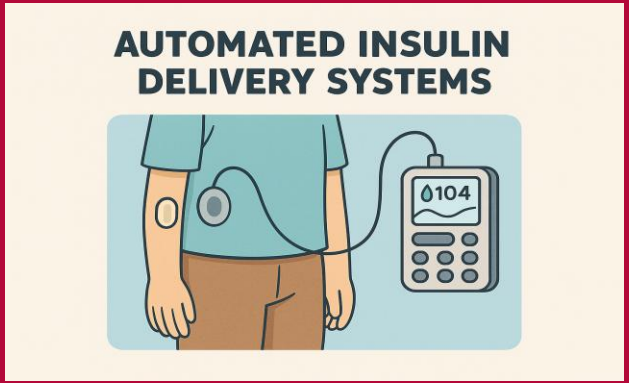


The Future Is Automated:
Transforming Type 2 Diabetes Management

Marissa Bowdler, PharmD, BCACP, TTS

Endocrinology Ambulatory Care Clinical Pharmacy Specialist

Disclosure to Participants

- Notice of Requirements For Successful Completion
  - Please refer to learning goals and objectives
  - Learners must attend the full activity and complete the evaluation in order to claim continuing education credit/hours
- Conflict of Interest (COI) and Financial Relationship Disclosures:
  - Presenter: Marissa Bowdler, PharmD, BCACP, TTS
- Non-Endorsement of Products:
  - Accredited status does not imply endorsement by AADE, ANCC, ACPE or CDR of any commercial products displayed in conjunction with this educational activity
- Off-Label Use:
  - Participants will be notified by speakers to any product used for a purpose other than for which it was approved by the Food and Drug Administration.
-

Objectives

Explain the components and function of automated insulin delivery (AID) systems.

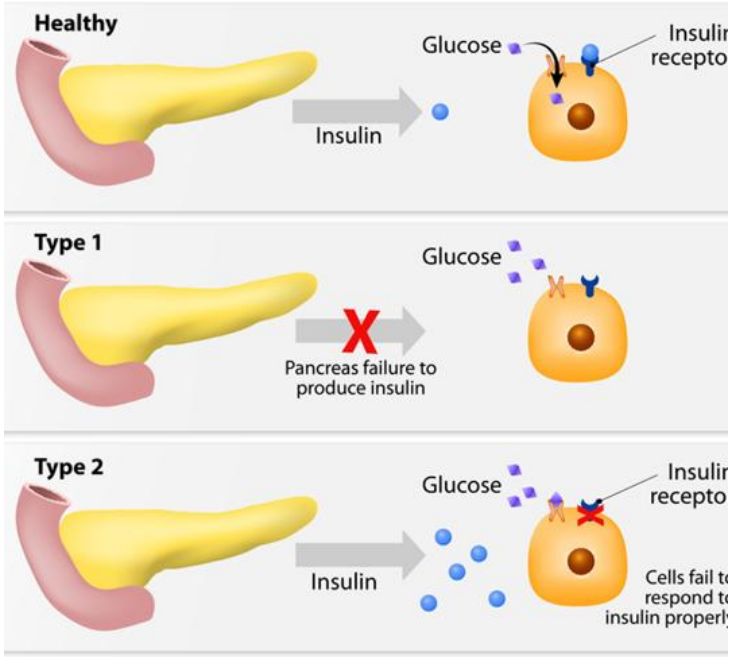
Review the clinical evidence supporting AID use in adults with type 2 diabetes.

Identify appropriate candidates for AID therapy based on patient-specific factors.

Apply current guideline recommendations for initiating and optimizing AID systems.

Discuss challenges and opportunities for integrating AID technology into clinical practice.

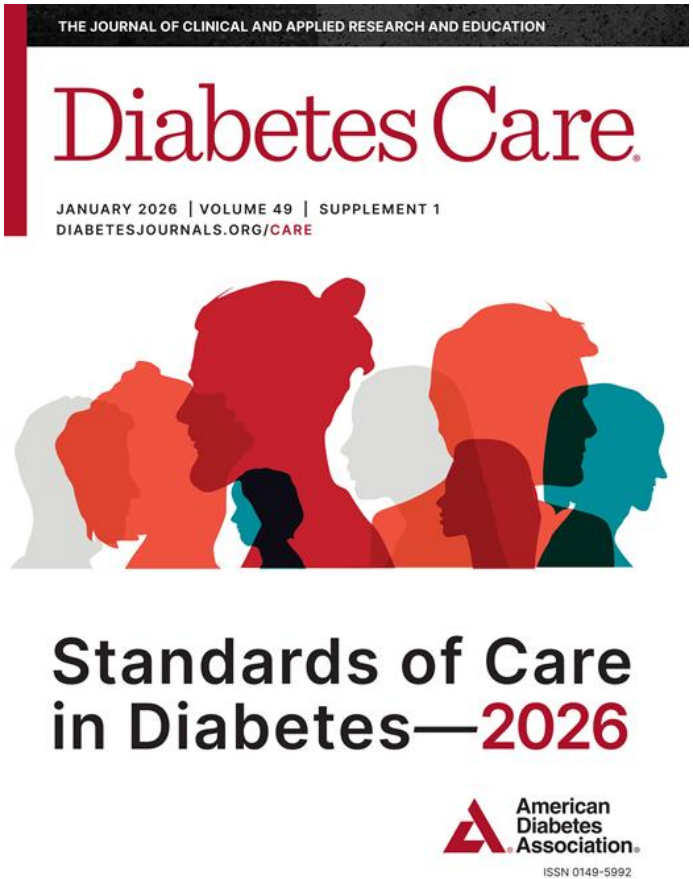
Type 2 Diabetes (T2D): Scope of the Problem



- Progressive disease characterized by insulin resistance and declining beta-cell function
- More than 30 million Americans live with T2D
- Approximately 6 million patient living with T2D require insulin therapy
- Many patients that require insulin do not achieve A1C goals due to treatment complexity, clinical inertia, and concern for hypoglycemia
- AID have been shown to improve A1C, increase time in range (TIR), reduce treatment burden, and maintain low rates of hypoglycemia in adults with T2D

MedlinePlus Genetics. *Type 2 Diabetes*.
Insulet Corporation. *Omnipod® 5 FDA Clearance for Type 2 Diabetes*, 2024.
Sequel Med Tech. *twiist-T2D Pivotal Trial Results*, 2026.

