STOP

• EDUCATE patients to drive safely with diabetes

Reduce Driving Risk

• EDUCATE on appropriate treatment and the need to have

ASK at each visit

• SCREEN for hypoglycemia unawareness

If a patient is unaware of symptoms of hypoglycemia, he/she must

40 minutes after hypoglycemia is resolved

• Tools: Glucometer, snacks nearby

Prepare fast-acting sugar treatment available at all times

• Wear a real-time continuous glucose monitor

If hypertension control needed

Other antihypertensive agents safe for pregnancy (Labetalol, nifedepine XL)

Statins

Non-insulin antihyperglycemic agents (except metformin and/or glyburide)

SGLT2 inhibitors

For patients using insulin or insulin secretagogues, e.g. glyburide,

Keeping patients safe when they are at risk

• Diuretics, direct renin inhibitors

• Metformin

• Sulfonylureas, other secretagogues

SADMANS

Aim for

• Pregancy should be planned, with the following steps taken prior to

- Statin s

- ACEi/ARB prior to pregnancy, but if overt nephropathy exists, continue

- Non-insulin antihyperglycemic agents (except metformin and/or glyburide)

- Folic acid 1 mg per day x 3 months prior to conception:

Kidney: Test eGFR and ACR yearly, or more if abnormal

Cardiac: ECG every 3-5 years if age >40 OR diabetes

Retinopathy: type 1 - annually; type 2 - q1-2 yrs

Potential Self-management Goals

- Be more active

- Lose weight

- Eat healthier

- Manage stress

- Check feet

- Avoid hypoglycemia

- Recognize the signs of hypoglycemia and take

- Taking medication will help to improve

- Use strategies (e.g., reduce calories or

- Portion control)

- Activity

- Diet

- Smoking/nobreakspace

- Medication

• ABCDES of diabetes care

DD rugs

BB P

E Exercis e

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening

SS moking/nobreakspace

E Exercis e

DD rugs

SS creening
Screening and diagnosis of type 2 diabetes in adults

Assess risk factors for type 2 diabetes ANNUALLY:

- Family history (first-degree relative with type 2 diabetes)
- High risk populations (non-white, low socioeconomic status)
- History of GDM/prediabetes
- Cardiovascular risk factors
- Presence of end organ damage associated with diabetes
- Other conditions and medications associated with diabetes

(see CPG Chapter 4, Screening for Diabetes in Adults, Table 1)

<table>
<thead>
<tr>
<th>Who to screen</th>
<th>Test</th>
<th>Result</th>
<th>Dysglycemia category</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk factors</td>
<td>FPG (mmol/L)</td>
<td>6.1 – 6.9</td>
<td>IFG</td>
</tr>
<tr>
<td>No caloric intake for at least 8 hours</td>
<td></td>
<td>≥7.0</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Presence of risk factors</td>
<td>A1C (%)**</td>
<td>6.0 – 6.4</td>
<td>Prediabetes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≥6.5</td>
<td>Diabetes</td>
</tr>
</tbody>
</table>

If asymptomatic and A1C or FPG are in the diabetes range, repeat the same test (A1C or FPG) as a confirmatory test. If both FPG and A1C are available and only one is in the diabetes range, repeat the test in the diabetes range as the confirmatory test. If both A1C and FPG are available and are each in the diabetes range, diabetes is confirmed. If symptoms of overt hyperglycemia are present, diagnosis of diabetes can be determined with one test (A1C, FPG, 2hPG, random PG) in the diabetes range, see Chapter 3, CPG.

*using a validated risk calculator (e.g. CANRISK)

**Use a standardized, validated assay. Be aware of factors that affect A1C accuracy (see CPG Chapter 9, Table 1)
**Use a standardized, validated assay. Be aware of factors that affect A1C accuracy (see CPG Chapter 9, Table 1)**

End of life: A1C measurement not recommended. Avoid symptomatic hyperglycemia and any hypoglycemia.

### Targets for glycemic control

<table>
<thead>
<tr>
<th>A1C%</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤6.5</td>
<td>Adults with type 2 diabetes to reduce the risk of CKD and retinopathy if at low risk of hypoglycemia*</td>
</tr>
<tr>
<td>≤7.0</td>
<td>MOST ADULTS WITH TYPE 1 OR TYPE 2 DIABETES</td>
</tr>
</tbody>
</table>
| 7.1  | Functionally dependent*: **7.1-8.0%**  
     | Recurrent severe hypoglycemia and/or hypoglycemia unawareness: **7.1-8.5%**  
     | Limited life expectancy: **7.1-8.5%**  
     | Frail elderly and/or with dementia¹: **7.1-8.5%** |
| 8.5  | Avoid higher A1C to minimize risk of symptomatic hyperglycemia and acute and chronic complications |

