



AACE/ACE COMPREHENSIVE TYPE 2 DIABETES MANAGEMENT ALGORITHM

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TASK FORCE

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PRINCIPLES OF THE AACE/ACE COMPREHENSIVE TYPE 2 DIABETES MANAGEMENT ALGORITHM



1.	Lifestyle therapy, including medically supervised weight loss, is key to managing type 2 diabetes.								
2.	Weight loss should be considered as a lifelong goal in all patients with prediabetes and T2D who also have overweight or obesity, utilizing behavioral interventions and weight loss medications as required to achieve chronic therapeutic goals.								
3.	The A1C target must be individualized.								
4.	Glycemic control targets include fasting and postprandial glucoses.								
5.	The choice of therapies must be individualized on basis of patient characteristics, impact of net cost to patient, formulary restrictions, personal preferences, etc.								
6.	Minimizing risk of hypoglycemia is a priority.								
7.	Minimizing risk of weight gain is a priority.								
8.	Initial acquisition cost of medications is only a part of the total cost of care which includes monitoring requirements, risk of hypoglycemia, weight gain, safety, etc.								
9.	This algorithm stratifies choice of therapies based on initial A1C.								
10.	Combination therapy is usually required and should involve agents with complementary actions.								
11.	Comprehensive management includes lipid and blood pressure therapies and related comorbidities.								
12.	Therapy must be evaluated frequently until stable (e.g., every 3 months) and then less often.								
13.	The therapeutic regimen should be as simple as possible to optimize adherence.								
14.	This algorithm includes every FDA-approved class of medications for diabetes.								



LIFESTYLE THERAPY



RISK STRATIFICATION FOR DIABETES COMPLICATIONS

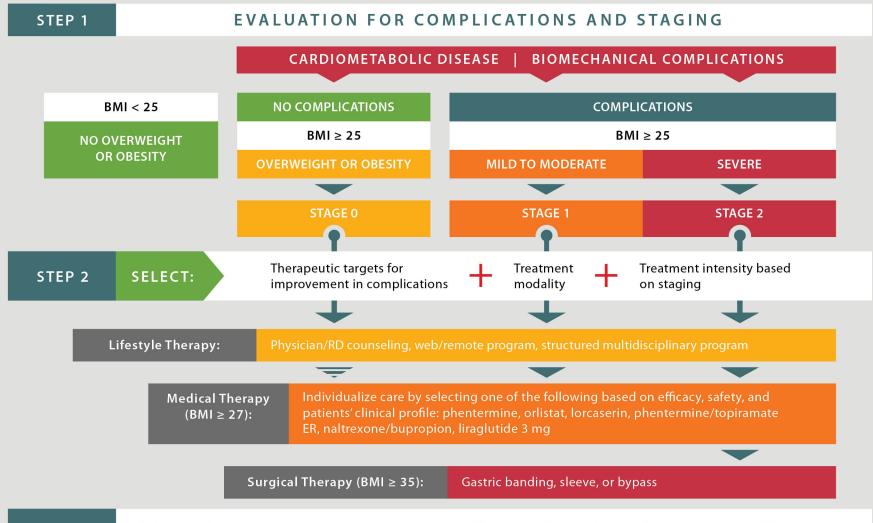
INTENSITY STRATIFIED BY BURDEN OF OBESITY AND RELATED COMPLICATIONS

Nutrition	 Maintain optimal weight Calorie restriction (if BMI is increased) Plant-based diet; high polyunsaturated and monounsaturated fatty acids Avoid trans fatty acids; limit saturated fatty acids Meal replacement Meal replacement
Physical Activity	 150 min/week moderate exertion (eg. walking, stair climbing) Strength training Increase as tolerated Structured program Wearable technologies Medical evaluation/clearance Medical supervision
Sleep	 About 7 hours per night Basic sleep hygiene Screen OSA Home sleep study
Behavioral Support	 Community engagement Alcohol moderation Discuss mood with HCP Formal behavioral therapy
Smoking Cessation	No tobacco products Nicotine replacement therapy Referral to structured program



COMPLICATIONS-CENTRIC MODEL FOR CARE OF THE PATIENT WITH OVERWEIGHT/OBESITY





STEP 3

If therapeutic targets for complications not met, intensify lifestyle, medical, and/or surgical treatment modalities for greater weight loss. Obesity is a chronic progressive disease and requires commitment to long-term therapy and follow-up.

