2** Inhaled salbutamol prn plus low-dose inhaled beclometasone, starting with 100 µg twice daily for adults and 100 µg once or twice daily for children
- 3** Same as step 2, but give higher doses of inhaled beclometasone, 200 µg or 400 µg twice daily
- 4** Add step-3 treatment, long-acting beta agonists and/or leukotriene antagonists.
- 5** Add oral prednisolone, but in the lowest dose possible to control symptoms (nearly always less than 10 mg daily)

As each step, check the patient's adherence to treatment and observe their inhaler technique



## FOLLOW UP

Review asthma control every 3-6 months and more frequently when treatment has been changed or asthma is not well controlled.

### Asthma is controlled when:

- Symptoms are present only during the day (daytime asthma)
- Use of salbutamol is limited to no more than twice a week
- Night symptoms occur fewer than twice a month
- No or minimal limitation of daily activities
- No severe exacerbations within a month
- PEFR > 80% of predicted

### Referral for specialist when:

- asthma remains poorly controlled
- the diagnosis of asthma is uncertain
- regular oral prednisolone is required to maintain control



Referral: Call SAMU and give inhaled corticosteroids

## MANAGEMENT OF EXACERBATION OF ASTHMA

Use Pulse Oxygen Peak Flow Meter



### ASSESS SEVERITY

#### MILD TO MODERATE

- PEFr 33-50% best or predicted
- Respiratory rate > 25 breaths/min (adults)
- Heart rate > 110 beats / minute (adult)

#### SEVERE

- Altered conscious level, exhaustion, arrhythmia, hypotension, cyanosis, silent chest, poor respiratory effort.
- SpO<sub>2</sub> < 92%



### MANAGEMENT OF ASTHMA EXACERBATION (Gina, 2019):

#### A - Mild to moderate exacerbation:

- Oral Prednisolone 40mg+nebulize with Salbutamol 5mg solution
- If no, or little improvement, repeat nebulization every 20 minutes for 1 hour
- Check SPO<sub>2</sub>, if SPO<sub>2</sub> ≤ 92%, give Oxygen to maintain SPO<sub>2</sub> around 95%
- If improved, discharge on ICS-LABA+oral Prednisolone 40mg OD for 5-7 days
- If no improvement, arrange to transfer to Regional Hospital

#### B - Severe exacerbation

- Oxygen to maintain SPO<sub>2</sub> > 94%
- Injection Methylprednisolone 40mg IV
- Nebulize with Salbutamol 5mg+Ipratropium Bromide 0.5mg. Repeat if needed
- Arrange for immediate transfer to ICU

#### Regarding prevention

- Avoid cigarette smoke & trigger factors for asthma, if known.
- Avoid dusty & smoke filled rooms
- Avoid occupations that involve agents capable of causing occupational asthma
- Reduce dust as far as possible by using damp clothes to clean furniture, sprinkling floor with water before seeping, cleaning blades of fans regularly, minimizing soft toys in the sleeping area.
- It may help to eliminate cockroaches from the house (when the patient is away) and shake and expose mattress, pillows and blankets, etc to sunlight.



### COUNSEL

#### Regarding treatment, ensure that the patient or parent:

- Knows what to do if the asthma gets worse
- Understands benefit of using inhalers, rather than tablets & why adding a spacer is helpful.
- Is aware that inhaled steroids take several days or even weeks to be fully effective.

#### FACTORS THAT MAY TRIGGER OR WORSEN ASTHMA

- Indoor allergens (e.g. house dust mites in bedding, carpets, stuffed furniture, pollution & pet dander.
- Outdoor allergens (i.e. pollens & moulds).
- Tobacco smoke
- Chemical irritants in the work place
- Cold air
- Extreme emotional arousal (anger or fear)
- Physical exercise
- Certain medications (such as Aspirin and other non-steroidal anti-inflammatory drugs and beta blockers.

# MANAGEMENT OF COPD

## SYMPTOMS SUGGESTIVE OF COPD

- Breathlessness (or a "need for air")
- Chronic cough
- Sputum (mucous) production

\* Depending on the local risk of infection with Tuberculosis, pulmonary TB should always be suspected if cough lasts more than 2 weeks.



## ASSESS SEVERITY

Measure PEFr and oxygen saturation, if possible

### MODERATE

- If breathless with normal activity

### SEVERE

- If breathless at rest



## TREAT

- 1 Inhaled salbutamol, two puffs as required, up to four times daily
- 2 *If symptoms are still troublesome,* consider low-dose oral theophylline
- 3 *If ipratropium inhalers are available,* they can be used instead of or added to salbutamol, but they are more expensive

## EXACERBATION OF COPD

- Antibiotics should be given for all exacerbations with evidence of infection
- For severe exacerbations, give oral prednisolone 30–40 mg for around seven days
- Give high doses of inhaled salbutamol by nebulizer or metered dose inhaler with spacer (e.g. four puffs every 20 minutes for 1 hour) or by nebulizer
- Oxygen, if available, should be given through a mask that limits the concentration to 24% or 28%

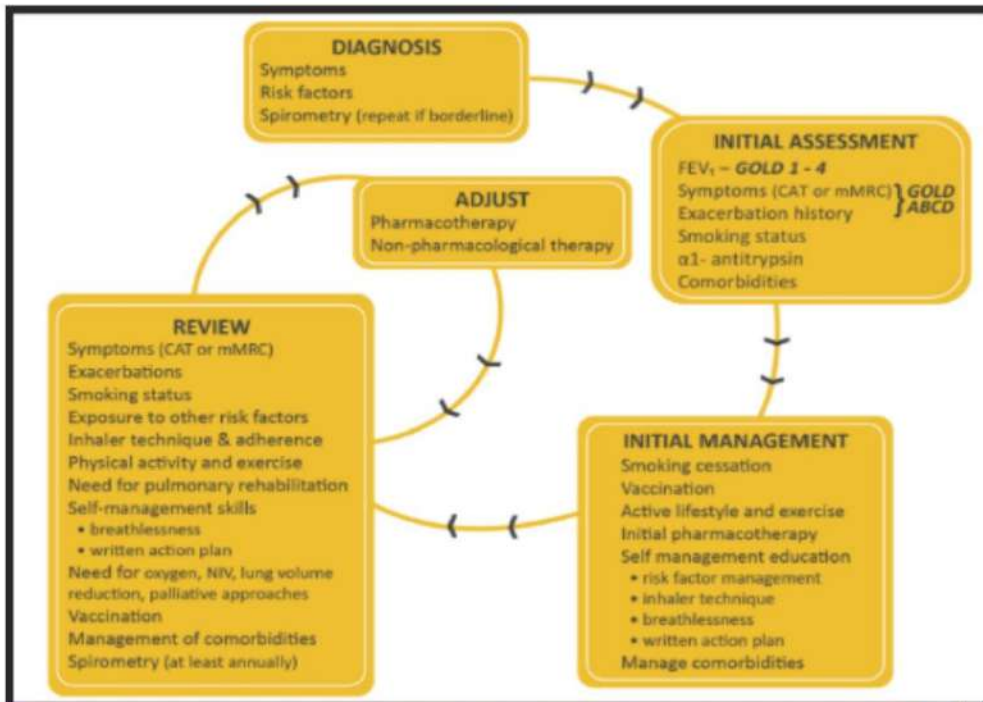


## COUNSEL

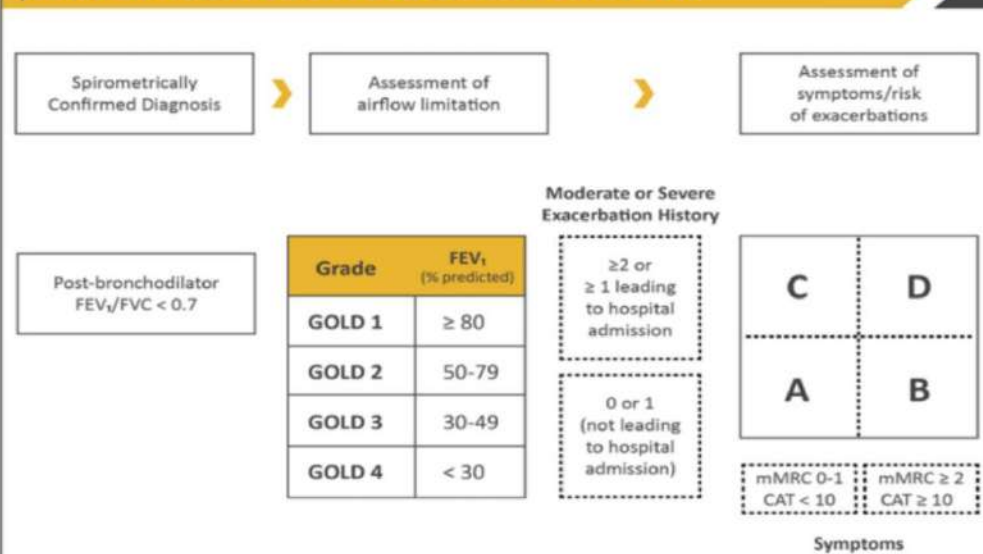
Advice to patients and families

- ensure they understand that smoking and indoor air pollution are the major risk factors for COPD – therefore, patients with COPD must stop smoking and avoid dust and tobacco smoke
- keep the area where meals are cooked well ventilated by opening windows and doors
- cook with wood or carbon outside the house, if possible, or build an oven in the kitchen with a chimney that vents the smoke outside
- stop working in areas with occupational dust or high air pollution – using a mask may help, but it needs to have an appropriate design and provide adequate respiratory protection

## MANAGEMENT OF COPD – GOLD GUIDELINES 2021



### ▶ THE REFINED ABCD ASSESSMENT TOOL



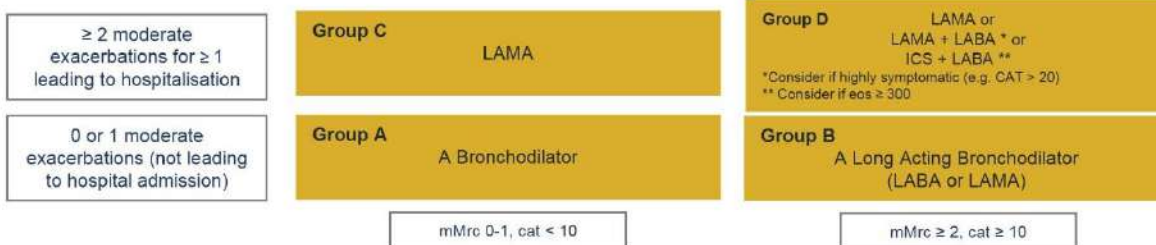
Ref: Global Initiative for Chronic Obstructive Lung Disease ([GOLD\\_2021](#))

## MANAGEMENT OF COPD – GOLD GUIDELINES 2021

### DIAGNOSIS – consider the following aspects:

- Presence of pyrometric abnormality and its severity
- Current nature and magnitude of symptoms
- History of moderate and severe exacerbations and future risk
- Presence of comorbidities

**Initial Management** should address reducing exposure to risk factors, such as smoking cessation, general advice on healthy living and the patient's co-morbidities should be provided. Tetanus, diphtheria, and pertussis (TdaP) vaccination should be offered to adults with COPD who were not vaccinated in adolescence to protect against pertussis.



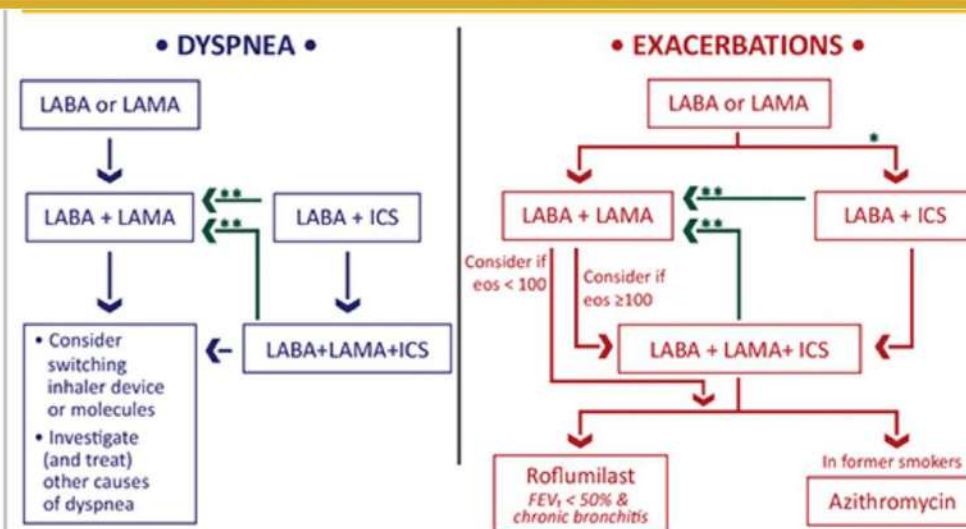
**Patient review and treatment reassessment** - Patients should be reassessed to determine whether the treatment goals of reducing the risk of exacerbations or reducing breathlessness and improving exercise capacity have been achieved and if not whether there are any correctable barriers to successful treatment, such as poor inhaler technique or poor adherence. At this review it is also essential to consider non-pharmacological interventions such as pulmonary rehabilitation and smoking cessation. If the response to the initial therapy is sufficient the treatment should be continued, but if the patient is continuing to have problems despite the initial therapy the treatment should be modified.

The algorithm proposed by GOLD requires the clinician to identify what the predominant treatable trait is (i.e. persistent dyspnoea, continuing exacerbations, or both) and what therapy the patient is currently receiving. The clinician should then use either the left-hand side of the figure below if the problem is persisting dyspnoea or the right-hand side if it is continuing exacerbations either in isolation or with persistent dyspnoea.