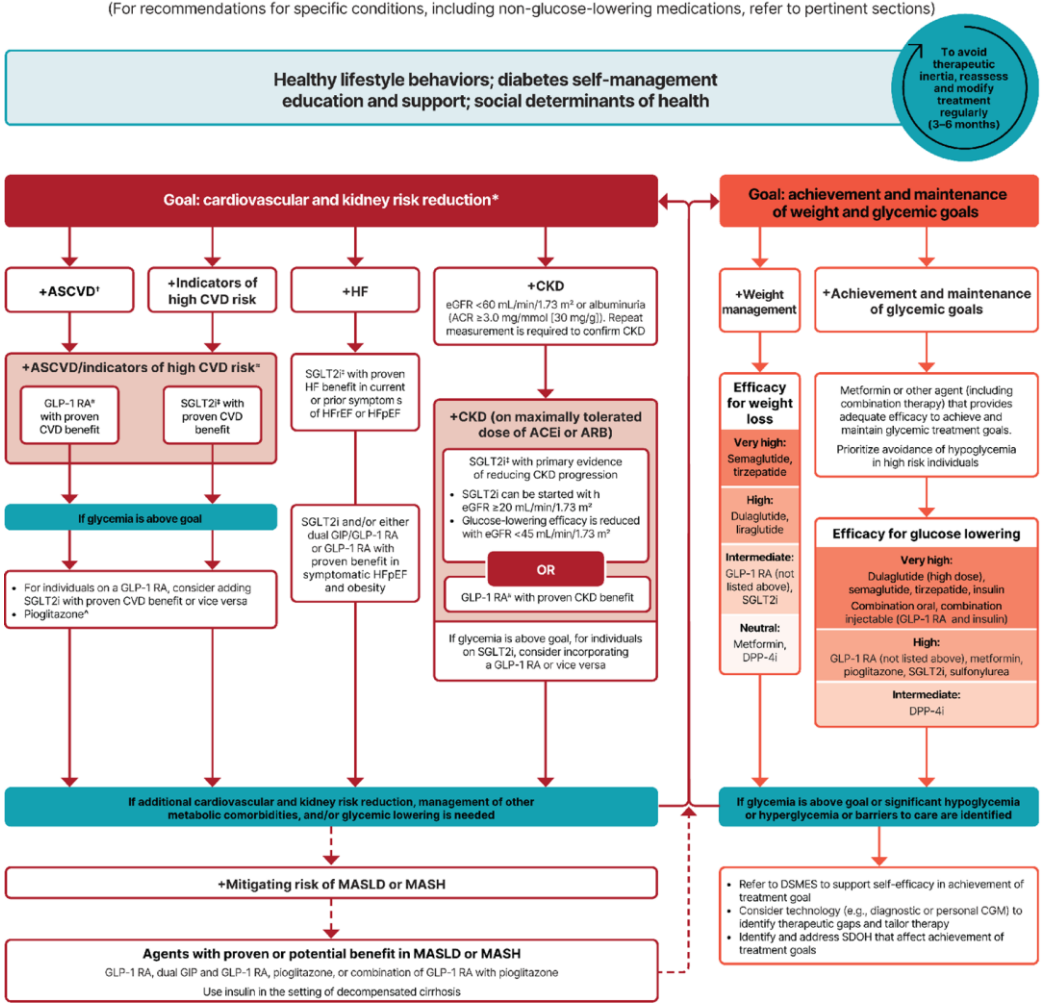
ADA Standards of Care in Diabetes 2026

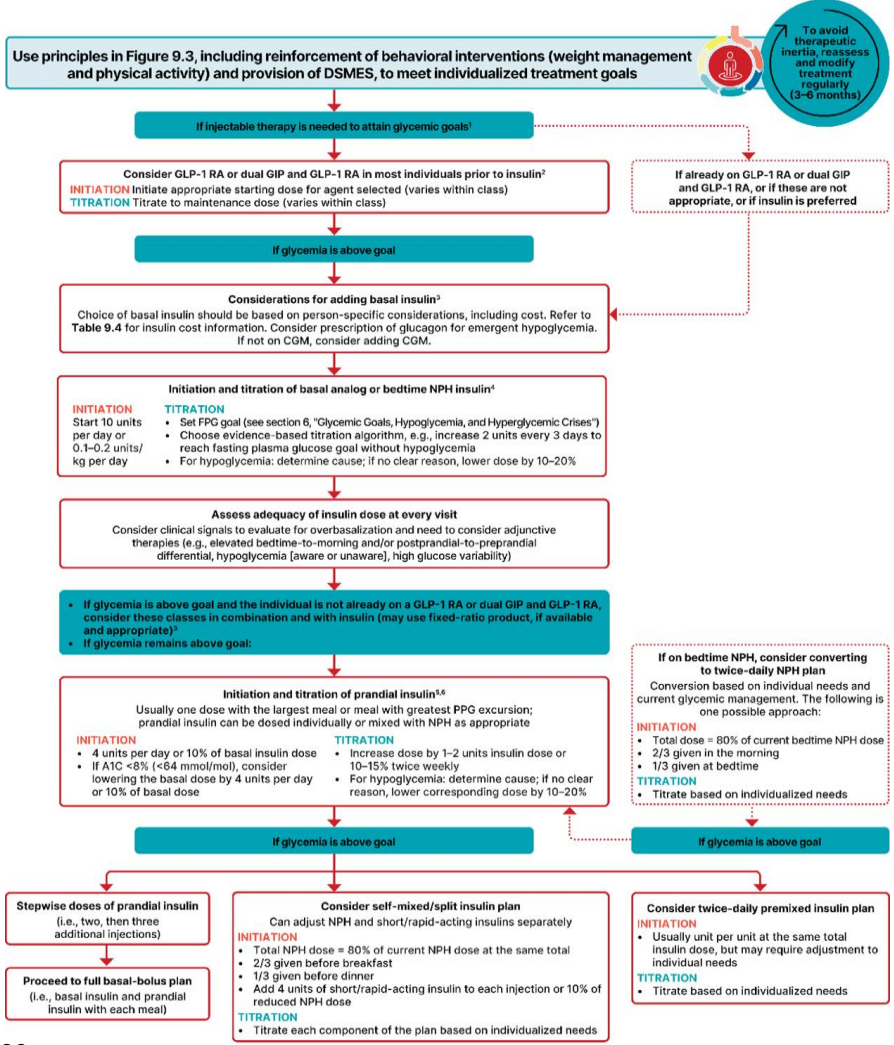


- *"A person-centered shared decision-making approach should guide the choice of glucose-lowering medications for adults with type 2 diabetes.* ***Use medications that provide sufficient effectiveness*** *to achieve and maintain intended treatment goals with consideration of the effects on* ***cardiovascular, kidney, weight, and other relevant comorbidities; hypoglycemia risk; cost and access****; risk for adverse reactions and tolerability; and individual preferences.* ***E"***
- **"**In adults with type 2 diabetes, **initiation of insulin should be considered** regardless of background glucose-lowering therapy or disease duration if symptoms of hyperglycemia are present or when **A1C or blood glucose levels are very high** (i.e., A1C >10% [>86 mmol/mol] or blood glucose ≥300 mg/dL [≥ mmol/L]). **E"**

Use of glucose-lowering medications in the management of type 2 diabetes

(For recommendations for specific conditions, including non-glucose-lowering medications, refer to pertinent sections)




