How Sweet It Is:
The 2026 Diabetes Update

Susan Cornell, PharmD, CDCES, FAPhA, FADCES

Professor (retired)
Midwestern University College of Pharmacy
Downers Grove, IL

- Diabetes Care and Education Specialist/Consultant
  Bolingbrook Christian Health Clinic -Bolingbrook, IL
  Will-Grundy Medical Clinic - Joliet, IL

Disclosure

- Susan Cornell has no relevant financial relationships with ineligible companies to disclose.

Learning Objectives: Pharmacists

After completion of this presentation, pharmacists should be able to:

1. Summarize recent changes to the American Diabetes Association Management of Hyperglycemia in People with Diabetes.
2. Discuss the rationale regarding therapeutic decision-making when selecting medication therapy for people with diabetes and its related conditions.
3. Formulate person-centered treatment plans for people with diabetes that focus on the whole person, to reduce glucose, improve cardiovascular, kidney, metabolic, and cognitive health.

Learning Objectives: Technician

After completion of this presentation, pharmacy technicians should be able to:

1. Summarize recent changes to the American Diabetes Association Management of Hyperglycemia People with Diabetes.
2. List at least 6 common classes of medications used to treat diabetes.
3. Compare and contrast the contraindications and adverse effects of medications used in the treatment of diabetes.

American Diabetes Association: Standards of Medical Care in Diabetes -- 2026

- Annually in January, the American Diabetes Association (ADA) professional practice committee publishes the Standards of Medical Care in Diabetes (SOC).
- This publication is anxiously awaited by healthcare professionals that specialize in the care & management for people with diabetes.
- Some years, there are major updates.
- Other years there are minor updates designed to reinforce critical concepts and influence guideline changes.

How can pharmacists and pharmacy technicians apply/implement the ADA - SOC into practice

Key abbreviations

- A1C = hemoglobin A1c
- ACR = albumin/creatinine ratio
- ASCVD = atherosclerotic cardiovascular disease
- BMI = body mass index
- CGM = continuous glucose monitor
- CKD = chronic kidney disease
- CV = cardiovascular
- CVD = cardiovascular disease
- CVOT = cardiovascular outcome trials
- DKA = diabetic ketoacidosis
- DKD = diabetic kidney disease
- DPP-4i = dipeptidyl peptidase-4 inhibitor
- eGFR = estimated glomerular filtration rate
- FPG = fasting plasma glucose
- GI = gastrointestinal
- GIP = glucose-dependent insulinotropic polypeptide
- GLP-1 RA = glucagon-like peptide -1 receptor agonist
- HDL = high density lipoprotein
- HF = heart failure
- HFrEF = heart failure reduced ejection fraction
- HFpEF = heart failure preserved ejection fraction
- HTN = hypertension
- IA = insulin autoantibody

Key abbreviations, continued

- LADA = latent autoimmune diabetes in adults
- LDL = low density lipoprotein
- MACE = Major Adverse Cardiovascular Event
- MASH = Metabolic Dysfunction–Associated Steatohepatitis
- MASLD = Metabolic Dysfunction-Associated Liver Disease
- MI = Myocardial Infarction
- PPG = postprandial plasma glucose
- SGLT-2i = Sodium Glucose Co-Transporter-2 inhibitors SMBG = self-monitoring of blood glucose

- SU = sulfonylurea
- T1D = type 1 diabetes
- T2D = type 2 diabetes
- TAR = time above range
- TBR = time below range
- TIR = time in range
- TG = triglyceride
- TZD = Thiazolidinediones
- UACR = Urine Albumin-to-Creatinine Ratio

