Estimated Healthcare Resource Utilisation and Costs Associated With Semaglutide 2.4mg Life Expectancy Gains in a Real-World Population With CVD and Overweight or Obesity in the United Kingdom

Hageman S.H.J.[1], Westerink J[2],da Rocha Fernandes J.D.[3], Arnaut T[3], Holloway S[4], Lee P[4], Pearson-Stuttard J[4,5]

Presented by: Silvia Capucci[3]

Correspondence to: jonathan.pearson-stuttard@lcp.uk.com

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Aim

- To estimate the impact of semaglutide 2.4mg treatment on healthcare resource utilisation (HCRU) and costs attributable to life expectancy and ASCVD event-free life-year gains in a UK real-world population with established ASCVD.

Introduction

- In the SELECT cardiovascular (CV) outcomes trial (ClinicalTrials.gov NCT03574597), semaglutide 2.4mg significantly reduced the incidence of major adverse cardiovascular events (MACE: non-fatal myocardial infarction, non-fatal stroke, CV mortality) versus placebo in patients aged ≥45 years with established ASCVD and overweight or obesity, without type 2 diabetes (T2D).[1]
- While the cost-effectiveness and life expectancy benefits of semaglutide 2.4mg have been previously demonstrated,[2,3] the potential HCRU reductions and cost savings associated with life expectancy gains have yet to be quantified.

Methods

- This observational cohort study used data from Discover, a real-world database of linked primary and secondary electronic health records covering 2.8 million people residing in North-West London.[4]
- Individuals aged ≥45 years, with a BMI ≥27 kg/m^2, established CVD (previous MI, stroke, or PAD) and no history of T2D were included.
- First recurrent CV events and associated healthcare resource utilisation (HCRU) and HCRU costs were assessed between January 2015 – December 2019.
- **Approach**:
  - Individuals were partitioned into five health states (CV death, non-CV death, non-fatal myocardial infarction (MI), non-fatal stroke, no event) using extended actuarial life tables.
  - Outcomes were estimated in 5-year age bands over a 5-year horizon.
  - Age-specific observed HCRU events and HCRU costs per person per year were applied to time spent in each state.
  - Age-specific effect estimates from SELECT for 3-point major adverse cardiovascular events (MACE: non-fatal MI, non-fatal stroke, CV mortality), non-CV mortality, and composite 3-point MACE (incl. non-CV mortality) endpoints were applied to aggregated observed outcomes.
  - Reductions in HCRU events and HCRU costs were estimated for semaglutide treatment versus no treatment.
- **Primary analysis:** focused on individuals aged 55-74 years, to demonstrate the impact of treatment on HCRU events and HCRU costs among age groups with statistically significant reductions in CV events and mortality observed in SELECT.
- Sensitivity analysis: repeated analyses in the full eligible cohort, applying overall SELECT trial effect estimates for CV event and mortality reductions, to quantify treatment impacts on HCRU and HCRU costs.