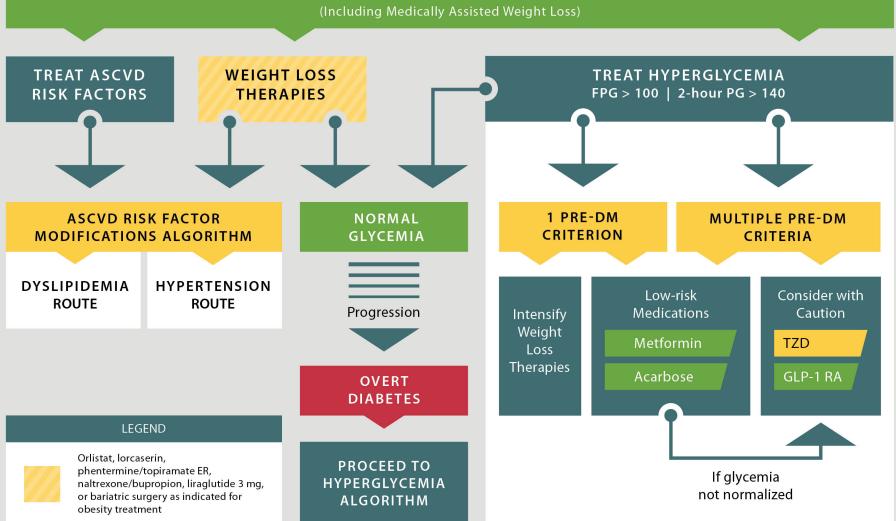


PREDIABETES ALGORITHM



IFG (100-125) | IGT (140-199) | METABOLIC SYNDROME (NCEP 2001)

LIFESTYLE THERAPY





ASCVD RISK FACTOR MODIFICATIONS ALGORITHM



DYSLIPIDEMIA

HYPERTENSION

LIFESTYLE THERAPY (Including Medically Assisted Weight Loss)

LIPID PANEL: Assess ASCVD Risk

STATIN THERAPY

If TG > 500 mg/dL, fibrates, Rx-grade omega-3 fatty acids, niacin

If statin-intolerant

Try alternate statin, lower statin dose or frequency, or add nonstatin LDL-C- lowering therapies

Repeat lipid panel; assess adequacy, tolerance of therapy

Intensify therapies to attain goals according to risk levels

RISK LEVELS	HIGH	VERY HIGH	EXTREME	RISK LEVELS:		
	DESIRABLE LEVELS	DESIRABLE LEVELS	DESIRABLE LEVELS	HIGH: DM but no other major		
LDL-C (mg/dL)	<100	<70	<55	risk and/or age <40 VERY HIGH:		
Non-HDL-C (mg/dL)	<130	<100	<80	DM + major ASCVD risk(s) (HTN, Fam Hx, Iow HDL-C,		
TG (mg/dL)	<150	<150	<150	smoking, CKD3,4)* EXTREME:		
Apo B (mg/dL)	<90	<80	<70	DM plus established clinical CVD		

IF NOT AT DESIRABLE LEVELS:

Intensify lifestyle therapy (weight loss, physical activity, dietary changes) and glycemic control; consider additional therapy

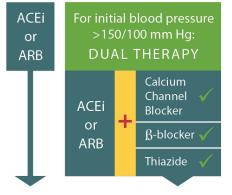
TO LOWER LDL-C:
TO LOWER Non-HDL-C, TG:
TO LOWER Apo B, LDL-P:
TO LOWER LDL-C in FH:**

Intensify statin, add ezetimibe, PCSK9i, colesevelam, or niacin Intensify statin and/or add Rx-grade OM3 fatty acid, fibrate, and/or niacin Intensify statin and/or add ezetimibe, PCSK9i, colesevelam, and/or niacin Statin + PCSK9i

Assess adequacy & tolerance of therapy with focused laboratory evaluations and patient follow-up

* EVEN MORE INTENSIVE THERAPY MIGHT BE WARRANTED ** FAMILIAL HYPERCHOLESTEROLEMIA

GOAL: SYSTOLIC <130, DIASTOLIC <80 mm Hg



If not at goal (2-3 months)

Add calcium channel blocker, β -blocker or thiazide diuretic

If not at goal (2–3 months)

Add next agent from the above group, repeat

If not at goal (2–3 months)

Additional choices (α-blockers, central agents, vasodilators, aldosterone antagonist)