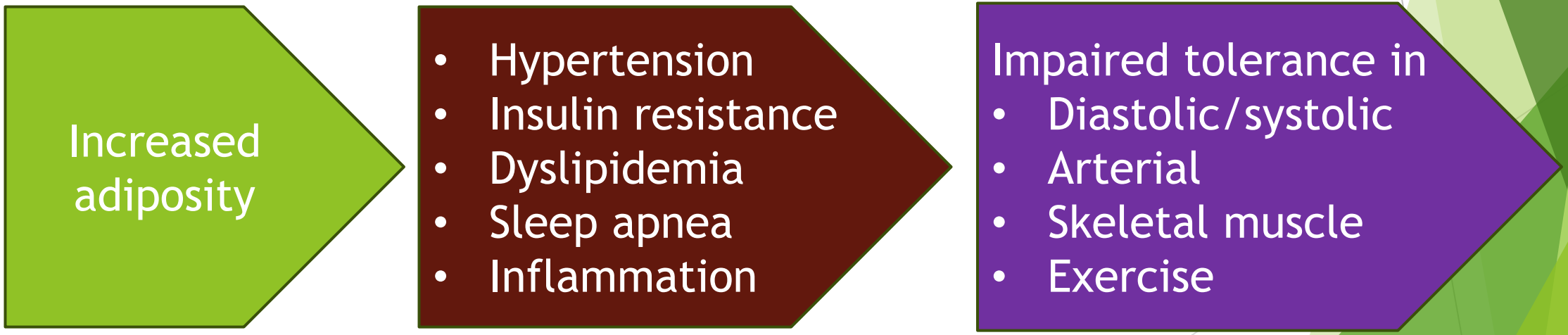
Statistics: Diabetes

- **Prevalence:**
  - 38.4 million Americans, or 11.6% of the population
  - 2 million Americans have type 1 diabetes
    - ~ 304,000 children and adolescents
    - ~40% of adults with type 1 diabetes are misdiagnosed with type 2 diabetes
- **Prevalence in seniors:**
  - People ≥ 65 account for 29.2%, or 16.5 million seniors
- **Prediabetes:**
  - 97.6 million Americans age 18 and older had prediabetes

https://www.cdc.gov/diabetes/php/data-research/?CDC_AAref_Val=https://www.cdc.gov/diabetes/data/statistics-report/index.html

Statistics: Obesity

- **Prevalence** of obesity was **41.9% (2017-2020)**
  - Overweight or obesity was **71.2%**
- Coexisting comorbidities:
  - diabetes, chronic kidney disease, hypertension



Martin SS et al. Heart Disease and Stroke Statistics. Circulation. 2025; 151(8):e41e660.
Kittleson MM et al. J Am Coll Cardiol. 2023; 81(18):18351878.

How many types of diabetes are there?

Diabetes is conventionally classified into 4 “main” categories.
Though it is being reconsidered based on genetic, metabolomic and other characteristics.

Type 1	Type 2	Types due to other causes	Gestational
Due to autoimmune destruction	Due to nonautoimmune, inadequate B-cell secretion and background insulin resistance		

• Prediabetes
• Latent autoimmune diabetes in adults (LADA)
	• Prediabetes	• Monogenic
		  • Maturity onset diabetes in youth (MODY)
		  • Neonatal diabetes mellitus (NDM)
		• Type 3c
		• Drug induced	

Need to diagnose the type of diabetes correctly to receive appropriate treatment.

American Diabetes Association. 2. Classification and Diagnosis of Diabetes: Standards of Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S27-S49

Diagnosis and Classification of Diabetes: Type 1

Type 1 (**Immune-Mediated Diabetes**) results from an autoimmune disorder that destroys the pancreatic ß cells

- **Autoimmune markers include**
  - Islet cell antibody (ICA)
  - Autoantibodies to glutamic acid decarboxylase -65 (GAD65)
  - Tyrosine phosphatases IA-2 and IA-2ß
  - Zinc transporter 8 (ZnT8)

- **T1D is associated with other autoimmune disorders**
  - Hashimoto thyroiditis
  - Graves disease
  - Celiac disease
  - Addison disease
  - Myasthenia gravis
  - Pernicious anemia

How can you implement this into your pharmacy practice?

Staging of Type 1 Diabetes

IGT - impaired glucose tolerance
IFG - impaired fasting glucose
FPG - fasting plasma glucose
PPG - postprandial glucose

	Stage 1 (pre-diabetes)	Stage 2 (pre-diabetes)	Stage 3 (diabetes)
Characteristics	Autoimmunity	Autoimmunity	New-onset hyperglycemia
	Normoglycemia	Dysglycemia	Symptomatic
	Presymptomatic	Presymptomatic	
Diagnostic Criteria	Multiple autoantibodies	Multiple autoantibodies	Clinical symptoms
		Dysglycemia: IFG &/or IGT	
		FPG 100-125 mg/dl	
	No IGT or IFG	2h PPG 140-199 mg/dl	Diabetes by standard criteria
		A1c 5.7% - 6.4%	

American Diabetes Association. 2. Classification and Diagnosis of Diabetes: Standards of Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S27-S49

Screening for T1D

- Not formally done in the United States
- Who to screen:
  - Relatives of people with T1D or LADA
  - People with elevated risk
- What to screen:
  - IA
  - GAD
  - IA-2
  - ZnT8

- Positive results:
  - If 1 or more islet antibodies – evaluate for stage 3 T1D
  - If multiple autoantibodies without overt T1D, refer to specialized center for metabolic staging, education, approved treatments.
  - If 1 autoantibody – monitor for progression.
    - Repeat antibody testing every 6 months to 3 years (pending age) to assess for seroconversion.

American Diabetes Association. 2. Classification and Diagnosis of Diabetes: Standards of Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S27-S49

Prevention or Delay of Diabetes

- Emphasis on monitoring for the progression from prediabetes to **all types** of diabetes (not just type 2)
- Use of CGM for monitoring disease progression in those with presymptomatic type 1 (pre-diabetes type 1)
- Consider use of metformin to prevent hyperglycemia in high-risk individuals treated with:
  - Phosphatidylinositol 3-kinase (P13Kα) inhibitor (e.g. alpelisib, inavolisib)
  - High dose glucocorticoids

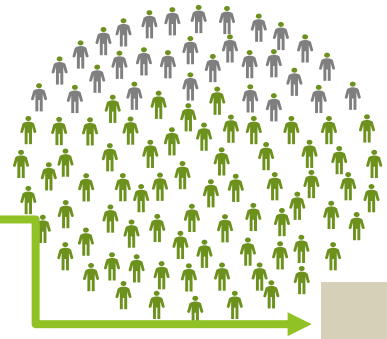
American Diabetes Association. 3. Prevention or delay of diabetes and associated comorbidities. Standards of Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S50-S60

Comprehensive Medical Evaluation/Assessment: **Focus on Liver Disease**

OLD Nomenclature	New Nomenclature
Nonalcoholic Fatty Liver Disease (NAFLD)	Metabolic Dysfunction-Associated Steatotic Liver Disease **(MASLD)**
Nonalcoholic Steatohepatitis (NASH)	Metabolic Dysfunction-Associated Steatohepatitis **(MASH)**

~70% of people with T2DM have MASLD

~20% of people with T1DM have MASLD



~ 50% will develop MASH

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Facilitating Positive Health Behaviors & Well-Being to Improve Health Outcomes

Tailor Treatment for Social Context

- Assess and address disparities in care and outcomes:
  - Insurance status
  - Race, ethnicity
  - Preferred language for health discussions
  - Disabilities
- Assess Social Determinants of Health (SDOH)
  - Food insecurity
  - Housing insecurity
  - Financial barriers
  - Health insurance
  - Health care access
  - Environmental and neighborhood factors
  - Community support and resources

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Nutrition Recommendations

- Nutrition -- Healthy eating
  - Mediterranean-style eating plan
  - Plant-based vs animal-based products
  - Whole grains, fiber, fruits, legumes, nuts, etc.
  - Minimize/avoid refined and processed foods.
  - Recommend water over other beverages
    - Nonnutritive sweeteners can be used instead of sugar-sweetened products
      - Use in moderation
      - Short-term use is recommended to reduce overall calorie and carbohydrate intake
  - Avoid excess alcohol intake

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Nutrition Behaviors to Encourage

Vegetables	Non-starchy, dark green, red and orange in color Fresh, frozen or low sodium canned
Legumes	Dried beans, peas, and lentils
Fruits	Whole fruit Fresh, frozen or low sodium canned
Whole grain	100% whole wheat breads, pastas, brown rice when culturally appropriate Focus on portion control when not culturally appropriate
High-fiber foods	3 grams of fiber per serving
Water	Beverage of choice (can add lemon, lime for favor) No-calorie alternatives are next best choice
Plant based proteins	Legumes (soy, pinto, black, garbanzo beans, lentils), nuts, and seeds
Meats/poultry	Fresh, frozen or low sodium canned in lean forms
Heart-healthy, wild-caught fatty fish	Fresh, frozen or low sodium canned salmon, tuna, sardines, mackerel
Herbs and spices	Instead of salt, use basil, fennel, mint, parsley, rosemary, thyme, cinnamon, ginger, pepper, turmeric for seasoning.
Cook with vegetable oil	Use canola, olive oil instead of high saturated fats (butter, shortening, lard, coconut oil)

How can you implement this into your pharmacy practice?