---

* based on class of antihyperglycemic medication(s) utilized and the person's characteristics  
¹ see Diabetes in Older People chapter, p. 5283
### Blood glucose-lowering therapies (type 2 diabetes)

#### At diagnosis of type 2 diabetes

- **A1C <1.5% above target**
  - Start healthy behaviour interventions (nutritional therapy, weight management, physical activity)+/- metformin

- **A1C >1.5% above target**
  - Symptomatic hyperglycemia and/or metabolic decompensation*

  - **Non-physiologic**
    - Start metformin immediately
    - Consider a second concomitant anti-hyperglycemic agent

  - **Stable glycemic targets**
    - If not at glycemic target within 3 months, start second-line antihyperglycemic agent

- **If not at glycemic target**
  - Start antihyperglycemic agent with demonstrated or expected benefit *empagliflozin* (Grade A, Level 1A) or *liraglutide* (Grade A, Level 1A) canagliflozin (Grade C, Level 2)

- **If not at glycemic target**
  - Start antihyperglycemic agent with demonstrated or expected benefit *empagliflozin* (Grade A, Level 1A) or *liraglutide* (Grade A, Level 1A) canagliflozin (Grade C, Level 2)

#### Add additional antihyperglycemic agent best suited to the individual based on the following:

**Clinical Considerations**
- Avoidance of hypoglycemia and/or weight gain with adequate glycemic efficacy
- Other considerations
  - Reduced eGFR and/or albuminuria
  - Degree of hyperglycemia
  - Other comorbidities (e.g., hepatic disease)
  - Planning pregnancy
  - Cost/coverage
  - Patient preference

**Choice of Agent**
- DPP-4 inhibitor, GLP-1 receptor agonist or SGLT2 inhibitor

### Table: Add additional antihyperglycemic agent best suited to the individual by prioritizing specific patient characteristics

<table>
<thead>
<tr>
<th>Class**</th>
<th>Effect on CVD outcomes</th>
<th>Glycemic efficacy</th>
<th>Weight change</th>
<th>Relative A1C lowering when added to metformin</th>
<th>Cost**</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLP-1 receptor agonists</td>
<td>Insulin-sensitizing</td>
<td>Rare</td>
<td>Neutral</td>
<td>2-4%</td>
<td>$$$</td>
</tr>
<tr>
<td>SGLT2 inhibitors</td>
<td>Canagliflozin</td>
<td>Rare</td>
<td>Neutral</td>
<td>2%</td>
<td>$$$</td>
</tr>
<tr>
<td>DPP-4 inhibitors</td>
<td>Neutral</td>
<td>Rare</td>
<td>Neutral</td>
<td>-2%</td>
<td>$$$</td>
</tr>
<tr>
<td>Insulin</td>
<td>Neutral</td>
<td>Yes</td>
<td>Neutral</td>
<td>No dose change</td>
<td>$</td>
</tr>
<tr>
<td>Thiazolidinediones</td>
<td>Neutral</td>
<td>None</td>
<td>Neutral</td>
<td>No dose change</td>
<td>$</td>
</tr>
<tr>
<td>Alpha-glucosidase inhibitors</td>
<td>None</td>
<td>Rare</td>
<td>Neutral</td>
<td>2%</td>
<td>$</td>
</tr>
<tr>
<td>Insulin sensitizers</td>
<td>Meglitinides</td>
<td>Yes</td>
<td>Rare</td>
<td>2%</td>
<td>$</td>
</tr>
<tr>
<td>Sodium-glucose cotransporter 2 inhibitors</td>
<td>Canagliflozin, empagliflozin, liraglutide</td>
<td>Rare</td>
<td>Neutral</td>
<td>2%</td>
<td>$</td>
</tr>
</tbody>
</table>

**Notes:**
- **A1C (%)**
- **FPG (mmol/L)**
- **2hPG (mmol/L)**
- **Random PG (mmol/L)**
- **Blood pressure (mm Hg)**
- **LDL-C (mmol/L)**
- **HbA1c (%)**

**Cost:**
- $: Low cost
- $$: Moderate cost
- $$$: High cost

**Risk factors for type 2 diabetes**
- **Family history (first-degree relative with type 2 diabetes)**
- **High risk populations (non-white, low socioeconomic status)**
- **Cardiovascular risk factors**
  - **Presence of end organ damage associated with diabetes**
  - **Presence of clinical CVD**
  - **Cerebrovascular/carotid disease**
  - **Cerebrovascular disease?**
  - **Cerebrovascular disease, age ≥55 with additional risk factors**

**Other comorbidities**
- **Chronic kidney disease**
- **Cancer**
- **Hepatic disease**
- **Obstructive sleep apnea**
- **Pregnancy**
- **Planning pregnancy**
### Which cardiovascular protection medications are indicated for my patient?

