**Driving Risk Reduction:**

- **Stop**
- **Be Aware**
- **Prepare**

**Hypoglycemia Prevention**

- DISCUSS POSSIBLE CAUSES and how to avoid future hypoglycemia
- CONSIDER medications with lower risk of hypoglycemia
- fast-acting glucose treatment available at all times
- EDUCATE on appropriate treatment and the need to have

**Risk Of Hypoglycemia**

- If patient is unaware of symptoms of
- until BG is above 5mmol/L to start driving

**Screen for complications…**

- Insulin if target A1C not achieved on metformin and/or glyburide (type 2)
- Statin
- ACEi/ARB either prior to (or upon detection of pregnancy in patients with

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

- SADMAN
- 7% or less but strive for <6.5% (ensure contraception until at target

**Your Patients Meet Their Goals**

1. Can we set a specific time we meet? What steps will you take to achieve it
2. How important is it for you to improve A1C, lower BP)
3. If their confidence is rated low, explore what needs to happen to

**Individualized Goal Setting**

- S.M.A.R.T. Goals:
  - A high level of confidence is needed
  - Evidence indicates that the person is ready to
  - Evidence is rated low, explore what needs to happen to

**Your Patients Meet Their Goals**

- Check feet
- Check blood glucose
- Avoid hypoglycemia
- Take medication
- Lose weight
- Use strategies (e.g., reduce calories or

**Diabetes Exercis**

- Cholesterol
- Risk reduction needed
- hypertension control needed
- Overt nephropathy)
- ACE-inhibitors
- Statin
- Non-steroidal anti-inflammatory drugs
- Insulin if target A1C not achieved on metformin and/or glyburide (type 2)

**Diabetes CVD Targets**

- ACCORD
- Alberti M
d
- ASCVD/eurorisk
- SGLT2 inhibitors

**Diabetes Exercis**

- Cholesterol
- Risk reduction needed
- hypertension control needed
- Overt nephropathy)
- ACE-inhibitors
- Statin
- Non-steroidal anti-inflammatory drugs
- Insulin if target A1C not achieved on metformin and/or glyburide (type 2)

**Diabetes Exercis**

- Cholesterol
- Risk reduction needed
- hypertension control needed
- Overt nephropathy)
- ACE-inhibitors
- Statin
- Non-steroidal anti-inflammatory drugs
- Insulin if target A1C not achieved on metformin and/or glyburide (type 2)
Screening and Diagnosis

Assess risk ANNUALLY if:
- Family history (First-degree relative with Type 2 DM)
- 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 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>Very high risk* (50% chance of developing Type 2 DM within 10 years) or additional risk factors for diabetes</td>
<td>Screen every 6 to 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High risk* (33% chance of developing Type 2 DM within 10 years) Age ≥ 40 years and no additional risk factors for diabetes</td>
<td>Screen every 3 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-moderate risk* or age &lt;40 with no additional risk factors for diabetes</td>
<td>No screen indicated (reassess risk annually)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Risk calculator (e.g. CANRISK)

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Dysglycemia category</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPG (mmol/L) No caloric intake for at least 8 hours</td>
<td>6.1 – 6.9</td>
<td>IFG</td>
</tr>
<tr>
<td></td>
<td>≥7.0</td>
<td>Diabetes</td>
</tr>
<tr>
<td>A1C (%) Standardized, validated assay, in the absence of factors that affect the accuracy of A1C and not for suspected type 1 diabetes</td>
<td>6.0 – 6.4</td>
<td>Prediabetes</td>
</tr>
<tr>
<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, repeat testing is not required.
### 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%** |
| 8.5  | Frail elderly and/or with dementia†: **7.1-8.5%** |
|      | Avoid higher A1C to minimize risk of symptomatic hyperglycemia and acute and chronic complications |

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

* based on class of antihyperglycemic medication(s) utilized and the person's characteristics  
† see Diabetes in Older People chapter, p. S283
### Blood Glucose-lowering Therapies (Type 2 Diabetes)