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Fasting Comparison

Religious Fasting:
- Fixed duration and timing
- High levels of intrinsic motivation
- Risk of hyperglycemia at the end of fasting hours with/without ketoacidosis
- Dehydration is possible

↑ Hypoglycemia risk

↑ Risk assessment and education are essential pre-fasting

↑ Treatment adjustment required

Intermittent Fasting:
- Flexible duration and timing
- Varying levels of intrinsic & extrinsic motivation
- Hyperglycemia is unlikely as the motive is health-related
- No added risk of dehydration

NOTE:
Prefasting risk assessment tool should be used to assess safety of religious fasting

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Medications Adjustments During Fasting

Medication	Risk of Hypo	Timing	Total daily dose
• Metformin • SGLT-2i • DPP-4i • GLP-1 RA • Acarbose • Pioglitazone	low	• If once daily, take at main meal • If twice daily, split dose between 2 meals • If once weekly, no change of time	No change
Sulfonylureas	Moderate to high	• If once daily, take at main meal • If twice daily, split dose between 2 meals	• Reduce dose if BG within goal & no hypoglycemia/hyperglycemia at baseline • Glyburide – reduce dose 50%
Basal insulin	Moderate to high	• Longer-acting insulins, no need to change timing • Intermediate or long-acting, take a breaking-fast meal	• Choose insulin with lower risk of hypo • Reduce dose by 25-35% if not managed
Prandial insulin	High	• At mealtime	• Reduce dose for the meal followed by fast (35-50%) • For other meals, match insulin to carbohydrate intake
Mixed insulin	High	• If once daily, take at main meal • If twice daily, split dose between 2 meals	• Reduce dose for the meal followed by fast (35-50%) • For other meals, no change

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Importance of 24-Hour Physical Behaviors for People with Diabetes

Sitting / breaking up prolonged sitting

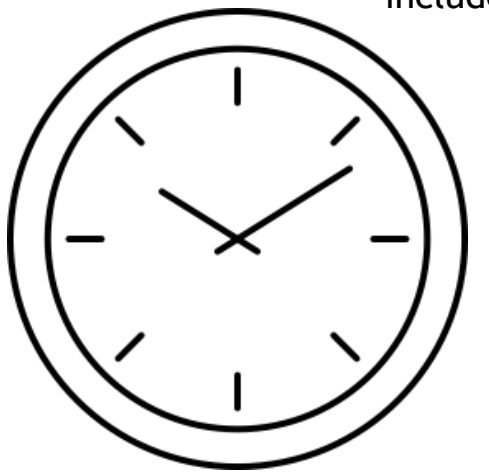
-Break prolonged sitting every 30 minutes
-Short bouts of walking
-Simple resistance exercise

Sweating (moderate to vigorous activity)

-150 + minutes/week of moderate-intensity physical activity
or
≥ 75 minutes/week vigorous-intensity activity
-Spread over ≥ 3 days/week
-No more than 2 consecutive days of inactivity
-include resistance, flexibility, and balance sessions

Stepping

-Increasing 500 steps per day associated with 2-9% decreased risk of CVD and all-cause mortality



Strengthening

-Resistance exercise
-Improves insulin sensitivity
-Tai chi, yoga improve flexibility and balance

Sleep

Aim for consistent, uninterrupted sleep
-**Quantity**: 6-8 hours
-**Quality:** irregular sleep results in poorer glycemic levels (insomnia, obstructive sleep apnea, restless leg syndrome, etc.)
-Chronotype: night owls vs. early birds.

Physical functional/frailty/sarcopenia

-Frailty phenotype in T2D is unique
-Earlier age

American Diabetes Association. Standards of Medical Care in Diabetes 2025. Diabetes Care 2025;48(Suppl. 1)

CGM Goals

Diabetes Type	Glucose Range	Recommendations (% of readings; time per day)
Type 1/type 2 diabetes	<54 mg/dL	<1% (<15 min)
	<70 mg/dL	<4% (<1 h)
	70-180 mg/dL	>70% (>16 h, 48 min) >60% for individuals <25 years old (>14 h, 24 min)
	>180 mg/dL	<25% (<6 h)
	>250 mg/dL	<5% (<1 h, 12 min)
Older/high-risk Type 1/Type 2	<70 mg/dL	<1% (<15 min)
	70-180 mg/dL	>50% (>12 h)
	>250 mg/dL	<10% (<2 h, 24 min)
Pregnancy with Type 1	<54 mg/dL	<1% (<15 min)
	<63 mg/dL	<4% (<1 h)
	63-140 mg/dL	>70% (>16 h, 48 min)
	>140 mg/dL	<25% (<6 h)

There is currently insufficient data to support the use of CGM in gestational diabetes.

