

Diabetes Care for Adults in Primary Care Settings

Revised Edition 2023



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Modules

- Module 1. Framework For Population Approach In The Prevention Of
Diabetes Across The Life Course
- Module 2. Identification and Management of Prediabetes
- Module 3. Early Identification Of People With Diabetes
- Module 4. Dietary Intervention For People With Diabetes
- Module 5. Recommending Exercise To People With Diabetes
- Module 6. Glucose Control And Monitoring
- Module 7. Drug Treatment For Hyperglycaemia
- Module 8. Drug Treatment In Type 2 Diabetes With Hypertension
- Module 9. Lipid Management In Diabetic Patients
- Module 10. Diabetic Nephropathy
- Module 11. Diabetic Eye Disease
- Module 12. Diabetic Foot Problems

Preface to the First Edition

Enhancing primary care is one of the proposals put forward in the Healthcare Reform Consultation Document “Your Health, Your Life” and has received broad public support during the first stage of public consultation conducted in 2008. In recognition of this broad support for the proposals, the Working Group on Primary Care (Working Group) under the Health and Medical Development Advisory Committee and chaired by the Secretary for Food and Health was reconvened to discuss and provide strategic recommendations on enhancing and developing primary care in Hong Kong.

Four Task Forces have been established to study specific proposals set out in the Healthcare Reform Consultation Document. One of them is the Task Force on Conceptual Model and Preventive Protocols (Task Force). The Task Force makes recommendations to the Working Group on conceptual models that are evidence based with associated reference frameworks for use in the local primary care settings. The Task Force is also responsible for promulgating, maintaining and revising the models and frameworks, and the strategies to promote their adoption.

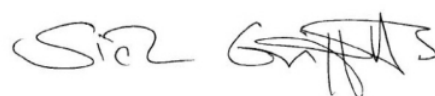
After a series of discussions with stakeholders, the Task Force has developed a basic conceptual model for the management of chronic disease using a population approach across life-course. It is based on the recognition that we need a comprehensive and continuous approach to care focused on the person to meet their needs and address their risks. The reference frameworks cover primary prevention and lifestyle changes, assessment of high risk groups, early detection and management of diseases as well as ensuring the quality of care for more complicated conditions or disabilities within the community. The need to coordinate inputs from multi-disciplinary teams, engage patients and interface with the community and other sectors is also highlighted.

To date, two reference frameworks, one on diabetes and the other on hypertension, have been developed. These reference frameworks consist of a core document supplemented by a series of different modules addressing various aspects of disease management which aim to -

- (a) provide a common reference to guide and co-ordinate care to patients from all healthcare professionals across different sectors in Hong Kong for the provision of continuous, comprehensive and evidence-based care for diabetes and hypertension in the community;
- (b) empower patients and their carers; and
- (c) raise public's awareness on the importance of preventing and properly managing these two major chronic diseases.

Drawing on international experience and best evidence, these frameworks provide general reference for practice in primary care settings to support the policy of promoting primary care within Hong Kong. However, since clinical practice and patient engagement need to keep pace with scientific advancements, in order to ensure the latest medical developments and evidence are reflected in the frameworks to provide reference for best practice, two Clinical Advisory Groups under the Task Force have been established to review and update the reference frameworks on a regular basis. The Clinical Advisory Groups are composed of experts from academia, professional organisations, private and public primary care sector and patient groups who are members of the groups in their own right, not representing organisations.

To facilitate the promulgation and adoption of the reference frameworks, support and endorsement from healthcare professionals across different sectors in Hong Kong has been and will continue to be very important. We hope that the adoption of the reference frameworks will improve patient care by facilitating co-ordination of their care, strengthen management continuity, promote evidence based effective and efficient practice, empower patients and their carers as well as enhancing public awareness about the prevention and management of these two major chronic diseases in our community.



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Key To Evidence Statements And Grades Of Recommendations[#]

Levels of Evidence

1++	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1+	Well conducted meta-analysis, systematic reviews of RCTs, or RCTs with a low risk of bias
1-	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2++	High quality systematic reviews of case control or cohort studies High quality case control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is causal
2+	Well conducted case control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal
2-	Case control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal
3	Non-analytic studies, e.g. case reports, case series
4	Expert opinion

[#] Scottish Intercollegiate Guidelines Network (SIGN) classification.

