Clinical Practice Guidelines
Quick Reference Guide

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DIABETES CANADA

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)

Who to screen

No risk factors	**Age <40 years** or low-moderate risk*	No screen indicated
	Age ≥40 years or high risk* (33% chance of developing type 2 diabetes within 10 years)	Screen every 3 years
Presence of risk factors	or very high risk (50% chance of developing type 2 diabetes within 10 years)	Screen every 6 to 12 months

How to screen

Test	Result	Dysglycemia category
FPG (mmol/L) No caloric intake for at least 8 hours	6.1 – 6.9	IFG
	≥7.0	Diabetes
A1C (%)**	6.0 – 6.4	Prediabetes
	≥6.5	Diabetes

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)
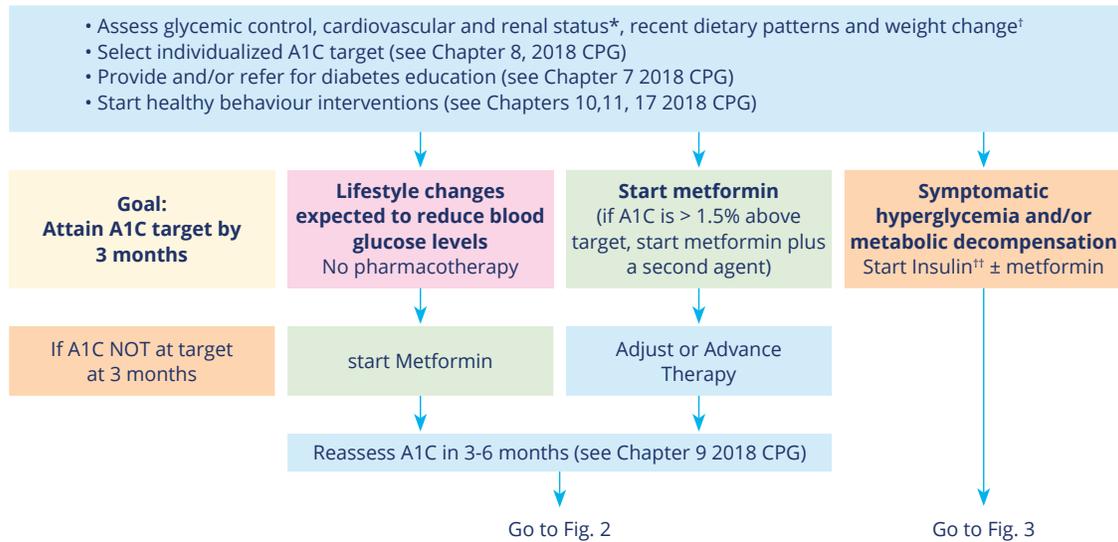
Targets for glycemic control

A1C%	Targets
≤6.5	Adults with type 2 diabetes to reduce the risk of CKD and retinopathy if at low risk of hypoglycemia*
≤7.0	**MOST ADULTS WITH TYPE 1 OR TYPE 2 DIABETES**
7.1 ↓ 8.5	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 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

At diagnosis of type 2 diabetes (Fig. 1)

2020

- Assess glycemic control, cardiovascular and renal status*, recent dietary patterns and weight change†
- Select individualized A1C target (see Chapter 8, 2018 CPG)
- Provide and/or refer for diabetes education (see Chapter 7 2018 CPG)
- Start healthy behaviour interventions (see Chapters 10,11, 17 2018 CPG)

Goal: **Attain A1C target by** **3 months**	**Lifestyle changes** **expected to reduce blood** **glucose levels** No pharmacotherapy	**Start metformin** (if A1C is > 1.5% above target, start metformin plus a second agent)	**Symptomatic** **hyperglycemia and/or** **metabolic decompensation** Start Insulin†† ± metformin
If A1C NOT at target at 3 months	start Metformin	Adjust or Advance Therapy	

Reassess A1C in 3-6 months (see Chapter 9 2018 CPG)
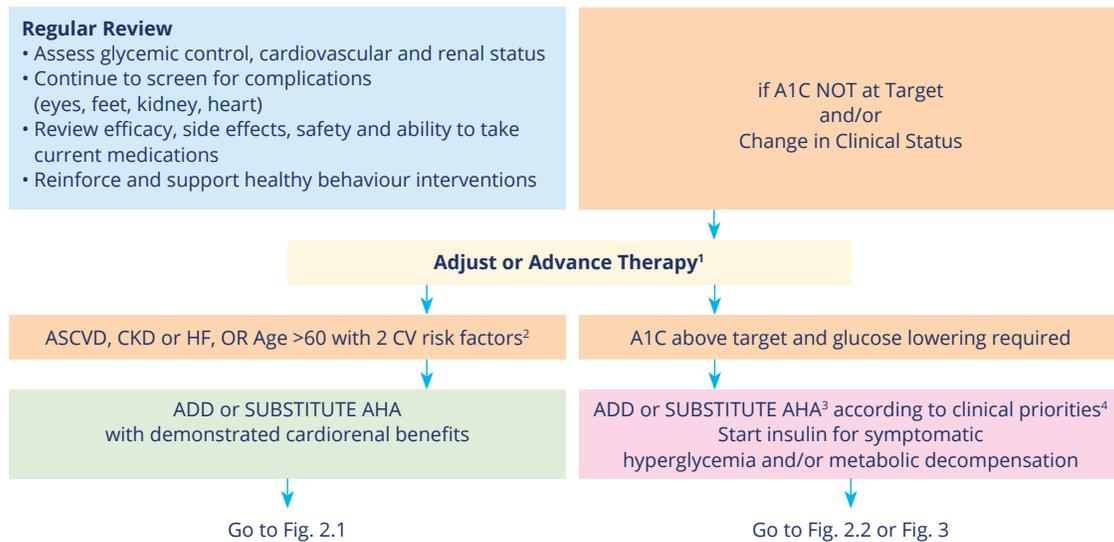
Go to Fig. 2

Go to Fig. 3

* In individuals **with** atherosclerotic cardiovascular disease, history of heart failure (with reduced ejection fraction) or chronic kidney disease, agents with cardiorenal benefits may be considered (see Pharmacologic Glycemic Management of Type 2 Diabetes in Adults 2020 Update – The Users Guide)
† Unintentional weight loss should prompt consideration of other diagnoses (e.g. type 1 diabetes or pancreatic disease)
†† Reassess need for ongoing insulin therapy once type of diabetes is established and response to healthy behaviour interventions is assessed

Reviewing, adjusting or advancing therapy in type 2 diabetes (Fig. 2)

2020

Regular Review
- Assess glycemic control, cardiovascular and renal status
- Continue to screen for complications (eyes, feet, kidney, heart)
- Review efficacy, side effects, safety and ability to take current medications
- Reinforce and support healthy behaviour interventions

if A1C NOT at Target
and/or
Change in Clinical Status

Adjust or Advance Therapy[1]

ASCVD, CKD or HF, OR Age >60 with 2 CV risk factors[2]

A1C above target and glucose lowering required

ADD or SUBSTITUTE AHA with demonstrated cardiorenal benefits

ADD or SUBSTITUTE AHA[3] according to clinical priorities[4]
Start insulin for symptomatic hyperglycemia and/or metabolic decompensation

Go to Fig. 2.1

Go to Fig. 2.2 or Fig. 3

1 Changes in clinical status may necessitate adjustment of glycemic targets and/or deprescribing
2 Tobacco use; dyslipidemia (use of lipid modifying therapy or a documented untreated LDL ≥3.4 mmol/L, or HDL-C <1.0 mmol/L for men and <1.3 mmol/L for women, or triglycerides ≥2.3 mmol/L); or hypertension (use of blood pressure drug or untreated SBP ≥140 mm Hg or DBP ≥95 mmHg)
3 All AHA's have Grade A evidence for effectiveness to reduce blood glucose levels
4 Consider degree of hyperglycemia, costs and coverage, renal function, comorbidity, side effect profile, and potential for pregnancy

For people with ASCVD, CKD or HF, OR >60 yrs and 2 CV risk factors (Fig. 2.1)

2020

ADD or SUBSTITUTE AHA with demonstrated cardiorenal benefits

		Established Cardiovascular or Renal Disease			Risk Factors
		ASCVD	CKD	HF	>60 yrs with 2 CV risk factors[†]
Lower Risks Observed in Outcomes Trials	MACE	**GLP1-RA[††] or SGLT2i***	SGLT2i* or GLP1-RA[††]		**GLP1-RA[††]**
	HHF	SGLT2i*	**SGLT2i***	**SGLT2i*** (and lower CV mortality)	SGLT2i*
	Progression of Nephropathy	SGLT2i*	**SGLT2i***		*SGLT2i**

Highest level of evidence: **Grade A** | Grade B | *Grade C or D*

† Tobacco use; dyslipidemia (use of lipid modifying therapy or a documented untreated LDL ≥3.4 mmol/L, or HDL-C <1.0 mmol/L for men and <1.3 mmol/L for women, or triglycerides ≥2.3 mmol/L); or hypertension (use of blood pressure drug or untreated SBP ≥140 mm Hg or DBP ≥95 mmHg)
†† Stop DPP4i when starting a GLP1-RA
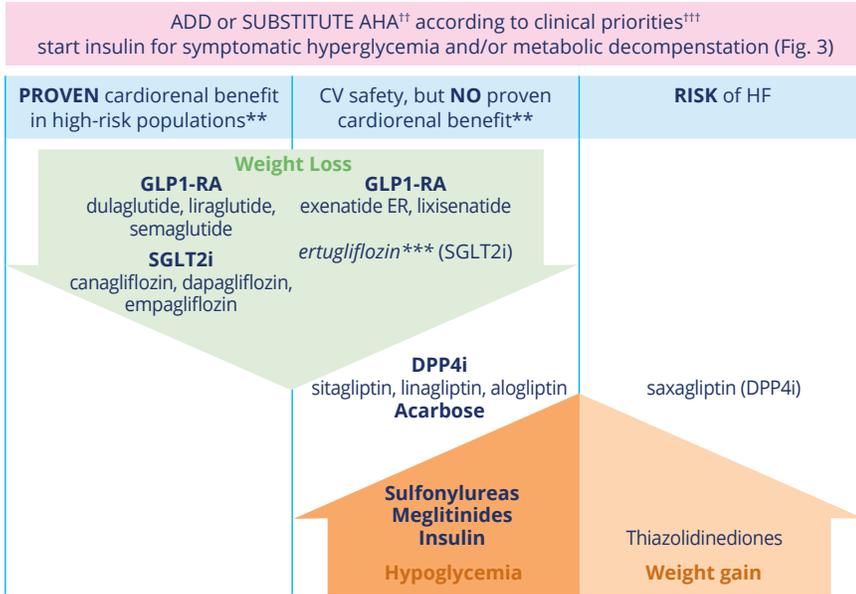* Initiate only if eGFR >30 ml/min/1.73m^2

Where additional glucose lowering is required (Fig. 2.2) `2020`

†† All AHA's have Grade A evidence for effectiveness to reduce blood glucose levels

††† Consider degree of hyperglycemia, costs and coverage, renal function, comorbidity, side effect profile, and potential for pregnancy

ADD or SUBSTITUTE AHA†† according to clinical priorities†††
start insulin for symptomatic hyperglycemia and/or metabolic decompenstation (Fig. 3)

PROVEN cardiorenal benefit in high-risk populations**	CV safety, but NO proven cardiorenal benefit**	RISK of HF

Weight Loss

GLP1-RA
dulaglutide, liraglutide, semaglutide

GLP1-RA
exenatide ER, lixisenatide

*ertugliflozin**** (SGLT2i)

SGLT2i
canagliflozin, dapagliflozin, empagliflozin

DPP4i
sitagliptin, linagliptin, alogliptin
Acarbose

saxagliptin (DPP4i)

