# Microdosing emerging as personalised approach in obesity medication



A growing trend in obesity care involves the microdosing of newly approved antiobesity medications, a practice where doses smaller than those approved by the US Food and Drug Administration (FDA) are used for type 2 diabetes, weight loss, or weight loss maintenance. This approach, which has emerged off-label, allows both patients and prescribers to personalise dosing and titration regimens with the aim of enhancing tolerability, preventing overtreatment, or reducing costs.

Dr Beverly Tchang, writing for Medscape, explains that the specific mechanics of microdosing vary depending on the medication’s formulation—whether delivered through multi-dose pens or vials with syringes. For medications administered through multi-dose pens, microdosing typically involves adjusting the pen’s dial and counting the “click” sounds produced. Published click charts assist patients in calibrating doses for semaglutide, with the caveat that users must confirm that their pen holds 3 mL to use these charts accurately.

Semaglutide is marketed in different formulations: Ozempic for type 2 diabetes and Wegovy for obesity, both available in multi-dose pens in certain regions such as Canada. Similarly, tirzepatide, a dual GLP-1/glucagon-insulinotropic peptide, is sold as Mounjaro for diabetes and Zepbound for obesity. Patients often employ click counting for off-label dosing adjustments with these medications, as outlined in dosing charts which translate clicks to approximate dosages per week. For example, for Wegovy (semaglutide 2.4 mg/3 mL pen), 8 clicks correspond to roughly 0.25 mg per week, with doses increasing incrementally through to 75 clicks for the full 2.4 mg weekly dose. Tirzepatide dosing via Mounjaro’s pen ranges from 5 clicks for 1.25 mg up to 60 clicks for 15 mg weekly.

However, microdosing practices diverge from manufacturers’ storage recommendations. For instance, the Ozempic pen can be stored for 56 days at room temperature or refrigerated following first use, while the Wegovy pen can be kept for 8 weeks under specific temperatures during use. The Mounjaro pen requires refrigeration but may be stored unrefrigerated for up to 30 days and must be discarded after four weekly doses. Continuing to use these medications beyond their recommended timeframe or storage conditions raises safety and efficacy concerns.

Single-use vials, such as those for Zepbound (tirzepatide), do not contain preservatives and require refrigeration or limited room temperature storage. Some patients draw smaller volumes from these vials than prescribed to achieve microdoses. This raises additional sterility concerns, as opened vials are intended for single use only.

Clinical trial data provide some insight into the use of low doses for weight loss and diabetes management, though not specifically for microdosing practices. A phase 2 trial involving 957 participants tested semaglutide doses as low as 0.05 mg/day, equating to approximately 0.35 mg per week, demonstrating a weight loss of 6.3% to 6.8% over one year at this lowest dose compared to 2.3% with placebo. This trial also found that side effects such as nausea were less common at lower doses, with 31% reporting nausea at the lowest dose versus 48% at the highest dose, and discontinuation rates were correspondingly lower.

Similarly, a 26-week phase 2 trial involving 318 participants with type 2 diabetes explored tirzepatide doses from 1 mg to 15 mg weekly. The 1 mg dose achieved a 0.7% reduction in HbA1c compared to an increase in the placebo group and resulted in 13.5% of participants experiencing at least 5% weight loss. Side effects were more frequently reported at higher doses; gastrointestinal adverse events occurred in 66% of participants on the 15 mg dose versus 23.1% on the 1 mg dose. Notably, these clinical trials used single-use injector pens rather than multi-dose microdosing techniques.

Given these considerations, healthcare providers are encouraged to assess patient response and tolerability every four weeks rather than automatically increasing doses according to standard escalation schedules. Dr Tchang notes that “doubling the dose from 0.5 mg to 1.0 mg, for example, may be jarring to some patients, and a method to access a 0.75 mg dose may be appropriate after discussing potential risks and benefits.” While such dose adjustments are not FDA-approved, they align with principles of patient-centred care and shared decision-making.

Dr Tchang further observes that as the biotechnology industry pursues more effective weight loss drugs, patients often become pioneers in adopting new treatments, accepting uncertain risks and innovating dosing strategies. She emphasises that “microdosing is not FDA-approved and has unknown risks and benefits, but the evidence for it should be developed.” Real-world use of these medications off-label should prompt curiosity and examination by clinicians rather than judgement, as progress in treatment can arise from such clinical experiences.

The Medscape report highlights the evolving landscape in obesity management where personalised dosing regimens continue to emerge, reflecting both the complexities of care and the varied responses among patients.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://www.healthline.com/health-news/ozempic-microdosing-weight-loss> - This article discusses the trend of microdosing GLP-1 weight loss drugs like Ozempic, including anecdotal claims about benefits such as weight loss with fewer side effects, aligning with the mention of microdosing as an emerging off-label practice to improve tolerability and reduce costs.
* <https://www.uclahealth.org/news/article/glp-1-microdosing-experimental-and-unauthorized> - This source explains that GLP-1 microdosing is experimental and unauthorized, highlighting the lack of official microdosing guidelines and the variable dosing practices described, such as adjusting pen clicks, and emphasizes the importance of patient-provider consultation.
* <https://www.pccarx.com/Blog/microdosing-glp-1-ras-fad-or-forever> - This blog addresses anecdotal discussions among practitioners about the potential of microdosing semaglutide for weight loss while limiting side effects, supporting the article's claim about personalized dosing and titration regimens to enhance tolerability and prevent overtreatment.
* <https://www.evexias.com/the-benefits-and-risks-of-microdosing-glp-1s> - This source provides a balanced perspective on the benefits and risks of microdosing GLP-1 receptor agonists, including the need for medical supervision and the lack of clinical research, echoing the article's caution about off-label use and unknown risks.
* <https://www.latimes.com/lifestyle/story/2024-11-05/microdosing-ozempic-weight-loss-drugs-diy-dosage> - The Los Angeles Times article covers the DIY aspect of microdosing weight-loss drugs like Ozempic, describing varying patient experiences and dosing methods such as taking lower doses or spacing injections differently, which supports the descriptions of off-label microdosing techniques and dosing variations in the article.