Grades of Recommendation

A	<p>At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; or</p> <p>A systematic review of RCTs or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results</p>
B	<p>A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or</p> <p>Extrapolated evidence from studies rated as 1++ or 1+</p>
C	<p>A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or</p> <p>Extrapolated evidence from studies rated as 2++</p>
D	<p>Evidence level 3 or 4; or</p> <p>Extrapolated evidence from studies rated as 2+</p>

Statement Of Intent

The framework is constructed from global evidence of best practice. As with all guidance it aims to support decision making, recognising that all patients are unique and have their own needs. The Task Force endeavours to provide accurate and up-to-date information. The frameworks provide support for decision making and as such are not mandatory. They should not be construed as within any legal framework, rather as guidance for professional practice. Standards of care for individual patients are determined on the basis of all the facts and circumstances involved in a particular case. They are subject to change as scientific knowledge and technology advances and patterns of care evolve. Management of diseases must be made by the appropriate primary care practitioners responsible for clinical decisions regarding a particular treatment procedure or care plan. The responsible primary care practitioners should only arrive at a particular treatment procedure or care plan following discussion with the patient on the diagnostic and treatment choices available.

Chapter 1. Epidemiology

Diabetes mellitus is a chronic condition that occurs when there are raised levels of glucose in the blood because the body cannot produce any or enough of the hormone insulin or use insulin effectively¹. There are three major types of diabetes, namely Type 1 diabetes, Type 2 diabetes, and gestational diabetes.

Type 2 diabetes is the most frequent form of diabetes among Hong Kong adults². The majority of patients with Type 2 diabetes have insulin resistance, defined as reduced responsiveness to insulin action in peripheral tissues although insufficient insulin secretion to overcome insulin resistance remains a cardinal feature in Type 2 diabetes. This disease is currently affecting around one in 10 people in Hong Kong or about 700 000 people. From the second Population Health Survey conducted by the Department of Health, the prevalence of diabetes increased with age from 0.5% for persons aged 25-34 to 25.4% for those aged 65-84³. Around half of those suffering from diabetes were being undiagnosed³. Such findings are consistent with the observations in earlier studies⁴.

Diabetes is the leading cause of kidney failure, blindness, leg amputations, cardiovascular diseases and stroke^{5,6}. Together with its chronic nature, diabetes continues to pose a significant burden to our healthcare system⁷. The optimal control of blood glucose level, blood pressure and dyslipidaemia in diabetic patients by a multidisciplinary team has been proven to reduce complication frequencies in randomised controlled trials and is cost-effective^{8a}.

Chapter 2. Population-based Intervention And Life Course Approach

In recent years, population-based approach in the control and management of chronic diseases is emphasised^{9,10,11}. This approach seeks to embrace the whole spectrum of the problem from health promotion, disease prevention and treatment to rehabilitation. To achieve this overarching goal, a proactive approach covering primary, secondary and tertiary levels of prevention is adopted^{12,13}. This involves promotion of healthy behaviours to reduce disease risk, early disease detection, and quality management with the ultimate goal to reduce the incidence of complications and associated morbidities and mortality.

The risks of developing chronic diseases including diabetes are influenced by factors acting at all stages of life. The effects of these modifiable risk factors accumulate with increasing age, especially in predisposed individual. Major chronic diseases often share common risk factors, e.g. undesirable environmental conditions, social deprivation, unhealthy dietary habit, physical inactivity, alcohol misuse and smoking¹⁴. Thus, it is necessary and advantageous to adopt an integrated life course approach in the prevention and control of chronic diseases based on the needs and risks of different population sub-groups to prevent the onset of diseases and reduce the rate of disease progression¹⁵. Module 1 summarises a comprehensive approach that involves different diabetes prevention or proactive management strategies that are most relevant for the different stages of the life course.

Chapter 3. Role Of Primary Care In The Management Of Diabetes

Primary care is the first point of contact in the healthcare system and is easily accessible to the majority of the population. With support and training, primary care providers form a workforce in the community to deliver coordinated care to diabetic patients, especially those with clinically stable conditions, and to identify high risk subjects for referral to other experts. By applying the principle of family medicine and working in partnership with other healthcare professionals such as dietitians, nurses, occupational therapists, optometrists, pharmacists and physiotherapists, primary care practitioners are in a prime position to provide patient-centered, continuing and comprehensive care taking into account individual patients' needs and values.