Achievement of target blood pressure is critical

GOALS FOR GLYCEMIC CONTROL



INDIVIDUALIZE GOALS

 $A1C \le 6.5\%$

For patients without concurrent serious illness and at low hypoglycemic risk

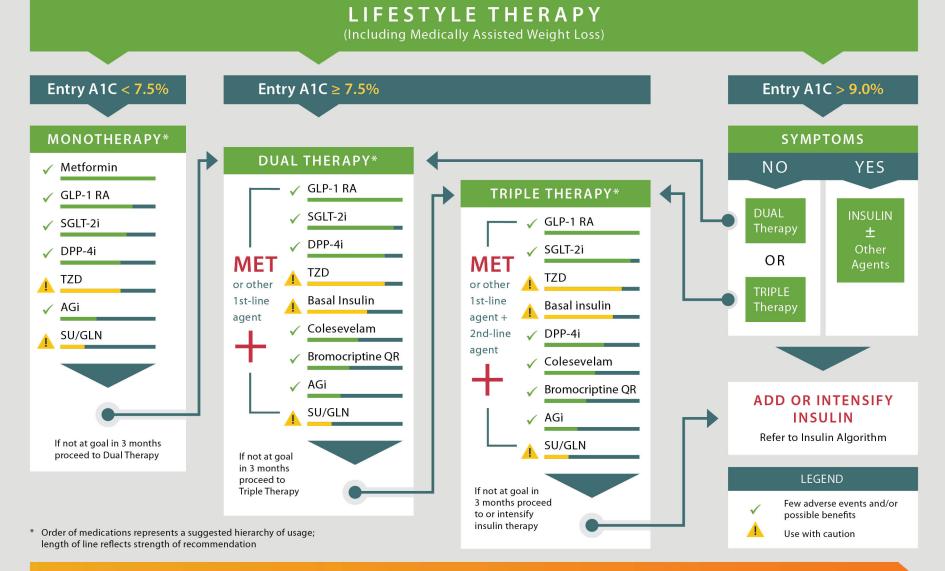
A1C > 6.5%

For patients with concurrent serious illness and at risk for hypoglycemia



GLYCEMIC CONTROL ALGORITHM





PROGRESSION OF DISEASE



ALGORITHM FOR ADDING/INTENSIFYING INSULIN

Glycemic

Control Not

at Goal*



START BASAL (Long-Acting Insulin)

A1C < 8%

A1C > 8%

0.1-0.2 U/kg

0.2-0.3 U/kg

Insulin titration every 2-3 days to reach glycemic goal:

- Fixed regimen: Increase TDD by 2 U
- Adjustable regimen:
 - **FBG** > 180 mg/dL: add 20% of TDD
 - FBG 140-180 mg/dL: add 10% of TDD
 - **FBG** 110–139 mg/dL: add 1 unit
- If hypoglycemia, reduce TDD by:
 - **BG** < 70 mg/dL: 10% 20%
 - **BG** < 40 mg/dL: 20% 40%

Consider discontinuing or reducing sulfonylurea after starting basal insulin (basal analogs preferred to NPH)

*Glycemic Goal:

- <7% for most patients with T2D; fasting and premeal</p> BG < 110 mg/dL; absence of hypoglycemia
- A1C and FBG targets may be adjusted based on patient's age, duration of diabetes, presence of comorbidities, diabetic complications, and hypoglycemia risk

INTENSIFY (Prandial Control)

Add **GLP-1 RA**

Or SGLT-2i Or DPP-4i

Add Prandial Insulin



Basal Plus 1, Plus 2, Plus 3

- Begin prandial insulin before largest meal
- · If not at goal, progress to injections before 2 or 3 meals
- Start: 10% of basal dose or 5 units



- Begin prandial insulin before each meal
 - 50% Basal / 50% Prandial TDD 0.3-0.5 U/kg
 - Start: 50% of TDD in three doses before meals

Insulin titration every 2-3 days to reach glycemic goal:

- Increase prandial dose by 10% or 1-2 units if 2-h postprandial or next premeal glucose consistently > 140 mg/dL
- If hypoglycemia, reduce TDD basal and/or prandial insulin by:
 - BG consistently < 70 mg/dL: 10% 20%
 - Severe hypoglycemia (requiring assistance from another person) or BG < 40 mg/dL: 20% - 40%



Few adverse events or possible benefits

PROFILES OF ANTIDIABETIC MEDICATIONS



* FDA indication to prevent CVD death in diabetes plus prior CVD events

	MET	GLP-1 RA	SGLT-2i	DPP-4i	AGi	TZD (moderate dose)	SU GLN	COLSVL	BCR-QR	INSULIN	PRAML
НҮРО	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate/ Severe Mild	Neutral	Neutral	Moderate to Severe	Neutral
WEIGHT	Slight Loss	Loss	Loss	Neutral	Neutral	Gain	Gain	Neutral	Neutral	Gain	Loss
	Contrain- dicated if eGFR < 30 mL/ min/1.73 m ²	dicated if eGFR < 30 mL/min/1.73	Not Indicated for eGFR < 45 mL/min/ 1.73 m ²	Dose Adjustment Necessary (Except Linagliptin) Effective in Reducing Albuminuria	t Neutral	l Neutral	More Hypo Risk	Neutral	Neutral	More Hypo Risk	Neutral
RENAL / GU			Genital Mycotic Infections								
		Possible Benefit of Liraglutide	Possible Benefit of Empagliflozin								
GI Sx	Moderate	Moderate	Neutral	Neutral	Moderate	Neutral	Neutral	Mild	Moderate	Neutral	Moderate
CHF	Neutral	Possible Benefit of Liraglutide	Possible Benefit of Empagliflozin	Possible Risk for Saxagliptin and Alogliptin	Neutral	Moderate	More CHF Risk	Neutral	Neutral	More CHF Risk	Neutral
CARDIAC* ASCVD	ineutiai	Possible CV Benefit	Possible CV Benefit	Neutral	Neutrai	May Reduce Stroke Risk	?	Benefit	Safe	Neutral	Neutral
BONE	Neutral	Neutral	Canagliflozin Warning	Neutral	Neutral	Moderate Fracture Risk	Neutral	Neutral	Neutral	Neutral	Neutral
KETOACIDOSIS	Neutral	Neutral	DKA Occurring in T2D in Various Stress Settings	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral