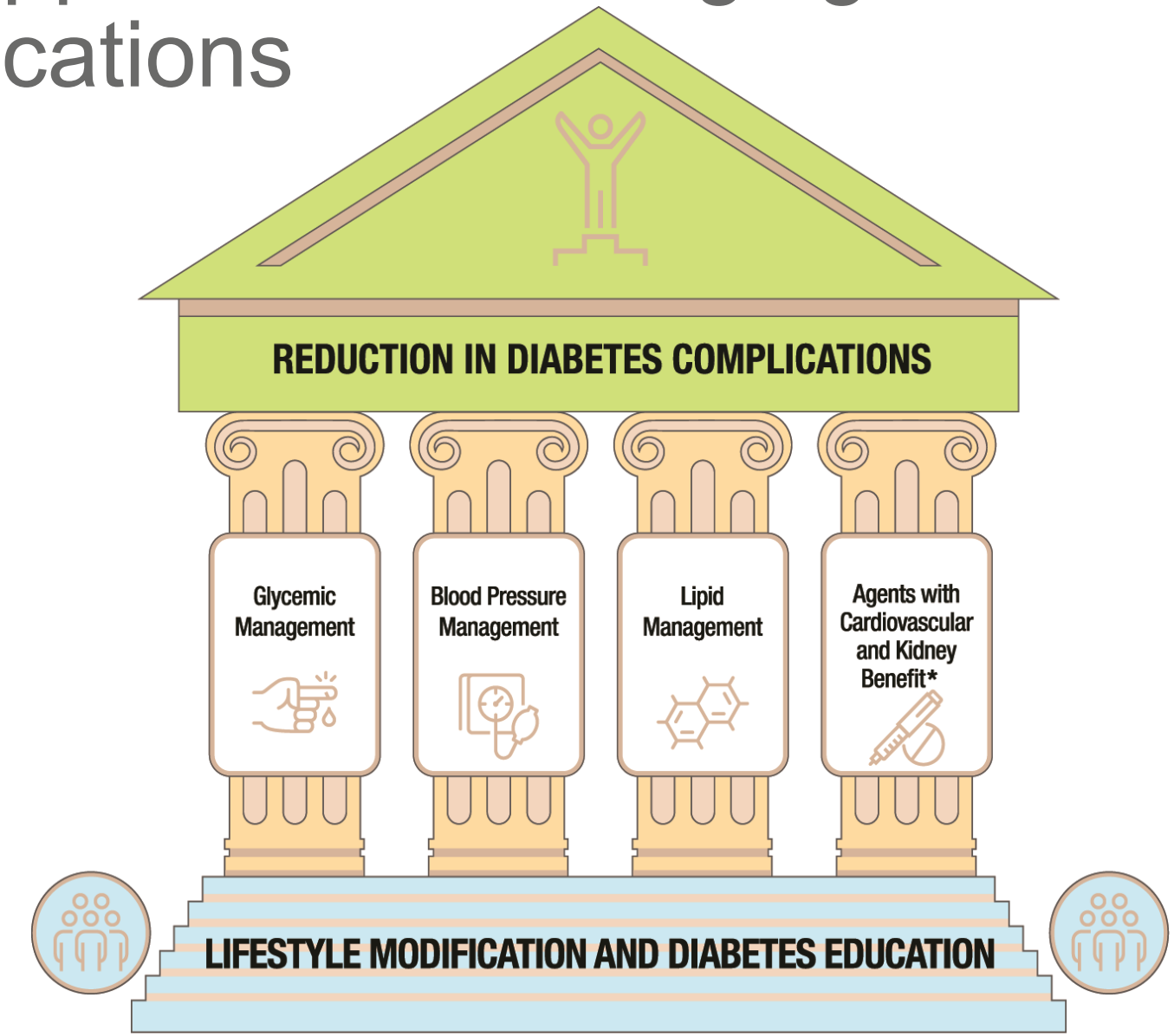
2024 Pharmacologic Therapy for Type 2 Diabetes

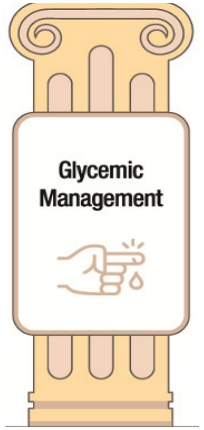
Raven Jackson, PharmD, MBA

Pillar Approach to Managing Diabetes Related Complications



American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2024. Diabetes Care 1 January 2024; 47.