In the management of chronic diseases such as diabetes, it is desirable for primary care practitioners to provide ongoing education to reduce risks, diagnose disease early, assess patients' needs, monitor treatment responses and adherence, and identify treatment barriers such as patients' concerns and misperceptions. Furthermore, they could provide holistic care by treating concurrent illnesses and co-morbidities, addressing their patients' psychosocial concerns, empowering them to change behaviour and enabling them to develop coping skills for special occasions, e.g. marriage, pregnancy, travelling and sick day management. Due to the large scope of services involved in the primary, secondary and tertiary prevention of diabetes and associated complications, multidisciplinary care targeting at interfaces between different sectors is essential. Therefore, close collaboration and coordination between primary and secondary care teams are required.

Chapter 4. Patient Education

Patient education is the cornerstone of diabetes management where patients (and their carers) are empowered with appropriate knowledge and skills to live with the disease. Diabetic patients must be given basic knowledge about the nature, consequences and treatment of the diseases as well as their rights and responsibilities in terms of access to care, adherence to recommended treatment and self-management. Primary care practitioners and other care professionals should help dispel misconceptions and address patients' concern about the disease and its treatment, e.g. fear for insulin injection, and emphasise the positive aspects of the disease in terms of risk awareness, adoption of a healthy lifestyle and regular surveillance by a health care team¹⁶.

Chapter 5. Aim Of The Framework

The Reference Framework for Diabetes Care in Adults in Primary Care Setting serves to provide an updated evidence-based approach and recommends core interventions to influence current practice with a view to reducing the burden of long-term complications, both microvascular and macrovascular. The Framework also aims to provide adults with or at risk of developing Type 2 diabetes with a reference for better self-management and proactive disease control.

The Framework has adopted the levels of evidence and grades of recommendations proposed by the Scottish Intercollegiate Guidelines Network (SIGN). In general, grade A recommendation is supported by level 1 evidence, whilst levels 2 and 3 evidence are considered as fair evidence.

Chapter 6. Component 1: Prevention Of Type 2 Diabetes- Adoption Of A Healthy Lifestyle And Management Of Obesity

There are two complementary approaches to reducing the incidence of Type 2 diabetes in the population:

- The “Population approach” aims to reduce the risks across the entire population and to address the causes of chronic diseases. A small shift in the average population levels of several risk factors can lead to a large reduction in the chronic disease burden^{17,18}.
- The “Individual-based/high-risk” approach for interventions on higher risk individuals (e.g. people with obesity or predisposing conditions, older people) has also been shown to be effective in reducing the incidence of diabetes, delaying disease onset and reducing complications^{19,20}.

Recommendations

Implement interventions to reduce overweight and obesity at all stages of life to reduce future risk of diabetes.

A

Advise individuals at increased risk of developing Type 2 diabetes and patients with impaired glucose tolerance to maintain optimal body weight and practise healthy lifestyles.

A

Supporting evidence

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| ● Overweight, general ¹ and central obesity ² are associated with increased risk of Type 2 diabetes, and interventions that affect the lifestyles of subjects at high risk of diabetes would reduce future incidence of diabetes ²⁰ . | 1++ |
| ● By changing lifestyle such as eating a balanced diet, and increasing the physical activity level, Type 2 diabetic patients in general can improve their glucose control, serum cholesterol levels and lead to a reduction in weight ^{21,22} . | 1+ |
| ● The overall prevalence of Type 2 diabetes in the population can be reduced by lifestyle interventions targeting persons with pre-diabetes. Lifestyle interventions using dietary, or behavioral interventions produced significant weight loss among persons with pre-diabetes and a significant decrease in diabetes incidence ²³ . | 1+ |
| ● The frequency and intensity of physical activity is inversely associated with the incidence of diabetes ^{24,25,26} . | 1+ |

¹ According to the BMI classification for Chinese adults adopted by the Department of Health, overweight is defined as BMI from 23.0 kg/m² to less than 25.0 kg/m², while obesity is defined as BMI 25.0 kg/m² or above.

² Central obesity is defined as waist circumference ≥ 90 cm and ≥ 80 cm in male and female respectively for the Chinese population.

Chapter 7. Component 2: Early Identification Of People With Diabetes - Risk-based Screening For Type 2 Diabetes In General Population

Increased awareness of the symptoms and signs of diabetes can result in the earlier identification of people with diabetes. Primary care practitioners are also in an opportune position to adopt a risk-based approach to screen for diabetes using simple tests such as fasting plasma glucose. (Module 3)

Recommendations

Test individuals known to be at high risk of developing diabetes. B

Supporting evidence

- The increase in prevalence and significant public health burden of diabetes make the test of identification of pre-diabetes and diabetes appropriate^{27,28,29}. 2++
- Early detection of pre-diabetes and diabetes and effective interventions will prevent progression of pre-diabetes to diabetes and reduce the risk of complications of diabetes^{s8b,30}. 2++

Chapter 8. Component 3: Clinical Care Of Adults With Diabetes

Effective treatment of Type 2 diabetes can prevent or delay many of its complications. Apart from medications often needed to control blood glucose, blood pressure and blood lipids, successful management of Type 2 diabetes hinges on patients' commitment and proactive participation in self-management. The latter includes adherence to a healthy lifestyle, maintenance of optimal body weight, weight reduction if obese, and regular monitoring of blood glucose.

8.1 Initial assessment of adults with newly diagnosed diabetes

Upon diagnosis of diabetes, primary care practitioners should:

- perform comprehensive assessment to detect risk factors and the presence of diabetic complications,
- review previous treatment and glycaemic control for patients with established diabetes,
- determine whether they need to be referred to a hospital/specialist service (Table 1),
- assess psychosocial aspect and need for carer support, and
- assess lifestyle behaviours including smoking habit.

Table 1. Referral to Hospital/ Specialist Service

Immediate referral to hospital/ initiation of insulin therapy ³¹
(a) Who are acutely ill
(b) Who have heavy ketonuria
(c) Who have a blood glucose level ≥ 25.0 mmol/L
(d) Who present with diabetic ketoacidosis (DKA)
(e) Who present with diabetic hyperosmolar non-ketotic syndrome (HONK)
Referral to specialist
(a) Young patients (age<30 years) with diabetes
(b) Patients with features suggestive of endocrinopathies e.g. Cushing syndrome
(c) Heavy proteinuria or presence of haematuria in the absence of other complications
(d) Presence of complications
(e) Women who are pregnant

8.2 Initial treatment of adults with diabetes

The aim of the treatment is to treat not only hyperglycaemia but the concomitant cardiovascular risk factors including hypertension, dyslipidaemia, obesity and albuminuria. The targets of treatment are summarised at Appendix 1.

8.2.1 Lifestyle interventions

Adoption of a healthy lifestyle (i.e. healthy eating, regular physical activity, and abstain from smoking) is an important aspect of the management of diabetes.

8.2.1.1 Healthy eating**Recommendations**

Advise all patients on maintaining optimal body weight (or reducing body weight if overweight/ obese) and adopting healthy eating habit.

A

Supporting evidence

- Healthy eating is of fundamental importance as part of diabetes healthcare behaviour and has beneficial effects on weight, metabolic control and general well-being. Decrease in fasting plasma glucose is determined more by the restriction of energy intake than by the body weight^{32,33}. 1+
- Patients should follow a diet with balanced nutrition in accordance with the principles regarding intake of fat, carbohydrate, protein, alcohol and salt set out in Module 4. 4

8.2.1.2 Physical activity**Recommendations**

Advise people with diabetes to increase level of physical activity and take up regular exercises. (Module 5)

B

Supporting evidence

- Regular physical activity significantly improves glycaemic control and reduces visceral adipose tissue and plasma triglycerides, but not plasma cholesterol in people with Type 2 diabetes, even without weight loss³⁴. 2++

8.2.1.3 Smoking cessation

Recommendations

Advise all patients not to smoke.

A

Include smoking cessation counselling and other forms of treatment as a routine component of diabetes care.