Use principles in Figure 9.3, including reinforcement of behavioral interventions (weight management and physical activity) and provision of DSMES, to meet individualized treatment goals
To avoid therapeutic inertia, reassess and modify treatment regularly (3–6 months)
If injectable therapy is needed to attain glycemic goals[1]
Consider GLP-1 RA or dual GIP and GLP-1 RA in most individuals prior to insulin[2]
INITIATION Initiate appropriate starting dose for agent selected (varies within class)
TITRATION Titrate to maintenance dose (varies within class)
If already on GLP-1 RA or dual GIP and GLP-1 RA, or if these are not appropriate, or if insulin is preferred
If glycemia is above goal
Considerations for adding basal insulin[3]
Choice of basal insulin should be based on person-specific considerations, including cost. Refer to Table 9.4 for insulin cost information. Consider prescription of glucagon for emergent hypoglycemia. If not on CGM, consider adding CGM.
Initiation and titration of basal analog or bedtime NPH insulin[4]
INITIATION
Start 10 units per day or 0.1–0.2 units/kg per day
TITRATION
Set FPG goal (see section 6, "Glycemic Goals, Hypoglycemia, and Hyperglycemic Crises")
Choose evidence-based titration algorithm, e.g., increase 2 units every 3 days to reach fasting plasma glucose goal without hypoglycemia
For hypoglycemia: determine cause; if no clear reason, lower dose by 10–20%
Assess adequacy of insulin dose at every visit
Consider clinical signals to evaluate for overbasalization and need to consider adjunctive therapies (e.g., elevated bedtime-to-morning and/or postprandial-to-preprandial differential, hypoglycemia [aware or unaware], high glucose variability)
If glycemia is above goal and the individual is not already on a GLP-1 RA or dual GIP and GLP-1 RA, consider these classes in combination and with insulin (may use fixed-ratio product, if available and appropriate)[3]
If glycemia remains above goal:
Initiation and titration of prandial insulin[5,6]
Usually one dose with the largest meal or meal with greatest PPG excursion; prandial insulin can be dosed individually or mixed with NPH as appropriate
INITIATION
4 units per day or 10% of basal insulin dose
If A1C <8% (<64 mmol/mol), consider lowering the basal dose by 4 units per day or 10% of basal dose
TITRATION
Increase dose by 1–2 units insulin dose or 10–15% twice weekly
For hypoglycemia: determine cause; if no clear reason, lower corresponding dose by 10–20%
If on bedtime NPH, consider converting to twice-daily NPH plan
Conversion based on individual needs and current glycemic management. The following is one possible approach:
INITIATION
Total dose = 80% of current bedtime NPH dose
2/3 given in the morning
1/3 given at bedtime
TITRATION
Titrate based on individualized needs
If glycemia is above goal
If glycemia is above goal
Stepwise doses of prandial insulin
(i.e., two, then three additional injections)
Proceed to full basal-bolus plan
(i.e., basal insulin and prandial insulin with each meal)
Consider self-mixed/split insulin plan
Can adjust NPH and short/rapid-acting insulins separately
INITIATION
Total NPH dose = 80% of current NPH dose at the same total
2/3 given before breakfast
1/3 given before dinner
Add 4 units of short/rapid-acting insulin to each injection or 10% of reduced NPH dose
TITRATION
Titrate each component of the plan based on individualized needs
Consider twice-daily premixed insulin plan
INITIATION
Usually unit per unit at the same total insulin dose, but may require adjustment to individual needs
TITRATION
Titrate based on individualized needs

Initiation and titration of basal analog or bedtime NPH insulin[4]

INITIATION

Start 10 units per day or 0.1–0.2 units/kg per day

TITRATION

- Set FPG goal (see section 6, "Glycemic Goals, Hypoglycemia, and Hyperglycemic Crises")
- Choose evidence-based titration algorithm, e.g., increase 2 units every 3 days to reach fasting plasma glucose goal without hypoglycemia
- For hypoglycemia: determine cause; if no clear reason, lower dose by 10–20%

Initiation and titration of prandial insulin[5,6]

Usually one dose with the largest meal or meal with greatest PPG excursion; prandial insulin can be dosed individually or mixed with NPH as appropriate

INITIATION

- 4 units per day or 10% of basal insulin dose
- If A1C <8% (<64 mmol/mol), consider lowering the basal dose by 4 units per day or 10% of basal dose

TITRATION

- Increase dose by 1–2 units insulin dose or 10–15% twice weekly
- For hypoglycemia: determine cause; if no clear reason, lower corresponding dose by 10–20%

Stepwise doses of prandial insulin

(i.e., two, then three additional injections)

Proceed to full basal-bolus plan

(i.e., basal insulin and prandial insulin with each meal)



What is AID?

Insulin Pumps using Automated Insulin Delivery (AID)