1. IF RESPONSE TO INITIAL TREATMENT IS APPROPRIATE, MAINTAIN IT.

2. IF NOT:

- ✓ Consider the predominant treatable trait to target (dyspnea or exacerbations)
- Use exacerbation pathway if both exacerbations and dyspnea need to be targeted
- ✓ Place patient in a box corresponding to current treatment and follow indications
- ✓ Assess response, adjust and review
- ✓ These recommendations do not depend on the ABCD assessment at diagnosis



eos = blood eosinophil count (cells/ $\mu$ L)

\* Consider if eos  $\geq$  300 or eos  $\geq$  100 AND  $\geq$  2 moderate exacerbations / 1 hospitalization

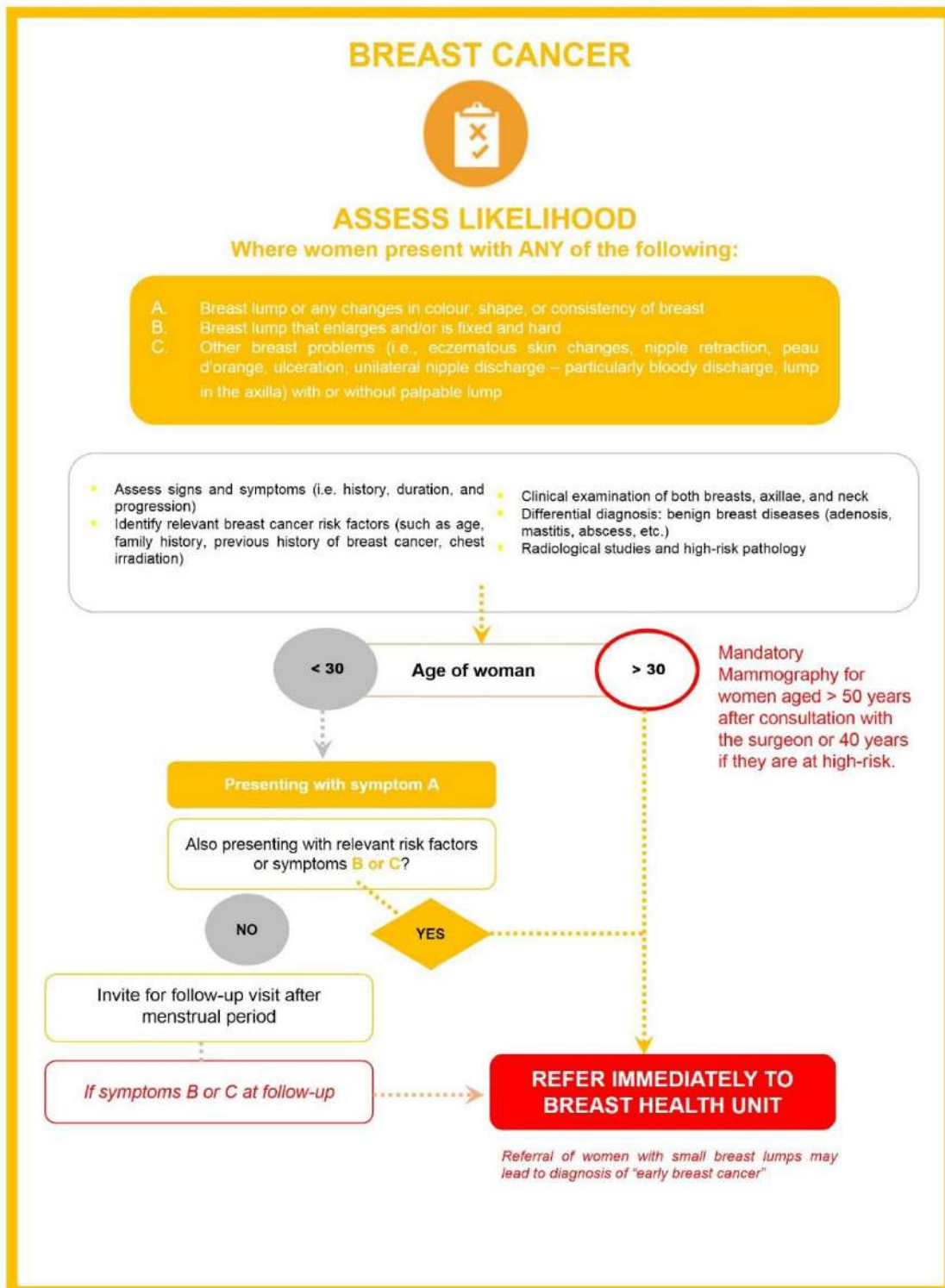
\*\* Consider de-escalation of ICS or switch if pneumonia, inappropriate original indication or lack of response to ICS



## **Recommended clinical governance actions for MOHW and partners to implement Chronic Respiratory Disease Service Framework with quality**

- All people suspected of having COPD should receive accurate early diagnosis, assessment, and management in PHC
- All people with COPD who meet the referral criteria should have access to the services provided by specialist respiratory teams in the community.
- All people with COPD and their carers should be given the opportunity to learn about their disease. Those meeting the criteria for pulmonary rehabilitation and case management should receive enhanced supported self-management as part of their care.
- All people with COPD with acute and/or chronic type 2 respiratory failure should have timely access to ventilatory support, if required,
- All people admitted to hospital with acute exacerbations of COPD should receive appropriate discharge planning and follow-up.
- All people with suspected asthma should have assessment and investigations to confirm the diagnosis.
- All people with asthma and their carers should be given the opportunity to learn about their condition and receive a written individualised self-management asthma action plan.
- All people with asthma should be on appropriate pharmacological therapy according to the nature and severity of their disease.
- All adults requiring, or potentially requiring long term ventilation, should have access to services that improve survival, enhance quality of life, avoid unplanned admissions to hospital and support their choice of end-of-life care.
- All people with respiratory conditions who can benefit from pulmonary rehabilitation should be offered this service by MOHW.
- All people with severe respiratory disease and their carers should be offered holistic assessment of their needs and be facilitated and supported to maintain their connections with social networks and community life, in order to promote wellbeing and mitigate the potentially isolating effects of long-term disability
- In partnership with healthcare professionals, all people with respiratory disease should be provided with appropriate, safe and effective medicines and medicines information to enable them to gain maximum benefits from medicines to maintain or increase their quality and duration of life.
- People with respiratory disease should receive a systematic review of all their medicines at appropriate intervals along the care pathway to ensure that their medicines continue to be appropriate, and that they participate in the treatment as prescribed.
- All people with advanced progressive incurable respiratory conditions should receive end of life care needs identified; coordinated care provided by a designated key worker, to meet these needs; and supported to die in their preferred place of care, in close collaboration with family and carers at all stages.

## 4.4. NCD Protocol 4: CANCER – EARLY DIAGNOSIS



# CERVICAL CANCER



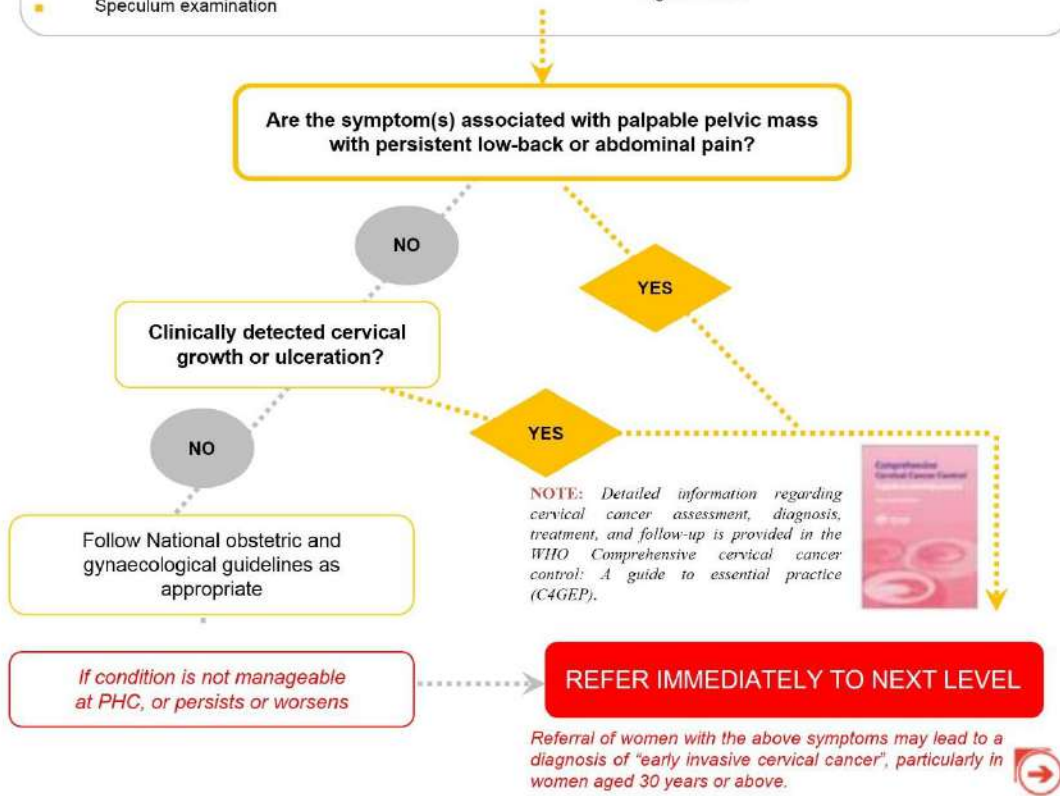
## ASSESS LIKELIHOOD

Where women have ANY of the following:

- A. Abnormal vaginal bleeding (i.e., after coitus, between menstrual periods, post menopause)
- B. Foul-smelling discharge
- C. Pain during vaginal intercourse
- D. 25-65 years of age

- Assess signs and symptoms (i.e., history, intensity, duration, progression)
- Identify relevant risk factors: age (aged 30 years or above)
- Speculum examination

- Differential diagnosis: abortion in pre-menopausal women, infections (e.g., chlamydia, gonorrhoea), genital ulcers, cervical inflammation, uterine polyps, dysfunctional uterus hemorrhage, endometrial or vaginal cancer



## CANCER SCREENING SERVICES

### Breast Cancer Screening Pathways

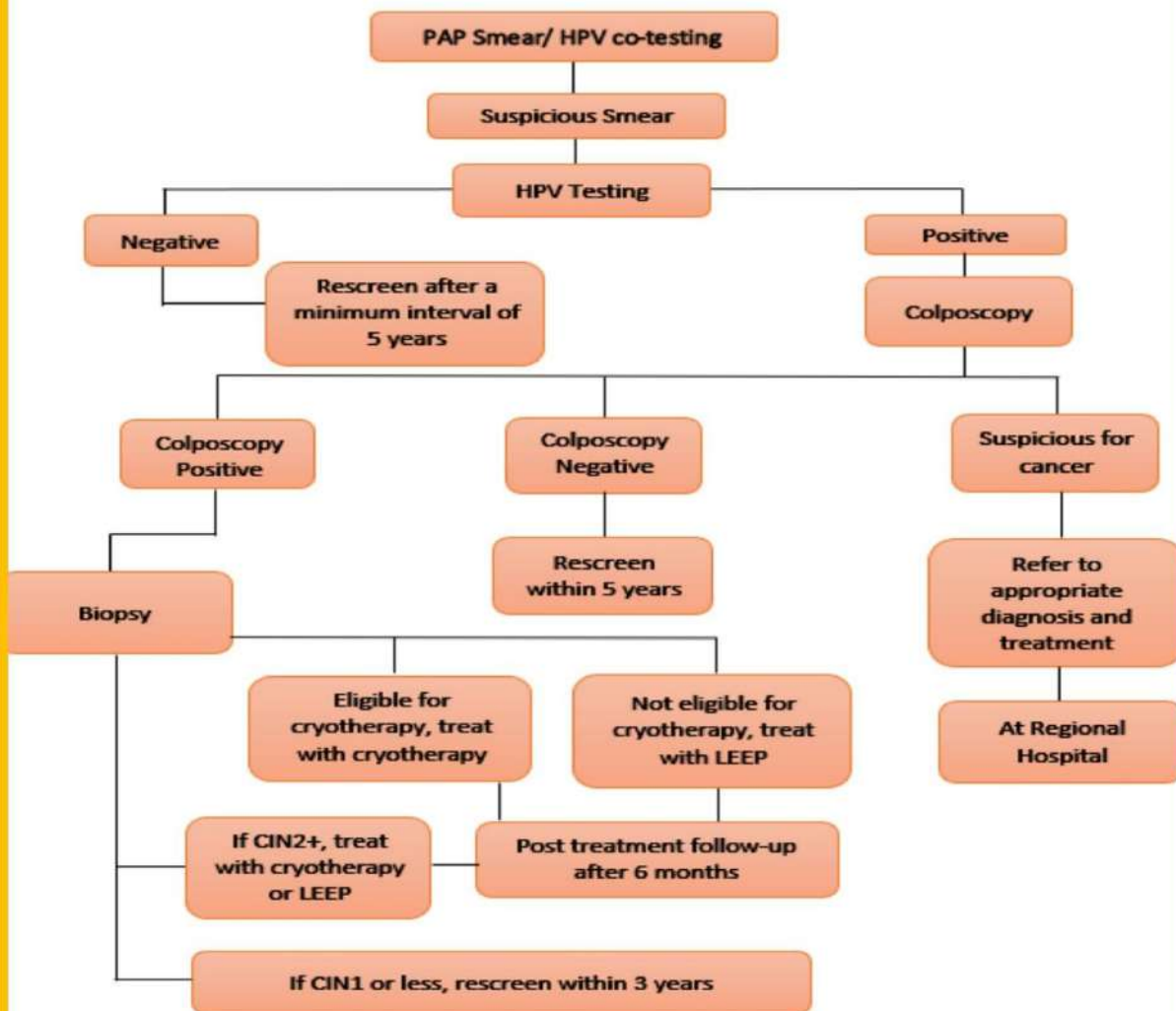


### MANAGEMENT OF BREAST CANCER (Follow National Guidelines).

This is according to staging (TNM classification), operability and clinical prognostic risk factors such as lymph node status. Biological prognostic factors such as hormone receptors and DNA ploidy may be considered particularly in node negative patients, and as per microscopic proof of malignancy (REF), (Cancer Protocols). GBCI.