<table>
<thead>
<tr>
<th>Does the patient have cardiovascular disease?</th>
<th>Statin¹ + ACEi/ARB² + ASA³</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>Liraglutide, Empagliflozin or Canagliflozin⁴ (only for patients with type 2 diabetes)</td>
</tr>
</tbody>
</table>

AND if the patient is NOT at glycemic target

<table>
<thead>
<tr>
<th>Does the patient have microvascular disease?</th>
<th>Statin¹ + ACEi/ARB²</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the patient:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>age ≥55 with additional CV risk factors?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

<p>| age ≥40? | |
| age ≥30 and diabetes &gt;15 years? | |</p>
<table>
<thead>
<tr>
<th>warranted for statin therapy based on the Canadian Cardiovascular Society Lipid Guidelines?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Dose adjustments or additional lipid therapy warranted if lipid target (LDL-C <2.0 mmol/L) not being met.
2. ACE-inhibitor or ARB (angiotensin receptor blocker) should be given at doses that have demonstrated vascular protection (eg. perindopril 8 mg once daily [EUROPA trial], ramipril 10 mg once daily [HOPE trial], telmisartan 80 mg once daily [ONTARGET trial]).
3. ASA should not routinely be used for the primary prevention of cardiovascular disease in people with diabetes. ASA may be used for secondary prevention. Consider clopidogrel if ASA-intolerant.
4. Canagliflozin: avoid in people with prior lower extremity amputation.
Keeping patients safe when they are at risk of hypoglycemia

For patients using insulin or insulin secretagogues, e.g. glyburide, gliclazide, repaglinide:

**Recognize**
- ASK at each visit
- ASSESS impact, including fear/intentional avoidance of lows
- SCREEN for hypoglycemia unawareness

**Act/Treat**
- EDUCATE on appropriate treatment and the need to have fast-acting sugar treatment available at all times

**Prevent**
- CONSIDER medications with lower risk of hypoglycemia
- DISCUSS POSSIBLE CAUSES and how to avoid future hypoglycemia

**Reduce Driving Risk**
- EDUCATE patients to drive safely with diabetes
  - Prepare Keep fast-acting sugar within reach and other snacks nearby
  - Be Aware of blood glucose (BG) before driving and every 4 hours during long drives. If BG is below 4 mmol/L, treat
  - Stop driving and treat if any symptoms appear
  - After treating a low, wait until BG is above 5 mmol/L to start driving again. Note: Brain function may not be fully restored until 40 minutes after hypoglycemia is resolved

If a patient is unaware of symptoms of hypoglycemia, he/she must check their BG before driving and every 2 hours while driving, or wear a real-time continuous glucose monitor.
Keeping patients safe when they are at risk of dehydration (vomiting/diarrhea)

**Re-hydrate** appropriately (water, broth, diet soft drinks, sugar-free Kool-Aid™, diet Jell-O™; avoid caffeinated beverages).

**Hold SADMANs** meds. **Restart** once able to eat/drink normally.

- **S** sulfonylureas, other secretagogues
- **A** ACE-inhibitors
- **D** diuretics, direct renin inhibitors
- **M** metformin
- **A** angiotensin receptor blockers
- **N** non-steroidal anti-inflammatory drugs
- **S** SGLT2 inhibitors

**Special considerations for women with type 1 or type 2 diabetes**

Pregnancy should be planned, with the following steps taken prior to conception:

- **A1C** 7% or less, but strive for ≤6.5% (ensure contraception until at personalized target)
- **Stop:**
  - Non-insulin antihyperglycemic agents (except metformin and/or glyburide)
  - Statins
  - ACE/ARB prior to pregnancy, but if overt nephropathy exists, continue until detection of pregnancy
- **Start:**
  - Folic acid 1 mg per day x 3 months prior to conception
  - Insulin if target A1C is not achieved on metformin and/or glyburide (type 2)
  - Other antihypertensive agents safe for pregnancy (Labetalol, nifedipine XL) if hypertension control needed
- **Screen for complications:**
  - Eye appointment, serum creatinine, urine ACR, blood pressure
- **Aim for healthy BMI**
- **Ensure appropriate vaccinations** have occurred
- **Refer** to diabetes clinic
3 Quick questions to help your patients meet their goals

For patients who are not making expected progress, try asking these questions to identify a path forward:

1. How important is it for you to <insert self-management goal> - low, medium, or high?
   (Goal examples: increase levels of physical activity, reduce weight, improve A1C, lower BP)
   If importance (motivation) is rated low, ask what would need to happen for importance to go up?
   A high level of importance will indicate that the person is ready to change.

