Managing Type 2 Diabetes

Disclaimer

See also:
- Insulin in Type 2 Diabetes
- Glycaemic Control for Type 2 Diabetes

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Red Flags
- Evidence of ketoacidosis (presence of ketonuria or ketonaemia)
- Acute, severe hyperglycaemia (> 20 mmol/L)
- Acute, severe hypoglycaemia
- Pregnancy

Background – About Managing Type 2 Diabetes
The underlying aim is to improve the length and quality of life of patients. The best long-term outcomes are achieved when the patient is engaged and self-manages as well as possible. Good diabetes care should be added to all other preventive health care activities. Young patients with Type 2 diabetes can have poor outcomes, so avoid clinical inertia.

Patients can be supported by:
- regular appointments.
- reviewing progress against targets for glycaemic control.
- cardiovascular risk factor management.
- medication management, with changes made as required.

Practice nurses are an integral part of patient recall and review. Management within a primary care team can include support from a credentialed diabetes educator, dietitian, exercise physiologist, optometrist, ophthalmologist, podiatrist, and pharmacist.

Assessment

1. Confirm that the diagnosis is correct.

2. **Assess at each visit regularly:**
   - HbA1c
   - Home blood glucose readings if available
   - Hypoglycaemic episodes
   - Progress against goals
   - Intercurrent illness
   - 3 monthly, if medication change or diabetes unstable
   - 6 monthly, if diabetes stable

   **Annual review**
   *This is a detailed review, and should include:*
   - preventive health
   - full clinical examination
   - screening for complications
   - referrals.
   *Ensure your practice has an annual Diabetes Cycle of Care recall system in place.*

3. Ask about symptoms of complications at each review.
   - Cardiovascular
   - Neurological including bladder function
   - Foot and toe problems
   - Recurrent infections, especially urinary and skin
• Erectile dysfunction
• Sleep disordered breathing
• Depression symptoms
• Visual disturbance

4. Perform a comprehensive examination at least annually. If random glucose level is \( \geq 15 \text{ mmol/L} \), check for ketones as high levels may require urgent initiation of insulin.

**Examination**
- Weight, height, \textit{BMI}, and waist circumference
- Cardiovascular system:
  - Blood pressure – lying and standing
  - Peripheral and neck vessels
- Eyes:
  - Visual acuity – with correction
  - Cataracts
  - Retinopathy – examine with pupil dilation
- Feet:
  - Sensation and tendon reflexes
    - Touch (10 g monofilament)
    - Vibration (128 Hz tuning fork)
  - Peripheral pulses
  - Skin condition
  - Pressure areas
  - Interdigital problems
  - Abnormal bone architecture – including Charcot’s arthropathy
- Urinalysis:
  - Albumin
  - Ketones
  - Nitrates and/or leucocytes

5. Consider completing a \textbf{Cardiovascular (CV) Risk Assessment}. This is not necessary in those already at \textbf{high absolute risk}.

**High absolute cardiovascular risk:**
- Aged \( > 60 \) years with diabetes
- Diabetes with microalbuminuria
- Moderate or severe chronic kidney disease (persistent proteinuria or eGFR \( < 45 \text{ mL/min/1.73 m}^2 \))
- Previous diagnosis of familial hypercholesterolaemia
- Systolic blood pressure \( \geq 180 \text{ mmHg} \) or diastolic blood pressure \( \geq 110 \text{ mmHg} \)
- Serum total cholesterol \( > 7.5 \text{ mmol/L} \)
- Aboriginal and Torres Strait Islander adults aged \( > 74 \) years

6. Arrange:

**Investigations**
- Baseline:
  - Renal function – eGFR, urinary albumin creatinine ratio (ACR)
  - Lipids: LDL-C, HDL-C, Non-HDL-C, total cholesterol, triglycerides
  - HbA1c
- Also consider:
  - ECG if patient aged \( > 50 \) years and \( \geq 1 \) other vascular risk factor
管理和最佳实践

**管理点**

**优化管理年轻患者**

对于2型糖尿病的年轻人，结局往往更糟。

优化管理和确保与卫生保健服务的参与是特别重要的，以防止并发症。

管理的总体目标是提高生活质量，防止并发症和过早死亡。

1. **立即安排糖尿病转诊或入院**：
   - 糖尿病酮症酸中毒或疑似糖尿病酮症酸中毒，如腹部疼痛，脱水，头晕，恶心和呕吐。
   - 高渗高血糖状态。
   - 糖尿病和严重呕吐。
   - 急性，严重的高血糖。
   - 急性，严重的低血糖。
   - 疑似Charcot的神经性关节病，如单侧，红，热，肿，可能疼痛的脚。
   - 脚溃疡，无脉。
2. **与患者讨论**：
   - **生活方式改变**作为糖尿病管理的基石。
   - **国家糖尿病服务计划**注册，以减少糖尿病产品的费用并获取额外资源。
   - **病假管理和术前计划**。