Results

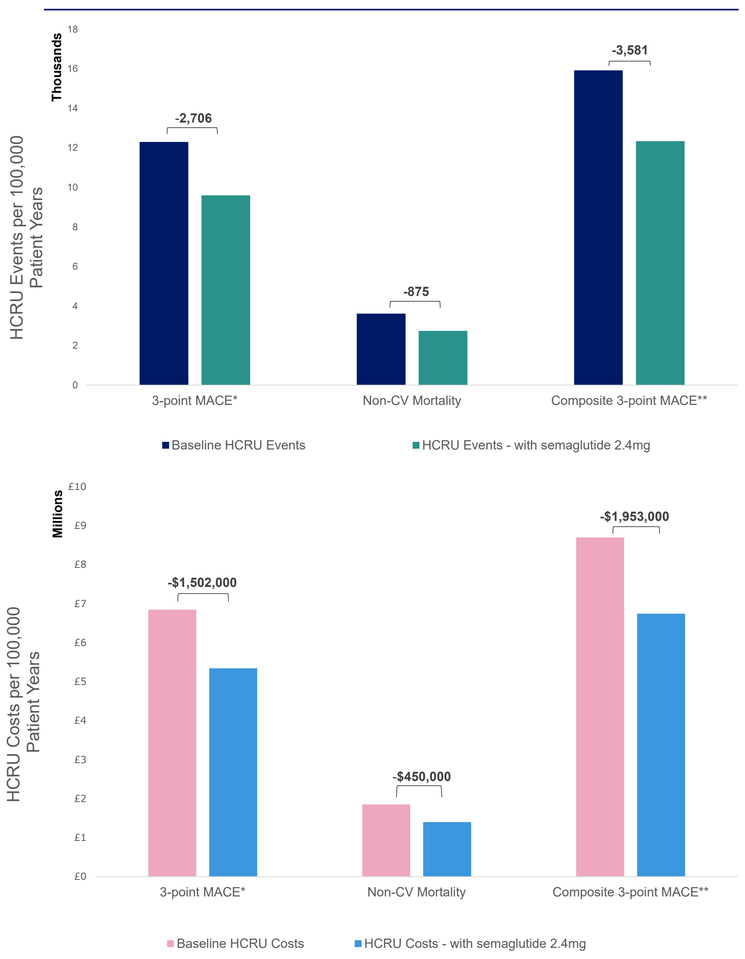
- In total, 16,310 SELECT-like individuals aged 45 and over were included (**Table 1**).
  - The percentage of individuals in each 5-year age band from 45 to 70 years is nearly equally distributed, ranging from 12.6% to 13.9%. The proportion of individuals then progressively decreases in the older age bands.
  - The majority (63.8%) of the study population were men.
  - Compared with the SELECT trial participants, this cohort has a smaller proportion of men (63.8% vs. 72%), and greater ethnic diversity (White: 60.6% vs. 84%; Asian: 21.8% vs. 8%; Black: 8.1% vs. 4%).[1]
- Main findings suggest that the CVD risk reduction observed with semaglutide 2.4mg treatment leads to 20-25% reduction in HCRU events in those aged 55-74
- Patients observed 3,581 per 100,000 patient years fewer HCRU events associated with composite 3-point MACE, with a reduction in HCRU costs of over £1.9M per 100,000 patient years (**Figure 1**).
- In addition, semaglutide 2.4mg treatment led to a reduction in HCRU events and HCRU costs following a CV event across all age bands, with the greatest reduction in HCRU events (22,252 per 100,000 patient years) and HCRU costs (~£7.4M per 100,000 patient years) observed in the 70 – 74 age band (**Figure 2**).
- When including all age groups, findings were broadly consistent with the main findings from (**Figure 3**).

Table 1: Baseline characteristics of the study population

Characteristics	Overall (N=16,310)
Sex – Male, n (%)	10,406 (63.8)
Ethnicity, n(%)	
White	9,892 (60.6)
Asian or Asian British	3,561 (21.8)
Other	1,454 (8.9)
Black or Black British	1,319 (8.1)
Unknown	84 (0.5)
Age group, n (%)	
45-49 years	2,264 (13.9)
50-54 years	2,130 (13.1)
55-59 years	2,055 (12.6)
60-64 years	2,232 (13.7)
65-69 years	2,139 (13.1)
70-74 years	1,861 (11.4)
75+ years	3,629 (22.3)
CVD type at baseline, n(%)	
MI only	9,010 (55.2)
Stroke only	6,693 (41.0)
PAD only	567 (3.5)
2+ CVD	40 (0.2)
Number of ORCs, n (%)	
2 or more ORCs	14,071 (86.3)
3 or more ORCs	9,608 (58.9)