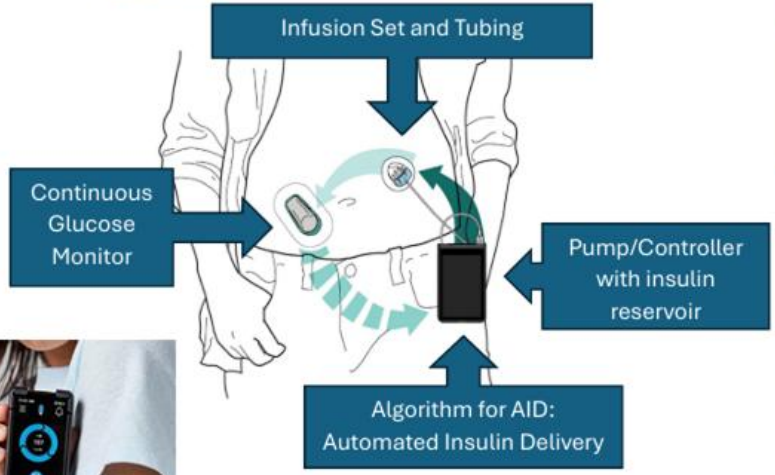










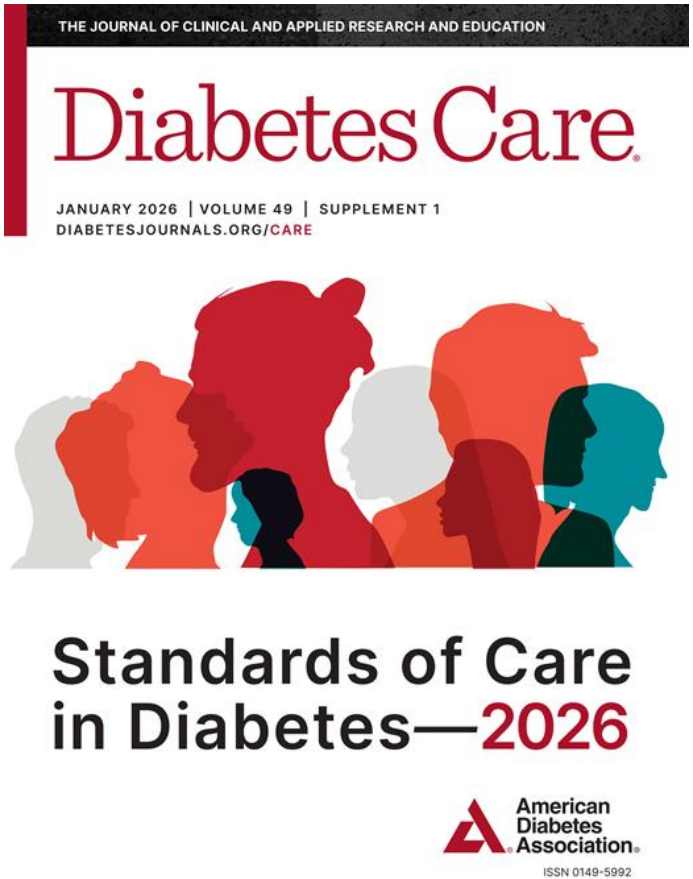






Who should be offered AID?

ADA Standards of Care in Diabetes 2026



- *"The use of AID systems should be offered to adults with type 1 or type 2 diabetes who are on insulin therapy to improve glycemic management and glycemic outcomes."*
- *"AID systems are the* ***preferred insulin delivery system*** *in individuals with* ***type 1 diabetes and type 2 diabetes*** *on multiple daily injections (MDI) and people with other forms of insulin-deficient diabetes. They can be considered for use in people on basal insulin who are not reaching their targets. Early initiation of AID therapy has been shown to be beneficial."*

Commercially Available AID Systems





Medtronic 630G
-has tubing

Medtronic 780G series
-has tubing



MiniMed Flex

Tandem X2:tslim
-has tubing





Tandem Mobi
-has tubing
-controlled with phone app



Sequel: Twist
-has tubing
-controlled with phone app



Omnipod 5
-no tubing
-controlled with phone app
or separate controller

iLet Bionic Pancreas
-has tubing
-only settings are target
and weight



FDA Approved AID Systems for T2D



Medtronic 780G series
-has tubing



MiniMed Flex

Tandem X2:tslim
-has tubing





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and weight



AID in T2D Approval Timeline



Omnipod

8/26/2024





MiniMed SmartGuard

9/02/2026

2/25/25

Tandem Control IQ



Twiist Loop

10/16/2026



Primary Literature

Study	System	A1C Change	TIR
SECURE – T2D	Omnipod	-0.8%	+ 20%
2IQP	Tandem Control-IQ+	-0.9%	+14%
IMPACT2D	MiniMed SmartGuard	-0.7%	+ 7%
TWIIST- T2D	Twiist Loop	-0.7%	+ 16%

Pasquel FJ, et al. *JAMA Netw Open.* 2025;8:e2459348
Kudva YC, et al. *N Engl J Med.* 2025
Bhargava A, et al. *Diabetes Technol Ther.* 2025;27:366-375
Levy CJ, et al. *Diabetes Care.* 2026



How to implement AID in T2D in practice?

Team-based Approach

- Provider considers/recommends insulin pump
- Send prescription for AID system
  - Pharmacy Benefit
    - Omnipod & Twiist
  - Pharmacy Benefit + DME
    - Tandem
  - DME Only
    - MiniMed
- Training by certified insulin pump trainer
- Connect insulin pump to clinic day of training for report review
- Ideal follow up: Day 3, 1 week, 1 month, and 3 months





Challenges/Barriers

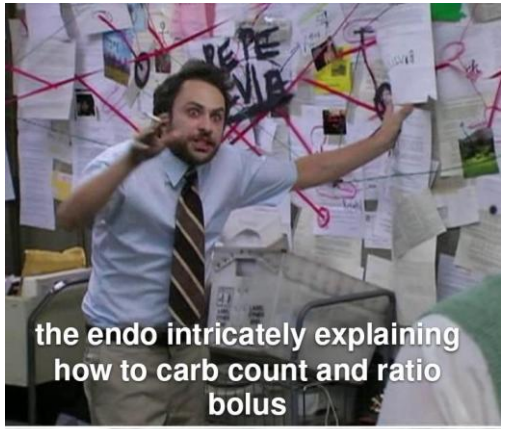
- Available time with patients
- Limited availability for follow up
- Insurance Coverage/Cost
- Clinic resources
- Higher risk of tissue damage
- Visual impairment/dexterity
- Unable to wear device d/t job or activity
- Weight gain

Considerations for Pump Selection/Setting Adjustment

- Does the patient know how to carb count?
- Is the patient blousing consistently on MDI?







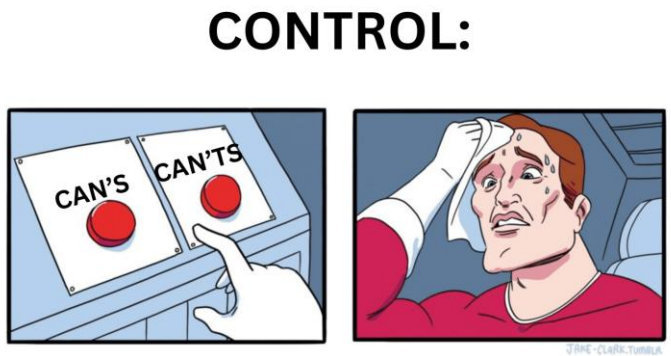


Considerations for Pump Selection/Setting Adjustment

- Does the patient have a fear of hypoglycemia?
- Does the patient want more or less control?
- Does the patient require support for site changes?









How to manage AID in T2D?

