Use of GLP-1 and GIP/GLP-1 Receptor Agonists in Type 1 Diabetes

Quick Reference Guide for Clinicians

Type 1 diabetes (T1D) carries an increased risk of micro- and macrovascular complications, yet approved treatment strategies remain limited. Even with advances in insulin formulations and advanced technologies, T1D remains complex and demanding to manage, and dysglycemia remains common.

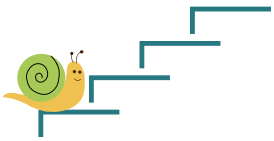
GLP-1 and GLP-1/GIP receptor agonists (GLP-1s and GIP/GLP-1s) have proven benefits for metabolism and complication risk reduction for type 2 diabetes, but are not yet approved for T1D. Many people with T1D have accessed these therapies through other indications or channels, but without regulatory approval for T1D, structured clinical guidance and safety education are scarce.

To address this gap, diaTribe partnered with a group of experts to publish a consensus report synthesizing current evidence and clinical experience into practical recommendations to guide safe use of GLP-1s and GIP/GLP-1s in T1D. This consensus was endorsed by the American Association of Clinical Endocrinology, the Association of Diabetes Care and Education Specialists, Breakthrough T1D, Advanced Technologies & Treatments for Diabetes, International Diabetes Federation Europe, and International Society for Pediatric and Adolescent Diabetes.

Key Takeaways

Consider potential **cardiac, renal, and weight loss benefits** for people with T1D

Start low and go slow: Much like in other populations, this approach to titration is key



Never stop insulin completely. Be sure to counsel people with T1D about risk factors and signs of DKA

Check in regularly to **monitor for adverse effects**

Among people with T1D, who would be a good candidate for GLP-1s or GIP/GLP-1s?

Among adults, experts recommend considering GLP-1s or GIP/GLP-1s for those who:

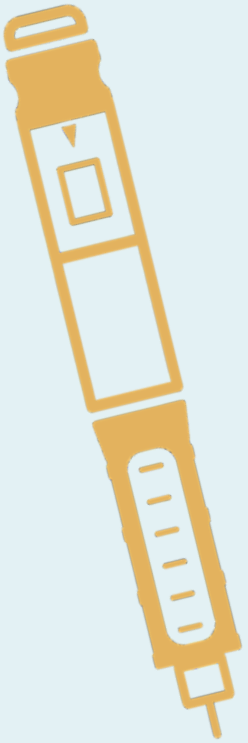
1. Have overweight/obesity;
2. Have a normal BMI but are not reaching glycemic targets with insulin alone, or;
3. Who may benefit from cardiovascular or renal protections.

GLP-1s or GIP/GLP-1s may also make sense for younger people with diabetes who have overweight or obesity, regardless of whether they are meeting glycemic targets.

What are the potential benefits of GLP-1s or GIP/GLP-1s for people with T1D?

While large trials of GLP-1 and GIP/GLP-1 use in T1D are still ongoing, currently available evidence from real-world studies and five early randomized trials suggest many possible benefits for people with T1D, including improvements in:

- Glycemia (with mean A1C reductions ranging from -0.3 to -1.1%,[1–3] and increases in time in range (TIR) 70–180 mg/dL (3.9–10.0 mmol/L) ranging from 4.5–25%.[2,4–7]
- Weight loss (results ranging from 9–23% reduction)[1,2,4–6,8–16]
- Blood pressure[1,5,14]
- Lipid profiles[1,2,5–7,14,17]
- Insulin sensitivity (tirzepatide treatment is associated with decreases in daily insulin dose of up to 30%.[14,16] Although treatment with semaglutide has also been associated with decreases in daily insulin dose,[5,8,10,17] significant changes in insulin doses have not been consistently seen in all studies.[4,9,13])
- Cardiac event risk[18]



The current **evidence suggests that these benefits do not come with markedly different risks than observed in other populations**, as most of the trials reported no major safety concerns and the observational studies did not reveal increases in severe hypoglycemia or diabetic ketoacidosis. Additionally, a recent study of a large insurance claims database demonstrated significant reductions in all-cause hospitalization, all-cause mortality, and emergency department visits among people with type 1 using GLP-1s and GIP/GLP-1s compared to non-users, with no increase in visits for hypoglycemia or DKA.[19]

What needs to be considered before prescribing a GLP-1 or GIP/GLP-1?

Before prescribing, it is important to screen for gastrointestinal symptoms such as reflux, consistent feelings of uncomfortable fullness, bloating, constipation, and diarrhea. Gastrointestinal conditions such as reflux, gastroparesis, or constipation should be diagnosed and treated prior to initiating a GLP-1 or GIP/GLP-1.

Additionally, **individuals should have a recent retinal examination** (within 12 months). If there are other clinical concerns, such as an A1C or GMI of >8.5% (>69 mmol/mol) where glucose levels are likely to fall rapidly after beginning use of a GLP-1 or GIP/GLP-1, consider an additional retinal exam closer to initiating.

If an individual's retinal exam identifies active retinopathy in need of treatment, this should be stabilized in collaboration with an experienced eye care provider prior to initiating therapy.

What education and advice should I provide to support someone with T1D starting a GLP-1 or GIP/GLP-1?

In addition to discussing the potential risks and benefits, include the following components when counseling someone with diabetes considering or beginning treatment with a GLP-1 or GIP/GLP-1:

- [ ] **Impact on insulin dosing:** Provide comprehensive education on how GLP-1s and GLP-1/GIPs will impact insulin needs following initiation, with particular emphasis on recognizing risks for hypoglycemia, hyperglycemia, and ketosis. Provide education and written instructions for self-adjustment of insulin dosing after initiation. **NEVER fully discontinue insulin in T1D**.
- [ ] **Monitoring and recognizing signs of DKA:**
  - [ ] Review potential symptoms of DKA and ensure access to ketone monitoring equipment alongside education on how and when to test (capillary blood ketone testing and continuous ketone monitoring, where available, are preferred over urine ketone dipsticks).
  - [ ] Advise monitoring of ketone levels
    - [ ] When glucose levels are ≥200 mg/dL for 2 hours or more.
    - [ ] During illness, persistent GI symptoms, reduced food/drink intake, or significant insulin dose reduction, even if glucose values are <250 mg/dL (euglycemic ketosis).
  - [ ] Provide sick day protocols and education on symptom awareness for ketosis and DKA if food intake falls and insulin doses are reduced.
- [ ] **Technology use:**
  - [ ] Recommend that people with T1D use a CGM at minimum, ideally an automated insulin delivery system is preferred for glycemic management.
  - [ ] Use CGM to inform insulin dose titration during and after initiation of GLP-1 and GIP/GLP-1 therapy. Provide written instructions for insulin self-adjustment using CGM metrics, that acknowledge and are tailored to the individual's insulin delivery regimen. The full consensus provides greater detail on specific changes to basal rates, insulin:carb ratios, and correction factors.
  - [ ] Advise individuals using insulin pump or automated insulin delivery system to change infusion sets frequently per manufacturer instructions and treatment guidelines
- [ ] **Birth control & family planning:**
  - [ ] Advise women with T1D to stop GLP-1 and GIP/GLP-1 therapy when actively trying to conceive or if pregnancy is confirmed.
  - [ ] Advise individuals using oral contraceptive pills of adverse reactions with GLP-1 and GIP/GLP-1 therapies
- [ ] **Maintaining muscle mass:**
  - [ ] Provide education about signs and symptoms of muscle loss or frailty.
  - [ ] Provide recommendations for resistance training and dietary protein intake as needed.
- [ ] **Potential adverse reactions:** Provide education regarding adverse reactions with concomitant oral medications such as levothyroxine and contraceptive pills, including those not specific to diabetes.

What is the timeline for titrating a GLP-1 or GIP/GLP-1 dose for someone with T1D?

Slow titration of a GLP-1 or GIP/GLP-1 in tandem with careful monitoring and adjustment of insulin dosing is key to safe and successful use in T1D.

1. **Start at a low dose and escalate slowly** as tolerated. In some individuals, dose escalation every 2-3 months may be necessary rather than monthly.
2. At each stage of titration, insulin doses should be adjusted as needed (but insulin should never be fully discontinued).
3. Consider reducing the GLP-1 or GIP/GLP-1 dose once treatment goals or weight-loss and glycemic management are met, individualized to a minimally effective dose for each person.
4. Following initiation, remote or in-person follow-up at a realistic frequency is recommended to ensure all adverse events are monitored.
5. Thereafter, follow up remotely or in person every 4-8 weeks to manage dose escalation in line with glycemic trends and insulin dose adjustments
6. Once a stable dose is achieved, follow-up intervals of 3 months or longer may be appropriate.

The framework below (from Table 2 in the consensus) provides helpful detail for insulin adjustments through titration of the GLP-1 and GIP/GLP-1 dose.