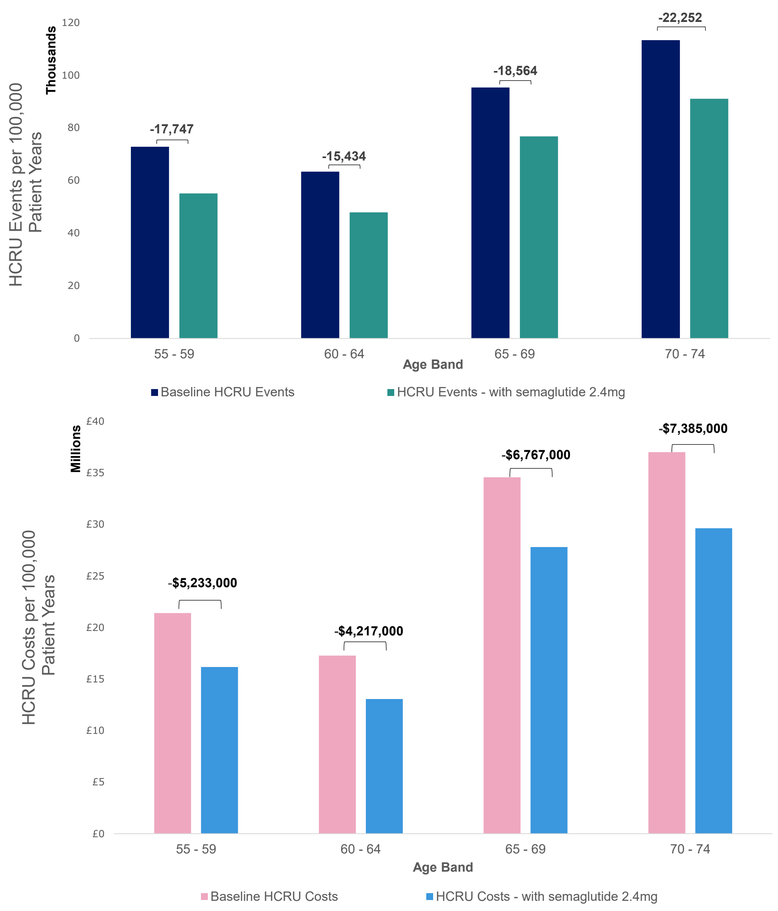
CVD, cardiovascular disease; MI, myocardial infarction; ORC, obesity-related complication; PAD, peripheral artery disease; HCRU, healthcare resource utilisation; RCT, randomized clinical trial

Figure 1. 3-point MACE and mortality associated HCRU events and costs with and without semaglutide 2.4mg



The numbers between the bars in the figures above are the reduction in HCRU events and costs with semaglutide 2.4mg treatment, with unit of per 100,000 patient years.
*3-point MACE defined as non-fatal MI, non-fatal stroke and CV death.
**Composite 3-point MACE defined as non-fatal MI, non-fatal stroke, CV death and non-CV death.

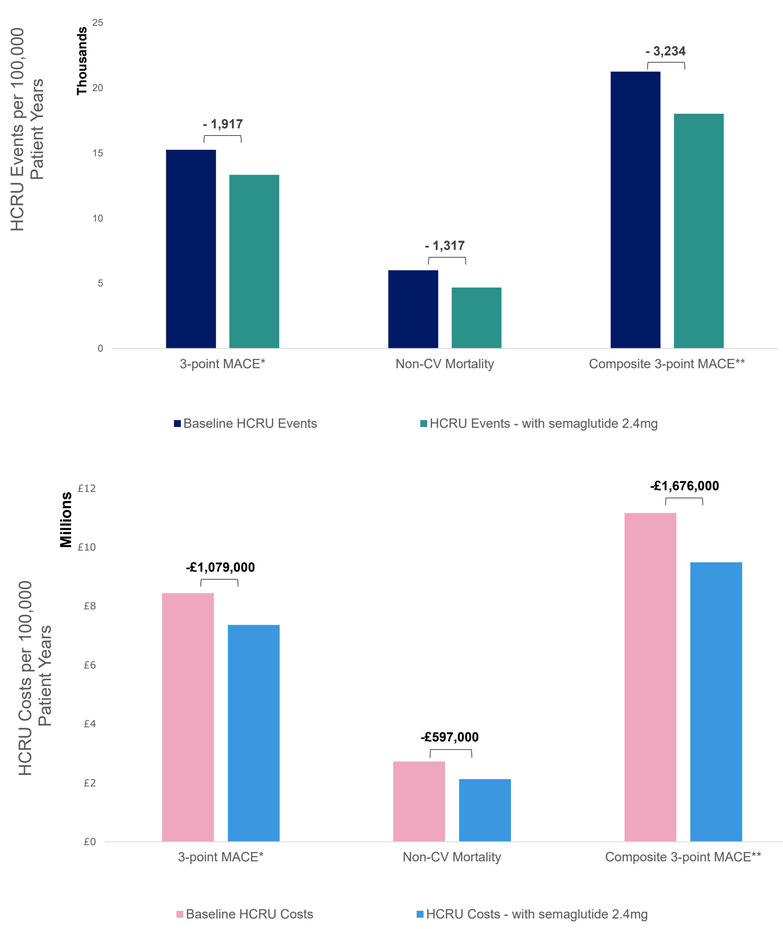
Figure 2. HCRU events and costs following a CV event with and without semaglutide 2.4mg