AID GPS: Connect, Check, Identify, Recalculate

Turn on Navigation

- AID use > 90%

Check Your Route

- Review TIR and TBR

Identify Roadblocks

- Spot glycemic pattern

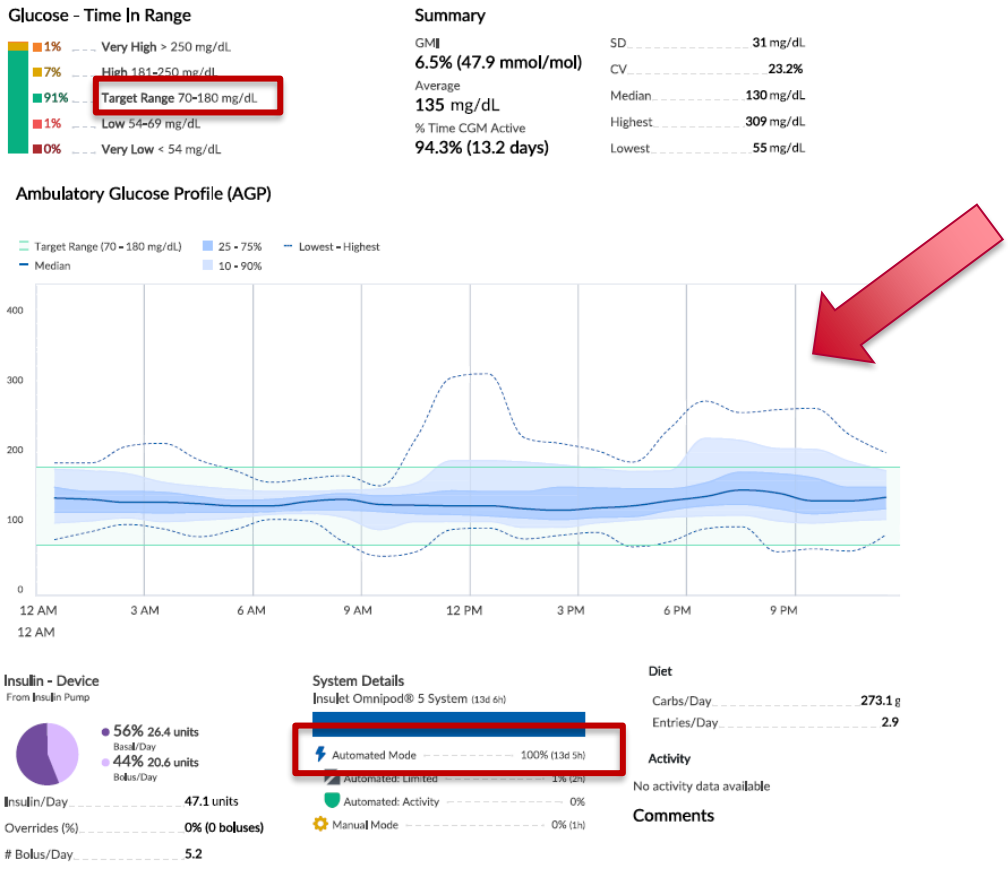
Recalculate for Succes

- Target setting changes that make the most impact



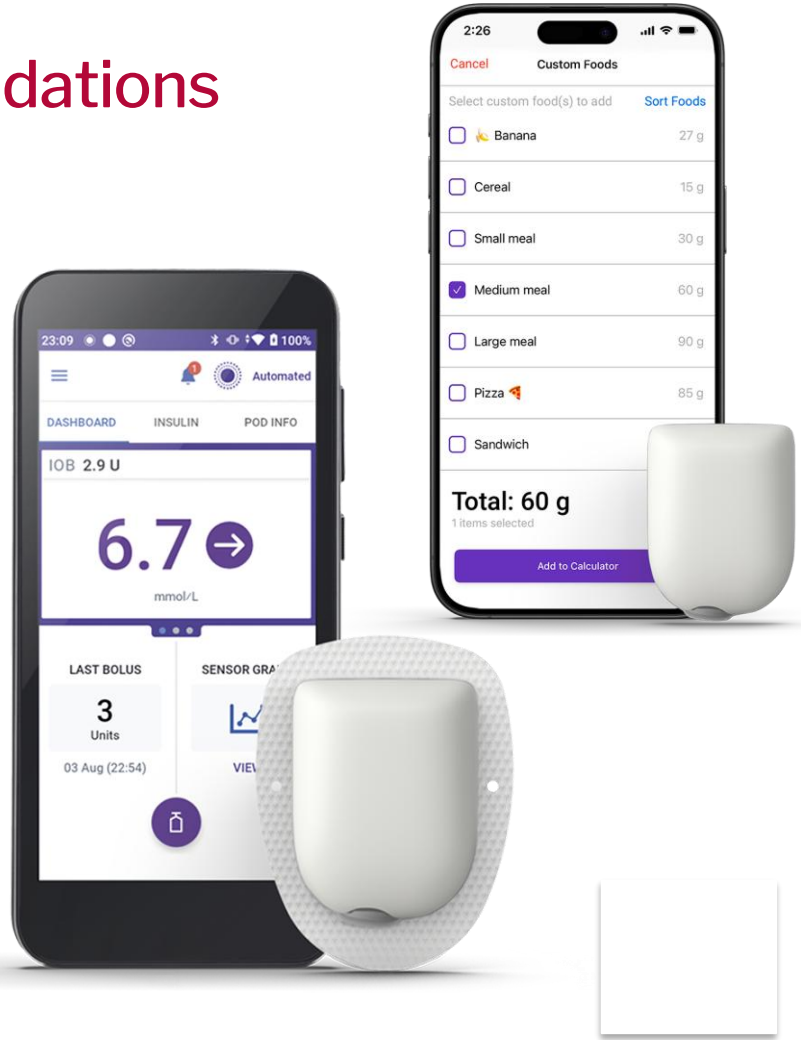
Omnipod Report

- ✓ Navigation
- ✓ Route
- ✓ Roadblocks



Omnipod Recalculation Recommendations

- Most impactful setting:
  - Carb Ratio
  - Targets 100 -150 mg/dL
    - Optimal settings would be target of 100 or 110 mg/dL
- Use custom foods
  - Program daily/ frequent foods
  - Fixed doses
    - Small (g of carbs)
    - Medium (g of carbs
    - Large (g of carbs)
- Check ISF if patients are giving correction doses
- Basal rate does not matter!
- Bolus something!



Omnipod Settings

General

Active Insulin Time	4 hours
Active CGM	Dexcom G7

Bolus

Min BG for Bolus Calc	70 mg/dL
Extended Bolus	OFF
Reverse Correction	OFF
Max Bolus	10 U

Basal

Max Basal Rate	1 U/hour
Temporary Basal Enabled	OFF
Active basal program	BASAL

Basal

BASAL **Active**

12:00 AM (24 hr)	0.5 Units/hr
Total	12 Units

Sensitivity (ISF, Correction)