#### At diagnosis of type 2 diabetes

<table>
<thead>
<tr>
<th>A1C &lt;1.5% above target</th>
<th>A1C ≥1.5% above target</th>
<th>Symptomatic hyperglycemia and/or metabolic decompensation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>If not at glycemic target within 3 months, Start metformin</td>
<td>Start metformin immediately Consider a second concurrent antihyperglycemic agent</td>
<td>Initiate insulin =/+ metformin</td>
</tr>
<tr>
<td>If not at glycemic target</td>
<td>If not at glycemic target</td>
<td>If not at glycemic target</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Clinical Considerations</th>
<th>Choice of Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance of hypoglycemia and/or weight gain with adequate glycemic efficacy</td>
<td>DPP-4 inhibitor, GLP-1 receptor agonist or SGLT2 inhibitor</td>
</tr>
<tr>
<td>Other considerations: Reduced eGFR and/or albuminuria Clinical CVD or CV risk factors Degree of hyperglycemia Other comorbidities (CHF, hepatic disease) Planning pregnancy Cost/coverage Patient preference</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Class**</th>
<th>Effect on CVD outcomes</th>
<th>Hypoglycemia</th>
<th>Weight</th>
<th>Relative A1C lowering when added to metformin</th>
<th>Other therapeutic considerations</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLP-1 receptor agonists</td>
<td>Ira: Superiority in people with type 2 diabetes with clinical CVD exenate LAR &amp; titi Neutral</td>
<td>Rare</td>
<td>++ to +++</td>
<td>++ to +++</td>
<td>Gastrointestinal, LUT, hypotension, dose-related changes in LDL-C. Caution with renal dysfunction, loop diuretics, in the elderly. Dapagliflozin not to be used if bladder cancer. Rare diabetic ketoacidosis (may occur with no hyperglycemia). Increased risk of fractures and amputations with canagliflozin. Reduced progression of nephropathy and CHF hospitalizations with empagliflozin and canagliflozin in persons with clinical CVD</td>
<td>$555</td>
</tr>
<tr>
<td>SGLT2 inhibitors</td>
<td>cana &amp; emp: Superiority in people with type 2 diabetes with clinical CVD</td>
<td>Rare</td>
<td>++ to +++</td>
<td>++ to +++</td>
<td>Genital infections, LUTI, hypotension, dose-related changes in LDL-C. Caution with renal dysfunction, loop diuretics, in the elderly. Dapagliflozin not to be used if bladder cancer. Rare diabetic ketoacidosis (may occur with no hyperglycemia). Increased risk of fractures and amputations with canagliflozin. Reduced progression of nephropathy and CHF hospitalizations with empagliflozin and canagliflozin in persons with clinical CVD</td>
<td>$555</td>
</tr>
<tr>
<td>DPP-4 inhibitors</td>
<td>Neutral (ali, sax, sita)</td>
<td>Rare</td>
<td>Neutral</td>
<td>++ to +++</td>
<td>Caution with saxagliptin in heart failure Rare joint pain</td>
<td>$5</td>
</tr>
<tr>
<td>Insulin</td>
<td>gli: Neutral deglude: risk to gluc</td>
<td>Yes</td>
<td>++ to +++</td>
<td>++ to +++</td>
<td>No dose ceiling, flexible regimens Requires subcutaneous injection</td>
<td>$555</td>
</tr>
<tr>
<td>Thiazolidinediones</td>
<td>Neutral</td>
<td>Rare</td>
<td>++ to +++</td>
<td>++ to +++</td>
<td>CHF, edema, fractures, rare bladder cancer (pioglitazone), cardiovascular controversy (rosiglitazone), 6-12 weeks required for maximal effect</td>
<td>$5</td>
</tr>
<tr>
<td>Alpha-glucosidase inhibitors (acarbose)</td>
<td>Neutral</td>
<td>Rare</td>
<td>Neutral</td>
<td>++ to +++</td>
<td>Glucose side-effects common Requires 3 times daily dosing</td>
<td>$5</td>
</tr>
<tr>
<td>Insulin sensitostatique Miglitolide</td>
<td>Yes</td>
<td>++ to +++</td>
<td>More rapid BG-lowering response Reduced postprandial glycaemia with meglitidines but usually requires 3 to 4 times daily dosing. GLA and glipizide associated with less hypoglycaemia than glyburide Poor durability</td>
<td>$5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfonylurea</td>
<td>Yes</td>
<td>++ to +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight loss agent (orlistat)</td>
<td>None</td>
<td>++</td>
<td></td>
<td>Glucose side-effects Requires 3 times daily dosing</td>
<td>$555</td>
<td></td>
</tr>
</tbody>
</table>

#### Healthy Behaviours/Interventions

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

*May include dehydration, DKA, HHS

**Use by CVA outcome data

† Insulin may be required at any point for symptomatic hyperglycemia/metabolic decompensation or if unable to achieve glycemic targets with other antihyperglycemic agents

†† Avoid in people with prior lower extremity amputation

‡‡ See product monographs

---

*Image of the diagram and table.*
### Which Vascular Protection Medications Are Indicated For My Patient?