Glycemic Management



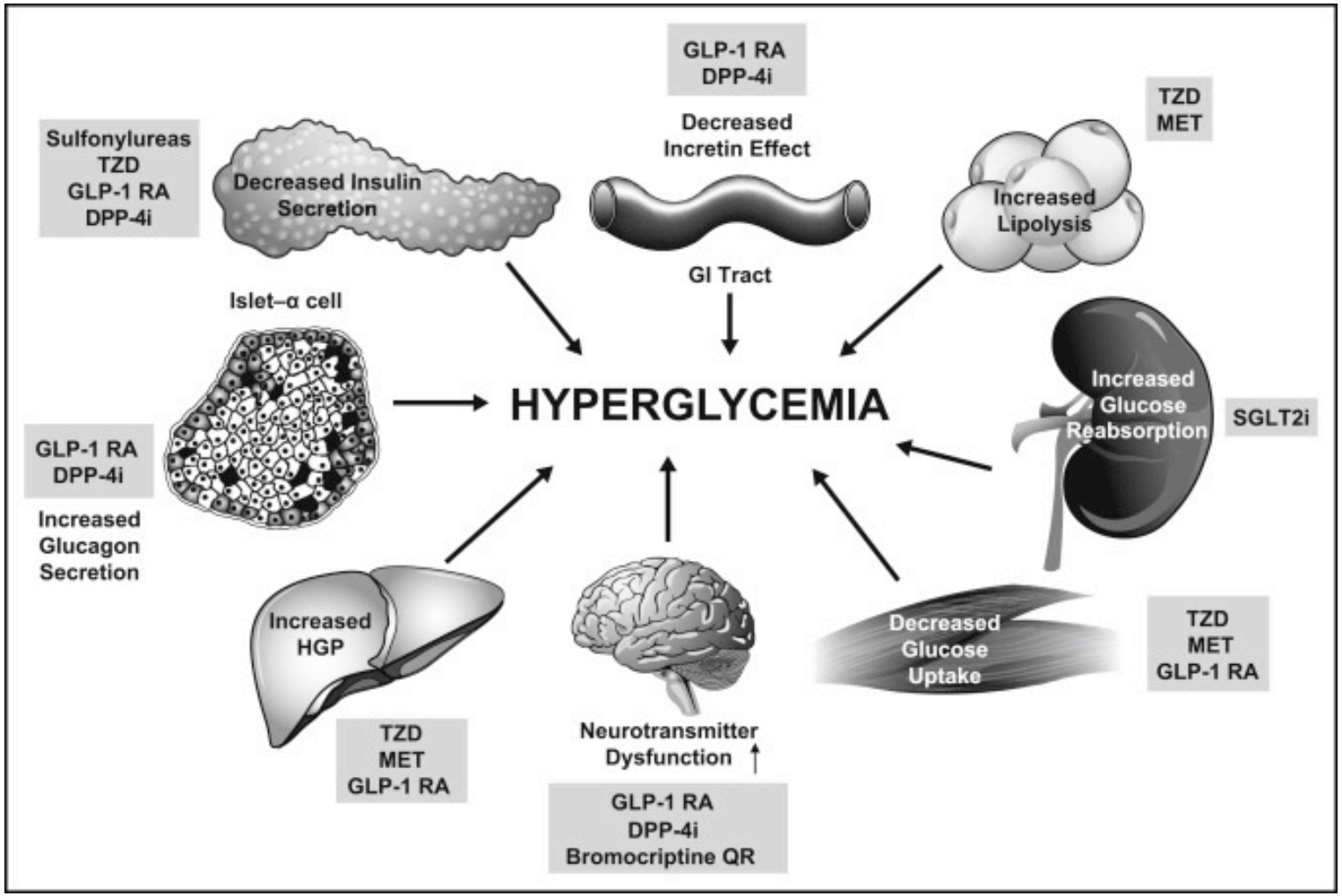
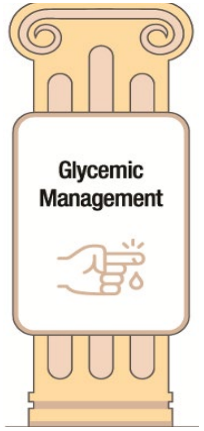


Photo Citation: Pharmacologic Management of Type 2 Diabetes - https://www.sciencedirect.com/science/article/pii/S0002934317304576

First Line Management In Adults With T2DM



2021 Diabetes Management Algorithm

FIRST-LINE Therapy is Metformin and Comprehensive Lifestyle (including weight management and physical activity)

2022 Diabetes Management Algorithm

FIRST-LINE THERAPY depends on comorbidities, patient-centered treatment factors, including cost and access considerations, and management needs and generally includes metformin and comprehensive lifestyle modification^

2023 and 2024 Diabetes Management Algorithm

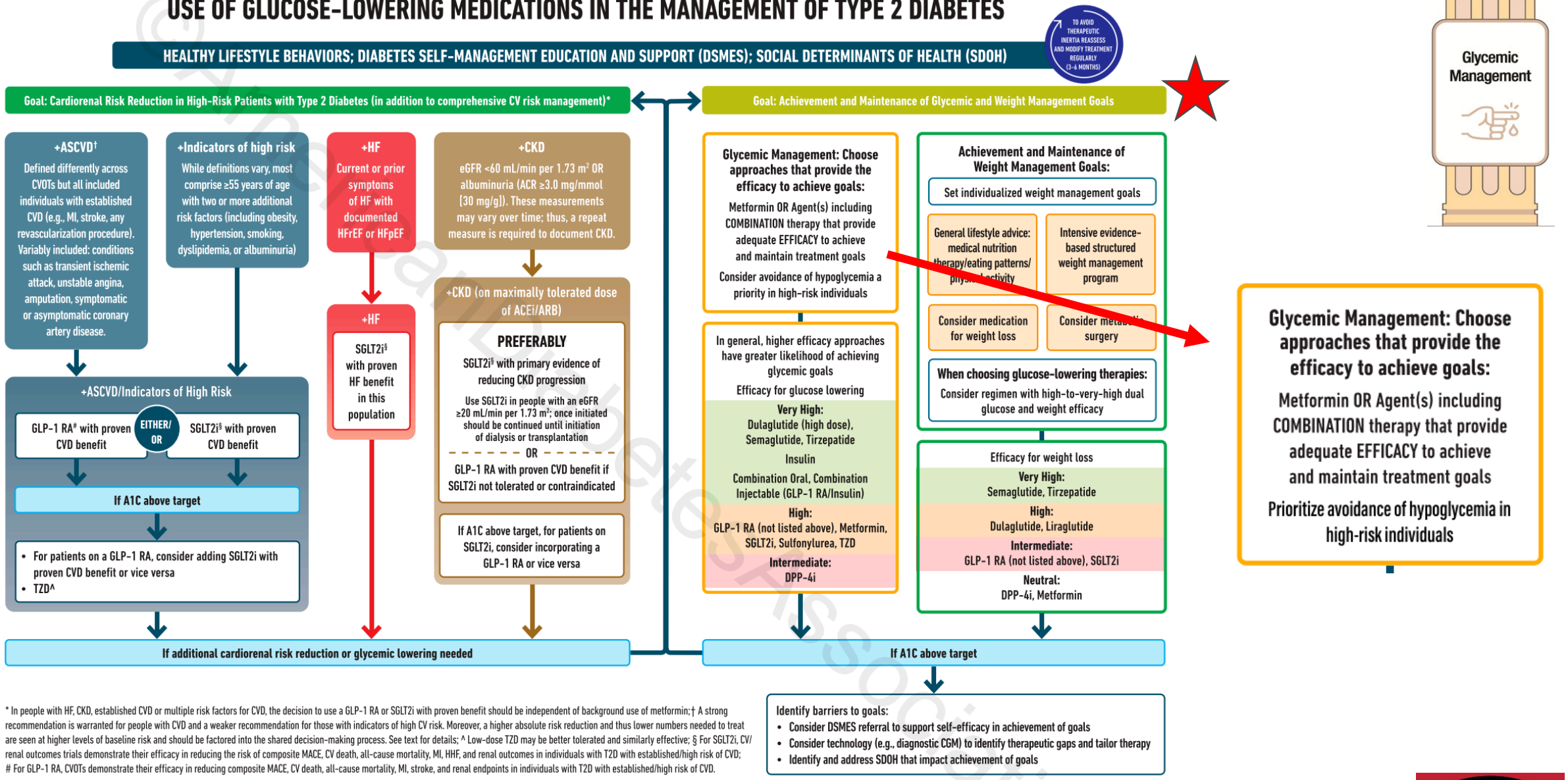
HEALTHY LIFESTYLE BEHAVIORS; DIABETES SELF-MANAGEMENT EDUCATION AND SUPPORT (DSMES); SOCIAL DETERMINANTS OF HEALTH (SDOH)