Sulfonylureas
Meglitinides
Insulin
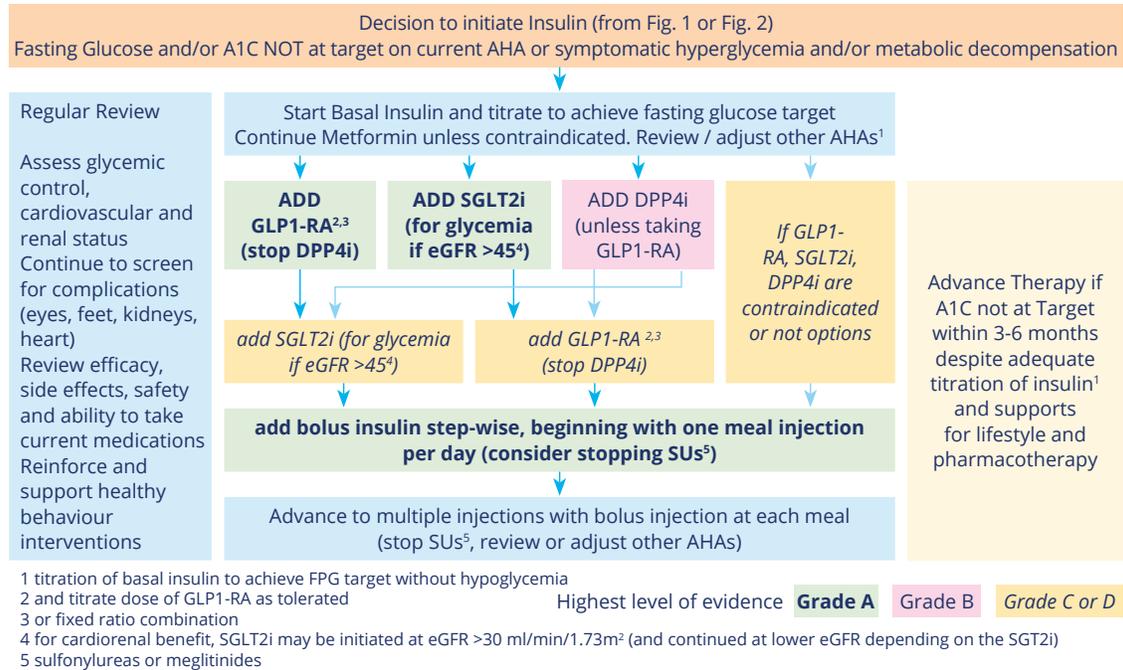Hypoglycemia

Thiazolidinediones
Weight gain

** In CV outcome trials performed in people with ASCVD, CKD, HF or at high CV risk
*** VERTIS (CV outcome trial for ertugliflozin) presented at ADA June 2020 showed non-inferiority for MACE. Manuscript not published at time of writing.

Starting or advancing insulin in type 2 diabetes (Fig. 3) `2020`

Decision to initiate Insulin (from Fig. 1 or Fig. 2)
Fasting Glucose and/or A1C NOT at target on current AHA or symptomatic hyperglycemia and/or metabolic decompensation

Regular Review

Assess glycemic control, cardiovascular and renal status
Continue to screen for complications (eyes, feet, kidneys, heart)
Review efficacy, side effects, safety and ability to take current medications
Reinforce and support healthy behaviour interventions

Start Basal Insulin and titrate to achieve fasting glucose target
Continue Metformin unless contraindicated. Review / adjust other AHAs[1]

ADD GLP1-RA[2,3] (stop DPP4i)	**ADD SGLT2i (for glycemia if eGFR >45[4])**	ADD DPP4i (unless taking GLP1-RA)	*If GLP1-RA, SGLT2i, DPP4i are contraindicated or not options*	Advance Therapy if A1C not at Target within 3-6 months despite adequate titration of insulin[1] and supports for lifestyle and pharmacotherapy

add SGLT2i (for glycemia if eGFR >45[4]) *add GLP1-RA [2,3] (stop DPP4i)*

add bolus insulin step-wise, beginning with one meal injection per day (consider stopping SUs[5])

