


# Health economic assessment of high-protein diet using high-protein ONS for weight maintenance following weight loss using GLP-1RAs

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## BACKGROUND



**Glucagon-like Peptide-1 Receptor Agonists (GLP-1RAs)** facilitate significant weight reduction.

Discontinuation of GLP-1RAs is associated with weight regain.




**Weight cycling:** intentionally losing and unintentionally regaining weight.

→ Can increase the **risk** of obesity-related diseases such as diabetes, heart disease, and cancer

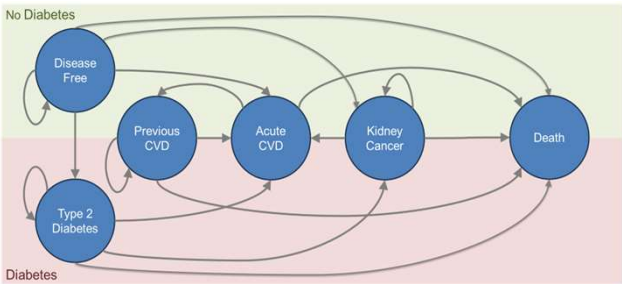
## AIMS

To model the health economic consequences of high-protein diet using **high-protein oral nutritional supplement (HP-ONS)** to **prevent weight cycling in individuals using GLP-1RAs** for treating **obesity**.

## METHODS



A **lifetime state-transition model (STM)** with monthly cycles was developed to simulate a **cohort** of individuals **with obesity**.




**Figure 1: General Structure of the State Transition Model.**  
CVD = Cardiovascular disease


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## METHODS (CONTINUED)




The model **compared individuals using HP-ONS as part of a high protein diet** for weight maintenance after GLP-1RA usage **versus natural weight maintenance**.




Weight maintenance rates were drawn from existing evidence.



Transition probabilities for obesity-associated diseases were **informed by the literature** and **adjusted** by BMI-, weight-cycling-, and Type 2 Diabetes-related relative risks (RR).



**Key outcomes:** cost per obesity-associated event avoided, cost per life-year (LY) gained, and cost per quality-adjusted life year (QALY) gained.



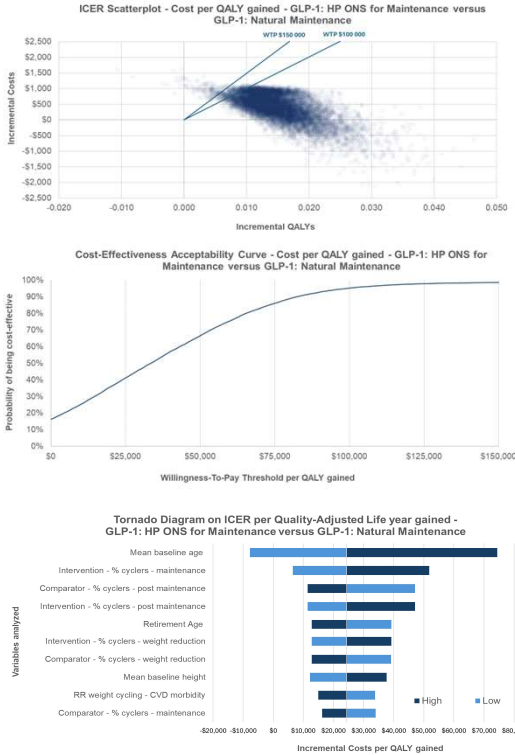
A **US- societal perspective** was used over a lifetime horizon. Sensitivity analyses were performed.

## RESULTS

**Table 1: Deterministic Life-Time Results**

GLP-1RA&HP-ONS for Maintenance vs. GLP-1RA & Natural Maintenance				
Category	Outcomes	GLP-1RA & HP-ONS	GLP-1RA (alone)	Incremental
Effectiveness	Events	0.4652	0.4667	0.0015*
	Life Years	17.0642	17.0540	0.0102
	QALYs	13.2711	13.2559	0.0152
Costs	Intervention	\$22,639	\$21,486	\$1,153
	Direct	\$80,627	\$80,878	-\$251
	Indirect	\$119,070	\$119,603	-\$533
	Total	\$222,336	\$221,967	\$369
Cost-Effectiveness (GLP1 & HP-ONS vs. GLP1 alone)	Cost per Event avoided			<b>\$246,000</b>
	Cost per LY gained			<b>\$36,176</b>
	Cost per QALY gained			<b>\$24,276</b>

## RESULTS (CONTINUED)



Probabilistic Sensitivity Analysis shows that over 95% of outcomes are cost effective at typical WTP thresholds

Model most sensitive to age at which weight loss occurs and share of individuals that experience weight cycling

**Figure 2: Probabilistic Sensitivity Analyses Results**

ICER – Incremental Cost-Effectiveness Ratio  
RR – Relative Risk  
CVD – Cardiovascular disease  
T2d – Type 2 Diabetes  
MI – Myocardial Infarction

## CONCLUSIONS

- A high-protein diet using HP-ONS as part of a high-protein diet is a **cost-effective intervention** for weight maintenance following weight loss with GLP-1RAs.
- Future research: long-term effects and health economic aspects of additional weight maintenance strategies.