

# 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-7d

## Macrovascular disease

### Overview

Although microvascular and neuropathic complications can impede the quality of life of a person with diabetes, macrovascular disease causes the most morbidity and mortality. Studies in this area have found that people with diabetes are at least 2 to 4 times more likely to develop macrovascular disease, compared to the general population. This increased risk is particularly striking in women, especially for coronary heart disease. The increase in vascular disease in diabetes occurs in all major vascular systems – cardiovascular, cerebrovascular and peripheral.

### Goals

- To understand the significant impact of morbidity and mortality from macrovascular disease in people with diabetes
- To understand that diabetes is more than a blood glucose disease; it is also a disease with significant macrovascular risk

### Objectives

After completing this module the participant will be able to:

- State that manifestations of macrovascular disease vary between different ethnic groups
- State that macrovascular disease comprises coronary heart disease, cerebrovascular disease and peripheral arterial disease
- Describe silent ischemia, angina, transient ischemia attacks (TIAs), claudication and resting pain
- Discuss the increased risk of a macrovascular event in people with diabetes
- Describe how diabetes increases the risk of cardiac failure
- Discuss the relationship between hyperglycaemia and increased macrovascular risks demonstrated in the Epidemiology of Diabetes Interventions and Complications (EDIC) and post-monitoring studies
- Recognize central obesity as a marker for increased vascular risk
- Describe risk factors and the additive effects of multiple risk factors

- Describe the increased risk of macrovascular disease in the presence of microalbuminuria/nephropathy, and the need for intensive management of macrovascular risk factors
- Describe the different types of lipids and targets for treatment
- Discuss the role of nutrition in primary and secondary prevention
- Discuss the role of lifestyle factors in therapy (regular exercise, smoking cessation, sustained weight loss for the overweight)
- Discuss the role of HMG-CoA reductase inhibitors in reducing the chance of a macrovascular event within 6 months of beginning therapy in people with established heart disease
- Describe the role of lowering blood pressure in reducing the risk of stroke and cardiac failure
- Discuss the benefits of intensive management of dyslipidaemia and hypertension, even in elderly people
- Discuss the use of aspirin in secondary prevention
- Describe the clinical trials that give some evidence for the treatment of macrovascular risk – including MicroHOPE, HOT, 4S, UKPDS, Heart Protection Study, ACCORD, CARDs, ADVANCE\*

<b>Teaching strategy</b>	Problem-based learning involving case studies
<b>Suggested time</b>	1 hour
<b>Who should teach this module</b>	Endocrinologist, diabetes educator, cardiologist
<b>Evaluation of learning</b>	<p>Assignment describing the importance of risk reduction strategies in type 1 diabetes and type 2 diabetes</p> <p>Design a care plan for an overweight person with type 2 diabetes who has family history of heart disease (what assessments would be performed?)</p>
<b>References</b>	<p>Alberti GK, Zimmet P, DeFronzo RA, Keen H. <i>International textbook of diabetes mellitus</i> 2<sup>nd</sup> edition. John Wiley and Sons. Chichester, 1997.</p> <p>American Diabetes Association. Treatment of hypertension in adults with diabetes. <i>Diabetes Care</i> 2004; 27(Suppl 1): S80-S82.</p> <p>Arch J, Korytkowski M. Strategies for preventing coronary heart disease in diabetes mellitus. <i>Diabetes Spectrum</i> 1999; 12: 88-95.</p> <p>Birkenhager WH, Staessen JA, Gasowski J, de Leeuw PW. Effects of antihypertensive treatment on endpoints in the diabetic patients randomised in the Systolic Hypertension in Europe (Syst-Eur) trial. <i>Nephrol</i> 2000; 13: 232-7.</p>

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