WELL-AHEAD

American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2023. Diabetes Care 1 January 2022; 46.
American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2022. Diabetes Care 1 January 2022; 45.
American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2021. Diabetes Care 1 January 2021; 44.

Project ECHO

2023 → 2024



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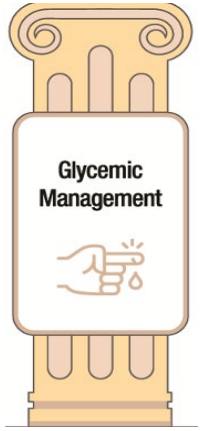
T2DM Medication Management



	Efficacy[1]	Hypoglycemia	Weight change[2]	CV effects		Renal effects		Oral/SQ	Cost	Clinical considerations
				Effect on MACE	HF	Progression of DKD	Dosing/use considerations*			
Metformin	High	No	Neutral (potential for modest loss)	Potential benefit	Neutral	Neutral	• Contraindicated with eGFR <30 mL/min per 1.73 m^2	Oral	Low	• GI side effects common; to mitigate GI side effects, consider slow dose titration, extended release formulations, and administration with food • Potential for vitamin B12 deficiency; monitor at regular intervals
SGLT2 inhibitors	Intermediate to high	No	Loss (intermediate)	Benefit: canagliflozin, empagliflozin	Benefit: canagliflozin, dapagliflozin, empagliflozin, ertugliflozin	Benefit: canagliflozin, dapagliflozin, empagliflozin	• See labels for renal dose considerations of individual agents • Glucose-lowering effect is lower for SGLT2 inhibitors at lower eGFR	Oral	High	• DKA risk, rare in T2DM: discontinue, evaluate, and treat promptly if suspected; be aware of predisposing risk factors and clinical presentation (including euglycemic DKA); discontinue before scheduled surgery (e.g., 3–4 days), during critical illness, or during prolonged fasting to mitigate potential risk • Increased risk of genital mycotic infections • Necrotizing fasciitis of the perineum (Fournier gangrene), rare reports: institute prompt treatment if suspected • Attention to volume status, blood pressure; adjust other volume-contracting agents as applicable
GLP-1 RAs	High to very high	No	Loss (intermediate to very high)	Benefit: dulaglutide, liraglutide, semaglutide (SQ) Neutral: exenatide once weekly, lixisenatide	Neutral	Benefit for renal endpoints in CVOTs, driven by albuminuria outcomes: dulaglutide, liraglutide, semaglutide (SQ)	• See labels for renal dose considerations of individual agents • No dose adjustment for dulaglutide, liraglutide, semaglutide • Monitor renal function when initiating or escalating doses in patients with renal impairment reporting severe adverse GI reactions	SQ; oral (semaglutide)	High	• Risk of thyroid C-cell tumors in rodents; human relevance not determined (liraglutide, dulaglutide, exenatide extended release, semaglutide) • Counsel patients on potential for GI side effects and their typically temporary nature; provide guidance on dietary modifications to mitigate GI side effects (reduction in meal size, mindful eating practices [e.g., stop eating once full], decreasing intake of high-fat or spicy food); consider slower dose titration for patients experiencing GI challenges • Pancreatitis has been reported in clinical trials but causality has not been established. Discontinue if pancreatitis is suspected • Evaluate for gallbladder disease if cholelithiasis or cholecystitis is suspected

American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2024. Diabetes Care 1 January 2024; 47.

