New modelling on the rollout of weight-loss medication tirzepatide

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Background

Tirzepatide (also known as Mounjaro) is a weight-loss medication approved for use on the NHS by the National Institute for Health and Care Excellence (NICE) in 2024. It works in two ways – firstly as a GLP-1 receptor agonist, but also as a GIP (glucose-dependent insulinotropic polypeptide) receptor agonist. Previously released weight-loss medications are a GLP-1 receptor only.

Modelling

Nesta has modelled what the impact of the proposed NHS England tirzepatide rollout would have on obesity and morbid obesity rates, as well as the costs and benefits to governments. NHS England (NHSE) has released interim commissioning guidance to follow the NICE recommendations of a 12-year cohort-based rollout of tirzepatide, with those with higher clinical need being treated first. The long-term plan is to reach 3.4 million individuals.

Consistent with other policies in Nesta's blueprint toolkit, this analysis shows the effect of the policy over a 5-year time horizon, ie, the first 5 years of the rollout. In this time frame, only patients living with class 3 (BMI ≥ 40) obesity and weight-related comorbidities would be eligible to receive the drug. Qualifying comorbidities include atherosclerotic cardiovascular disease (ASCVD), hypertension, dyslipidaemia, obstructive sleep apnoea, and type 2 diabetes mellitus (T2DM).

Over the five years, approximately 344,000 eligible individuals were modelled to be offered the treatment and complete it.

Lifestyle interventions are also recommended alongside the medication, and have been included in the estimated impact and cost of rollout.

Key findings

- More than 340,000 adults living with severe obesity in England will lose around 20kg of weight.
- The cost to deliver the programme in the first 5 years is estimated to be £1.6 billion.
- This policy is estimated to deliver savings and benefits valued at around £10 billion over 5 years.

The positive effect of reduced severe prevalence captured in the benefits is not just in fewer people needing treatment for cardiovascular disease and other comorbidities, but also in people feeling healthier with improved quality of life. While the treatment will be transformative for the people who receive the medication, the programme only addresses a small fraction of the estimated 13 million people living with obesity in the UK.

Appendix: detailed modelling methodology

All the above figures were created through in-house modelling at Nesta. We use the results from two clinical trials, SURMOUNT-1 and SURMOUNT-2.[1] They are both phase 3 double-blind, randomised, controlled trials, one focused upon adults without type 2 diabetes and one with.

We apply the effect sizes of these trials to adults who meet the current NICE guidelines for prescribing tirzepatide via the NHS. For each year in our model, we use a random weighted sampling approach to select the required number of individuals from a pool of all eligible individuals in a particular year. We apply a 70% take-up rate following a referral as per the NICE/ NHSE implementation proposal (see Table 4)I.

[1]See also NICE technology appraisal and discussion aid for healthcare professionals

We apply a 15% dropout rate from treatment after accepting a referral as per dropout rates in the tirzepatide trials. In addition, we use treatment regimen estimates in our modelling. This accounts for any dropouts and discontinuation from treatment after accepting a referral and is likely to be representative of the real-world effect of tirzepatide.

In our modelling, all weight loss from tirzepatide is experienced in the first year of receiving the drug, after which people's weight plateaus.

With the NICE and NHSE guidelines not prescribing a stopping rule for the drug, we assume that those receiving the treatment would stay on it for our five-year modelling period. Therefore, during this period, they do not experience any weight regain, or in other words, individuals receiving the treatment maintain their weight loss for our modelling period.

The benefits are calculated using analysis conducted by the Tony Blair Institute and Frontier Economics. Around a third of the savings will be 'cashable' - through, for example, fewer treatments for heart failure and other diseases associated with obesity. The remaining two-thirds of this saving would benefit individuals (via quality-adjusted life years and informal social care) but are not directly cashable.