Profile **Active**

12:00 AM (24 hr)	50 mg/dL

BG Correction Threshold

Profile **Active**

12:00 AM (24 hr)	110 mg/dL

Insulin : Carb Ratios

Profile **Active**

12:00 AM (24 hr)	15 g/Unit

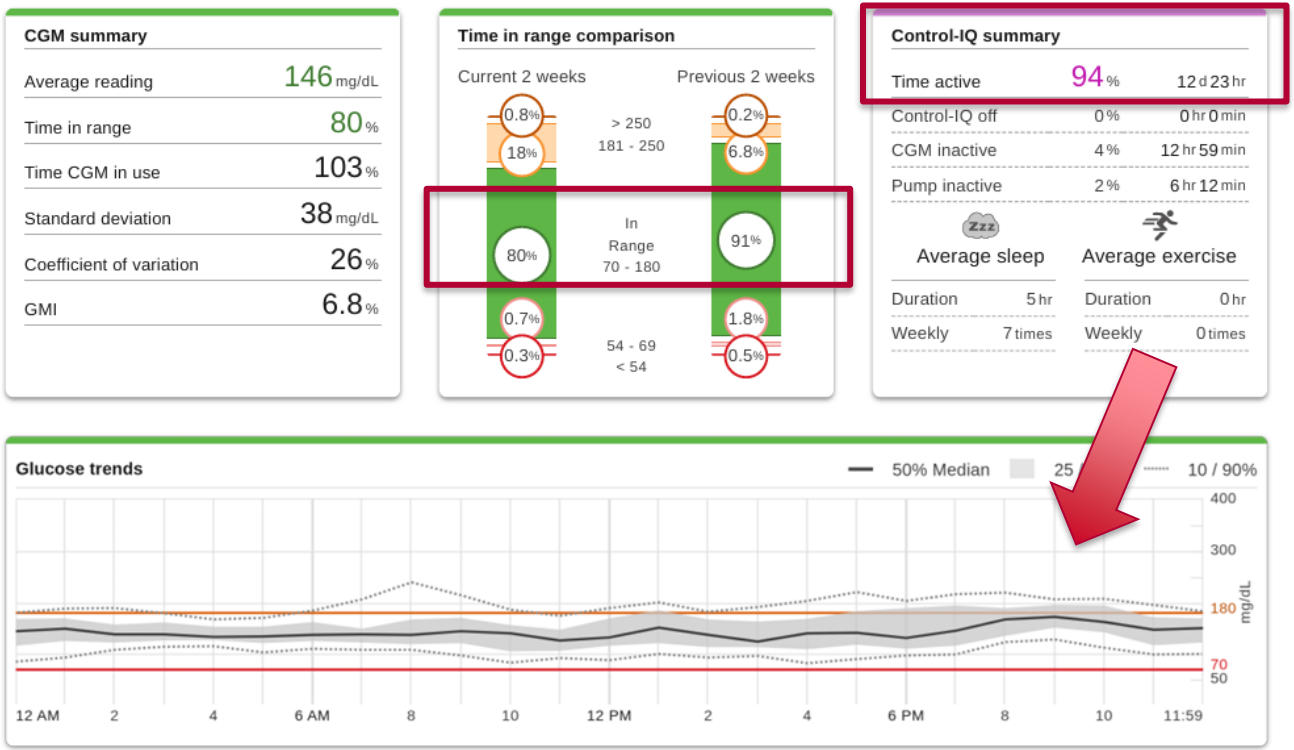
BG Target Range

Profile **Active**

12:00 AM (24 hr)	110 mg/dL (+0/−0)

Tandem Reports

- ✓ Navigation
- ✓ Route
- ✓ Roadblocks



Tandem Recalculation Recommendations

- Most impactful settings
  - Correction Factor
    - Auto-bolus gives 60% recommended dose
- Sleep Mode
  - Turn on 2 hours after last meal/snack
  - Targets 112.5 mg/dL – 120 mg/dL



Tandem Settings

Time	Basal Rate (units/hr)	Correction Factor (units:mg/dL)	Carb Ratio (units:grams)	Target BG (mg/dL)
12:00 AM	4.500	1:3	1:10.0	110

Total Daily Basal: 108.000 units Insulin Duration: 5 hr Carbohydrates:On

General settings

Quick bolus	Off
Max bolus	20 units
Basal limit	5.400 units/hr

Control-IQ settings

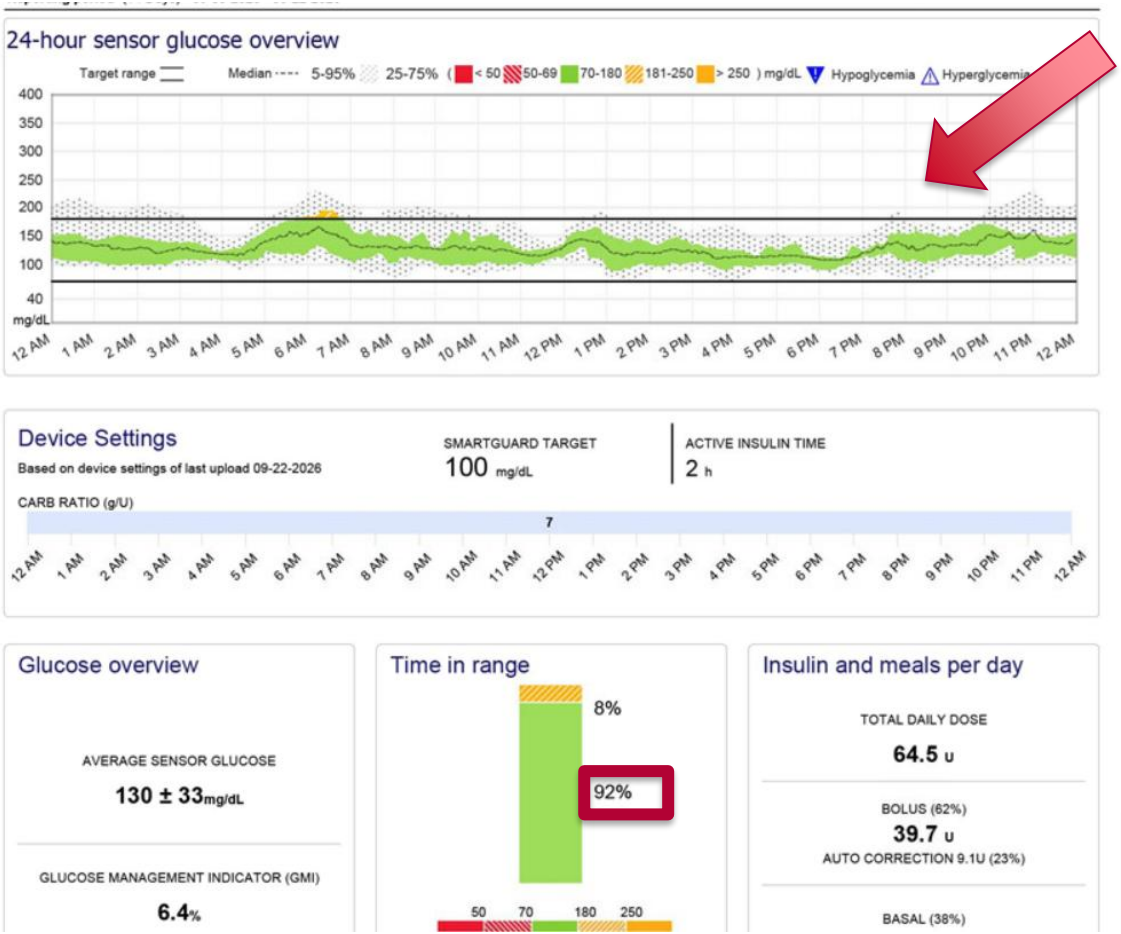
Control-IQ	On
Weight	255 lb
Total daily insulin	190 units
Sleep schedules	
Everyday (1:00 AM - 6:00 AM)	On
	Off
Insulin duration	5 hr
Target BG	110 mg/dL

