A Weighty Problem: Assessment of Diabetes

Diabetes is a chronic disease, which can be treated and, above all, controlled in order to reduce the consequences of chronic complications. The prevalence of this condition makes it essential for physicians to keep up to date.

By Chantal Godin, MD, FRCPC, CSPQ

Diabetes is a common problem, affecting 5% of Canadians, or 1.5 million people.\(^1\) Compounding this, the problem is growing. Family physicians are likely to see many diabetics in their respective practices. Such patients become at risk for a number of problems (e.g., micro- and macrovascular complications) and already have a number of metabolic abnormalities (e.g., obesity, dyslipidemia, hypertension, etc.).

The initial assessment, therefore, will attempt to shed light on all these problems and evaluate them accordingly. As diabetes is a chronic disease, the patient also will benefit from a thorough education provided by the family physician. Learning how to take capillary blood sugar becomes an indispensable tool for making people aware of the results of their efforts.

Diabetes, however, remains a very costly illness that demands much more than merely taking medication. Even though a healthy lifestyle—with proper diet and exercise—is good advice for everyone, the recommendation...
becomes more difficult to follow when it is imposed. The patient’s socioeconomic environment, understanding, means and support must be taken into account when drawing up therapeutic objectives.

**Screening**

Diabetes (fasting blood sugar) screening is recommended every three years for people over 45 years of age. It should be done more frequently in high-risk individuals, such as those with a history of first-degree relatives with diabetes, those of an origin at risk (e.g., Aboriginal, Hispanic, Asian or African), those who have low high-density lipoprotein (HDL) dyslipidemia and elevated triglycerides, and those who are obese. Yearly screening also should be administered in people with glucose intolerance, marginal fasting blood sugar levels, diabetes during pregnancy, a baby over 4 kg at birth, or if complications associated with diabetes, hypertension or coronary disease are present.

**Initial Assessment**

During the first visit, the physician should look into diabetes symptoms, personal and family history, and conduct a systems review. Particular attention should be paid to risk factors, such as hypertension, dyslipidemia, obesity (particularly around the trunk) and smoking. Social factors, such as family dynamics, education, employment, lifestyle and adjustment techniques, should be highlighted. The patient’s medication history and record of alcohol consumption should be brought up to date, as well. The circumstances of the diagnosis—biochemical criteria with or without symptoms—should be known. Physicians should look for symptoms of complications affecting the feet, eyes or kidneys, and cardiovascular, neurologic and skin problems. The patient’s lifestyle—meal plan, usual diet, exercise, medication, hypoglycemic reactions and monitoring capillary blood sugar—should be reviewed at each visit.

The physical examination should include height, weight and waistline measurements. The body mass index then can be calculated and the waistline measurement monitored as the patient’s condition progresses. Weight gain and a reduction in waist measurement may be found with thiazolidinediones, a new class of drugs. When examining the head and neck, pupil reaction, extraocular movement, fundus and opacification of the cornea should be noted, together with oral hygiene and thyroid palpation. A cardiopulmonary examination should be routine, with attention paid to the patient’s signs of heart failure, bruises and pulse. The physician should

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also examine the abdomen and the genitourinary system for mycosis.

To finish, the musculoskeletal and nervous systems should be evaluated, and the skin inspected for any problems. Proprioception, vibration and reflexes can be assessed when checking peripheral neuropathy, but the 10 g monofilament remains the examination of choice for initial assessment and follow-up.

**Treatment Plan**

When it is time to draw up a patient’s treatment plan, a visit to a dietitian must be a priority. Learning how to measure capillary blood sugar is also a must. The reasons for changing lifestyle and the frequency of capillary glucose measurements should be discussed with the patient. Ideally, fingersticks should be done once a day, or even more frequently if rapid changes are expected (e.g., when starting a drug or some other condition that may change control status [starting steroids]).

If there is no contraindication, the target for capillary glycemia would be that of the 1998 Canadian consensus guidelines: four to seven for capillary glycemia before meals, or five to 11 one to two hours after a meal. The actual time the measurement should be taken is at the discretion of the physician, but it is important to check at various times. Postprandial measurements can be particularly interesting when checking the efficacy of medications that act more following meals, such as acarbose and repaglinide.

When patients know the basics of their diabetes, an effort must be made to further their knowledge by enrolling them at a diabetic day centre or similar organization, so they can take control of their lives. Being well-informed, understanding the treatment and the consequences of non-compliance motivates patients to follow recommendations more closely.

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**Long-term Follow-up**

For long-term follow-up, visits should be scheduled every two to four months, with the glycosylated hemoglobin measured at this time (target: < 115% of normal; try to do better if between 116% and 140%, and act if > 140%). A full lipid profile should be done every year, or more frequently if medication is being taken. Microalbuminuria also should be checked annually (Table 1).

In addition, the capillary blood sugar meter could be checked when taking fasting blood levels. A difference of more than 15% with the laboratory results means the technique and device must be reviewed. This can be performed by the pharmacist. A visit to an ophthalmologist is suggested, and treatment depends on the impairment documented. In people over the age of 35, an...
electrocardiogram (ECG) while resting or during exertion can round out the work-up, if needed.