**病假管理**

- 寻找潜在原因并治疗。
- 增加自我监测。
- 确保能够维持水分。
- 确保建议的连续性，尤其是在非工作时间。
- 通常需要继续当前的药物，并可能增加药物。
- 有关病假管理的更多信息，请参见糖尿病澳大利亚–病假和2型糖尿病。
3. **目标实现**的最优化管理。
4. **个性化血糖目标**：

**HbA1c目标**

- 目标可能在以下患者中更低：
  - 在诊断时更年轻。
  - 无显性心血管疾病（CVD）。
• are diet controlled.
• are pregnant and planning pregnancy.
• have a lower baseline HbA1c.

• Targets may be relaxed in patients who:
  • are aged > 65 to 70 years.
  • have existing CVD.
  • have co-morbidities that impair quality of life.
  • are at risk of hypoglycaemia e.g., frail, elderly, hypoglycaemic unawareness.
  • are at risk of adverse drug effects e.g., renal dysfunction, excess alcohol.

• Discuss the HbA1c target with individual patients.
• Balance achieving HbA1c target against the risk of severe hypoglycaemia, particularly in the elderly.
• See the recommended HbA1c target ranges for adults with Type 2 diabetes.

**Individualisation of HbA1c Targets**

<table>
<thead>
<tr>
<th>Specific clinical situation</th>
<th>Therapy</th>
<th>Equivalent HbA1c target expressed in (mmol/mol)</th>
<th>Target HbA1c (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes of short duration and no clinical CV disease</td>
<td>Lifestyle modification with or without metformin</td>
<td>≤ 42</td>
<td>≤ 6.0</td>
</tr>
<tr>
<td></td>
<td>Requiring any antidiabetic agents other than metformin or insulin</td>
<td>≤ 48</td>
<td>≤ 6.5</td>
</tr>
<tr>
<td></td>
<td>Requiring insulin</td>
<td>≤ 53</td>
<td>≤ 7</td>
</tr>
<tr>
<td>Planning pregnancy</td>
<td></td>
<td>≤ 48</td>
<td>≤ 6.5</td>
</tr>
<tr>
<td>Pregnancy</td>
<td></td>
<td>≤ 42</td>
<td>≤ 6.0</td>
</tr>
<tr>
<td>Diabetes of longer duration or clinical CV disease</td>
<td>Any</td>
<td>≤ 53</td>
<td>≤ 7.0</td>
</tr>
</tbody>
</table>

Notes:
1. Achievement of HbA1c targets must be balanced against risk of severe hypoglycaemia, especially in the elderly.
2. In an older adult long duration might be considered to be > 10 to 20 years, but for a person who develops type 2 diabetes at a young age it may be considerably longer.
3. Examples of major co-morbidities include chronic medical conditions such as chronic kidney disease stage IV or V, NYHA Heart Failure stages III or IV, incurable malignancy, and moderate to severe dementia.
4. Where practical suggest BGL target < 15 to help minimise risk of infection.

• Blood glucose targets – For most, fasting 4 to 7 mmol/L and 2 hour post-prandial 5 to 10 mmol/L. See **Type 2 Diabetes Goals Chart**.

5. Consider optimising glycaemic control with **medication**.

**Medication**

• In symptomatic patients, arrange prompt treatment with a glucose-lowering agent at initial diagnosis (or blood glucose level > 20 mmol/L).
• In asymptomatic patients at diagnosis, recommend a 3 to 6 month trial of lifestyle modification as first-line management of blood glucose.
• Initiate medication when HbA1c target is not reached after a 3 to 6 month trial of lifestyle modification.

See also:
• Glucose-Lowering Therapy – Excluding Insulin
• Insulin in Type 2 Diabetes

6. Reduce cardiovascular risk factors:
   • Monitor blood pressure and lipids.
     **Monitor blood pressure**
     • Hypertension in diabetic patients is an independent risk factor for macrovascular disease, retinopathy, and nephropathy.
     • Aim for blood pressure target of ≤ 130/80.
     • Treat all adults with Type 2 diabetes and known prior cardiovascular disease with blood pressure lowering therapy unless contra-indicated or clinically inappropriate.
     • Any movement towards target blood pressure is beneficial.
     • Choose angiotensin-converting enzyme (ACE) inhibitors or angiotensin 2 receptor blockers (ARBs) in preference to other agents as they have renal protective benefits.

     **Monitor lipids**
     • Dyslipidaemia in diabetic patients is an independent risk factor for macrovascular disease.
     • Lipids, especially triglycerides, may significantly improve with adequate glycaemic control alone. Consider medication if the patient is above target levels after 3 months of effective glucose management.
     • Start all adults with Type 2 diabetes and known prior cardiovascular disease (except haemorrhagic stroke) on:
       o the maximum tolerated dose of a statin (irrespective of their lipid levels)
       o fibrates – in addition to a statin or on their own (for those intolerant to statin)
       – when fasting triglycerides ≥ 2.3 mmol/l or high-density lipoprotein < 1.05.
     • Any movement towards target lipids is beneficial:
       o TC < 4.0 mmol/L
       o HDL-C ≥ 1.0 mmol/L
       o LDL-C < 2.0 mmol/L
       o Non-HDL-C < 2.5 mmol/L
       o TG < 2.0 mmol/L

• Offer smoking cessation advice, if appropriate.
• In selected cases, consider aspirin for protection from cardiovascular diseases.
  **Aspirin**
  • Do not routinely prescribe aspirin in patients with diabetes and no history of cardiovascular disease (primary prevention).
  • Prescribe aspirin 100 mg daily in patients with diabetes and a history of cardiovascular disease (secondary prevention) – unless contraindications.

7. Manage depression, if present.

8. Consider:
  **Fitness to drive**
  • Hypoglycaemia, particularly lack of hypoglycaemia awareness, complications such as CV disease, retinopathy, neuropathy, and foot problems can affect fitness to drive.
Advise patients that in Victoria they are legally required to notify VicRoads if they have diabetes.

For detailed information, refer to Austroads – Assessing Fitness to Drive.

If commercial driver’s licence holder requiring assessment, refer for urgent or routine diabetes referral.

9. Ensure immunisations are up-to-date.
   - Influenza: once per year
   - Pneumococcal: Vaccinate according to current guidelines.
   - Tetanus: booster at age 50 (unless booster has been given within 10 years). Tetanus vaccination in adults is best given with a multivalent vaccine such as dTpa (Boostrix or Adacel, or Boostrix-IPV or Adacel-Polio)

10. If Aboriginal and Torres Strait Islander or Pacific Islander patient, consider:
    - Closing the Gap
    - Aboriginal and Torres Strait Islander Services for transport and health literacy support.
    - Referral to Integrated Team Care Program (ITC).

11. Consider referral to:
    - accredited exercise physiologist
    - dietitian for annual review
    - podiatrist
    - diabetes educator
    - optometrist or ophthalmologist.
    - pharmacist for a home medicines review.

12. Arrange urgent or routine diabetes referral if:
    - Type 2 diabetes not responding to a combination of dietary and medical management (i.e., has tried at least three glucose-lowering medicines), with HbA1c > 64 mmol/mol or 8%.
    - patients with type 2 diabetes with complications e.g., cardiovascular disease, kidney disease, retinopathy, cerebral vascular disease, neuropathy.
    - planning for pregnancy.
    - pregnancy in known diabetic woman.
    - management of unstable glycaemia due to concomitant use of medicines that impact on glycaemic control e.g., corticosteroids, chemotherapy protocols.
    - needing assessment for commercial driver’s licence.
    - diagnosis of type of diabetes.

Referral

- Arrange immediate diabetes referral or admission if:
  - diabetic ketoacidosis or suspected diabetic ketoacidosis e.g., abdominal pain, dehydration, confusion, nausea and vomiting.
  - hyperosmolar hyperglycaemic state.
  - diabetes and severe vomiting.
  - acute, severe hyperglycaemia.
  - acute, severe hypoglycaemia.
  - suspected Charcot’s neuroarthropathy e.g., unilateral, red, hot, swollen, possibly aching foot.
• Arrange **urgent or routine diabetes referral** if:
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**Information**

**For health professionals**

**Further information**

- Australian Diabetes Society – [Type 2 Diabetes Treatment](#)
- National Diabetes Service Scheme – [Resources to Support Health Professionals](#)
- RACGP – [Management of Type 2 Diabetes: A Handbook for General Practice 2020](#)

**For patients**

- Diabetes Australia:
  - [Translated Resources](#)
  - [Type 2 Diabetes](#)
- Diabetes Victoria – [Programs and Services](#)

**References**

**Select bibliography**

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