CGM settings

Type	-
High alert	On 300 mg/dL, never repeat
Low alert	On 70 mg/dL, never repeat
Rise alert	On 3 mg/dL/min
Fall alert	On 3 mg/dL/min
Out of range	On 20 min

MiniMed Report

- ✓ Navigation
- ✓ Route
- ✓ Roadblocks



MiniMed Practice Recommendations

- Most impactful setting:
  - SmartGuard Targets: 100 mg/dL, 110 mg/dL, 120 mg/dL
    - Optimal settings would be target of 100 mg/dL
  - Active insulin time (AIT): 2 hours
- Meal detection technology
  - Assess rate of blood sugar increase



MiniMed Smart Guard Settings



Basal

Maximum Basal Rate	2.50 U/Hr		Updates

Basal 1 (active)

24-Hour Total	45.600 U	

Time	U/Hr	
00:00	1.90	

Basal 2

24-Hour Total	–	

Time	U/Hr	
–	–	

Basal 3

24-Hour Total	–	

Time	U/Hr	
–	–	

Bolus

Bolus Wizard	On
Units	g, mg/dL
Active Insulin Time (h:mm)	2:00
Maximum Bolus	25.0 U

Easy Bolus	Off
Bolus Increment	0.1 U
Bolus Speed	Quick
Dual/Square	Off/Off

Carbohydrate Ratio (g/U)

Time	Ratio	
0:00	5.0	

Insulin Sensitivity (mg/dL per U)

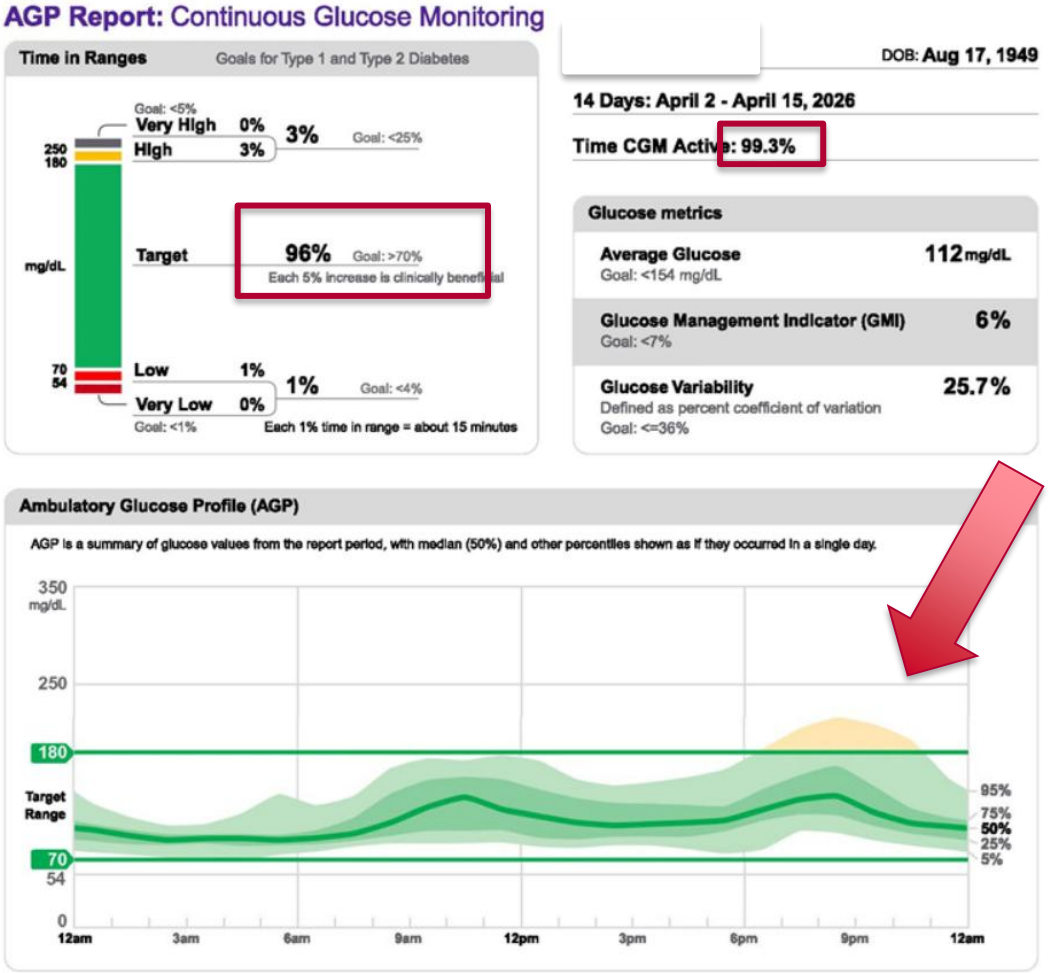
Time	Sensitivity	
0:00	20	

Blood Glucose Target (mg/dL)

Time	Low	High	
0:00	90	110	

Twiist

- ✓ Navigation
- ✓ Route
- ✓ Roadblocks



Twiist Practical Recommendations

- Most impactful setting:
  - Targets 87-180mg/dL
    - Optimal settings would be target of 100 – 110 mg/dL
  - Basal and Max Basal (~5x basal)
  - Correction factor
- Keep it simple
  - Add on features as needed
- Pre- Meal Preset
  - Set lower than target
    - Turn on PRIOR to meal
    - Can use to help with post prandial high blood sugars



Twiist Settings

Therapy Settings - Active at upload on Mar 30, 2026

Basal Rates U/hr	
Start time	Value
12:00 am	2.800
Total	**67.200**

Correction Range mg/dL[1]		
Start time	Low	High
12:00 am	100	110
12:30 am	100	110