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Individualized Approach to Setting Glycemic Goals

	Good health & function, low treatment risks/burdens	Most adults & healthy older adults	Healthy older adults	Older adults with complex/ intermediate health	Older adults with very complex/poor health Adults with limited life expectancy
A1c goals	<6.5%	<7.0%	<7.5%	< 8.0%	No A1c goal
CGM goal TIR	--	>70%	--	>50%	--
TBR < 70mg/dl	--	<4%	--	<1%	<1%
TBR < 54mg/dl	--	<1%	--	<1%	<1%
TAR > 180mg/dl	--	<25%	--	<50%	Avoid symptomatic hyperglycemia
TAR > 250mg/dl	--	<5%	--	<10%	

American Diabetes Association. 6. Glycemic Goals, Hypoglycemia and Hyperglycemia. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S132-S149

Modifying Factors for treatment goals

Favor more stringent goal	Favor less stringent goal
Short duration of diabetes	Long duration of diabetes
Low hypoglycemia risk	High hypoglycemia risk
Low treatment risks/burdens	High treatment risks/burdens
Pharmacotherapy with CV, kidney, weight & other benefits	Pharmacotherapy without nonglycemic benefits
No CV complications	Established CV complications
Few or minor comorbidities	Severe, life-limiting comorbidities

American Diabetes Association. 6. Glycemic Goals, Hypoglycemia and Hyperglycemia. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S132-S149

Adjunctive Therapies For Type 1 Diabetes

- Reaching glycemic goals with insulin alone is difficult because of hypoglycemia risk.
  - **Insulin is associated with weight gain**, which will increase insulin resistance.
  - Insulin does not address other pathophysiological defects.
    - Alpha cell dysfunction
    - Does not have CV protection
- **> 60% of people with T1D are overweight or obese.**
- Apply obesity management strategies for people with T1D who have obesity.
  - GLP-1 RA
  - Metabolic surgery

Type 1 diabetes no longer a disease of the thin, advice needed. Medscape. Feb 13, 2023
American Diabetes Association. 8. Obesity and weight management. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S166-S182

Starting & Adjusting Insulin in T1D

Support healthy lifestyle behaviors, deliver diabetes self-management education & support, address social determinants of health

Choice of insulin & administration methods should be based on person-specific considerations: including progression and severity of insulin deficiency, presentation ok DKA, and/or overweight/obesity. Glucagon prescribed for emergent hypoglycemia

Initiation: start 0.4-0.5 units/kg/day divided equally between basal and prandial coverage.
Titration: uptitrate or downtitrate as needed, adjust basal and prandial doses based on goals for A1c, CGM and SMBG

Reassess frequency using CGM and/or SMBG to determine individual needs for prandial and basal dosing balance

If A1c, CGM metrics, or SMBG not at goal

Hypoglycemia: adjust basal and/or prandial based on timing of the hypoglycemia
(e.g. 1-4 units or 5-10% of dose

Hyperglycemia: adjust basal and/or prandial based on timing of the hypoglycemia
(e.g. 1-4 units or 5-10% of dose

American Diabetes Association. 9. Pharmacologic approaches to glycemic goals. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S183-S215

SMBG = self monitoring blood glucose

Healthy Lifestyle Behaviors: Diabetes Self-Management Education & Support (DSMES); Social Determinants of Health (SDOH)

Goal: Cardiorenal Risk Reduction in High-Risk Patients with T2D (in addition to comprehensive CV risk management)

In people with HF, CKD, established CVD or multiple risk factors for CVD, the decision to use a GLP-1RA or SGLT-2i with proven benefit should be made irrespective of attainment of glycemic goal

+ ASCVD

+ Indicators of high risk

GLP-1 RA with proven CVD benefit
----------OR----------
SGLT-2i with proven CVD benefit

If A1c above target

- If on GLP-1 RA, add SGLT-2i with proven CVD benefit & visa versa
- Pioglitazone (low dose)

+ HF

Current or prior symptoms of HF with documented HFrEF or HFpEF

SGLT-2i and/or dual GIP/GLP1RA or GLP-1RA with proven benefit in HFpEF & obesity

+ CKD

eGFR <60 mL/min/1.73 m^2
Or Albuminuria (ACR ≥ 3.0 mg/mmol [30 mg/g]). repeat measurement to confirm CKD

On max tolerated dose of ACEi/ARB

SGLT-2i with primary evidence of reducing CKD progression
Use SGLT-2i in people with an eGFR > 20 mL/min/1.73 m^2
(Once started, should continue until dialysis or transplant)
----------Or----------
GLP-1 RA with proven CVD benefit

Mitigating risk of MASLD or MASH - Agents with potential benefit in MASLD or MASH
- GLP-1 RA, dual GIP & GLP-1RA, pioglitazone, or combination of GLP-1 RA & pioglitazone
- Insulin preferred with decompensated cirrhosis

Goal: Achievement & Maintenance of Glycemic & Weight Management Goals)

To achieve & maintain glycemic goals:
- Metformin OR agents including COMBINATION for efficacy to reach/keep goals
- Prioritize avoiding hypoglycemia

Efficacy for glucose lowering:

Very High:
Dulaglutide (high dose), Semaglutide, Tirzepatide, Insulin, combo oral, combo injectable (GLP-1 RA + insulin)

High:
GLP-1 RA (not listed above), metformin, SGLT-2i, SU, TZD

Intermediate:
DPP-4i

Weight Management:

Efficacy for weight loss:

Very High:
Semaglutide, Tirzepatide

High:
Dulaglutide, Liraglutide

Intermediate:
GLP-1 RA (not listed above), SGLT-2i

Neutral:
DDP-4i, metformin

HF = heart failure
CKD = chronic kidney disease
eGFR = estimated glomerular filtration rate

American Diabetes Association. 9. Pharmacologic approaches to glycemic goals. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S183-S215

SGLT-2 Inhibitor Indication Comparison

SGLT-2 inhibitor	Glucose-lowering	Cardiovascular Effects		Kidney Effects
		MACE Effect To reduce the risk of death in type 2 diabetes and established CV	Heart Failure	Slow progression of DKD
Canagliflozin	∫	∫	∫	∫
Dapagliflozin	∫		∫	∫
Empagliflozin	∫	∫	∫	∫
Ertugliflozin	∫		∫	
Bexagliflozin	∫			
Sotagliflozin			∫	

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

SGLT-2i's

- Most Common Side Effects
  - Weight loss
  - Vaginal and male genital infections
  - Rash
  - Urinary tract infection
  - Frequent urination
  - Increased thirst
  - Dehydration
  - GI problems
    - When combined with metformin or a GLP-1 agonist

- Tips for Use
  - Educate patients on:
    - Proper genitourinary hygiene
      - Minimize high-acidic foods/beverages
    - Importance of hydration
      - Minimize caffeinated & dehydrating foods/beverages
    - Increase the frequency of urination
    - Signs/symptoms of diabetic ketoacidosis
  - Use caution in patients on volume-depleting drugs (e.g, diuretics)

Pamulapati LG, Sisson E. Pharmacotherapy for glucose management.
In: Cornell S, Miller DK, Urbanski P, eds. The Art and Science of Diabetes Care and Education. 6th ed. 2023

GLP-1 RA Indication Comparison

GLP-1 RA	Glucose-lowering	Cardiovascular Effects		Kidney Effects	Liver disease
		MACE Effect To reduce the risk of death in type 2 diabetes and established CV	Heart Failure	Slow progression of DKD	MASH
Exenatide	√				
Liraglutide	√	√			
Semaglutide (oral)	√	√			
Semaglutide (injectable)	√	√	?	√	√
Dulaglutide	√	√			
Tirzepatide	√	?	?	?	?

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

GLP-1 RA Side Effects

- Common side effects:
  - Nausea
  - Vomiting
  - Constipation
- Other notable side effects:
  - Fatigue
  - Acid reflux
  - Muscle loss
  - "Ozempic face"

Possibly due to improper nutrition

- Tirzepatide:
  - Possible drug interaction with oral contraceptive (0.035 mg ethinyl estradiol, 0.25 mg norgestimate, & norelgestromin)
    - Cmax reduced by 59%,66%, and 55%
    - AUC was reduced by 20%, 21%, and 23%

AUC = areas under the curve

Pamulapati LG, Sisson E. Pharmacotherapy for glucose management.
In: Cornell S, Miller DK, Urbanski P, eds. The Art and Science of Diabetes Care and Education. 6th ed. 2023

Five essential nutrients for patients on GLP-1s. Medscape. Sept 26, 2024

Tips to Minimize GLP-1 RA Side Effects

- GI effects tend to be dose-dependent
  - Tips to minimize side effects
    - Change the timing and size of meal portions
      - Smaller, more frequent meals
      - Eat slowly
    - Consider easy-to-digest foods and beverages
      - Clear and/or ice-cold drinks
      - Avoid sweet, fried, and greasy food
      - Try light, bland foods (e.g., bread, saltine crackers)
    - Proper nutrition
      - Protein, fiber, B12, calcium, vitamin D

- General tips for use:
  - Educate and monitor injection technique (for injectables)
  - Review oral administration (for oral GLP-1 RA)
    - Time of day
    - With/without food, beverage, and other medications
    - Medication storage

Pamulapati LG, Sisson E. Pharmacotherapy for glucose management. In: Cornell S, Miller DK, Urbanski P, eds. The Art and Science of Diabetes Care and Education. 6th ed. 2023
Five essential nutrients for patients on GLP-1s. Medscape. Sept 26, 2024

Candidates for GLP-1 RA and/or SGLT-2i

- High risk or established atherosclerotic cardiovascular disease (ASCVD)
- HF and/or CKD
- Risk of MASLD or MASH
- Benefit from weight loss
- Hypoglycemia is a concern
- Have good medication insurance coverage, cost is not an issue, are candidates for medication rebates/coupon cards

Cardiovascular Disease: Prevention of ASCVD in People with T2D

Nutrition and Lifestyle
BP management

Does the person have established ASCVD

Yes

High intensity statin
GLP-1RA
SGLT-2i

Does the person have ASCVD in 2 or more vascular beds, or 1 vascular bed and >65 years old?

Yes

Aspirin 81mg daily
AND
Rivaroxaban 2.5mg twice daily

No

Aspirin 81mg daily
OR
Clopidogrel 75mg daily

No

Is the person at high ASCVD risk?

Yes

High intensity statin
GLP-1RA
SGLT-2i

No

Moderate or high intensity statin

American Diabetes Association. 10. Cardiovascular Disease and Risk Management. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1):S216-S245

What about Metformin and other diabetes medications ????

Candidates for Metformin

- Need sufficient A1c lowering
  - Up to 2%
- Hypoglycemia is a concern
- Cost is an issue

Common side effects:

- Nausea
- Diarrhea
- Flatulence
- Lactic acidosis
- Metallic taste
- B-12 deficiency

Renal considerations	
eGFR 45 – 60 mL/min/1.73 m^2	Continue therapy Monitor renal function every 3 – 6 months
eGFR 30 – 45 mL/min/1.73 m^2	Avoid initiation of metformin If already using, consider dose adjustment to max of 500mg BID
eGFR < 30 mL/min/1.73 m^2	Do not use / discontinue use

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Candidates for DPP-4i

- Need minimal A1c lowering
  - 0.4 to 0.7%
  - PPG lowering
- Hypoglycemia is a concern
- Weight gain is a concern
- Side effects are a concern
- Cost is an issue
- Not already on a GLP-1 RA medication

- Minimal side effects
  - Stuffy, runny nose
  - Headache
  - Upper respiratory tract infection

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Candidates for Pioglitazone

- Need sufficient A1c lowering
  - Up to 1.5 - 2%
- Hypoglycemia is a concern
- Risk of MASLD or MASH
- Benefit from weight gain
- Cost is an issue

- Most common side effects
  - Edema (swelling) usually in the legs
  - Weight gain
  - Possible ↑ risk of fractures
- Reminder:
  - Takes 8-12 weeks to see BG lowering

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Candidates for Sulfonylureas

- Need sufficient A1c lowering
  - Up to 1.5 - 2%
- Benefit from weight gain
- Cost is an issue

- Most common side effects
  - Hypoglycemia
  - Weight gain
- Reminder to patient:
  - Patients need to eat on schedule
    - Do not skip meals/snacks

American Diabetes Association. Standards of Medical Care in Diabetes 2026. Diabetes Care 2026;49(Suppl. 1)

Diabetes Medications Can Mimic Lifestyle Behaviors

Medication	Lifestyle behavior	Rationale
GLP-1 RA	Eating small frequent meals	Allows, appropriate insulin and glucagon secretion. Slows gastric motility and signals satiety to brain
SGLT-2 inhibitor	Hydration	Increased hydration can help excrete glucose
Metformin	Eating breakfast	Eating within 2 hours of waking "breaks the fast" of not eating overnight. Metformin inhibits hepatic glucose production
DPP-4 inhibitor	Eating small frequent meals	Endogenous GLP-1 can help with appropriate insulin and glucagon secretion.
Pioglitazone	Exercise	TZD's increase GLUT-4 transporters to allow glucose to be stored in the cell; improving insulin resistance.
Sulfonylurea	Not applicable	Not applicable

