BEST PRACTICE

CARDIOVASCULAR RISK IN TYPE 2 DIABETES

Managing dyslipidaemia and hypertension: latest SEMDSA and international guidance

Type 2 diabetes is a complex disorder frequently associated with adiposity, hypertension, dyslipidaemia and increased blood platelet aggregation in addition to hyperglycaemia. Despite recent improvements in care, type 2 diabetes results in increased mortality and morbidity mainly due to cardiovascular events. As such, type 2 diabetes is considered a coronary artery disease (CAD) risk equivalent and the risk factors of dyslipidaemia, hypertension and overweight should be investigated and treated aggressively in every patient with type 2 diabetes.¹

KEY MESSAGES

- Multifactorial treatment of hypertension, dyslipidaemia and overweight is key to reducing cardiovascular risk in type 2 diabetes
- The most recent Society for Endocrinology, Metabolism and Diabetes of South Africa (SEMDSA) guidelines for type 2 diabetes patients in primary care recommend LDL-cholesterol targets of <1.8mmol/l
- SEMDSA guidelines include hypertension targets and recommend a systolic blood pressure of 130-140mmHg and a diastolic blood pressure of 80-90mmHg.

Benefit of managing co-existing risk factors in type 2 diabetes

The outcomes of patients in the STENO-2 randomised trial of multifactorial intervention in people with type 2 diabetes (and microalbuminuria) were recently reviewed after 21 years of follow-up.² This longer view of the initial 7.5 years of intensified multifactorial intervention for co-existing CAD risk factors versus conventional therapy showed that when treatment of all cardiovascular risk factors was target driven, there was an eight-year gain in life expectancy. This extended lifespan was matched by eight years of freedom from intervening cardiovascular events in the intensive arm as compared to the standard treatment arm (Figure 1).
Dyslipidaemia in type 2 diabetes

The most frequently encountered lipid disturbance in type 2 diabetes is moderately increased triglycerides and decreased HDL-cholesterol. This increase in triglycerides (2-5mmol/l) reflects the increase of remnant lipoproteins, which are highly atherogenic. LDL-cholesterol levels are often not very elevated, but because the LDL particles are small and dense, the atherosclerotic risk is high.

Goals of lipid-lowering therapy

Guidelines across the world agree that lipid-lowering with statins is first-line therapy for lowering LDL-cholesterol in diabetic patients. The most recent NICE guidelines recommend the use of statins of high intensity (atorvastatin and rosuvastatin), as do the 2017 SEMDSA guidelines.

With regard to lipid targets, guidance is similar. The most recent guidelines from the American Association of Clinical Endocrinologists (AACE) and American College of Endocrinology (ACE) in 2016, however, further refined the risk of cardiovascular disease in diabetes as extreme, very high or high, with differing targets (Table 1).
Cardiovascular risk in type 2 diabetes

In the South African guidelines, statin therapy plus lifestyle therapy (weight loss, calorie intake equal to achieving ideal weight) is advocated for all patients with type 2 diabetes who:
- Have existing cardiovascular disease
- Have chronic kidney disease
- Are older than 40 years or have diabetes of 10 years duration or one, or additional cardiovascular risk factors.

Antiplatelet therapy

In the latest NICE guidelines, aspirin and clopidogrel are not recommended for people with type 2 diabetes without cardiovascular disease. Aspirin is, however, recommended for secondary prevention of cardiovascular disease in type 2 diabetes in both the NICE and 2017 SEMDSA guidelines.

Hypertension in type 2 diabetes

People with type 2 diabetes are at greater risk of developing hypertension than non-diabetics and are more likely to develop target organ disease. According to the SEMDSA guidelines, blood pressure should be measured at every routine visit to the healthcare professional. The threshold for treatment initiation is >140/90mmHg.

The guidelines recommend ambulatory blood pressure monitoring:
- In cases of suspected white-coat hypertension
- In hypertension resistant to increased medication
- Where there are hypotensive symptoms on treatment
- In cases of autonomic dysfunction
- Where there is suspected episodic hypertension, e.g. phaeochromocytoma

---

**Table 1: SEMDSA and AACE/ACE lipid targets in type 2 diabetes**

<table>
<thead>
<tr>
<th>SEMDSA targets</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cholesterol</td>
<td>&lt;4.5mmol/l</td>
<td></td>
</tr>
<tr>
<td>LDL-cholesterol</td>
<td>&lt;1.8mmol/l</td>
<td></td>
</tr>
<tr>
<td>HDL-cholesterol</td>
<td>&gt;1.0mmol/l in men; &gt;1.2mmol/l in women</td>
<td></td>
</tr>
<tr>
<td>Triglycerides</td>
<td>&lt;1.7mmol/l</td>
<td></td>
</tr>
</tbody>
</table>

**AACE/ACE targets**

<table>
<thead>
<tr>
<th>Extreme risk</th>
<th>LDL-cholesterol</th>
<th>Non-HDL-cholesterol*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established clinical cardiovascular disease in patients with diabetes or chronic kidney disease (Stage 3/4)</td>
<td>&lt;1.4mmol/l</td>
<td>2.3mmol/l</td>
</tr>
<tr>
<td>Very high risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes with one or more risk factors</td>
<td>&lt;1.8mmol/l</td>
<td>2.5mmol/l</td>
</tr>
<tr>
<td>High risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes with no other risk factors</td>
<td>&lt;2.5mmol/l</td>
<td>3.4mmol/l</td>
</tr>
</tbody>
</table>

*Total cholesterol minus HDL-cholesterol
The treatment targets for most patients are systolic blood pressure 130-140mmHg and diastolic blood pressure 80-90mmHg. Suitable initial choices in patients without albuminuria include an angiotensin converting enzyme (ACE) inhibitor, angiotensin receptor blocker (ARB), thiazide-like diuretic (indapamide is the preferred diuretic) or calcium channel blocker (CCB). Diuretics or CCBs are preferred in black patients.

ACE inhibitors, ARBs, thiazide-like diuretics and non-dihydropyridine CCBs have been shown to be of benefit in diabetic kidney disease. CCBs should be avoided in patients with heart failure and beta-blockers should be avoided in patients at high risk of stroke. ACE inhibitors and ARBs should not be used in combination.

References