<table>
<thead>
<tr>
<th>Does the patient have macrovascular disease?</th>
<th>Statin(^1) + ACEi/ARB(^2) + ASA(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cardiac ischemia (silent or overt)</td>
<td></td>
</tr>
<tr>
<td>- Peripheral arterial disease</td>
<td></td>
</tr>
<tr>
<td>- Cerebrovascular/carotid disease</td>
<td></td>
</tr>
<tr>
<td>AND if the patient is NOT at glycemic target</td>
<td>Liraglutide, Empagliflozin or Canagliflozin(^4) (only for patients with Type 2 DM)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Does the patient have microvascular disease?</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Retinopathy</td>
<td></td>
</tr>
<tr>
<td>- Kidney disease (ACR(\geq 2.0))</td>
<td></td>
</tr>
<tr>
<td>- Neuropathy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the patient...</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- age (\geq 55) with additional CV risk factors?</td>
<td></td>
</tr>
</tbody>
</table>

| - age \(\geq 40\)?                          |     |
| - age \(\geq 30\), and diabetes \(>15\) years?|     |
| - warranted for statin therapy based on the Canadian Cardiovascular Society Lipid Guidelines? |     |

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.
4 Canagliflozin: avoid in patients with risk factors for lower limb amputations.
Keeping Patients Safe Who Are At Risk Of Hypoglycemia
(using insulin or insulin secretagogues, e.g. glyburide, glidazide, repaglinide)

Hypoglycemia Recognition
- ASK at each visit
- ASSESS impact including fear/intentional avoidance of lows
- SCREEN for hypoglycemia unawareness

Hypoglycemia Action/Treatment
- EDUCATE on appropriate treatment and the need to have fast-acting glucose treatment available at all times

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

Educate Patients to Drive Safe with Diabetes

Prepare: Keep fast-acting sugar and other snacks accessible.

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 5mmol/L to start driving again. Note: Brain function may not be fully restored until 40 minutes after hypoglycemia is resolved.

Driving Risk Reduction: If patient is unaware of symptoms of hypoglycemia, must check 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
- S SGLT2 inhibitors

Special Considerations for Women With Type 1 or Type 2 Diabetes of Childbearing Age

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 target)
- **Stop**
  - Non-insulin antihyperglycemic agents (except metformin and/or glyburide)
  - Statins
  - ACEi/ARB either prior to (or upon detection of pregnancy in patients with overt nephropathy)
- **Start**
  - Folic acid 1 mg per day x 3 months prior to conception
  - Insulin if target A1C not achieved on metformin and/or glyburide (type 2)
  - Other antihypertensive agents safe for pregnancy (Labeotolol, Adalat 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 2-3x/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 <a href="http://www.phqscreeners.com">www.phqscreeners.com</a>).</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>
<tr>
<td>A</td>
<td>A1C targets</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
| | A1C ≤7.0%  
If on insulin or insulin secretagogue, assess for hypoglycemia and ensure driving safety |
| B | BP targets | BP <130/80 mmHg  
If on treatment, assess for risk of falls |
| C | Cholesterol targets | LDL-C <2.0 mmol/L |
| D | Drugs for CVD risk reduction | 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)  
SLGT2i/GLP1ra with demonstrated CV benefit (if have type 2 DM with CVD and A1C not at target) |
| E | Exercise goals and healthy Eating | 150 minutes of moderate to vigorous aerobic activity/week and resistance exercises 2-3 times/week  
Follow healthy dietary pattern (i.e. Mediterranean diet, low glycemic index) |
| S | Screening for complications | Cardiac: ECG every 3-5 years if age >40 OR diabetes complications  
Foot: Monofilament/Vibration yearly or more if abnormal  
Kidney: Test eGFR and ACR yearly, or more if abnormal  
Retinopathy: yearly dilated retinal exam |
| S | Smoking cessation | If smoker: Ask permission to give advice, arrange therapy and provide support |
| S | Self-management, stress, other barriers | 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 |