Carb Ratios g/U	
Start time	Value
12:00 am	5

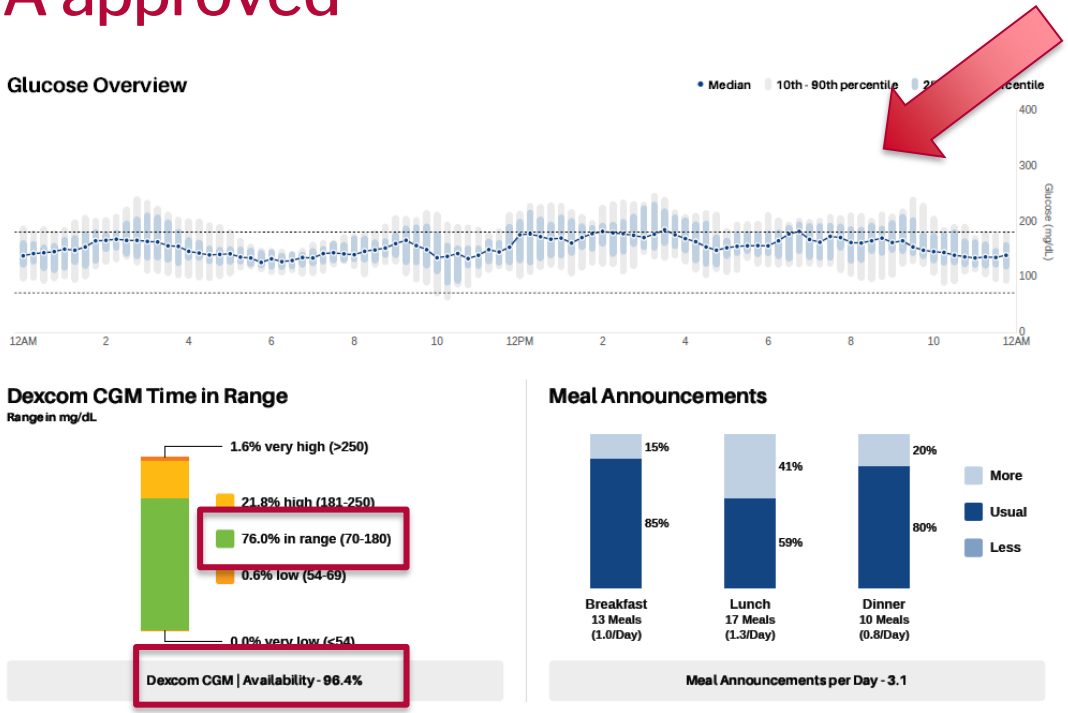
Insulin Sensitivities mg/dL/U	
Start time	Value
12:00 am	15

Insulin Settings	
Glucose Safety Limit [2]	75 mg/dL
Maximum Basal Rate	17.90 U/hr
Maximum Bolus	25 U
Insulin Model [3]	Rapid-Acting - Adults

Presets	
Name	Correction Range (mg/dL)
Pre-Meal	80-110
Workout	100-150

ILet – NOT FDA approved

- ✓ Navigation
- ✓ Route
- ✓ Roadblocks



ILet Recalculation Recommendations

- Most impactful factors
  - Target
    - 110 mg/dL (Lower)
    - 120 mg/dL (Usual)
    - 130 mg/dL (Higher)
  - Weight at set up or if more than 15% change
- Use usual target and usual prior to MOST meals
- Monitor and assess how patient is interacting with pump
- Do not over treat low blood sugars
- Not blousing
  - Lower Target
- Drifting overnight low blood sugars
  - Higher target – only when not eating
- If pump is not working optimally, factory reset.



Patient Case

- 76-year-old M with PMH T2D, HTN, PAD, OSA on CPAP, BKA, Obesity (BMI > 45) who presents to clinic for management of multiple disease states related to reduction of CV risk. Unable to tolerate higher doses of metformin. Current insurance is Medicare.
- Current Diabetes Medication:
  - Tirzepatide (Mounjaro) 12.5 mg once weekly (Wednesday)
  - metformin ER 500 mg twice daily
  - Dapagliflozin (Farxiga) 10 mg once daily
  - Lantus 75 units at bedtime
  - Fiasp 45 units with meals and 5 units with snacks
- Home Glucose Readings:
  - GMI: 8.8%
  - Time in range= 27% (37% very high; 36% high; 0% low)

Patient Case

- 76-year-old M with PMH T2D, HTN, PAD, OSA on CPAP, BKA, Obesity (BMI > 45) who presents to clinic for management of multiple disease states related to reduction of CV risk. Unable to tolerate higher doses of metformin.
- What AID System would you consider for this patient?
  - A. Omnipod 5
  - B. Tandem Mobi
  - C. Tandem T:Slim X2
  - D. MiniMed 780 G
  - E. MiniMed Flex
  - F. Twiist
  - G. ILet
  - H. I would not start AID in this patient.

WHY?!

Patient Case

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  - G. ILet
  - H. I would not start AID in this patient.

NONE OF THE ABOVE

Any AID system would be appropriate.

AID > MDI



Who should be offered AID?

Who should be offered AID?



Basal-bolus insulin users



High A1C despite therapy



Need for simplification



Willingness to wear CGM and pump

Resources

- Device Comparison Chart | PANTHER Program

SENSOR/SHARE				
	Which CGM is compatible? **CGM options may vary by region*	**Can user see real-time data on personal cell phone?**	**Can others see data remotely?**	**Is data automatically stored in the cloud?**
MiniMed™ 780G 	Guardian 4 Simplera Sync Instinct	MiniMed mobile app (pump + CGM data)	CareLink Connect app (pump + CGM data)	Automatic uploads to CareLink via MiniMed mobile app
t:slim X2™ & Mobi 	Dexcom G6 and G7: Use of Dexcom G6 or G7 mobile app is optional; cannot use the Dexcom receiver. FreeStyle Libre 2 Plus or 3 Plus (t:slim only): Must connect CGM to the pump via t:slim mobile app. Cannot use FreeStyle Libre apps or reader.	Dexcom G6/G7 mobile app (CGM data) t:slim = t:slim mobile app (pump + CGM data) Mobi = Mobi app (pump + CGM data)	Dexcom Follow app (CGM data) *If using FreeStyle Libre 2 Plus, there is no option for remote data sharing	Automatic uploads to Source via t:slim mobile app or via Mobi app
Omnipod® 5 	Dexcom G6 and G7: Must use Dexcom G6/G7 mobile app (on personal cell phone) to use Automated Mode. Cannot use the Dexcom receiver. FreeStyle Libre 2 Plus: Must start sensor on Omnipod 5 controller; cannot use FreeStyle Libre apps or reader.	Omnipod 5 app (pump + CGM data, also used to operate pump; availability of app varies by region) Dexcom G6/G7 mobile app (CGM data)	Dexcom Follow app (CGM data) *If using FreeStyle Libre 2 Plus, there is no option for remote data sharing	Automatic uploads to Glooko or Discover after linking device
twiist™ 	FreeStyle Libre 3+: Must pair on twiist app, cannot use Libre apps or reader Eversense 365: CGM is started on Eversense app and then linked to twiist app after the first 2 calibrations are completed	twiist app (pump + CGM data)	twiist insiight app for remote pump and sensor data sharing	Automatic uploads to Tidepool Data Platform
iLet Bionic Pancreas 	Dexcom G6 and G7: Use of Dexcom G6 or G7 mobile app is optional; cannot use the Dexcom receiver. FreeStyle Libre 3 Plus: Must pair on iLet app only; cannot use FreeStyle Libre apps or reader.	Dexcom G6/G7 mobile app (CGM data) iLet Mobile app (pump + CGM data)	Dexcom Follow app (CGM data) Bionic Circle app (pump + CGM data)	Automatic uploads to the Beta Bionics portal via iLet app

v.05.2026



Thank you!

Marissa Bowdler, PharmD, BCACP, TTS

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