Operable tumors are T1-N0 N1 M0 and T2-N0 N1 M0. Tumors less than 3 cm. No regional lymph nodes or metastasis to movable ipsilateral axillary nodes. Breast conservation surgery + Axillary clearance + External radiotherapy to breast only + a booster dose may be recommended if the edge of the local excision is not completely clear. External radiotherapy will be given to internal mammary chain and ipsilateral supraclavicular region in medial quadrant or central tumors, and in all pathologically positive axillary lymph nodes. Adjuvant systemic chemotherapy only in positive axillary nodes and high risk, node negative, (RBS III). Tamoxifen may be used in estrogen receptor (ER) positive premenopausal women. In premenopausal women and positive nodes -CMF x 6. In postmenopausal (3 years)- Tamoxifen 10 mg b.d. daily for a minimum of 3 years.

## Cervical Cancer Screening Pathways



### MANAGEMENT OF CERVICAL CANCER (Follow National Guidelines)

Depends on the clinical staging based on EUA, speculum, cystoscopy, biopsy, +/- fractional curettage, and IVU.

**Stage-Ia1:** Microscopic invasion, (<3mm). Local treatment in woman wishing to retain reproductive potential assuming complete excision of the lesion is possible with no lympho-vascular permeation. In women past childbearing age – Extra fascial Hysterectomy.

**Stage Ia2:** Lesion with an invasion >3mm-<5mm deep, <7mm wide. If no lympho-vascular permeation, and woman wishing to retain fertility. Deep Conization can probably be effective. If fertility not an issue- Radical Hysterectomy with pelvic node dissection. Those with positive nodes should be given further therapy with external beam radiotherapy.

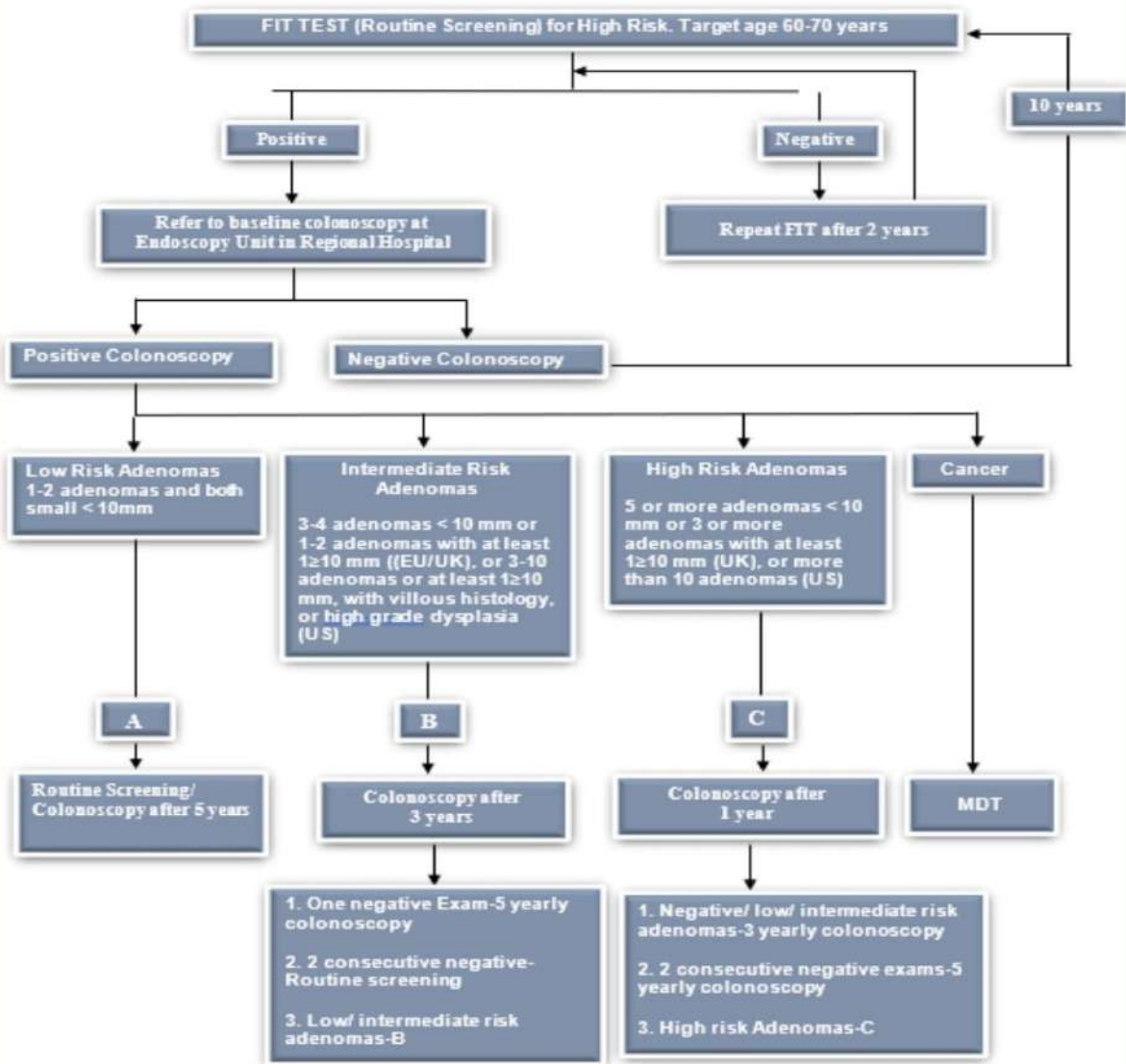
**Stage Ib:** Primarily Surgical Management-Radical Hysterectomy with or without ovarian conservation (depending on age)

**Stage IIa – IVb:** Treatment with radiotherapy. No debulking or partial surgery should be undertaken.

**Follow-up:** 3 monthly for 3 years, 6 monthly for a further 2 years and yearly thereafter annual smear is recommended.

**Recurrence:** After surgery – Give radiotherapy. After radiotherapy - discuss with Radiotherapy Team in the local

## Colorectal Cancer Screening Pathways



### MANAGEMENT OF COLORECTAL CANCER (Follow National Guidelines).

Offer laparoscopic surgery for rectal cancer and consider open surgery if clinically indicated, for example for locally advanced tumors, multiple previous abdominal operations, or previous pelvic surgery.

For people with colon cancer, consider preoperative systemic anti-cancer therapy for people with CT4 colon cancer. For people with stage III colon or rectal cancer treated with short-course radiotherapy or no preoperative treatment, offer: Capecitabine in combination with Oxaliplatin for 3 months, if this is not suitable, Oxaliplatin in combination with 5-fluorouracil and folic acid for 3 to 6 months, or single-agent fluoropyrimidine for 6 months as per national guidance.

# Prostate Cancer – PHC sensitization & clinical management

## Main objective

- To create awareness about prostate cancer amongst the general population.

## Specific objectives

- To sensitise the public about the signs and symptoms of cancer prostate.
- To fast track our referral system from primary healthcare to Regional Hospitals.
- To optimize the treatment for early prostate cancer: the 2 main modalities of treatment being surgery (Radical prostatectomy) and Radical Radiotherapy (conformal radiotherapy).
- To improve the treatment of metastatic prostate cancer.
- To standardize and harmonise the treatment of carcinoma prostate according to stage.
- To establish Standards of Procedures and Protocols specific to Mauritius.
- Standards of Procedures and Protocols to be adopted by 50% by medical and paramedical cadres by 2025.

## Key strategies

- Sensitise the general population about prostate cancer.
- Improve the treatment outcome for prostate cancer by 2025.

Key strategies	Short term 2022	Mid term 2023-2024	Long term 2025
Sensitise the general population about prostate cancer.	To target at least 20% of male population.	To target at least 30 % of male population.	To target at least 50% of male population.
Improve the treatment outcome for prostate cancer by 2025.	To introduce medical castration in the public sector (GnRH*, LHRH* analogues)  To standardize Chemotherapy and Radiotherapy protocols	To standardise surgical interventions, Conformal Radiotherapy and Brachytherapy	Introduction of Robotic Surgery

\* - GnRH - Gonadotropin-releasing hormone

\* - LHRH - Luteinizing hormone-releasing hormone

## Recommendations

- To create awareness campaigns on Prostatic Cancer.
- To train surgeons/ Radiation Oncologists on new and up-to-date techniques (Robotic Surgery/ 3-D Conformal Radiotherapy).

## Recommended clinical governance actions for MOHW and partners to implement Cancer Service Framework with quality

- The public should be made aware of the early signs and symptoms of cancer so they know when they need to go to their doctor for advice.
- All people with signs and symptoms that might suggest cancer should be appropriately assessed by PHC and referred promptly and timely to hospital for further tests if needed.
- All year 9 girls should be routinely offered the HPV immunisation to protect against future risk of cervical cancer. Scale-up HPV vaccine for the young boys as well. One-off HPV vaccine for all girls aged 16 years. By 2030 Mauritius aims to eliminate cervical cancer as 90% girls are vaccinated.
- All women who are eligible to participate in the Cervical Screening Programme should be invited for screening within the recommended timescales and be provided with the appropriate information and support to allow them to make an informed decision to attend.
- All women who are eligible for the Breast Screening Programme should be invited for screening within the recommended timescales and be provided with the appropriate information and support to allow them to make an informed decision to attend.
- All patients who have high clinical suspicion or have a diagnosis of cancer should have their care managed by an appropriately constituted and effective multidisciplinary team (MDT).
- All patients being offered treatment should be seen by a clinical psychologist.
- All patients who need systemic cancer therapy should be seen by a multidisciplinary team in all hospitals (i.e., colposcopy, chemotherapy, hormone therapy, radiotherapy, reconstructive surgery for breast implants), should have aspects of their therapy provided closer to home in line with regional chemotherapy standards, when it is allowed by their treatment and disease.
- All patients with suspected breast cancer should be seen at a triple assessment clinic (Breast Health Unit) at their first outpatient appointment. Mandatory Mammography for women aged > 50 years after consultation with the surgeon or 40 years if they are at high-risk. All patients should receive a holistic and periodic assessment.
- All services involved in the care of cancer patients should explicitly incorporate attention to psychosocial needs into their policies and protocols addressing clinical health care. These policies and protocols should be developed and aimed at ensuring that patients and carers are offered support appropriate to their needs, with those experiencing or demonstrating distress referred to professionals with specialist expertise. Improve communication by e-newsletters and live testimonials.
- All patients with cancer should have their rehabilitation needs identified and addressed in a timely way and in line with regionally agreed care pathways.
- Health and social care professionals, in consultation with the patient, will identify, assess and communicate the unique supportive, palliative and end of life care needs of the person and family, including the bereavement support.
- Work in line with the National Cancer Control Programme.
- Cervical screening at workplaces and community level for 25-65 ages and HPV/Pap smear co-testing.



## 4.5 NCD Protocol 5: Mental, Neurological and Substance Abuse Frameworks

### **HISTORY TAKING:**

- **Presenting Complaint:** Main symptom or reason that the person is seeking care. Ask when, why, and how it started. It is important at this stage to gather as much information as possible about the person's symptoms, their situation and about their occupational analysis

- **Past MNS history:** Ask about similar problems in the past, any psychiatric hospitalizations or medications prescribed for MNS conditions, and any past suicide attempts. Explore tobacco, alcohol, and substance use.

- **General Health history:** Ask about physical health problems and medications. Obtain a list of current medications. Ask about allergies to medications

- **Family history of MNS conditions:** Explore possible family history of MNS conditions and ask if anyone had similar symptoms or has received treatment for a MNS condition.

- **Psychosocial history:** Ask about current stressors, coping methods and social support, current socio-occupational functioning (at home, work and in relationships). Obtain basic information including where the person lives, level of education, work/employment history, marital status and number/ages of children, income, and household structure/living conditions. Check Forensic Police and court cases (past & present).

### **2. ASSESSMENT FOR MNS CONDITIONS**

• **Complete Physical/Neurological Examination:** Conduct a targeted physical examination guided by the information found during the MNS assessment.

• **Mental Status Examination (MSE):** Ask about and observe the person's appearance and behaviour, mood and affect, content of thought, any perceptual disturbances, cognition, insight, overtone and speech

• **Differential Diagnosis:** Consider the differential diagnosis and rule out conditions that have similar presenting symptoms.

• **Basic Laboratory Test:** Request laboratory tests when indicated and possible, especially to rule out physical causes. Identify the MNS Condition and narco-check for substance-abuse.

• **Identify the MNS condition:** by using the appropriate protocols. Assess for other MNS symptoms and priority conditions. Follow the management algorithm/treatment protocols. Assess for self-harm and suicidal tendencies.

### **MANAGEMENT OF MNS CONDITIONS**

**1-Treatment planning:** Discuss treatment goals that respect the preferences for care. Involve the carer after obtaining the person's agreement. Encourage self-monitoring of symptoms and explain when to seek care urgently. Involve medical-social workers, community psychiatric nurse. Stop tobacco and avoid harmful use of alcohol.

**2-Psychosocial & Motivational Interventions Therapy: A. Psychoeducation** - Provide information about the MNS condition to the person, including its expected course and outcome, available treatments, and their benefits. Duration of treatment, importance of adhering to treatment and what carers can do to help the person adhere to treatment. Potential side-effects of medication and need to monitor. Potential involvement of community/social workers, case managers, or trusted community members.