2. How confident are you in your ability to <insert target outcome here> - low, medium, or high?
   If their confidence is rated low, explore what needs to happen to increase their confidence. Usually this has to do with improving knowledge, skills or resources and support.
   A high level of confidence indicates that the person is ready to change.

3. Can we set a specific goal for you to try before the next time we meet? What steps will you take to achieve it?
   Encourage S.M.A.R.T. Goals:
   - Specific
   - Measurable
   - Achievable
   - Realistic
   - Timely
### Individualized goal setting

<table>
<thead>
<tr>
<th>Potential Self-management Goals</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eat healthier</strong></td>
<td>See a dietitian to help develop a healthy eating plan.</td>
</tr>
<tr>
<td><strong>Be more active</strong></td>
<td>Increase physical activity with the goal of getting to 150 minutes aerobic activity/week and resistance exercise 2-3 times/week. Choose physical activity that meets preferences/needs.</td>
</tr>
<tr>
<td><strong>Lose weight</strong></td>
<td>Use strategies (e.g., reduce calories or portions) to lose 5-10% of initial weight.</td>
</tr>
<tr>
<td><strong>Take medication regularly</strong></td>
<td>Taking medication will help to improve symptoms and take control of your life. Consider using a pillbox or setting a timer.</td>
</tr>
<tr>
<td><strong>Avoid hypoglycemia</strong></td>
<td>Recognize the signs of hypoglycemia and take action to prevent it.</td>
</tr>
<tr>
<td><strong>Check blood glucose</strong></td>
<td>Establish a routine and act accordingly.</td>
</tr>
<tr>
<td><strong>Check feet</strong></td>
<td>Do a daily self-check and follow-up with a health-care provider if anything is abnormal.</td>
</tr>
<tr>
<td><strong>Manage stress</strong></td>
<td>Screen for distress (depressive and anxious symptoms) by interview or a standardized questionnaire (e.g. PHQ-9)</td>
</tr>
<tr>
<td><strong>Reduce or stop smoking</strong></td>
<td>Identify barriers to quitting and develop a plan to address each of these.</td>
</tr>
</tbody>
</table>
**ABCDES of diabetes care**

<table>
<thead>
<tr>
<th>A</th>
<th>A1C targets</th>
<th>A1C ≤7.0% (or ≤6.5% to + risk of CKD and retinopathy) If on insulin or insulin secretagogue, assess for hypoglycemia and ensure driving safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>BP targets</td>
<td>BP &lt;130/80 mmHg If on treatment, assess for risk of falls</td>
</tr>
<tr>
<td>C</td>
<td>Cholesterol targets</td>
<td>LDL-C &lt;2.0 mmol/L (or &gt;50 % reduction from baseline)</td>
</tr>
<tr>
<td>D</td>
<td>Drugs for CVD risk reduction</td>
<td>ACEi/ARB (if CVD, age ≥55 with risk factors, OR diabetes complications) Statin (if CVD, age ≥40 for type 2, OR diabetes complications) ASA (if CVD) SGLT2/GLP1ra with demonstrated CV benefit (if have type 2 with CVD and A1C not at target)</td>
</tr>
<tr>
<td>E</td>
<td>Exercise goals and healthy eating</td>
<td>150 minutes of moderate to vigorous aerobic activity/week and resistance exercises 2-3 times/week Follow healthy dietary pattern (eg Mediterranean diet, low glycemic index)</td>
</tr>
<tr>
<td>S</td>
<td>Screening for complications</td>
<td>Cardiac: ECG every 3-5 years if age &gt;40 OR diabetes complications Foot: Monofilament/Vibration yearly or more if abnormal Kidney: Test eGFR and ACR yearly, or more if abnormal Retinopathy: type 1 - annually; type 2 - q1-2 yrs</td>
</tr>
<tr>
<td>S</td>
<td>Smoking cessation</td>
<td>If smoker: Ask permission to give advice, arrange therapy and provide support</td>
</tr>
<tr>
<td>S</td>
<td>Self-management, stress, other barriers</td>
<td>Set personalized goals (see “individualized goal setting” panel) Assess for stress, mental health and financial or other concerns that might be barriers to achieving goals</td>
</tr>
</tbody>
</table>

Educational grant funding for this resource was provided in part by AstraZeneca, Boehringer-Ingelheim Canada /Eli Lilly Canada Alliance, and Novo Nordisk Canada Inc. Diabetes Canada thanks these organizations for their commitment to diabetes in Canada. Copyright © 2018 Diabetes Canada.