Doctor-patient confidence is very important. This means that the physician must stay current about the various technologies in order to properly respond to patients, who are often anxious to access new devices, pills, etc. The physician’s role also means he/she often will have to convince patients to begin insulin therapy. Even the slightest personal experience increases the physician’s power of persuasion (e.g., the physician may prick his/her skin with an insulin pen to demonstrate there is no pain with the new superfine needles).

The treatment algorithm put forward in the 1998 consensus guidelines suggests a progressive approach, which begins with non-drug therapy (stressing diet, exercise, smoking cessation and education) for one to four months. If the goals cannot be achieved this way, pharmacotherapy must be initiated. New medications have come onto the market since the consensus guidelines, and new questions may be asked as to the current drug of choice or even drug combinations.

Experts have raised the possibility of obtaining better results by combining small doses of medication early on in treatment. This is thought to help play on both the insulin resistance and insulin secretion defect found when diabetes is diagnosed. Obviously, many factors are involved, such as compliance, which is often a burden for diabetics. With respect to combinations, a study has shown the advantage of using triple therapies, such as
as metformin, sulfonylureas and thiazolidinedione, before starting insulin. Neutral protamine Hagedorn (NPH) insulin at bedtime remains the next best choice, unless the patient’s diary shows that a premixed injection in the morning is better.

On the other hand, most people agree that insulin sensitizers should be continued with insulin, while insulin secretors could help by keeping insulin injections to just one per day. If more than two injections per day must be administered, insulin secretors no longer have a role to play. According to the United Kingdom Prospective Diabetes Study (UKPDS), diabetes is a progressive disease. Therefore, physicians must be able to identify the various stages that will improve control fairly quickly. New drugs on the market give some hope about safeguarding the function of beta cells, which generally wear out over time.

As already mentioned, diabetic patients often present with other health problems, or are at risk of developing such problems. Check-up visits must

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can be there before 50.

Diagnose Early. Treat with anticholinergic foundation therapy.
## Table 1

### Treatment of Diabetes

<table>
<thead>
<tr>
<th><strong>Physician</strong></th>
<th><strong>Multidisciplinary Team</strong></th>
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<tbody>
<tr>
<td><strong>Patient</strong></td>
<td></td>
</tr>
<tr>
<td>HbA$_{1C}$ &lt; 7.0 gm/dL</td>
<td>General information</td>
</tr>
<tr>
<td>BP &lt; 130/80 mmHg</td>
<td>Hypo- and hyperglycemia</td>
</tr>
<tr>
<td>LDL &lt; 2.5 mmol/L</td>
<td>Diet</td>
</tr>
<tr>
<td>Monitor complications</td>
<td>Capillary blood sugar technique</td>
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<tr>
<td>Change in lifestyle</td>
<td>Use of insulin pen</td>
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### Detection/Monitoring of Complications

- **Retinopathy**: Ophthalmologic consultation
  - Initial evaluation and follow-up by ophthalmologist
- **Nephropathy**: Annual detection
  - Microalbuminuria: 30-299 mg/24 h
  - Macroalbuminuria: > 300 mg/24 h
- **Neuropathy**: 10 g monofilament pressure test (test of choice)
  - Regular inspection of feet; aggressive treatment of lesions and infections
  - Autonomic problems: evaluation and symptomatic treatment
- **Macroangiopathy**: Questionnaire: cardiovascular symptoms
  - Further investigation if needed

### Monitoring of other risks

- **Blood pressure**: Regular monitoring
  - Appropriate treatment (often requires 1-3 Rx)
- **Hyperlipidemia**: Laboratory tests
  - Consider high risk; treat to achieve goal
- **Weight**: Try to obtain BMI < 27
  - Consider drug treatment if diet alone fails
- **Smoking**: Strongly recommend cessation
  - An aid may be necessary (e.g., nicotine patch)
- **Exercise**: Prescribe exercise
  - 20-60 minutes, 3-4 times a week
- **Diet**: Reinforce importance
  - Minimize alcohol consumption (1-2 drinks/day)

HbA$_{1C}$ = glycosylated hemoglobin; BP = blood pressure; LDL = low-density lipoprotein
encompass all aspects of the disease, and ensures that glycosylated hemoglobin is maintained below 7%. Blood pressure must be checked and treated, using very strict criteria—treat when over 140/90 mmHg, or 130/80 mmHg if the target organs are impaired, while making > 130/80 mmHg the target.4 Lipids also must be monitored and, since diabetics run the same risk as patients with vascular disorders, target values are: low-density lipoprotein (LDL) < 2.5 mmol/L; total cholesterol/HDL < 4.0; and triglycerides < 2.0 mg/dL.5 Particular attention should be paid to liver enzymes when oral glucose-lowering drugs are being taken. Uric acid, which often can be elevated in Type 2 diabetes, should be checked periodically, together with electrolytes, creatinine and a complete blood count.

Ideally, both the physician and patient should be supported by a multidisciplinary team. This will provide the patient with general information, including education about hyperglycemia (reviewing hypoglycemia if need be) and the need to follow diet and lifestyle recommendations, as well as support regarding problems with capillary blood sugar devices and the initial and long-term use of insulin pens. If there is no such support nearby, a local community services center should be able to provide at least a minimum of service for diabetics. The ultimate goal when treating diabetics is to make them conscious of the very important role they play in their own treatment, while providing them with the support and tools to do so.

References

Suggested Reading