**B. Reduce stress and strengthen social supports-** Address current psychosocial stressors: Identify and discuss relevant psychosocial issues that place stress and impact on the person and their life including family and relationship problems, employment/occupation/livelihood issues, housing, finances, access to basic security and services, stigma, discrimination, etc. Assist the person to manage stress by problem-solving techniques. Assess and manage any situation of maltreatment, abuse (e.g. domestic violence) and neglect (e.g. of children or the elderly). Discuss with the person possible referrals to a trusted protection agency or informal protection network. Contact [legal](#) and community resources, as appropriate. Identify supportive family members and involve them. Strengthen social supports and try to reactivate the person's social networks.

**C. Promote functioning in daily activities** - Provide the person support to continue regular social, educational and occupational activities as much as possible. Facilitate inclusion in economic activities. Offer life skills training & social skills training.

**D. Psychological Treatment** - Interventions that typically require substantial dedicated time and tend to be provided by specialists trained in providing them. Nonetheless, they can be effectively delivered by trained and supervised non-specialized workers and through guided self-help (e.g., with use of e-mental health programmes or self-help books)

### 3. PHARMACOLOGICAL INTERVENTIONS

- Follow the guidelines on psychopharmacology in each module.
- Use pharmacological interventions when indicated in the management algorithm.
- In selecting the appropriate essential medication, consider the side effect profile of the medication (short and long term), efficacy of past treatment, drug-drug interactions or drug-disease interactions.
- Consult the National Formulary/WHO Formulary as needed.
- Educate the person about risks and benefits of treatment, potential side effects, duration of treatment, and importance of adherence.
- Exercise caution when providing medication to special groups such as older people, those with chronic disease, women who are pregnant or breastfeeding, and children/ adolescents.
- Consult a specialist as needed.

### 4. REFERRAL TO SPECIALIST/ HOSPITAL IF NEEDED

Stay alert for situations that may require referral to a specialist/hospital, i.e., no-response to treatment, serious side effects, comorbid physical and/or MNS conditions, risk of self-harm/ suicide.

- **Identify the MNS condition:** by using the appropriate protocols. Assess for other MNS symptoms and priority conditions. Follow the management algorithm/treatment protocols. Assess for self-harm and suicidal tendencies.

### 5. FOLLOW-UP –

- Arrange a follow-up visit after the initial assessment.
- After every visit, schedule a follow-up appointment and encourage attendance.
- Schedule initial follow-up visits more frequently until the symptoms begin to respond to treatment.
- Once symptoms start improving, schedule less frequent but regular appointments.

#### At each follow-up meeting, assess for:

- Response to treatment, medication side-effects, and adherence to medications and psychosocial interventions. – General health status (be sure to monitor physical health status regularly).
  - Self-care (e.g. diet, hygiene, clothing) and functioning in the person's own environment.
  - Psychosocial issues and/or change in living conditions that can affect management.
  - The person's and the carer's understanding and expectations of the treatment.
- Correct any misconceptions.

#### During the entire follow-up period:

- Acknowledge all progress towards the treatment goals and reinforce adherence.
- Maintain regular contact with the person and their carer. If available, assign a community worker to support the person (such as a family member).
- Explain that the person can return to the clinic at any time in between follow-up visits if needed (e.g. for side-effects of medications, etc.)
- Have a plan of action for when the person does not show up for appointments.
- Use family and community resources to contact people who have not returned for regular follow-up.
- Consult a specialist if the person does not improve or worsens and document.

Refer to the management section of relevant modules for disorder specific follow-up information.

## 6. Involving carers:

When appropriate, and with the consent of the person concerned, involve the carer or family member in the person's care. Acknowledge that it can be challenging to care for people with MNS conditions. Explain to the carer the importance of respecting the dignity and rights of the person with a MNS condition. Identify psychosocial impact on carers. Assess the carer's needs to ensure necessary support and resources for family life, employment, social activities, and health. Encourage involvement in self-help and family support groups, where available. With the consent of the person, keep carers informed about the person's health status, including issues related to treatment and side-effects.

## 7. Links with other Sectors-

Ensure comprehensive care, link the person to employment, education, social services (housing) and other relevant sectors.

## 8. Special Populations –

**CHILDREN / ADOLESCENTS** - Explore exposure to adverse factors such as violence and neglect which may affect mental health and wellbeing. Assess the needs of carers. Treat adolescents who may come alone for help even if not accompanied by parent or guardian. Obtain informed consent from the adolescent. Allow opportunities for the child/adolescent to express concerns in private. Adapt language to the child/adolescent's level of understanding. Explore available resources within the family, school and community.

## WOMEN WHO ARE PREGNANT OR BREAST-FEEDING

If the woman is of child-bearing age, ask about:

- Breastfeeding
- Possible pregnancy
- Last menstrual period,

If pregnant, liaise with maternal health specialist to organize care.

Consider consultation with mental health specialist if available.

Exercise caution with pharmacological interventions

- check toxicity to fetus and passage into breast milk.

Consult a specialist as needed.

### - OLDER ADULTS

Address psychosocial stressors that are particularly relevant to the person, respecting their need for autonomy.

Identify and treat concurrent physical health problems and manage sensory deficits (such as low vision or poor hearing) with appropriate devices (e.g. magnifying glass, hearing aids).

Use lower doses of medications.

Anticipate increased risk of drug interactions.

Address needs of carers.

- Give awareness about MNS services available at PIC.
- Aware any personnel about substance abuse services to refer to Addictology Unit.

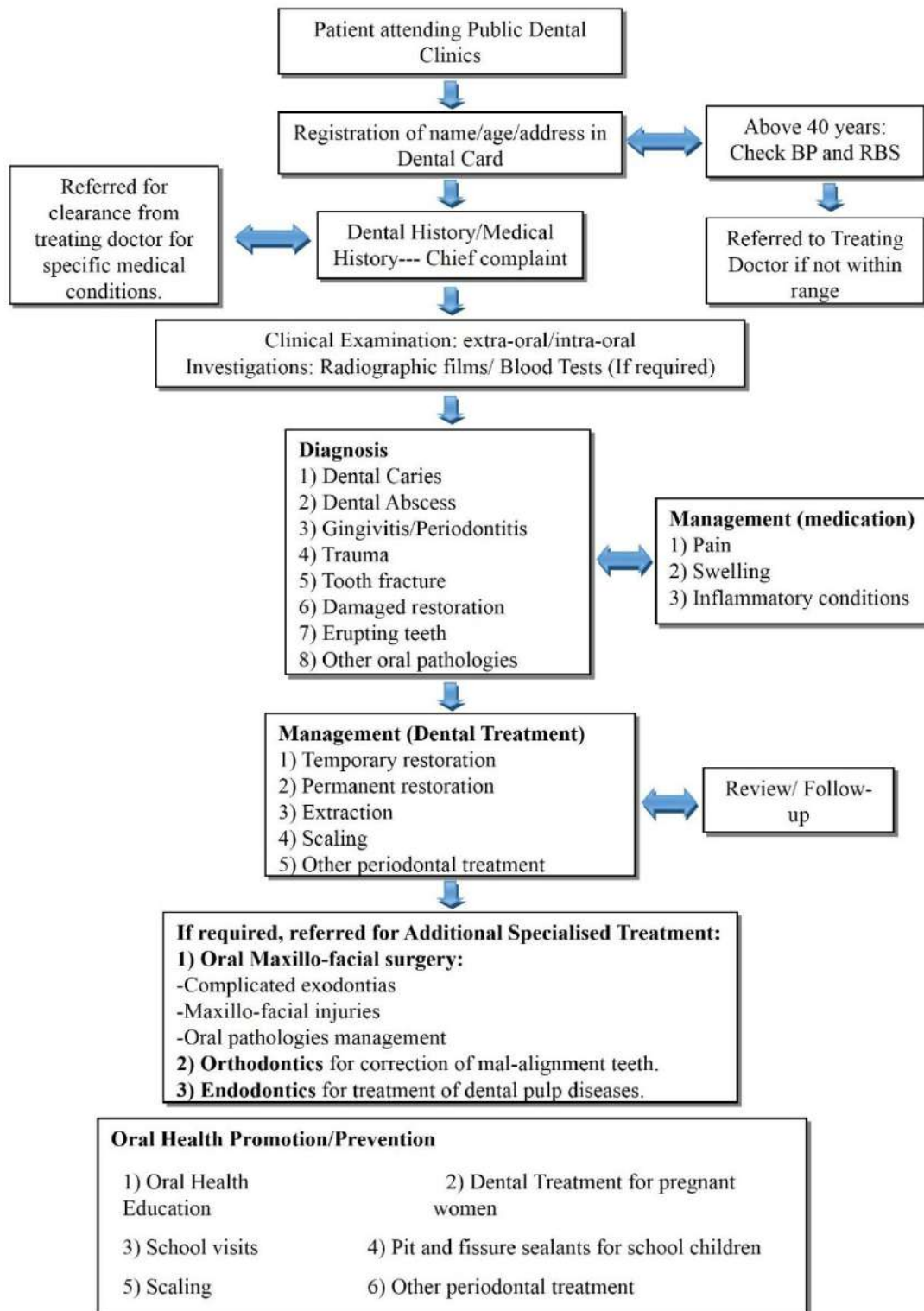
## INDIVIDUAL & POPULATION INTERVENTIONS FOR PRIORITY MNS CONDITIONS

Priority condition	Individual interventions		Population interventions
	Pharmacological element	Psychosocial, including evidence-based psychological interventions	Prevention and promotion
<b>DEP Depression</b>	<ul style="list-style-type: none"> <li>• Amitriptyline (a tricyclic antidepressant), for use in adults only</li> <li>• Fluoxetine (a selective serotonin re-uptake interventions: inhibitor)</li> </ul>	<ul style="list-style-type: none"> <li>• Psychoeducation</li> <li>• Promote functioning in daily activities and community life (e.g. physical activity)</li> <li>• Psychological behavioural activation, relaxation training, problem-solving treatment, CBT, IPT</li> </ul>	<ul style="list-style-type: none"> <li>• Activities to improve community attitudes towards people with MNS conditions</li> </ul>
<b>PSY Psychoses</b>	<ul style="list-style-type: none"> <li>• Haloperidol or chlorpromazine</li> <li>• Second-generation antipsychotics (with the exception of clozapine) may be considered for individuals with appropriate psychotic disorders as an alternative to haloperidol or chlorpromazine if availability can be assured and cost is not a constraint.</li> <li>• Lithium, valproate or carbamazepine for bipolar mania</li> </ul>	<ul style="list-style-type: none"> <li>• Psychoeducation</li> <li>• Strengthening social support, reducing stress, teaching life skills</li> <li>• Psychological interventions: CBT, family counselling or therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Activities to improve community attitudes towards people with MNS conditions</li> <li>• Facilitation of assisted living, independent living and supported housing that is culturally and contextually</li> </ul>
<b>EPI Epilepsy</b>	<ul style="list-style-type: none"> <li>• Essential antiepileptic drugs: Carbamazepine, phenobarbital, phenytoin and valproic acid</li> <li>• Newer Antiepileptic medicines (Lamotrigine, Levetiracetam and Topiramate) as add-on therapy in people with medicine resistant convulsive epilepsy.</li> </ul>	<ul style="list-style-type: none"> <li>• Psychoeducation that is culturally and contextually appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Activities to improve community attitudes towards people with MNS conditions</li> </ul>
<b>SUB Disorders due to substance use</b>	<ul style="list-style-type: none"> <li>• Benzodiazepines for alcohol withdrawal</li> <li>• Thiamine for Wernick encephalopathy</li> <li>• Baclofen to prevent relapse</li> <li>• Methadone and buprenorphine for opioid maintenance and detoxification</li> </ul>	<ul style="list-style-type: none"> <li>• Psychoeducation, including stigmatization discrimination</li> <li>• Psychological interventions: CBT, contingency management therapy, family counselling or therapy, motivational enhancement therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Activities to improve community attitudes towards people with MNS conditions</li> <li>• Mutual help groups</li> <li>• Provision of sterile injection equipment and retrieval of used equipment in primary care centres, involving community pharmacies or through outreach programmes</li> </ul>