B

Supporting evidence

- Smoking is an independent risk factor for cardiovascular disease in diabetic patients^{35,36}. 2++
- Simple advice to stop smoking given by a physician or a nurse was shown to be effective in helping patients quit smoking^{37,38,39}. 1++

If assistance is needed, please refer to Appendix 2 for more information on smoking cessation services.

For details regarding the practical approach to help patients quit smoking, please refer to the Module on Smoking Cessation in Primary Care Settings available at https://www.healthbureau.gov.hk/pho/rfs/english/pdf_viewer.html?file=download14&title=string28&titletext=string13&htmltext=string13&resources=13_en_Module_on_Smoking_Cessation

8.2.2 *Glucose control*

Recommendations

Achieve optimal blood glucose control in all diabetic patients and to reduce microvascular and macrovascular complications.

A

Supporting evidence

- Major clinical trials have shown that early implementation of aggressive glycaemic control is effective in reducing both microvascular complications as well as long-term cardiovascular risk^{40,41}. 1+
- HbA1c goal of <7% is in adults without significant hypoglycemia.^{8c} Even lower A1c values (say around 6.5%) can be considered for selected younger individuals with short history of diabetes and no significant cardiovascular disease, if achievable with a simple drug regimen and without significant risk of hypoglycaemia or adverse effect of treatment. A more lenient A1c target of 7 – 8.5% is more appropriate for those patients with limited life expectancy, functional impairment or significant comorbidities, older or frail patients.^{8d,42,43,44} (Module 6) 1+
- HbA1c should be used as an indicator for blood glucose control⁴⁵ and the use of fructosamine as a routine substitute for HbA1c is not recommended⁴⁶. 4,
1-
- The selection of specific anti-diabetic agents is predicated on their effectiveness in lowering glucose, and extraglycaemic effects that may reduce long-term complications, safety profiles, tolerability, and expenses. (Module 7) 4
- Due to the heterogeneity of diabetic patients in terms of complications and risk factors, the treatment goal should be individualized to optimize risk-benefit ratio. 4

8.2.3 Self-monitoring of blood glucose

Recommendations

Recommend self-monitoring of blood glucose (SMBG) to patients with type 2 diabetes who are using insulin and have been educated in appropriate alterations in insulin dose or who are at increased risk of hypoglycaemia.

B

Supporting evidence

- Specific subgroup of patients including those who are using insulin and have been educated in appropriate alterations in insulin dose or who are at increased risk of hypoglycaemia may benefit from self-monitoring of blood glucose⁴⁷.

1++

For non-insulin treated patients, the International Diabetes Federation Guideline on Self-Monitoring of Blood Glucose recommends that ‘*SMBG protocols (intensity and frequency) should be individualized to address each individual’s specific educational/ behavioural/ clinical requirements (to identify/prevent/ manage acute hyper- and hypoglycaemia) and provider requirements for data on glycaemic patterns and to monitor impact of therapeutic decision making*’⁴⁸.

8.2.4 Blood pressure control

Recommendations

The target blood pressure in people with diabetes is below 130/80 mm Hg.

A

Measure blood pressure at every routine diabetes visit.

A

Supporting evidence

- Blood pressure lowering in people with diabetes reduces the risk of macrovascular and microvascular diseases⁴⁹. 1+
- The lowering of blood pressure to below 130/80 mmHg is of significant benefit in people with diabetes⁵⁰, particularly those with diabetic kidney disease. 1++
- Angiotensin-converting enzyme (ACE) inhibitors, calcium channel blockers, thiazides and β -blockers are all effective in lowering blood pressure and reducing cardiovascular events^{51,52}. ACE inhibitors should be considered as first line therapy in patients with albuminuria for their additional benefits on renal function. Beta-blockers are not recommended as first line therapy but may be considered if patients are intolerant to ACE inhibitors or have previous heart attacks. (Module 8) 1++

8.2.5 *Control of lipid*

Recommendations

Use lipid modifying drug treatment to control dyslipidemia in diabetic patients.

A

Supporting evidence

- Lipid-lowering therapy in particular statin is highly effective in preventing cardiovascular mortality and morbidity in people with diabetes⁵³. (Module 9)

1+

8.2.6 *Anti-platelet agents in diabetes*

Recommendations

Use anti-platelet agents as a secondary prevention in those with a history of cardiovascular and cerebrovascular diseases e.g. myocardial infarction, peripheral vascular disease, stroke or transient ischemic attack.