T2DM Medication Management

	Efficacy[1]	Hypoglycemia	Weight change[2]	CV effects		Renal effects		Oral/SQ	Cost	Clinical considerations
				Effect on MACE	HF	Progression of DKD	Dosing/use considerations*			
Dual GIP and GLP-1 RA	Very high	No	Loss (very high)	Under investigation	Under investigation	Under investigation	• See label for renal dose considerations • No dose adjustment • Monitor renal function when initiating or escalating doses in patients with renal impairment reporting severe adverse GI reactions	SQ	High	• Risk of thyroid C-cell tumors in rodents; human relevance not determined • Counsel patients on potential for GI side effects and their typically temporary nature; provide guidance on dietary modifications to mitigate GI side effects (reduction in meal size, mindful eating practices [e.g., stop eating once full], decreasing intake of high-fat or spicy food); consider slower dose titration for patients experiencing GI challenges • Not recommended for individuals with history of gastroparesis • Pancreatitis has been reported in clinical trials but causality has not been established. Discontinue if pancreatitis is suspected • Evaluate for gallbladder disease if cholelithiasis or cholecystitis is suspected

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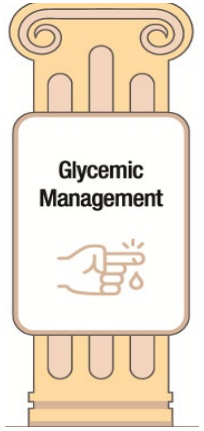
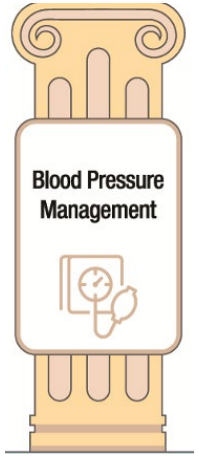
T2DM Medication Management



	Efficacy[1]	Hypoglycemia	Weight change[2]	CV effects		Renal effects		Oral/SQ	Cost	Clinical considerations
				Effect on MACE	HF	Progression of DKD	Dosing/use considerations*			
DPP-4 inhibitors	Intermediate	No	Neutral	Neutral	Neutral (potential risk, saxagliptin)	Neutral	• Renal dose adjustment required (sitagliptin, saxagliptin, alogliptin); can be used in renal impairment • No dose adjustment required for linagliptin	Oral	High	• Pancreatitis has been reported in clinical trials but causality has not been established. Discontinue if pancreatitis is suspected • Joint pain • Bullous pemphigoid (postmarketing): discontinue if suspected
Thiazolidinediones	High	No	Gain	Potential benefit: pioglitazone	Increased risk	Neutral	• No dose adjustment required • Generally not recommended in renal impairment due to potential for fluid retention	Oral	Low	• Congestive HF (pioglitazone, rosiglitazone) • Fluid retention (edema; heart failure) • Benefit in NASH • Risk of bone fractures • Weight gain: consider lower doses to mitigate weight gain and edema
Sulfonylureas (2nd generation)	High	Yes	Gain	Neutral	Neutral	Neutral	• Glyburide: generally not recommended in chronic kidney disease • Glipizide and glimepiride: initiate conservatively to avoid hypoglycemia	Oral	Low	• FDA Special Warning on increased risk of CV mortality based on studies of an older sulfonylurea (tolbutamide); glimepiride shown to be CV safe (see text) • Use with caution in persons at risk for hypoglycemia

American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2024. Diabetes Care 1 January 2024; 47.