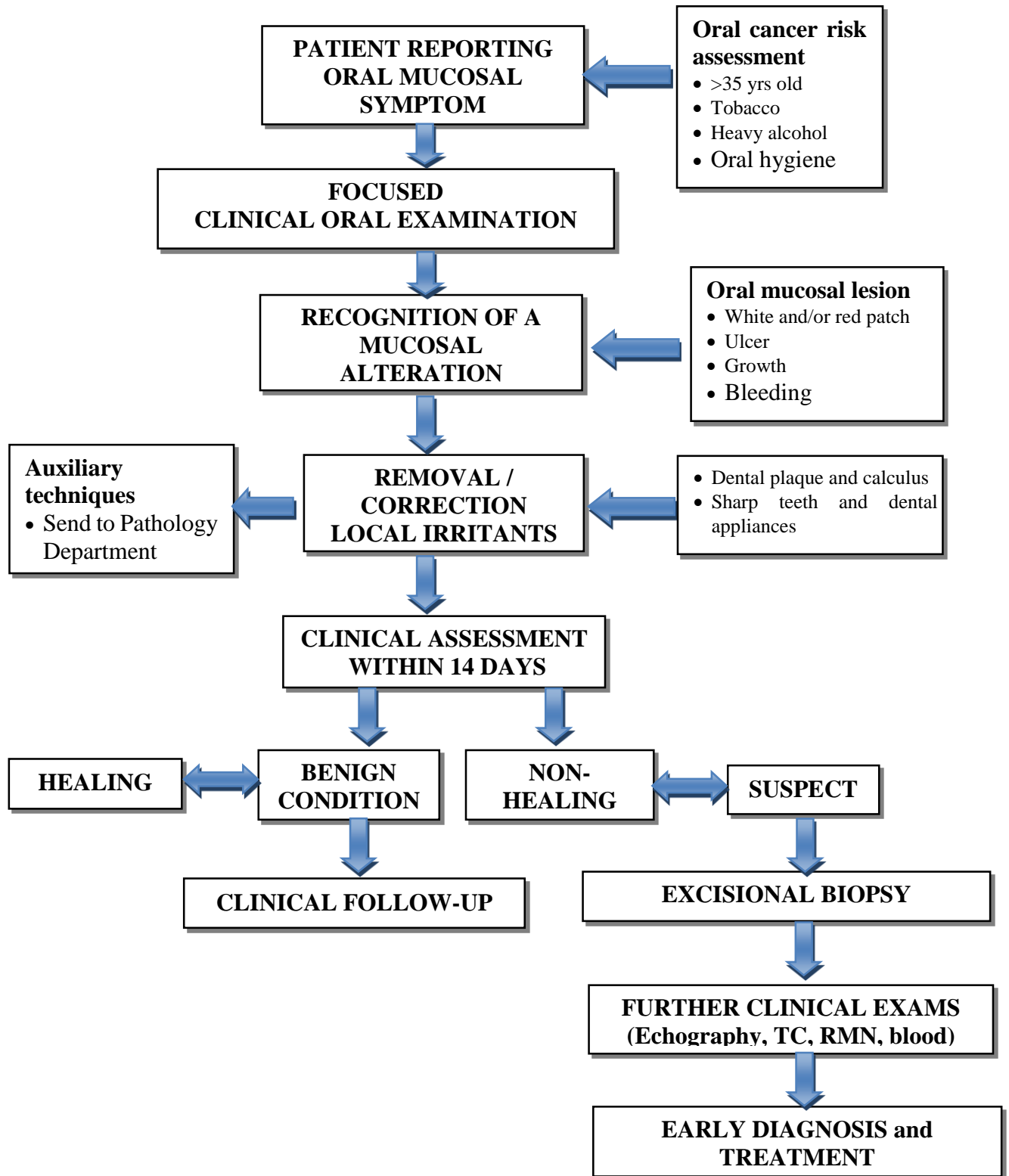
Priority condition	Individual interventions		Population interventions
	Pharmacological element	Psychosocial, including evidence-based psychological interventions	Prevention and promotion
<b>CMH</b> Child and adolescent mental and behavioural disorders	<ul style="list-style-type: none"> <li>Methylphenidate for attention deficit hyperactivity disorder after consultation with a specialist</li> <li>Fluoxetine but no other selective serotonin re-uptake inhibitor or tricyclic antidepressant for adolescents with depression</li> </ul>	<ul style="list-style-type: none"> <li>Psychoeducation for person and carers and parenting advice</li> <li>Guidance to caregivers on improving child and adolescent behaviour</li> <li>Promote child and adolescent well-being and functioning (including social and peer connections, physical activity and self-care)</li> <li>Psychological interventions: CBT, training in parenting skills</li> </ul>	<ul style="list-style-type: none"> <li>Activities to improve community attitudes towards people with MNS conditions</li> </ul>
<b>DEM</b> Dementia	<ul style="list-style-type: none"> <li>Cholinesterase inhibitors and memantine (not first-line treatment)</li> </ul>	<ul style="list-style-type: none"> <li>Psychoeducation</li> <li>Carer support (self-care, stress management)</li> </ul>	<ul style="list-style-type: none"> <li>Activities to improve community attitudes towards people with MNS conditions</li> </ul>
<b>STR</b> Conditions related to stress	<ul style="list-style-type: none"> <li>Selective serotonin re-uptake inhibitor (fluoxetine) and tricyclic antidepressant (amitriptyline) as second-line treatment</li> </ul>	<ul style="list-style-type: none"> <li>Psychoeducation (e.g. on post-traumatic stress disorder)</li> <li>Psychological first aid</li> <li>Support in dealing with psychosocial stressors with problem-solving techniques</li> <li>Stress management</li> <li>Strengthening of positive coping methods and social support</li> <li>Psychological interventions: CBT focused on trauma, eye movement desensitization and reprocessing<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Activities to improve community attitudes towards people with MNS conditions</li> </ul>
<b>SUI</b> Self-harm and suicide	<ul style="list-style-type: none"> <li>In line with treatment of concurrent mhGAP priority condition</li> </ul>	<ul style="list-style-type: none"> <li>Remove means of self-harm, and ensure follow-up after self-harming episode</li> <li>Psychoeducation</li> <li>Carer support</li> <li>Activate psychosocial support networks (e.g. peers, family, community)</li> <li>Psychological interventions: CBT</li> </ul>	<ul style="list-style-type: none"> <li>Reduce access to means of self-harm.</li> <li>Suicide prevention programmes in schools that include training in mental health awareness and skills</li> <li>Policies to reduce harmful use of alcohol should be a component of a comprehensive suicide prevention strategy.</li> <li>Encourage the media to report responsibly about suicidal behavior</li> <li>Activities to improve community attitudes towards people with MNS conditions</li> </ul>
<b>OTH</b> Other significant mental health complaints	<ul style="list-style-type: none"> <li>In line with treatment of concurrent mhGAP priority condition</li> </ul>	<ul style="list-style-type: none"> <li>Psychoeducation</li> <li>Support in reducing psychosocial stressors by problem-solving techniques</li> <li>Psychological Interventions: in line with treatment of concurrent mhGAP priority condition</li> </ul>	<ul style="list-style-type: none"> <li>Activities to improve community attitudes towards people with MNS conditions</li> <li>Reduce access to means of self-harm.</li> <li>Suicide prevention programmes in schools that include training in mental health awareness and skills</li> <li>Policies to reduce harmful use of alcohol should be a component of a comprehensive suicide prevention strategy.</li> <li>Encourage the media to report responsibly about suicidal behaviour</li> </ul>

## 4.6 NCD PROTOCOL 6: ORAL HEALTH

### 1. Assessment, diagnosis and treatment in the Public Dental Services



## 2. Assessment and diagnosis for Oral Cancer



## Oral Health

- The WHO Global Oral Health Status Report (2022) estimated that oral diseases affect close to 3.5 billion people worldwide, with 3 out of 4 people affected living in middle-income countries. Globally, an estimated 2 billion people suffer from caries of permanent teeth and 514 million children suffer from caries of primary teeth.
  
- Oral diseases are the most common of the chronic diseases and are important public health problems because of their prevalence, their impact on individuals and society and the expense of their treatment. Notwithstanding the very fact that non-communicable diseases, which include, among others, diabetes and oral diseases, constitute nearly 80% of the diseases burden in Mauritius.
  
- The total number of attendances at government dental clinics (static and mobile) in 2021 was 225,398, out of which 25,057, that is 11.1%, were among children aged less than 12 years. 16,717 (7.5%) were cases seen by dental specialists. The number of cases treated for paradontal diseases was 24,106 and the number of surgical operations on jaws, including surgical extraction of roots and impacted teeth, was 5,128.
  
- Dental Caries are widespread in Mauritius and Rodrigues affecting mostly children. Dental caries, when not detected and treated, may lead to loss of teeth resulting in difficulty in eating, talking and has a negative impact on social and psychological aspects which are essential to the quality of life. Hence, a lot of emphasis is put on dental caries prevention since young age.
  
- The Public Dental Services comprise of a comprehensive oral health package including oral health promotion, basic oral health service (diagnosis, extraction, temporary and permanent fillings, fluoride application, pit and fissure sealant as well as oral prophylaxis) and Specialized dental services (Oral Surgery, Orthodontics and Endodontics) are provided.



## **National Action Plan for Oral Health:**

- The National Action Plan for Oral Health 2022-2027 has been published. The goal of the Action Plan is to improve the overall oral health status of the population by reducing the incidence and prevalence of oral diseases.

## **Way Forward:**

- Establish a Unit of Dental Public Health and with the help of WHO expertise in Oral Health, Mauritius needs a National Oral Health Survey so as to be able to have a baseline to be able to attain the main aim of helping the population to attain an optimum Oral Health and to identify priority actions.

## **Oral Cancer**

- Data published in 2018 showed that Oral Cancer Deaths in Mauritius reached 52 or 0.57% of total deaths. The age adjusted Death Rate was 3.26 per 100,000 of population ranks Mauritius #87 in the world.

## **Way forward**

- Ensure that Oral Cancer is an integral part of National cancer-control programs.
- Involve oral health professionals or primary health care personnel with relevant training in oral health in detection, early diagnosis and treatment.
- In order to detect and treat Oral Cancer at an early stage, public awareness campaigns have been recommended, encouraging those with signs and symptoms to attend dental clinics.
- The management of all oral cavity cancers should occur in a Multidisciplinary Head and Neck Oncology Team.


## 4.7. NCD Protocol 7: DISABILITY, ACCIDENTS, VIOLENCE, AND INJURIES

A disability is any condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them (participation restrictions). According to the World Health Organization, disability has three dimensions:

1. **Impairment** in a person's body structure or function, or mental functioning; examples of impairments include loss of a limb, loss of vision or memory loss.
2. **Activity limitation**, such as difficulty seeing, hearing, walking, or problem solving.
3. **Participation restrictions** in normal daily activities, such as working, engaging in social and recreational activities, and obtaining health care and preventive services.

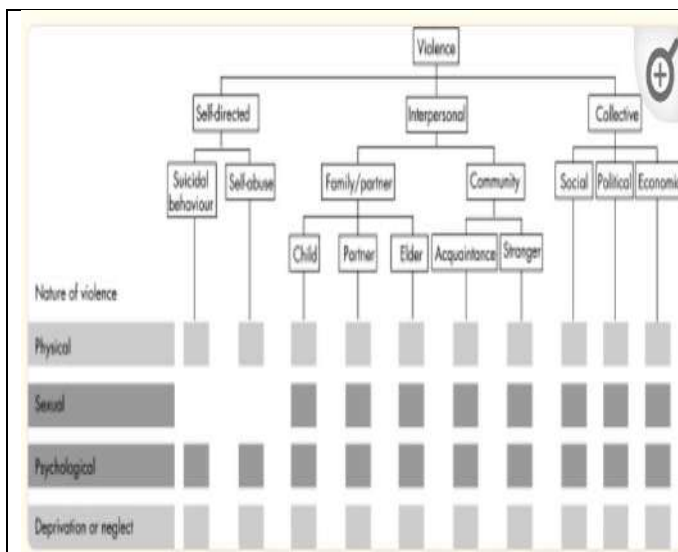
It is very important to improve the conditions in communities by providing accommodations that decrease or eliminate activity limitations and participation restrictions for people with disabilities, so they can participate in the roles and activities of everyday life.

### GLOBAL ACTION PLAN ON ROAD SAFETY 2011-20



Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5
Road safety management	Safer roads and mobility	Safer vehicles	Safer road users	Post-crash response

Each year, 1.25 million people die as a result of road traffic crashes and as many as 50 million people are injured. They are the leading cause of death among people aged 15-29 years. Nearly half (49%) of the people who die on the world's roads are pedestrians, cyclists and motorcyclists.



**Violence** is a significant public health problem and defies simple analysis. Defining violence in different ways has both moral and material consequences, such as whether or not a perpetrator is prosecuted, whether or not a prevention program is funded, or how a victim understands their situation. It is most important that public health practitioners understand the broad scope of violence and are able to identify points for successful intervention to prevent violence and its health and social impacts.

Universal interventions addressing violence are aimed at the general population, or groups within it (for example those of a certain gender or age bracket) without regard to individual risk. Examples include developing educational and training programs against bullying in schools or reducing population alcohol consumption by regulating sales and increasing prices to prevent alcohol-related violence. (WHO Activities 2022-26)

## 4.8. NCD Protocol 8A: HEALTHY LIFESTYLE COUNSELLING

### EDUCATE YOUR PATIENT TO:

- Be Physically active
- Eat a “heart healthy” diet
- Stop tobacco and avoid harmful use of alcohol
- Adhere to treatment

### BE PHYSICALLY ACTIVE

- Progressively increase physical activity to moderate levels (such as brisk walking) at least 30 minutes per day on 5 days of the week
- Control body weight and avoid overweight by reducing high-calorie food and performing adequate physical activity

### EAT A HEART HEALTHY DIET

- Salt (sodium chloride)
  - Restrict to less than 5 grams (1 teaspoon) per day
  - Reduce salt when cooking, limit processed and fast foods
- Fruits and vegetables
  - 5 servings (400-500 g) of fruits and vegetable per day
  - 1 serving is equivalent to 1 orange, apple, mango, banana or 3 tablespoons of cooked vegetables
- Fatty food
  - Limit fatty meat, dairy fat, and cooking oil (less than two tablespoons per day)
  - Replace palm and coconut oil with olive, soya, rapeseed or safflower oil
  - Replace other meat with chicken (without skin)
- Fish
  - Eat fish at least three times per week, preferably oily fish such as tuna, mackerel, salmon