Overview of insulin adjustments*

Assessment Metric (Baseline)	Adjustment for Multiple Daily Injections		Adjustment for Automated Insulin Delivery	
	Basal Insulin	Bolus Insulin	Bassal Insulin	Bolus Insulin
14-day CGM				
TIR <50% and TBR <4%	No change	No change	No change	No change
TIR 50–60% and TBR <4%	↓ Basal by 10%	↓Bolus by 10%	No change	↓Bolus by 10%
TIR 60–70% and TBR <4%	↓Basal by 15%	↓Bolus by 20%	↓Basal by 10%	↓Bolus by 20%
TIR ≥70% or TBR ≥4%	↓Basal by 20%	↓Bolus by 25%	↓Basal by 15%	↓Bolus by 25%
HbA1C				
>8.5% (69 mmol/mol)	No change	No change	No change	No change
7.5–8.5% (58–69 mmol/mol)	↓Basal by 10%	↓Bolus by 10%	No change	↓ Bolus by 10%
7.0–7.5% (53–58 mmol/mol)	↓Basal by 15%	↓Bolus by 20%	↓Basal by 10%	↓Bolus by 20%
<7.0% (<53 mmol/mol)	↓Basal by 20%	↓Bolus by 25%	↓Basal by 15%	↓Bolus by 25%

*These adjustments are intended as general framework to guide individualized medication adjustment in coordination with a licensed medical provider. This is not medical advice.

What should follow-up include?

At every follow-up visit:

- [ ] Reassess insulin regimen, regardless of GLP-1 and GLP-1/GIP RA dose, duration of therapy, or perceived stability. **NEVER completely stop insulin in people with T1D on GLP-1s and GIP/GLP-1s despite attaining HbA1c goals <7.0% and lower.**
- [ ] Assess retinal health:
  - [ ] Any time symptoms of impaired vision develop
  - [ ] 1 year after initiating for individuals without retinopathy at baseline
  - [ ] 3–4 months after initiation for individuals with active or recently-treated active diabetes-related retinopathy at baseline, or who have experienced significant reduction from high baseline glucose levels (>0.5% change in A1C or GMI).
- [ ] Assess symptoms of sarcopenia, muscle mass, ability to maintain activity, and fall or fracture risk
- [ ] Assess potential or suspected contraindications
- [ ] Monitor and treat gastrointestinal adverse effects, which are commonly reported in people with T1D (necessary to optimize dose and improve adherence)
- [ ] Monitor for nutritional deficiencies
- [ ] Monitor for disordered eating

Additionally, continue monitoring blood pressure, lipid profiles, eGFR and albumin-creatinine ratios (ACR) as standard.

Implementing new consensus recommendations

GLP-1s and GIP/GLP-1s are of great interest to address the significant demands and difficulties of T1D management, the associated risk for serious complications, and the relative lack of therapeutic options. Leveraging these medications as adjunctive therapies for people with T1D with the involvement of trained clinicians can address the long-standing need and improve glycemic and weight-loss outcomes while trials continue.

The recently published consensus provides novel guidance for the safest possible use based on existing evidence and expert clinical experience. Clinicians should reference the full consensus for more detailed information on the available research, between-product differences, perioperative management, and access and coverage considerations.

For more information, see the full consensus statement published in *Diabetes Technology & Therapeutics:*
https://journals.sagepub.com/doi/10.1177/15209156261449879