A

Supporting evidence

- Aspirin has been recommended for secondary prevention of cardiovascular events^{54,55,56,57}.

1++

8.3 Continuing care of adults with diabetes

- Healthcare professionals should work in partnership with people who have diabetes to support them in managing their diabetic conditions, and to achieve the best possible level of blood glucose control. The risk of hypoglycaemia should also be taken into consideration.
- Once the diabetic condition is stabilised and good blood glucose control has been established, longer-term management targets for blood glucose control, weight, diet, physical activity levels, smoking cessation, blood pressure and blood lipids level should be negotiated and established with the patients. The targets should be tailored to the individual, taking account of what is possible and safe to achieve, and should be reviewed preferably at 6-monthly intervals but no more than 1 year.^{8c,58,59a}
- All adults with diabetes should receive continuing support, including psychological support, for the rest of their life to enable them to adjust their lifestyle.
- Glycated haemoglobin (HbA1c) should be measured regularly, at 3 to 6-monthly intervals in those whose control is suboptimal, and preferably at 6-monthly intervals but no more than 1 year in those who have stable control.^{8c,58,59a} In general, a value over treatment target calls for additional treatment (Table 2).

Table 2. HbA1c Treatment Target for Patients with Different Profile^{8c,59b}

Patient profile	Treatment target
Adults without significant hypoglycemia	<7.0%
Patients with limited life expectancy, functional impairment or significant comorbidities, older or frail patients	7.0 – 8.5%

- All adults with diabetes should receive regular surveillance for and management of cardiovascular risk factors. This should take place at least annually in adults with Type 2 diabetes. This assessment should include:
 - calculation of body mass index (BMI) and, ideally, measurement of waist circumference (WC)
 - assessment of physical activity levels
 - dietary assessment
 - review of smoking status
 - measurement of blood pressure
 - measurement of blood lipids
- All adults with diabetes should also receive regular surveillance for the long-term complications of diabetes and for other conditions which occur more commonly in people with diabetes, such as depression. The anti-diabetic medication should also be reviewed regularly to see if adjustment of dosage is required.
- Pneumococcal vaccines and seasonal influenza vaccination are recommended for people having chronic illness such as diabetes^{60, 61}.
- All women of childbearing age with diabetes considering motherhood should also receive continuing advice about the importance of planning their pregnancy and optimising their blood glucose control before they become pregnant. This will include the provision of advice on contraception.

8.4 Detection and treatment of long-term complications

Given the silent nature and additive effects of closely associated risk factors (blood glucose, blood lipid and blood pressure), macrovascular (stroke, peripheral vascular disease and coronary heart disease) and microvascular complications (nephropathy, renal impairment, neuropathy and retinopathy) on future cardiovascular diseases and renal event rates, periodic assessments to detect these risk factors and complications especially in those with long disease duration, presence of comorbidities, albuminuria, reduced renal function and/or poor risk factors control are of paramount importance.

8.4.1 Cardiovascular disease

Macrovascular complications, namely coronary heart disease, stroke and peripheral vascular disease, are major causes of death and complications in diabetic patients.

Primary care practitioners should conduct regular assessment to detect and prevent macrovascular diseases which include:

- check for symptoms of macrovascular diseases, e.g. chest pain, transient ischaemic attack (TIA),
- palpate peripheral pulses, and
- consider conducting ECG for patients who have cardiovascular risk factors such as hypertension, dyslipidaemia, smoking, proteinuria and renal impairment even if they are asymptomatic.

8.4.2 Diabetic kidney disease

Diabetic kidney disease is the commonest cause of renal failure. Early sign of diabetic kidney disease is microalbuminuria, followed by macroalbuminuria. The latter is associated with progressive deterioration in renal function with progressive rise in serum creatinine, eventually leading to renal failure and need for dialysis and transplantation. Hence primary care practitioners should ensure diabetic patients undergo regular screening for diabetic kidney disease and receive optimal management to minimise the risk of onset and progression of diabetic kidney disease. (Module 10)

Recommendations

Optimise glucose and blood pressure control to reduce the risk of onset and/or slow the progression of diabetic kidney disease.