Pamulapati LG, Sisson E. Pharmacotherapy for glucose management. In: Cornell S, Miller DK, Urbanski P, eds. The Art and Science of Diabetes Care and Education. 6th ed. 2023

Strategies for Optimizing the Timing of Medications

Medication	Best time to take medication	Before or after a meal	Can take anytime	Considerations
GLP-1 RA *Oral & short-acting injectable*	Morning	∫ Must be taken ~30 minutes before meal on empty stomach.		Oral GLP-1 needs to remain in original container
Long acting injectable	Anytime		∫	
SGLT-2 inhibitor	Morning		∫	May increase urinary frequency
Metformin	Evening	∫ With or immediately after meal		Once daily dosing with evening meal; twice daily dosing with morning and evening meals.
DPP-4 inhibitor	Anytime		∫	
Pioglitazone	Anytime		∫	
Sulfonylurea	Morning	∫ With or immediately after meal		Once daily dosing with evening meal; twice daily dosing with morning and evening meals. Must not skip meals/snacks to prevent hypoglycemia
Insulin *Bolus*		∫ Before or with meal		Once daily dosing before largest meal; twice daily dosing before morning and evening meals; three times daily dosing before each meal.
Basal		NPH – before breakfast and before dinner or bedtime	∫ All non-NPH insulins	

Pamulapati LG, Sisson E. Pharmacotherapy for glucose management. In: Cornell S, Miller DK, Urbanski P, eds. The Art and Science of Diabetes Care and Education. 6th ed. 2023

Person-Centered Treatment Plans: Case Studies

Case One: James (62 years old)

James is a finance manager at a large company.

- Eats 3 healthy meals daily and avoids snacking
- Drinks 2-3 cups of coffee daily
- 1-2 glasses of wine on weekends
- Denies smoking/vaping/cannabis use
- Insurance with prescription coverage for most diabetes medications/devices

- **Medical History/Current Medications:**
  - Type 2 diabetes
    - newly diagnosed
  - HTN
    - Lisinopril/HCTZ 10 mg/12.5 mg daily
  - Dyslipidemia
    - Atorvastatin 40 mg orally daily
  - Sleep apnea

	Today
Height	5 ft 10 in
Weight	234 lbs.
Blood pressure (sitting)	124/78 mm Hg
Heart rate	58 bpm
FPG	192 mg/dL
A1C	8.6%
LDL	108 mg/dL
HDL	40 mg/dL
TG	175 mg/dL
eGFR	>60 mL/min/1.73 m^2
UACR	15 mg/g

James' primary care provider asks for your suggestion on starting a diabetes medication. What would you recommend?

A. Empagliflozin
B. Glipizide
C. Metformin
D. Pioglitazone
E. Semaglutide

Case Two: Dario (57 years old)

Dario is a new patient at your pharmacy.

- Insurance with minimal to no prescription coverage for most diabetes medications/devices

A pharmacy technician performs point-of-care (POC) testing and obtains vitals.
Dario states he feels dizzy "on and off" during the day.

- **Medical History/Current Medications:**
  - Type 2 diabetes, newly diagnosed
    - Metformin 1000 mg twice daily
    - Glipizide 10 mg daily
    - Self-monitoring of blood glucose (SMBG) once daily
  - Hypertension
    - Lisinopril/HCTZ 10 mg/12.5 mg daily

	Today
Height	5 ft 11 in
Weight	210 lbs.
Blood pressure (sitting)	128/84 mm Hg
Heart rate	58 bpm
FPG (POC)	150 mg/dL
A1C (POC)	7.6%

What questions would you ask to "start the conversation"?

Making a Difference in Your Patients' Lives

- How long does it take to build a rapport?
- How much time is needed to make a difference in patient care?
- What can you do to be your patient's advocate?

Key Take-Away Points

- Diabetes care and management are continually evolving.
- Diagnosing the correct type of diabetes is critical to proper treatment.
- Lifestyle, including self-care, is the cornerstone of optimal diabetes therapy and outcomes.
- Glucose, blood pressure, lipids, liver, kidneys, weight management, mental health, and cognitive function need to be assessed and addressed.
- Pharmacotherapy needs to look beyond glycemic control and consider:
  - Cardio-renal- hepatic-metabolic risk
  - Weight management
  - Hypoglycemic risk
- Access to quality care and medications is critical to optimal diabetes management.