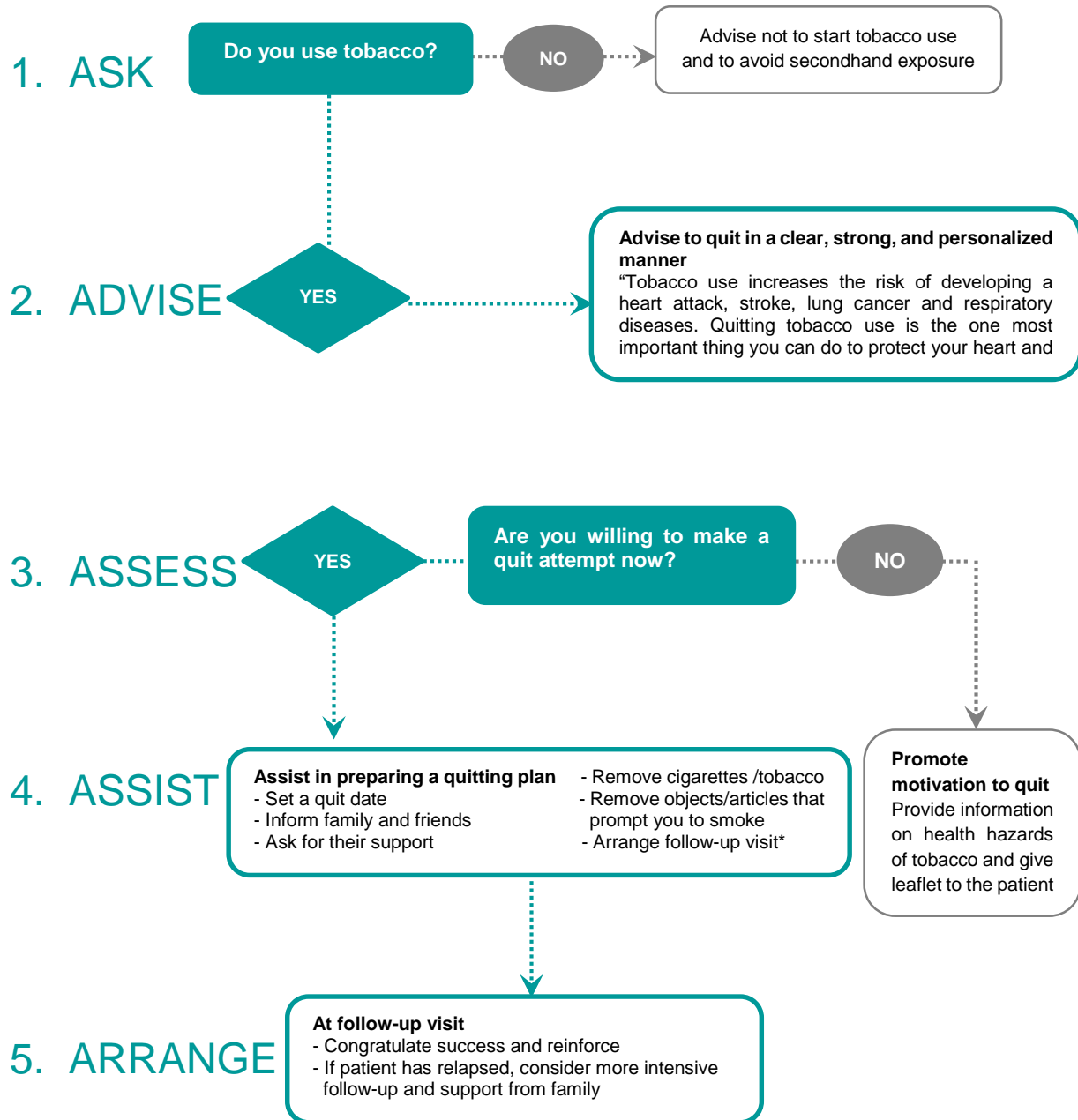
### STOP TOBACCO AND AVOID HARMFUL USE OF ALCOHOL

- Encourage all non-smokers not to start smoking
- Strongly advise all smokers to stop smoking and support them in their efforts
- Individuals who use other forms of tobacco should be advised to quit
- Alcohol abstinence should be reinforced
- People should not be advised to start taking alcohol for health reasons
- Advise patients not to use alcohol when additional risks are present, such as:
  - driving or operating machinery
  - pregnant or breast feeding
  - taking medications that interact with alcohol
  - medical conditions made worse by alcohol

### ADHERE TO TREATMENT

- If the patient is prescribed medication:
  - teach the patient how to take it at home
  - explain the difference between medicines for long-term control (e.g., blood pressure) and medicines for quick relief (e.g., for wheezing)
  - tell the patient the reason for prescribing the medication
- Show the patient the appropriate dose
- Explain how many times a day to take the medication
- Label and package the tablets
- Check the patient’s understanding before the patient leaves the health centre
- Explain the importance of:
  - keeping an adequate supply of the medication
  - the need to take the medication regularly

# COUNSELLING ON CESSATION OF TOBACCO USE (5 As)



OPTIONAL: Nicotine Replacement Therapy Protocol

Tobacco legislation, Public Health Act 2008.

\*Ideally a second follow-up visit is recommended within the same month and every month thereafter for 4 months and evaluation after 1 year. If not feasible, reinforce counselling whenever the patient is seen

## 4.8. NCD Protocol 8B: SELF CARE

### SELF-CARE

#### AMONG PATIENTS WITH CARDIOVASCULAR DISEASE, DIABETES OR RESPIRATORY DISEASE

- All patients with NCDs perform some level of self-care. Health workers can work to strengthen self-care strategies among these patients by following this protocol.
- Counselling patients on self-care can be integrated into existing care structures. All interactions with patients can be seen as opportunities to understand and improve patients' self-care strategies.
- Strategies to improve adherence should form part of self-care for NCDs.
- Promoting self-care among patients with NCDs should take into account patients' beliefs and concerns about medicines and their effects on adherence.
- No single strategy to improve overall adherence is recommended over another. Health workers should use their skills, resources, and patient preferences to devise plans to improve adherence

#### FIRST VISIT

- Identify opportunities to improve self-care
- Provide written or visual educational materials and training in self-care
- For self-care recommendations that require an action plan, agree on and provide a written or visual action plan

#### FOLLOWING VISITS

- Check the patient's progress
- If necessary and the patient wishes it, repeat the steps from the first visit

## CONDITION-SPECIFIC RECOMMENDATIONS

### CARDIOVASCULAR DISEASES

#### ■ Raised blood pressure

- Self-measurement to monitor blood pressure is recommended for the management of hypertension in appropriate patients where the affordability of the technology has been established.

#### ■ Heart failure

- Appropriate patients could benefit from being educated on the benefits of cardiac rehabilitation, and can be encouraged to undertake rehabilitation exercise in the home setting.

#### ■ Need for anticoagulation

- Self-monitoring of blood coagulation and self-adjustment of dosage in patients receiving oral anticoagulation agents are recommended if affordable and according to an agreed action plan with a health professional.

### DIABETES

#### ■ Diabetes Type 1 and 2

- People with type 1 and type 2 diabetes on insulin should be offered self-monitoring of blood glucose based on individual clinical need.

#### ■ Diabetes Type 1

- Self-monitoring and self-adjustment of dosage is recommended in type 1 diabetes according to an agreed action plan with a health professional.

### RESPIRATORY DISEASES

#### ■ Asthma and chronic obstructive pulmonary disease

- Self-monitoring in asthma and COPD and self-adjustment of dosage is recommended according to an agreed action plan with a health professional.

#### ■ Chronic obstructive pulmonary disease

- Appropriate patients may benefit from being educated on the benefits of chronic obstructive pulmonary disease rehabilitation, and encouraged to undertake rehabilitation exercise.

For more details, please refer to:

HEARTS –Technical package for cardiovascular disease management in primary health care -

Healthy Lifestyle Counseling –

[WHO-NMH-NVI-18.1-eng.pdf](#)

## Recommended clinical governance actions for MOHW and partners to implement Healthy Lifestyle and Self-care Service Framework with quality

- All patients, carers and partner agencies should be provided effective communication with them by health and social care organisations as an essential part of the planning and delivery of health and social care for NCDs.
- All patients should receive good face to face communication, from an appropriately trained professional, as part of their care.
- All relevant health and social care professionals should identify people who smoke, make them aware of the dangers of smoking, advise them to stop and provide information and signposting to specialist cessation services.
- All relevant health and social care professionals should identify inactive individuals and, where appropriate, provide them with advice and support to accumulate a minimum of 30 minutes of moderate activity on 5 days of the week or more.
- People should be provided with healthy eating support and advice, appropriate to their needs, in a range of settings.
- Health and social care should work with institutions, workplaces and communities in the promotion and support of breastfeeding, healthy eating and physical activity to prevent obesity.
- PHC professionals should identify people who consume hazardous / harmful amounts of alcohol, make them aware of the dangers, advise them to reduce or stop and provide information and signposting to specialist services if appropriate. Follow WHO's SAFER approach at the policy level.
- NCDs in all hospitals of the country to be covered by National Insurance as part of the Universal Health Coverage (UHC) and this should reach 100% by 2028. Government of the Republic of Mauritius provides free health coverage to all its citizens and serves as a welfare state.
- All MOHW services should encourage, carry out and use research to improve people's health and wellbeing.

## 4.8. NCD Protocol 8C: PALLIATIVE CARE

### WHAT IS PALLIATIVE CARE

Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.<sup>89</sup>

WHO Definition of Palliative Care

<https://www.who.int/cancer/palliative/definition/en>

### ESTABLISHING PALLIATIVE CARE

Palliative care services can be established or expanded in several ways, depending on the local situation. For instance, a country may decide to begin by:

- Setting up a palliative home-care service or integrating palliative home care into existing homecare services
- Setting up a community-based palliative care service
- Setting up a hospital-based palliative care service

TREAT AND REFER WHEN NECESSARY FOR:      CONSIDER AND MANAGE

#### PHYSICAL CARE NEEDS

- Pain (all types)
- Respiratory problems (dyspnoea, cough)
- Gastrointestinal problems (constipation, nausea, vomiting, dry mouth, mucositis, diarrhoea)
- Delirium
- Wounds, ulcers, skin rash and skin lesions
- Insomnia
- Fatigue
- Anorexia
- Anaemia
- Drowsiness or sedation
- Sweating

#### PSYCHOLOGICAL, EMOTIONAL, AND SPIRITUAL CARE NEEDS

- Psychological distress
- Anxiety, Depression
- Suffering of family or caregivers
- Spiritual needs and existential distress
- Bereavement support for family/caregivers

#### CARE PLANNING AND COORDINATION

- Identify support and resources available; develop and implement care plan based on patient's needs
- Provide care in the last weeks/days of life
- Facilitate the availability and access to medications (especially opioids)
- Identify the psychosocial/spiritual needs of patients and their caregivers

#### COMMUNICATION ISSUES

- Communicate with patient, family and caregivers about diagnosis, prognosis, treatment, symptoms and their management, and issues relating to care in the last days/weeks of life
- Identify and set priorities with patient and family/caregivers
- Provide information & guidance to patients & caregivers according to available resources



## 4.8. NCD Protocol 8D: REHABILITATIVE CARE

Rehabilitation is an increasingly important health service in light of ageing populations and the rising prevalence of noncommunicable diseases. Rehabilitation work should focus on evidence-based rehabilitation interventions which are safe and of sufficient specialization and intensity to meet needs. They empower, educate and motivate people and are underpinned by appropriate assessment, treatment planning, outcome measurement and note-taking practices, timely and delivered along a continuum, with effective referral practices. They should be person-centred, flexible, and engage users, family and carers in decision-making, and finally making it possible that the health personnel and community members are aware, knowledgeable and seek rehabilitation.

The main WHO framework used for rehabilitation is shown below:



### Characteristics of Rehabilitation integrated into primary health care:

This type of rehabilitation is delivered within the context of primary health care, which includes the services and professionals that act as a first point of contact into the health system. It may be delivered during the acute, sub-acute and long-term phases of care. In this type of rehabilitation, the rehabilitation interventions are most commonly delivered by rehabilitation personnel but can also be delivered by other primary health care personnel. Key user groups: People with musculoskeletal, neurological, cardiovascular, paediatric and or psychiatric conditions. Settings: Primary health care centers, clinics, single- or multi-professional practices and community settings.

**Characteristics of Community-delivered rehabilitation:**

This type of rehabilitation is distinguished through its delivery in community settings. Community settings include a home, school, workplace, community centers, and may also include a health center, clinic or post. Tertiary, secondary, and primary care can all be delivered in a community setting, most commonly this type of rehabilitation is a form of secondary care and occurs during the sub-acute and long-term phases of care. This type of rehabilitation is delivered through a range of mechanisms, examples include outreach by rehabilitation personnel into a home, school or workplace; and regular mobile clinics where rehabilitation personnel deliver interventions such as assistive products. It may also be integrated into other health and social programmes, such as in-home nursing care; early childhood intervention programmes; and disability focused community services, often delivered by rehabilitation personnel but can also be delivered by other health personnel.

**Engagement with rehabilitation users:**

A dedicated team is required to engage rehabilitation users, and possibly rehabilitation providers. This should focus on accessibility, including whether rehabilitation is available, affordable and acceptable. This should help identify barriers to accessing rehabilitation. They also explore care quality and consider how people have been respected, engaged, educated and empowered during the rehabilitation processes.

## 4.9 NCD Protocol 9: TEAM-BASED CARE

(Cross-cutting theme and applies to all NCD protocols)

Team-based care is a strategic redistribution of work among members of a practice team. In the model, all members of the physician-led team play an integral role in providing patient care. The physician (or in some circumstances a nurse practitioner or physician assistant) and a team of nurses and/or medical assistants (MAs) share responsibilities for better patient care.

→ **Engage the team** - Bring together a multi-disciplinary team of nurses, medical assistants (MAs), physicians, pharmacists, community health workers, nutritionists, administrators and information technology staff members with a leader who has enough authority within the practice or organization to empower the process. Consider involving patients on the team as well.

→ **Determine the team composition** - Design the model of care that will meet the needs of the patients and team. Consider which current team members could learn a new skillset and fulfil a new role. The team may include a counsellor, nutritionist, nurse practitioner, physician assistant, clerical staff or others). Ensure that the team(s) consists of physicians and supporting team members who are eager to transform the clinic into a team-based care model. They should be champions and good communicators who are willing to put in extra effort to prepare for the transition and continue to develop the new model once it is underway.

→ **Design workflows to reflect the new model of care** - Determine the new team-based care workflows. Remember to think outside the box when designing the dream team and ideal practice to create an ideal future state. If certain aspects of the current workflow function well, feel free to incorporate them into the future state! Consider how an already great process can be made better. Design workflows for an entire clinical process (including pre-visit, visit, and post-visit), or for individual tasks to be assigned to the team.