This resource was medically reviewed by Dr. Anders Carlson, MD

References

1. Garg SK, Kaur G, Renner D, et al. Cardiovascular and Renal Biomarkers in Overweight and Obese Adults with Type 1 Diabetes Treated with Tirzepatide for 21 Months. *Diabetes Technol Ther*. 2025;27(3):152-160. doi:10.1089/dia.2024.0481
2. Gonzalez F, Reid MW, Garcia JF, Raymond JK, Chao LC. GLP-1 receptor agonists reduce body mass index and total daily insulin dose in youth with type 1 diabetes: a retrospective cohort study. *J Pediatr Endocrinol Metab JPEM*. 2026;39(2):166-172. doi:10.1515/jpem-2025-0568
3. Almohareb SN, Alfayez OM, Aljuaid SS, et al. Effectiveness and Safety of GLP-1 Receptor Agonists in Patients with Type 1 Diabetes. *J Clin Med*. 2024;13(21):6532. doi:10.3390/jcm13216532
4. Garg SK, Kaur G, Haider Z, Rodriquez E, Beatson C, Snell-Bergeon J. Efficacy of Semaglutide in Overweight and Obese Patients with Type 1 Diabetes. *Diabetes Technol Ther*. 2024;26(3):184-189. doi:10.1089/dia.2023.0490
5. Mertens J, De Winter HT, Dirinck E, Francque S, De Block C. Real-World Evidence of the Effect of Adjunctive Semaglutide on Weight Change, Glycemic Control, and Metabolic Dysfunction-Associated Steatotic Liver Disease in People with Type 1 Diabetes. *Diabetes Technol Ther*. 2026;28(1):27-37. doi:10.1177/15209156251362497
6. Al Hayek A, Klonoff DC, Al Zahrani WM, Ibrahim SE, Al Dawish MA. Evaluating the effect of Semaglutide as add-on therapy on glycemic control and continuous glucose monitoring outcomes in adults with type 1 diabetes: A two-year real-world data study. *J Diabetes Complications*. 2025;39(7):109064. doi:10.1016/j.jdiacomp.2025.109064
7. Almohareb SN, Alfayez OM, Aljuaid SS, et al. Effectiveness and Safety of GLP-1 Receptor Agonists in Patients with Type 1 Diabetes. *J Clin Med*. 2024;13(21):6532. doi:10.3390/jcm13216532
8. Shah VN, Akturk HK, Kruger D, et al. Semaglutide in Adults with Type 1 Diabetes and Obesity. *NEJM Evid*. 2025;4(8):EVIDoa2500173. doi:10.1056/EVIDoa2500173
9. Snell-Bergeon JK, Kaur G, Renner D, Akturk HK, Beatson C, Garg SK. Effectiveness of Semaglutide and Tirzepatide in Overweight and Obese Adults with Type 1 Diabetes. *Diabetes Technol Ther*. 2025;27(1):1-9. doi:10.1089/dia.2024.0328
10. Al Ozairi E, Irshad M, Alkandari J, et al. Weight loss in people with type 1 diabetes over 12 months: Real-world data comparing tirzepatide, semaglutide and liraglutide. *Diabetes Obes Metab*. 2026;28(1):166-173. doi:10.1111/dom.70172
11. Pasqua MR, Tsoukas MA, Kobayati A, Aboznadah W, Jafar A, Haidar A. Subcutaneous weekly semaglutide with automated insulin delivery in type 1 diabetes: a double-blind, randomized, crossover trial. *Nat Med*. 2025;31(4):1239-1245. doi:10.1038/s41591-024-03463-z
12. Cohen N, Yeung A, Jenkins A. Real-world experience of adjunct weekly semaglutide in Type 1 diabetes. Is it worth it? *Diabetes Res Clin Pract*. 2025;219:111979. doi:10.1016/j.diabres.2024.111979
13. Orrange S, Humphrey T, Fayne E, Peters A. Semaglutide for Weight Reduction in Type 1 Diabetes: Promising Results With Uncertain Glycemic Impact. *J Diabetes Sci Technol*. 2025;19(2):593-594. doi:10.1177/19322968241304779
14. Rivera Gutierrez R, Tama E, Bechenati D, et al. Effect of Tirzepatide on Body Weight and Diabetes Control in Adults With Type 1 Diabetes and Overweight or Obesity. *Mayo Clin Proc*. 2025;100(2):265-275. doi:10.1016/j.mayocp.2024.07.006
15. Snaith JR, Frampton R, Samocha-Bonet D, Greenfield JR. Tirzepatide in Adults With Type 1 Diabetes: A Phase 2 Randomized Placebo-Controlled Clinical Trial. *Diabetes Care*. 2026;49(1):161-170. doi:10.2337/dc25-2379
16. Karakus KE, Klein MP, Akturk HK, Shah VN. Changes in Basal and Bolus Insulin Requirements with Tirzepatide as an Adjunctive Therapy in Adults with Type 1 Diabetes Using Tandem Control-IQ. *Diabetes Ther Res Treat Educ Diabetes Relat Disord*. 2024;15(7):1647-1655. doi:10.1007/s13300-024-01592-9
17. Pasqua MR, Tsoukas MA, Haidar A. Changes to insulin requirements over time with semaglutide in adults with type 1 diabetes on insulin pump therapy: A post-hoc analysis of a double-blinded, randomised, crossover trial. *Diabetes Obes Metab*. 2026;28(1):427-433. doi:10.1111/dom.70213
18. Xu Y, Malek ND, Chang AR, et al. Glucagon-like peptide-1 receptor agonists for major cardiovascular and kidney outcomes in type 1 diabetes. *Nat Med*. Published online March 19, 2026. doi:10.1038/s41591-026-04274-0
19. Garg S, Kim S, Ford A, et al. All-Cause Mortality and Health Care Resource Utilization in Patients with Type 1 Diabetes Treated with Glucagon-like Peptide 1 Receptor Agonists/Glucose-Dependent Insulinotropic Polypeptide. *Diabetes Technol Ther*. 2026;28(3):271-278. doi:10.1177/15209156251403555