Advance to multiple injections with bolus injection at each meal
(stop SUs[5], review or adjust other AHAs)

1 titration of basal insulin to achieve FPG target without hypoglycemia
2 and titrate dose of GLP1-RA as tolerated
3 or fixed ratio combination
4 for cardiorenal benefit, SGLT2i may be initiated at eGFR >30 ml/min/1.73m² (and continued at lower eGFR depending on the SGT2i)
5 sulfonylureas or meglitinides

Highest level of evidence **Grade A** Grade B *Grade C or D*

Which cardiovascular non-antihyperglycemic medications are indicated for my patient?

Does the patient have cardiovascular disease? - Cardiac ischemia (silent or overt) - Peripheral arterial disease - Cerebrovascular/carotid disease	**YES** →	**Statin[1]** + **ACEi/ARB[2]** + **ASA[3]**

NO ↓

Does the patient have microvascular disease? - Retinopathy - Kidney disease (ACR ≥2.0) - Neuropathy	**YES** →	**Statin[1]** + **ACEi/ARB[2]**

NO ↓

Is the patient: - age ≥55 with additional CV risk factors?[4]	**YES** →	
- age ≥40? - age ≥30 and diabetes >15 years? - warranted for statin therapy based on the Canadian Cardiovascular Society Lipid Guidelines?	**YES** →	**Statin[1]**

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 TC > 5.2 mmol/L, HDL-C < 0.9 mmol/L, hypertension, albuminuria, smoking.

For antihyperglycemic medications with CVD and/or cardiorenal benefits see Fig. 2.1

Keeping patients safe when they are at risk of hypoglycemia

For patients using glyburide, gliclazide, repaglinide or insulin:

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

Act/Treat
- EDUCATE on treatment of non-severe hypoglycemia with fast-acting sugar and severe hypoglycemia with glucagon

Prevent
- CONSIDER switching from high risk medications
- DISCUSS POSSIBLE CAUSES (e.g. increased activity, skipped meals) 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. Note: Brain function may not be fully restored for some time after blood glucose level returns to normal

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

Refer to Hypoglycemia and Drive Safe resources

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 regarding pregnancy for women with type 1 or type 2 diabetes

For women planning pregnancy, 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
  - ACEi/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, nifedepine 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 **M**easurable **A**chievable **R**ealistic **T**imely

Individualized goal setting

Potential Self-management Goals	Examples
Eat healthier	See a dietitian to help develop a healthy eating plan.
Be more active	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.
Lose weight	Use strategies (e.g., reduce calories or portions) to lose 5-10% of initial weight.
Take medication regularly	Taking medication will help to improve symptoms and take control of your life. Consider using a pillbox or setting a timer.
Avoid hypoglycemia	Recognize the signs of hypoglycemia and take action to prevent it.
Check blood glucose	Establish a routine and act accordingly.
Check feet	Do a daily self-check and follow-up with a health-care provider if anything is abnormal.
Manage stress	Screen for distress (depressive and anxious symptoms) by interview or a standardized questionnaire (e.g. PHQ-9 www.phqscreeners.com).
Reduce or stop smoking	Identify barriers to quitting and develop a plan to address each of these.

ABCDES of diabetes care   2020

		GUIDELINE TARGET (or personalized goal)
A	A1C targets	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
B	BP targets	BP <130/80 mmHg If on treatment, assess for risk of falls
C	Cholesterol targets	LDL-C <2.0 mmol/L (or >50 % reduction from baseline)
D	Drugs for CV and/or Cardiorenal protection	(non-AHA) • 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) (Antihyperglycemic Agents) • SGLT2i/GLP1-RA with demonstrated cardiorenal benefits in high risk type 2 with ASCVD, CKD or HF, OR Age >60 with 2 CV risk factors
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 (eg 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: type 1 - annually; type 2 - q1-2 yrs
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