→ **Increase communication among the team, practice and patients** - Start by keeping the

practice aware of the team's work. Physicians and staff may feel out of the loop and disengage if they are not involved. Include the team's task-shifting work as a standing agenda item at team meetings and department gatherings. Broadcast updates in a weekly meeting or call. Have doctors share space with the rest of their team in a common workspace to support team communication. Communicate the team's work to the patients as well. Pamphlets in the waiting and exam rooms could also be used to remind patients of the changes before their visit begins.

→ **Use a gradual approach to implement the model** - Team-based care implementation will be a gradual process. It will take time, and every day will not be perfect. Be patient; know that several months may go by before the team feels like they are really comfortable with the new system. Those who are considering implementation make sure that they are completely committed because it is not easy. For people who work in a team-based care model, it can take about two months to feel like one was really getting the hang of documenting patient visits for the physician. They work very closely and often teach each other's preferences and show how every single patient note is edited. This type of time commitment is necessary to successfully implement team-based care. As the model expands, experienced staff can mentor or assist with training new staff.

→ **Optimize the care model** - Shared workspace - Teams that sit in closer proximity communicate with greater frequency and ease. Questions can rapidly be answered, reducing the time that someone may have to wait before completing a task or responding to a patient. Everyone will be aware of the work that their teammates are doing, enabling easier task-sharing and division of work. Finally, after a busy clinic day, someone's inbox will not be filled with messages that could have quickly been triaged by another team member during the day.

# CHAPTER 5: POLICY INSIGHTS & CONCLUSIONS

Addressing cancers, diabetes, heart disease and other non-communicable diseases (NCDs) in Mauritius is crucial to ensure health and well-being for all, maintain rapid economic growth, and achieve the Sustainable Development Goals and 'Mauritius Vision 2030'. The National Service Framework for NCDs (2023-28) will help the government and its partners from a range of sectors, as well as for UN agencies and civil society.

Mauritius, led by its Ministry of Health and Welfare (MOHW), has made great strides in protecting its population from NCDs in the recent years. The NSF for NCDs in combination with an NCD investment case for services mentioned in PEN, HEARTS Technical Package and WHO's UHC Compendium and database and as illustrated in the NSF for NCDs document can offer an opportunity to take the national response to new heights with the use of Digital Technology and Artificial Intelligence.

Mauritius has already achieved significant improvements in health and poverty reduction due to stable economic growth and need to continue working for future generations in reducing the prevalence of NCDs. Furthermore, we should be proud that Mauritius is the first country in the AFRO Region to launch the effort to National Assessment of Health System Challenges and Opportunities, followed by work on NSF for NCDs and NINAP.

NSF for NCDs will yield maximum results when coupled with a skilled workforce. Health care costs account for approximately 5% of the economic losses, while the remaining 95% are from the enormous burden NCDs impose on the workforce. This framework directs towards an NCD investment case that the social and economic costs from NCDs will only grow without an accelerated national response. Conversely, implementing proven cost-effective policies now would save lives, prevent widespread human suffering, and avert a substantial portion of the projected economic losses.

Mauritius too can reduce a major drag on its social and economic transformation by further strengthening its current commitment & stride against NCDs by reviewing NCD interventions in its UHC Priority Benefit Package and additional steps such as:

- Updating its subsequent Health Sector Strategic Plans that will align with the results framework of the Thirteenth General Programme of Work 2019–2023, and subsequent WHO plans.
- Scaling-up efforts to strengthening health information systems that include NCDs, and collect quality, timely and reliable data, including vital statistics, on NCD services.
- Developing an NCD dashboard for faster and easier monitoring of service delivery and outcomes.
- Ensuring that the operational framework on strengthening primary health care includes NCDs.
- Developing a simulation tool, by 2024, using interventions for NCDs which are updated with the latest evidence and aligned to PHC and UHC frameworks with emphasis on health inequalities.
- Supporting the health workforce needs of delivering NCD prevention and management.
- Developing NCD Legislation and fostering implementation research and innovations.
- Scaling-up strategic communication and partnerships to increase demand for NCDs.

Investments in NSF for NCDs will model the costs and benefits of implementing prevention policies and clinical interventions, in line with WHO’s ‘Best Buys’ for the prevention and control of NCDs. Several countries have benefitted from integrated, multisectoral NINAP, and NSF for NCDs and investment cases developed jointly by the Ministries of Health, WHO and partners, using NCD Global Action Plan, implementing Public Health Act, integration with climate change policies, and by promoting digital technology (e.g applications such as ‘Be He@lthy, Be Mobile (BHBM)’).

## **THE SOONER – THE BETTER**

# REFERENCES

- Scaling Up Action against Noncommunicable Diseases: How Much Will It Cost? World Health Organization, 2011 - Costing Tool – User Guide, World Health Organization, 2012
- World Health Organization 2008. Prevention of Cardiovascular Disease. Pocket Guidelines for Assessment and Management of Cardiovascular Risk
- WHO/ISH risk prediction charts. World Health Organization 2010. WHO Package of Essential Noncommunicable disease interventions and protocols
- World Health Organization 2011. Scaling up action against noncommunicable diseases; how much does it cost? and Tool for estimating cost of implementing the Best Buys (with the User Guide)
- Sample clinical record for monitoring WHO PEN interventions, Sample questionnaire for rapid assessment of capacity in primary care facilities for integration of WHO PEN interventions
- World Health Organization 2011. Use of Glycated Haemoglobin (HbA1c) in the Diagnosis of Diabetes Mellitus
- World Health Organization 2013. Diagnostic Criteria and Classification of Hyperglycaemia First Detected in Pregnancy
- World Health Organization 2013. Self-care of cardiovascular disease, diabetes, and chronic respiratory disease.
- Prevention and control of noncommunicable diseases; Guidelines for primary health care, World Health Organization, 2012
- Prevention of cardiovascular diseases; Pocket guidelines for assessment and management of cardiovascular risk, World Health Organization, 2008

- WHO model list Essential Medicines 17th edition, World Health Organization. Package of essential noncommunicable (PEN) disease interventions for primary health care in low resource settings, World Health Organization, 2010

- Health Statistics Report 2016, Island of Mauritius & Island of Rodrigues. A publication of Health Statistics Unit, Ministry of Health & Quality of Life

- World Health Organization – Non-communicable Diseases (NCD) Country Profiles, 2014.

World Health Organization. Global status report on noncommunicable diseases 2010; Available from: [http://www.who.int/entity/nmh/publications/ncd\\_report\\_chapter2.pdf](http://www.who.int/entity/nmh/publications/ncd_report_chapter2.pdf)

- Stuckler D. Population causes and consequences of leading chronic diseases: a comparative analysis of prevailing explanations. *Milbank Quarterly*, 2008, 86:273–326

- Assessment Guide. Better noncommunicable disease outcomes: challenges and opportunities for health systems, No.1, 2014, WHO Regional Office for Europe: Copenhagen

- World Health Organisation, Global action plan for the prevention and control of noncommunicable diseases: 2013-2020. 2013; Available from: <http://www.who.int/nmh/publications/ncd-actionplan/en/>

- Family Planning & Demographic Yearbook 2015. Volume 41 October 2016 A publication by Demographic/Evaluation Unit Ministry of Health & Quality of Life.

- World Health Statistics 2017: monitoring health for the SDGs, Sustainable Development Goals. Geneva: World Health Organisation: 2017.

- WHO Report on the Global Tobacco Epidemic, 2017

- The Tobacco Atlas: Mauritius Fact Sheet; Available from: <https://tobaccoatlas.org/wpcontent/uploads/pdf/mauritius-country-facts.pdf>

- ITC Mauritius Project Top-line Report of Evaluation Measures from Wave 3 of the ITC Mauritius Survey, October 2011



- Evaluation of the Emergency Medical Services (Service d' Aide Medicale Urgente or SAMU), Mauritius Institute of Health, 2004.
- National Health Accounts 2015 Republic of Mauritius Ministry of Health and Quality of Life/World Health Organisation.
- Household Out-of-Pocket Expenditure on Health Survey Report 2015
- Jakab M, Farrington J, Borgermans L, and Mantingh F. (Eds.) Health systems respond to NCDs: time for ambition. Copenhagen: WHO Regional Office for Europe, 2018
- WHO 2016, discussion-paper-updating-appendix3-25july2016-EN.pdf (who.int)

## ANNEX A: IMPLEMENTATION PLAN FOR NSF for NCDs

(To be read with WHO CHOICE paper, DCP3\_interventions and ICER economic analysis for details)

<b>A. Themes to maximize the benefits of NSF for NCDs</b>			
<b>KEY THEMES</b>	<b>ACTION</b>	<b>RESPONSIBILITY</b>	<b>TIMESCALE</b>
Theme 1:  A Partnership Approach to PHC's NCD Service Transformation - Clinical leadership and User Involvement	Endorse the NSF for NCDs and commence the work under the supervision of the Multi-sectoral NCD Committee of Mauritius to implement the themes and activities mentioned below.	MOHW, Multi-sectoral NCD Committee All ministries/partners	Immediate
	Build and empower NCD Committees at national, regional and local levels to enable stakeholders to be fully engaged in transforming services for people living with NCD	MOHW, Multi-sectoral NCD Committee All ministries/partners	Immediate
	Establish a work programme designed to measurably improve outcomes by introducing electronic records to reduce duplication of cases in the registers.	MOHW, MOHW, Multi- sectoral NCD Committee All ministries/partners	Within 12 months
	Define and test operational principles for achieving sustainable improvement	MOHW, MOFED	Within 12 months
Theme 2:  Supporting Self-management	Agree a menu of quality assured Structured NCD Education programmes (SDE) for people, consistent with WHO and National Service Framework Protocols	MOHW,	Within 12 years
	Establish a plan for delivery of Structured Diabetes Education with the goal that all newly diagnosed people with diabetes can be offered SDE within 6-12 months of diagnosis	MOHW,	Within 24 months
	Establish a 'catch up' plan to meet the needs of those already diagnosed who have not already been offered SDE and to meet the need for refresher programmes	MOHW,	Within 3 years
	Explore whether digital technology and Artificial Intelligence can be used to support delivery of SDE	MOHW,	Within 24 months

	Scope the role of social media in supporting self-management	MOHW,	Within 24 months
Theme 3: Prevention, Early Detection and Delaying Complications	The NCD Network will be represented on the implementation groups taking forward the NINAP and NSF for NCDs to improve the population's health and well-being, and the NCD prevention strategies	MOHW,	Immediate
	Establish an approach to the prevention of NCDs which is congruent with NCD emerging evidence and trends in specific population groups	MOHW,	Within 24 months
	Provide information, advice and support for people who are identified as being at increased risk	MOHW,	Within 24 months
	Implement an NCD patient care pathway that improves outcomes at individual and population level	MOHW,	Within 3 years
	Agree appropriate risk stratification in NCD care. Multi-sectoral involvement and referral lines/algorithms	MOHW,	Within 24 months
Theme 4: Using Information to Optimise Services and improve Outcomes for People Living with NCD and their segmented care	Agree an initial suite of indicators against which to measure improvement in care at local and regional levels	MOHW, Office of Statistics, DHIS2	Within 12 months
	Develop and implement National NCD Audits with participation of partners and patients. Keep disease registers, and screen high-risk groups (metabolic syndrome, GDM).	MOHW, Office of the Audit, All ministries/partners	Immediate
	Formalise the relationship between the NCD Network and the eHealth Strategy Group with the goal of having an NCD care pathway within the electronic care pathway and a portal through which people living with NCDs can manage their own health information and interact with clinicians	MOHW, IT, DHIS2,	Immediate

	Influence regional work to achieve integration of clinical information systems relevant for the care of people living with NCDs	MOHW,	Immediate
Theme 5:  Designing Services for People Living with NCD, Particularly Those Requiring Bespoke Treatment and Care	Develop a plan to achieve measurable improvement in access to NCD services for young people to improve experience of transition to adult services	MOHW, Youth,	Within 3 years
	Achieve measurable improvement in service capacity to meet the needs of pregnant women with NCDs	MOHW,	Within 12 months
	Test and implement reliable systems to support early detection and follow up for women with Gestational diabetes	MOHW, Diabetic Association, D. Networks,	Within 3 years
	Achieve measurable increase in the number of women who are pre-pregnancy and at risk, who avail of pre-pregnancy counselling services	MOHW, Gender Development,	Within 24 months
	Improve the experience of care in-hospital for people living with NCD but admitted for other reasons by enhancing the capacity for Specialist NCD Teams to provide care, advice, and support	MOHW	Within 3 years
	Conduct formal needs assessment for particularly vulnerable people in order to inform future service models and improve outcomes	MOHW, Office of Statistics,	Within 3 years
Theme 6:  Enhancing the skills of frontline staff	Develop a workforce plan for NCD services, which takes into account: <ul style="list-style-type: none"> <li>the changing epidemiology of the condition.</li> <li>the need for an integrated, multidisciplinary approach to care.</li> <li>future reconfiguration of services; and</li> <li>the skills required to deliver a high-quality service for people living with NCD</li> </ul>	MOHW, HRD, MIH	Within 3 years