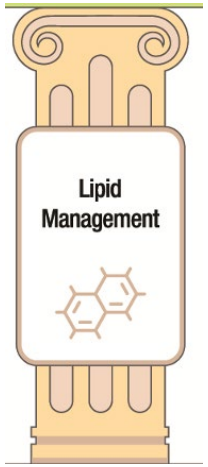
Blood Pressure Management



- In patients with diabetes and hypertension (BP >130/80), antihypertensive treatment should be initiated with a treatment goal of <130/80.
  - Diuretics (i.e. TZDs, such as chlorthalidone and indapamide preferred)
  - Dihydropyridine Calcium Channel Blockers (DHP CCBs)
  - ACE inhibitors or ARBs
- Consider ACE inhibitor or ARB primarily in patients with
  - Diabetes + Hypertension + Coronary Artery Disease
  - Diabetes + Hypertension + Urinary Albumin Creatinine > 300 mg/g (or 30 – 299 mg/g)

American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2024. Diabetes Care 1 January 2024.

Lipid Management



- **Primary Prevention**
  - For people with diabetes AND aged 40–75 AND at higher cardiovascular risk, including those with one or more atherosclerotic cardiovascular disease risk factors, recommend a HIGH intensity statin therapy and target an LDL cholesterol goal < 70
    - *2022 Recommendations – stated "In patients with diabetes at higher risk, especially those with multiple atherosclerotic cardiovascular disease risk factors or aged 50–70 years, it is reasonable to use high intensity statin therapy"*
  - **Bempedoic Acid**
    - *New 2024 Recommendations - 10.24 In people with diabetes tolerant to statin therapy, treatment with bempedoic acid is recommended to reduce cardiovascular event rates as an alternative cholesterol lowering plan*

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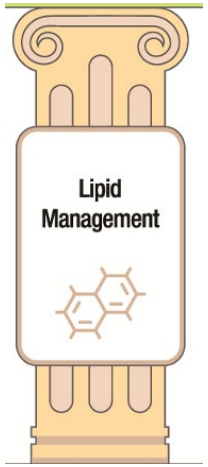
American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2024. Diabetes Care 1 January 2024.

Lipid Management (cont.)



- **Primary Prevention**
  - In adults with diabetes AND > 75 years AND already on statin therapy, it is reasonable to continue statin treatment.
  - In adults with diabetes AND >75 years AND NOT already on statin therapy, it may be reasonable to initiate MODERATE-intensity statin therapy after discussion of potential benefits and risks
    - *2022 Recommendations – listed as Secondary Prevention Recommendations and moderate statin intensity was not specifically mentioned*

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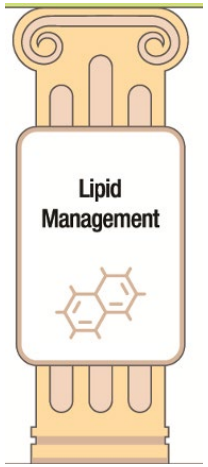
Lipid Management (cont.)



- **Secondary Prevention**
  - For people with diabetes and atherosclerotic cardiovascular disease, treatment with HIGH intensity statin therapy is recommended to target an LDL cholesterol goal of < 55
  - Addition of ezetimibe and PCSK 9 inhibitor for patients who have not achieved goal