A

Check the presence of microalbuminuria and serum creatinine in all Type 2 diabetic patients, starting from diagnosis and should review annually.

D

Treat diabetic patients with microalbuminuria with ACE inhibitors or Angiotensin Receptor Blockers (ARB) to reduce the progression to diabetic kidney disease if there are no contraindications.

A

Supporting evidence

- ACE inhibitors and ARB have proven significant reduction in the risk of developing microalbuminuria in patients who have diabetes with no diabetic kidney disease and have proven survival benefit in diabetic patients with diabetic kidney disease^{62,63,64}.

1++

8.4.3 Diabetic eye disease

Diabetic retinopathy is one of the leading causes of blindness among adult populations. Primary risk factors for diabetic retinopathy include longer duration of disease, suboptimal blood glucose control, elevated blood pressure and dyslipidaemia. Other risk factors include pregnancy and presence of diabetic kidney disease.

Since many of these complications can be silent but are highly preventable by control of blood glucose, blood pressure and blood lipids, primary care practitioners should ensure diabetic patients undergo regular eye screening and receive proper management to reduce the risk of their occurrence and progression. (Module 11)

Recommendations

Achieve optimal blood glucose and blood pressure control to reduce the risk of onset and progression of diabetic retinopathy.

A

Perform eye examination in patients with Type 2 diabetes shortly after the diagnosis of diabetes and repeat annually. Examination will be required more frequently if glycaemic and blood pressure control is suboptimal.

B

Promptly refer patients with any level of macular edema, severe Non-Proliferative Diabetic Retinopathy (NPDR), or any Proliferative Diabetic Retinopathy (PDR) to an ophthalmologist.

A

Supporting evidence

- Optimal glycaemic and blood pressure control reduce the incidence and progression of diabetic retinopathy⁶⁵. 1++
- Screening for diabetic retinal disease is effective in detecting unrecognised sight-threatening retinopathy⁶⁶. 2++

8.4.4 Diabetic foot

Diabetic foot problems result from complex interactions between peripheral neuropathy, peripheral arterial disease and poor foot hygiene, often compounded by foot deformities and skin lesions due to poor foot care and inappropriate footwear. The loss of sweating, imbalanced foot muscle, loss of sensation and fungal infection act in multiplicative manner increases the risk of trauma and minor injury and ultimately leads to foot ulcer and poor healing. Spontaneous closure of digital blood vessels can lead to digital infarcts followed by dry gangrene.

Education on foot care, regular foot examination and aggressive treatment of foot infection and ulceration, no matter how minor, can help to prevent lower limb amputation, which is one of the most feared complications of diabetes with prolonged hospital stay and disabilities. (Module 12)

Recommendations

Foot care education is recommended as part of a multi-disciplinary approach in all patients with diabetes.

B

Screen all patients with diabetes for foot disease annually, and refer to specialist promptly if complication is detected.

D

Supporting evidence

- Programmes which include education with podiatrists show a positive effect on minor foot problems^{67,68}. | 1+,
2++
- The absence of reliable symptoms and the high prevalence of asymptomatic disease make foot screening essential⁶⁹. | 4

Chapter 9. Component 4: Patient Empowerment

Empowerment of patient requires an increase of their awareness about what they can do to prevent diseases occurrence in the first instance such as living healthier lifestyles, the need for regular health checks and also the need for self-maintenance, thereby sharing with their doctors the management of their chronic diseases such as diabetes and hypertension. The healthcare professional needs to develop a working alliance with their patients to enhance and support their capacity for self-maintenance and self-care.

Recommendations

Offer structured educational intervention and lifestyle modification to all patients.

D

- The purpose of education is to equip patients with knowledge and skills in diabetic self-management and thus making them capable of decision making and controlling their own health and determinants.
- Patients with diabetes should be educated about the chronic nature of diabetes and its complications, meal planning, the importance of smoking cessation, weight control, regular exercise as well as the need for periodic assessment on a long-term basis.
- Patient education programme is effective in the management of Type 2 diabetes and in the prevention of its complication in high-risk groups through the control of blood glucose, blood pressure and lipid levels.
- Education programme should be provided by appropriately trained care team including healthcare professionals with specialist training. Family members and friends of patients should also be involved.
- Patients need to be empowered to actively engage in self-management, to make informed choices and decisions that will help achieve their personal diabetic goals as well as life goals.
- The components of self-care include: adopting and maintaining a healthy lifestyle, self-monitoring, and adherence to medication.