	<p>Prioritise training in NCD care for nurses and Allied Health Professionals who are not specialists in NCDs but regularly come into contact with people with NCDs.</p> <p>For specialists in NCDs, a programme for basic training in psychological skills should be designed</p>	MOHW, MIH	Within 24 months
	At least 10% of staff who are specialist in NCD care will be trained to level 1 in the Attributes Framework for Quality Improvement	MOHW, MIH	Within 12 months
	Expert advice in improvement science will be provided to the NCD Network	MOHW, IT,	Immediate
Theme 7: Encouraging Innovation	Establish formal links with the NCD Clinical Interest professionals and Clinical Research Networks and clinical Innovations. One measure of success will be the number of peer reviewed publications from the NCD Network supported by NCD professionals	MOHW,	Within 12 months
	Scope opportunities to support individuals and teams to innovate. Establish referral lines as per NCD emergencies.	MOHW,	Within 12 months
	Establish processes to ensure that the introduction of new drugs and devices is supported by appropriate infrastructure and staff training. Develop protocols with adequate pharmacopeia	MOHW, MIH	Within 12 months
	Assess outcome of evaluation of NSF for NCDs to establish viability of further reviews and roll-out	MOHW, MIH	Within 12 months

<b>B. Activities to align NSF for NCDs with NINAP</b>			
<b>KEY THEMES</b>	<b>ACTION</b>	<b>RESPONSIBILITY</b>	<b>TIMESCALE</b>
1. Strengthen Multisectoral coordination and leadership for NCD prevention and control	1.1 Establish/revive a National NCD Programme coordinated by MOHW with specific roles and responsibilities of other technical units to support the programme (resource mobilization, communications)	MOHW, MOFED, Ministry of Communications,	Immediate
	1.2 Develop and implement a National NCD Programme in collaboration with various stakeholders, sectors and other Ministries	MOHW,	Within 3 months
	1.3 Establish NCD Sub-Committee for each area of NCD work with clear Terms of Reference to coordinate response to NCDs via multisectoral approach	MOHW, all ministries,	Within 3 months
2. Advocacy for Prevention and Control	2.1 Lobby for NCD prevention and control as national priority to the Cabinet Members	MOHW, MOFED, Ministry of Communications,	Within 6 months
	2.2 Conduct dialogue with other Ministries, private sector, NGOs, FBOs in understanding policy links and a multisectoral approach for NCD prevention and control	MOHW, Ministry of Communications,	Within 12 months
	2.3 Develop a “Joint Operational Plan” for an effective implementation of the Multisectoral Action Plan and disseminated widely	MOHW,	Within 6 months
3. Strengthen resource mobilization	3.1 Recommend the Cabinet to utilize an earmarked tax (tobacco, alcohol etc.) for NCDs prevention and control programme to be sustainable	MOHW, MOFED	Within 3 months

	3.2 Establish diversion of existing taxes on targeted foods (sales tax from tobacco, snacks high in salt, trans fat, sugar etc.)	MOHW,	Within 6 months
	3.3 Advocacy for resource mobilization among all concerned sectors (Other Ministries, private, NGOs, media and academia etc.)	MOHW, Ministry of Communications,	Within 12 months
4. Strengthen multisectoral engagement and partnerships	4.1 Assess national capacity (resource groups, services, facilities etc.) for prevention and control of NCDs and segmented care.	MOHW, Office of Audit, MOFED,	Within 12 months
	4.2 Conduct Stakeholder Meetings with various sectors for “buy-in”, engagement and partnership for implementation of the programme	MOHW, all ministries	Within 12 months
	4.3 Conduct effective resource mobilization via partnerships with various sectors including civil society, NGOs, media	MOHW, MOFED, MOFA	Within 18 months
	4.4 Establish an “Alliance” and/or “Registry” of NGOs, FBOs for health promotion	MOHW, MSS,	Within 12 months
	4.5 Develop structured and OHC setting-base prevention programme and implement via partnerships	MOHW,	Within 12 months
5. Advocacy for public awareness on NCD	5.1 Conduct National Campaigns to raise public awareness on NCD prevention and control	MOHW, Ministry of Communications,	Within 24 months
6. Strengthen health system response to NCDs and risk factors at all levels	6.1 Implement National Service Framework Protocols in all PHC facilities	MOHW,	Within 24 months
	6.2 Set up targeted numbers of patients per day for GP’s consultation together with appointment system at PHC for improving quality of care	MOHW,	Within 12 months

7. Continue empowering patients and strengthen community linkage	7.1 Provide health promotion and counselling to patients, families and communities for NCD prevention and control	MOHW,	Within 24 months
	7.2 Promote timely and specific medical interventions (patients and providers) for management and care for NCDs based on NSF for NCDs	MOHW,	Within 24 months
	7.3 Improve patients' adherence to medications, follow-up care through health education	MOHW, MOE, MSS	Within 36 months
8. Scale up health professionals' skills and motivation	8.1 Provide training for PHC professionals to collect and report quality data routinely	MOHW, MIH, DHIS2	Within 24 months
	8.2 Provide incentives and motivational packages for PHC care providers	MOHW, MOFED	Immediate
For details refer to:	<p>HEARTS – Healthy Lifestyle Counselling - WHO-NMH-NVI-18.1-eng.pdf</p> <p>HEARTS – Evidence-based treatment protocols - WHO-NMH-NVI-18.2-eng.pdf</p> <p>HEARTS – Access to essential medicines and technology - WHO-NMH-NVI-18.3-eng.pdf</p> <p>HEARTS – Risk-based CVD Management - 9789240001367-eng.pdf (who.int)</p> <p>HEARTS – Team based care - WHO-NMH-NVI-18.4-eng.pdf</p> <p>HEARTS – Systems for monitoring - WHO-NMH-NVI-18.5-eng.pdf</p> <p>HEARTS – Implementation Guide - WHO-NMH-NVI-18.14-eng.pdf</p>		
NCD Interventions	NCD-Disease Control Priorities (DCP <sup>3</sup> ) mentioned below can be delivered across a range of healthcare facilities and through community activities and Priority Benefit Packages. These NCD service samples can be readjusted for service		



	delivery at the most appropriate facilities based on decisions of Local Health Committees and NCD healthcare needs identified by them.
--	--

## ANNEX-B: NCD INTERVENTIONS THAT CAN BE SPREAD ACROSS APPROPRIATE LEVELS OF THE HEALTH CARE SYSTEM TO INCREASE ACCESS

COMMUNITY	CHC/AHC/NCD CLINICS	MEDICLINICS/COMMUNITY HOSPITALS	SPECIALIZED/DISTRICT HOSPITALS	REGIONAL HOSPITALS	ADDITIONAL SERVICES
<b>NCDs</b>					
<b>Health promotion and disease prevention</b>					
★ Education on prevention and management of non-communicable diseases (cardiovascular disease, cancer, high blood pressure, diabetes)		★ Integrated screening for NCDs based on individual characteristics through the life course [WHO-UHC]			
★ Referral of suspected cases	★ Counselling and behavioural modification on nutrition, healthy diet, and physical activity [WHO-UHC]	★ Counselling and behavioural modification on nutrition, healthy diet, and physical activity [WHO-UHC]	★ Counselling and behavioural modification on nutrition, healthy diet, and physical activity [WHO-UHC]		
		← ★ Education on tobacco hazards, value of human papillomavirus (HPV) and hepatitis B virus (HBV) vaccination, and importance of seeking early treatment for common cancers (DCP-P)	★ Education on tobacco hazards, value of HPV and HBV vaccination, and importance of seeking early treatment for common cancers (DCP-P)	★ Education on tobacco hazards, value of HPV and HBV vaccination, and importance of seeking early treatment for common cancers (DCP-P)	
<b>Cardiovascular and pulmonary diseases</b>					
		⊙ Perform periodic screening of adults and children for hypertension [WHO-UHC]	⊙ Initiate regimen for oral anti-hypertensive agents [WHO-UHC]	⊙ Management of complications of hypertension	
		★ Monitor oral anti-hypertensive regimen	⊙ Perform ECG (electrocardiogram) [WHO-UHC]	★ Administer parenteral anti-hypertensive agents for hypertensive emergencies	
		★ Monitor oral regimen for long-term medical management of heart failure and ischaemic heart disease	★ Initiate oral agents for medical management of heart failure and ischaemic heart disease	⊙ Initiate oral agents for medical management of heart failure and ischaemic heart disease {replaces Provide a Heart Failure Special Programme}	X-nodular regenerative hyperplasia Invasive management of acute coronary syndromes with percutaneous coronary interventions X-nodular regenerative hyperplasia surgical procedures for valve repair and replacement X-RHC Chronic management of cardiac arrhythmias (WHO-UHC)
		← ★ Provide aspirin for all suspected cases of acute myocardial infarction [DCP-H]	★ Management of acute coronary syndromes with aspirin and unfractionated heparin [DCP-E]	← ★ Management of acute coronary syndromes with aspirin, unfractionated heparin, and generic thrombolytics [DCP-E]	

		★ Monitor oral regimen for chronic management of stroke [DCP-H]	★ Initiate oral regimen for chronic management of stroke [DCP-H]	★ Management of acute stroke	X-C Counselling regarding significant modifiable ischaemic stroke risk factors (DCP-P) X-C Educating patient on signs and symptoms of an acute stroke and reasons to seek acute care (DCP-P)
		⊙ Treatment of asthma and COPD with inhaled agents	⊙ Treatment of asthma and COPD with inhaled agents		X-HC Exercise-based pulmonary rehabilitation for patients with obstructive lung disease (DCP-P)
		⊙ Treatment of asthma and COPD with oral agents	⊙ Treatment of asthma and COPD with oral agents		X-C Self-management for obstructive lung disease to promote early recognition and treatment of exacerbations (DCP-P)
<b>Diabetes</b>					
		← ★ Screening for diabetes among at-risk adults, [DCP-H]	⊙ Management of type 1 diabetes, including treatment with insulin [WHO-UHC]	⊙ Advanced management of diabetes and complications of diabetes	X-C Patient education for diabetes self care (glucose monitoring, timed dietary intake, insulin dosing if indicated) (DCP-P)
		★ Management of type 1 diabetes, including treatment with insulin [WHO-UHC]	⊙ Management of type 2 diabetes with oral agents and insulin [WHO-UHC]		★ Treatment of diabetic retinopathy with laser photocoagulation [DCP-E]
		★ Management of type 2 diabetes with oral agents and insulin [WHO-UHC]	⊙ Advanced management of diabetes and complications of diabetes		★ Retinopathy screening
		← ★ Screening for diabetes complications			
<b>Cancer</b>					
		← ★ Essential palliative care and pain control including oral immediate release morphine and medicines for associated symptoms [DCP-H]	★ Expanded palliative care and pain control [DCP-H]	★ Expanded palliative care and pain control [DCP-H]	
			← ★ Psychosocial support and counselling services for individuals with serious, complex, or life-limiting health problems, and their caregivers [DCP-E]	← ★ Psychosocial support and counselling services for individuals with serious, complex, or life-limiting health problems, and their caregivers [DCP-E]	
			← ★ Early detection by visual inspection of early-stage cervical cancer [DCP-H]	← ★ Treatment by cryotherapy and colposcopy of early-stage cervical cancer [DCP-H]	

Mental health and substance use disorders					
★ Education on mental health	● Support for families	← ★ Detection and referral for depressive disorders with validated interview based tools [WHO-UHC]	● Provide psychological interventions for depression [WHO-UHC]	● Provide psychological interventions for depression [WHO-UHC]	X-HC Medications for maintenance treatment of bipolar disorder (WHO-UHC)
★ Referral of people needing care		← ● Monitor oral regimen for depression [DCP-H]	● Initiate oral agents for depression [DCP-H]	● Initiate oral agents for depressive disorders [DCP-H]	
			● Provide outpatient psychiatric treatment by mental health nurses	● Inpatient psychiatric care for depression	
		← ★ Detection and referral for anxiety disorders for all age groups using validated interview based tools [WHO-UHC]	★ Provide psychological interventions for anxiety [WHO-UHC]	★ Provide psychological interventions for anxiety [WHO-UHC]	X-PHU Cognitive behavioural therapy for persons with subthreshold symptoms of mood and anxiety disorders [DCP-P]
		← ★ Monitor oral therapy for anxiety disorders [DCP-H]	★ Initiate oral agents for anxiety [DCP-H]	★ Initiate oral agents for anxiety [DCP-H]	
		← ★ Monitor oral therapy of psychotic disorders [DCP-H]	★ Initiate oral agents for psychotic disorders [DCP-H]	★ Manage refractory psychosis with advanced oral agents [DCP-P]	
			← ★ Administer IM and IV antipsychotic therapies [DCP-P]		
			● Provide inpatient psychiatric care for psychotic disorders		
	★ Provide harm reduction services such as safe injection equipment [DCP-H]	★ Provide screening and brief interventions for alcohol use disorders [DCP-E]		← ★ Manage alcohol withdrawal [WHO-UHC]	
		● Provide tobacco and khat cessation counselling and nicotine replacement therapy when relevant		← ★ Manage opiate withdrawal [WHO-UHC]	

Injury					
	● Basic life support, plus protocol-based administration of oral fluids with adjustment for age and condition including malnutrition	● Initial management and immediate referral for polytrauma (WHO BEC)	● Basic initial management of polytrauma (WHO BEC)	● Advanced initial assessment and management of polytrauma [WHO-UHC]	X-C Basic initial syndrome-based management at scene and during transport for polytrauma (WHO-UHC)
	● Early recognition and immediate referral for injury	● Basic wound care, including suturing of simple lacerations	★ Implementation of WHO checklists for management of critically ill and injured patients	★ Implementation of WHO checklists for management of critically ill and injured patients	
		● Initial management of burns		★ Trauma laparotomy	
	★ Initial wound care including cleaning and application of dressing	● Analgesia, immobilization and referral for musculoskeletal injuries	● Advanced wound care, including suturing of complex lacerations	● Nutritional support for those with major injury	
			● Management of burns with fluids and nutritional support including therapeutic feeding	★ Basic skin grafting and release of contractures, including for burns	
			● Analgesia, immobilization, referral for musculoskeletal injuries	← ★ Fracture reduction, external fixation and traction [DCP-H]	
			● Management of non-displaced fractures with closed reduction	← ★ Irrigation and debridement of open fractures [DCP-H]	