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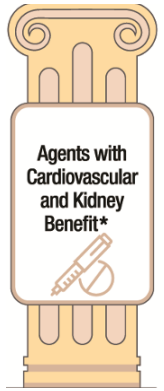
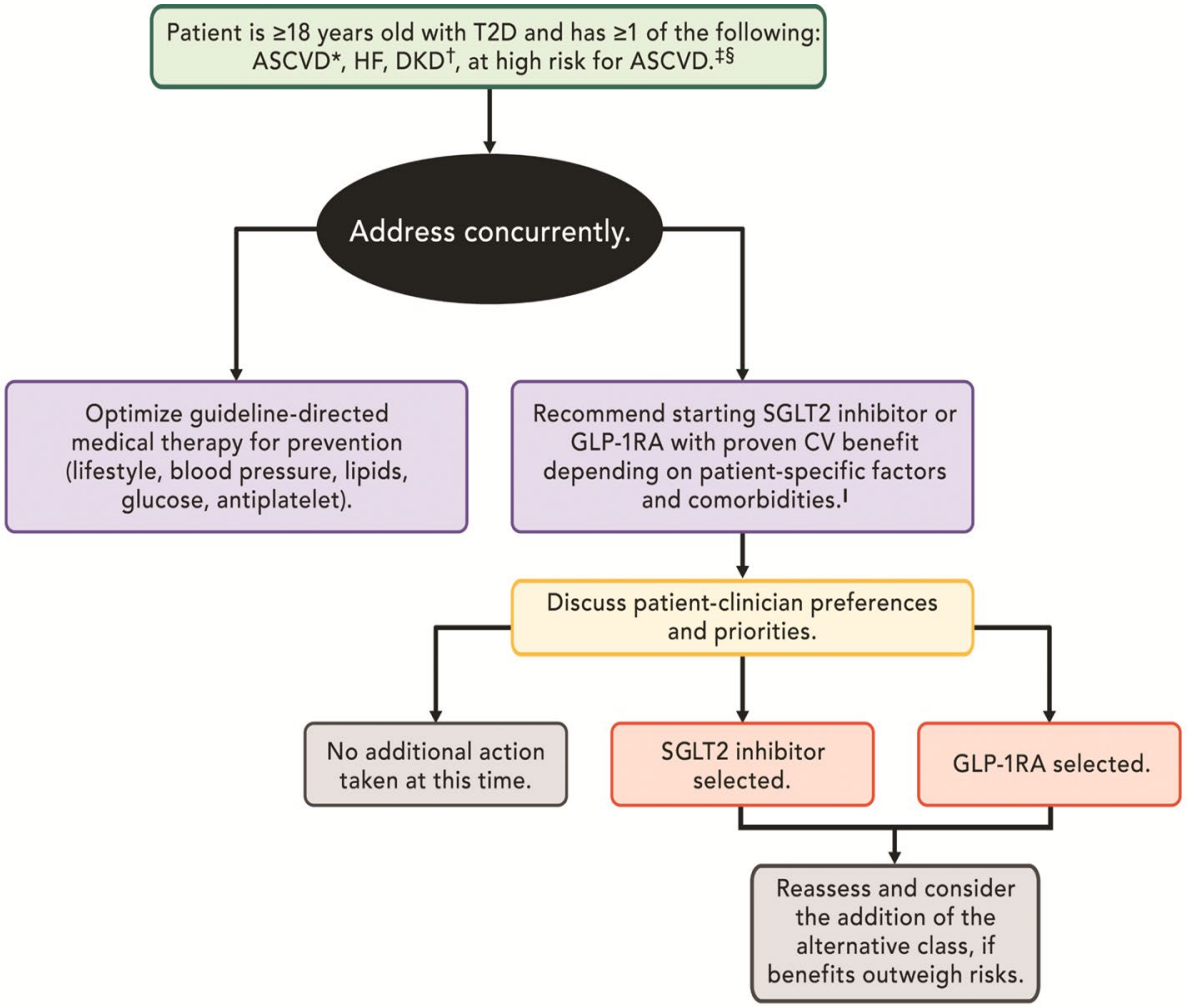
Agents with Cardiovascular and Kidney Benefit





American Diabetes Association Professional Practice Committee; Standards of Medical Care in Diabetes—2024. Diabetes Care 1 January 2024; 47.

References

American Diabetes Association Professional Practice Committee: Summary of Revisions: Standards of Medical Care in Diabetes—2023. Diabetes Care 1 January 2023: 46

American Diabetes Association Professional Practice Committee. Sections 9-10. Standards of Medical Care in Diabetes—2022. Diabetes Care 2022: 45

American Diabetes Association Professional Practice Committee. Sections 9-10. Standards of Medical Care in Diabetes—2023. Diabetes Care 2023:46

American Diabetes Association Professional Practice Committee. Sections 9-10. Standards of Medical Care in Diabetes—2024. Diabetes Care 2024.