

Module III-7

Long-term complications

Overview

While the underlying pathophysiology and management of both of the major forms of diabetes differ, a common feature is the development of long-term micro- and macrovascular complications, such as retinopathy, nephropathy, macrovascular disease and peripheral and autonomic neuropathy. These complications are associated with increased morbidity and mortality.

The predictors for the development of microvascular complications are duration of diabetes and poor metabolic control. However, the progression of these complications can be reduced by prompt and intensive treatment. Therefore, strategies must be in place for their early detection.

As type 2 diabetes can be present for many years before diagnosis and up to 30% of people already have a complication at diagnosis, the assessment of complications should begin at diagnosis and annually thereafter. Adults with type 1 diabetes should be assessed within 5 years of diagnosis and annually thereafter.

Goals

- To develop a comprehensive understanding of the pathophysiology of micro- and macrovascular complications
- To provide participants with an understanding of their role in recommending and advocating for early screening and prompt treatment, and in some cases performing screening for complications
- To discuss the implications of monitoring and treating long-term complications
- To understand the psychological consequences of long-term complications for the individual and the family members
- To discuss the necessity of being honest and adopting a positive approach to the prevention and management of complications, and of not using scare tactics and threatening messages

Module III-7c

Diabetic neuropathy

Objectives

After completing this module the participant will be able to:

- Counsel adolescents and adults about the risks of developing neuropathy
- Define the different types of poly- and mononeuropathies associated with diabetes – including motor, sensory, autonomic, truncal and cranial nerve
- Describe the impact of autonomic neuropathy on various organs
- Describe the impact of autonomic neuropathy on quality of life (refer to **Module I-4, Psychosocial and behavioural approaches** and **Module III-9, Diabetes and sexual health**)
- Describe the role and function of the sensory and motor nerves
- Describe the signs and symptoms of diabetic peripheral neuropathy
- Describe the features of painful diabetic neuropathy
- Differentiate between painful diabetic neuropathy and other causes of peripheral pain
- Explain the significance of the asymptomatic insensate foot
- Describe the impact of gastroparesis on metabolic control and the management of gastroparesis*
- Describe the metabolic and structural abnormalities that occur in diabetic peripheral neuropathy and the suggested physiological pathways of those abnormalities*

Assess the diabetic foot

- Describe the effect of diabetes on blood vessels, nerves and joints
- Define those factors that place the foot at risk of ulceration
- Define the 'high risk foot'
- Describe how these factors can lead to amputation
- Perform non-invasive tests, elicit relevant history, and observe for clinical signs and symptoms of peripheral vascular disease

- Perform and understand the results of non-invasive tests such as biothesiometer or monofilament, obtain a history of the associated symptoms, and observe clinical signs of peripheral neuropathy
- Perform routine assessment of mechanical factors, such as foot deformity
- Assess nail and skin integrity
- Assess the presence of claudication and resting pain
- Assess people's ability to care for their feet
- Interpret the results of a person's assessment to determine a management plan

Provide preventive foot care

- Define the appropriate self-care practices to be taught to people with diabetes and vascular disease and/or loss of sensation:
 - selecting and wearing appropriate footwear
 - first aid for minor skin breaks, tinea, dry skin, etc.
 - safe exercise
 - daily foot inspection
 - where and when to seek appropriate medical attention
- Describe the treatment of common minor foot problems, such as tinea, skin fissures, dry skin, calluses, corns and ingrown toenails

Assess foot problems

- Describe the aetiology of:
 - neuropathic foot ulceration
 - ischemic foot ulceration
 - mixed aetiology (neuroischemic) foot ulcers
- Identify the features of each type of ulcer
- Describe the treatment goals for each type of ulcer
- Understand principles of moist wound healing and the stages of normal wound healing
- Understand the factors that delay wound healing in people with diabetes
- Understand the indications for, and application of, locally available wound dressing
- Identify the signs and symptoms of infection in a diabetic foot

- Understand the importance of appropriate control of infection
- Employ simple strategies to reduce the pressure (known as offloading) on the wound to facilitate healing
- Understand the safe indications for wound debridement
- Describe the role of relevant investigations, such as wound swabs and x-rays, in the management of foot ulceration
- Describe optimum nutritional intake to facilitate wound healing
- Describe local referral pathways for wound management
- Understand the impact on quality of life for people with insensate feet, foot problems or amputation (refer to **Module I-4, Psychosocial and behavioural approaches**)
- Describe the presentation and pathophysiology of Charcot's arthropathy*
- Assess and monitor the Charcot foot to determine the stage of the disease as acute, subacute or chronic*
- Describe the treatment for acute, subacute and chronic Charcot's arthropathy*

Teaching strategies

Lecture, theory, practical demonstration and group participation for clinical assessment of neuropathy
Visit multidisciplinary foot clinic if available

Who should teach this module

Doctor, diabetes educator, podiatrist, wound care consultant

Evaluation of learning

Role play demonstrating neurological assessment
Student-facilitated teaching of foot care for high risk feet

References

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* Indicates objectives at an advanced level

Detailed content for this module is available as a slide presentation at www.idf.org