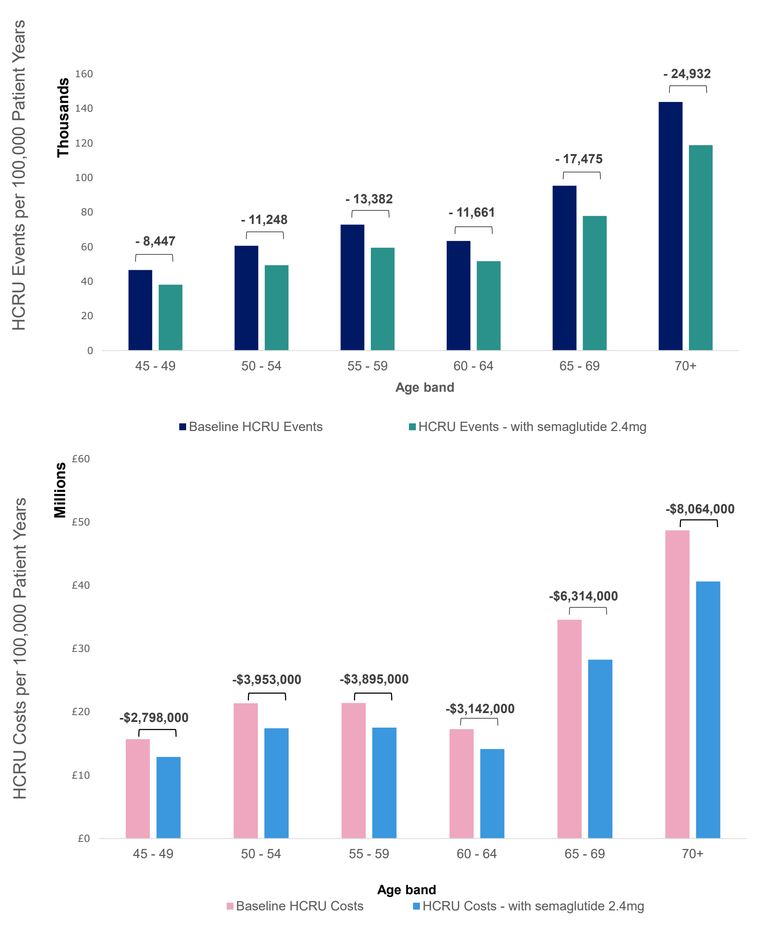
The numbers between the bars in the figures above are the reduction in HCRU events and costs with semaglutide 2.4mg treatment, with unit of per 100,000 patient years

Figure 3. Results from sensitivity analyses including all eligible individuals ≥45 years of age

3-point MACE and mortality associated HCRU events and costs with and without semaglutide 2.4mg



HCRU events and costs following a CV event with and without semaglutide 2.4mg



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**Composite 3-point MACE defined as non-fatal MI, non-fatal stroke, CV death and non-CV death.

Strengths and limitations

- **Strengths:**
  - This study leverages data from high quality sources such as SELECT and Discover
  - Captures a more diverse, real-world population than typical RCTs.
- **Limitations**:
  - Outcomes focus exclusively on HCRU and cost reductions associated with life expectancy and CV event-free life expectancy gains from semaglutide 2.4mg treatment
  - Further research is needed to assess whether these modelling findings are observed in routine clinical practice.

Conclusion

- Use of semaglutide 2.4mg treatment was associated with reductions in HCRU events and healthcare costs in people living with overweight or obesity and ASCVD in a North-West London real-world population.
- These cost savings highlight the healthcare system benefits of addressing ASCVD in people living with overweight or obesity and established ASCVD.

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[1]Department of Vascular Medicine, University Medical Center Utrecht, Utrecht, Netherlands; [2]Department of Internal Medicine, Isala, Zwolle, Netherlands; [3]Novo Nordisk A/S, Søborg, Denmark; [4]Health Analytics, Lane Clark & Peacock LLP, London, UK; [5]Department of Epidemiology and Biostatistics, School of Public Health, Imperial College London, London, UK

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