Chapter 10. Future Direction

Through developing and promoting the various reference frameworks, coupled with other system changes to the service delivery model for primary care, it is hoped to bring about a paradigm shift that would put a much greater emphasis on preventive care.

The reference framework is an evolving entity that will be extended and updated over time. The key to the usefulness of this reference framework is its adaptability to local structures, environments and needs. To achieve the goal of providing preventive services most effectively requires a multidisciplinary approach with concerted effort from all the stakeholders in primary care. It also involves a system adopting a more proactive approach that comprises the whole spectrum of primary, secondary and tertiary levels of prevention. It is hoped that the reference frameworks would:

- 1) Promote the family doctor concept which emphasises continuity of care, holistic care and patient-centred care.
- 2) Put greater emphasis on prevention of diseases and illnesses.
- 3) Facilitate primary care professionals to collaborate with other professionals to provide co-ordinated services.
- 4) Achieve collaboration and interfacing of service providers in the community through an integrated system.

Appendix 1. Treatment Target Values

	Ideal Control	Unsatisfactory control
Fasting plasma glucose (mmol/L)	4-7	≥8
HbA1c (%)	<7	≥7
Body mass index (kg/m ²)	<23	≥27.5
Waist circumference ^a for male ^b	<90 cm (<36 inches) and BMI<23	≥90 cm (≥36 inches)
Waist circumference for female ^b	<80cm (<32 inches) and BMI<23	≥80cm (≥32 inches)
Systolic blood pressure (mm Hg)	<130	≥140
Diastolic blood pressure (mm Hg)	<80	≥90
Total cholesterol (mmol/L)	<4.5	≥6.2
HDL- cholesterol for male (mmol/L)	>1.0 ^c	<0.9
HDL-cholesterol for female (mmol/L)	>1.3 ^c	<0.9
LDL- cholesterol (mmol/L)	<2.6 (<1.8 in patients with coronary heart disease)	≥3.4
Triglyceride (mmol/L)	<1.7 ^c	≥2.8

a “Guide to physical measurement” issued by WHO in 2008 provides reference method for measuring waist circumference:

- » Place a tape measure around the bare abdomen, just above the hip bone
- » Be sure the tape is snug, but does not compress the skin
- » The tape should be parallel to the floor, midway between the top of the iliac crest and the lower rib margin on each side
- » The patient should relax and exhale while the measurement is made

b May not be applicable to elderly age groups

c American Diabetes Association. 10. Cardiovascular disease and risk management: Standards of Medical Care in Diabetes - 2021. Diabetes Care. 2021;44(Suppl.1):S125–S150.

Appendix 2. Smoking Cessation Services

Service	Organisation	Telephone number
Integrated Smoking Cessation Hotline of the Department of Health	Department of Health	1833 183 (Press 1)
Smoking Counselling and Cessation Hotline	Hospital Authority	1833 183 (Press 3), 2300 7272
HKU Youth Quitline	The University of Hong Kong	1833 183 (Press 5), 2855 9557
Tung Wah Smoking Cessation Hotline	Tung Wah Group of Hospitals	1833 183 (Press 2), 2332 8977
Pok Oi Smoking Cessation Service using Traditional Chinese Medicine	Pok Oi Hospital	1833 183 (Press 4), 2607 1222

Acknowledgments

The Working Group on Primary Care of the Health and Medical Development Advisory Committee gratefully acknowledges the invaluable contribution of the Members of the Task Force on Conceptual Model and Preventive Protocols and the Clinical Advisory Group on the Hong Kong Reference Framework for Diabetes Care in Adults in Primary Care Setting in the development of the Reference Framework.

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The on-going updating and development of new modules under this reference framework is supported by the **Expert Panel on Reference Frameworks** since 2021. The Health Bureau gratefully acknowledges the invaluable support and contribution of Members of this Expert Panel.

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