

Blood pressure changes with once-weekly semaglutide 7.2 mg in adults with obesity: *Post hoc* analysis of the STEP UP randomised, controlled trial

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Introduction and methods



- Guidelines recommend blood pressure targets of <130 mmHg for SBP and <80 mmHg for DBP in most adults^{1,2}
- In the STEP UP trial of adults with obesity without type 2 diabetes, once-weekly subcutaneous (s.c.) semaglutide 7.2 mg vs placebo led to the following outcomes at week 72:^{3†}
 - Greater body weight loss (−20.7% vs −2.4%)
 - A higher proportion of participants (pts) attaining ≥5% weight loss (93.2% vs 35.7%)
 - Greater reductions in SBP/DBP (−10.9/−4.9 mmHg vs −4.1/−2.1 mmHg)



- STEP UP was a phase 3b, randomised, double-blind, placebo- and active-controlled trial (NCT05646706)³
- Pts (N=1407) were randomised 5:1:1 to once-weekly s.c. semaglutide 7.2 mg, s.c. semaglutide 2.4 mg, or placebo, in addition to lifestyle intervention, for 72 weeks³



This *post hoc* analysis of STEP UP by treatment group compared:

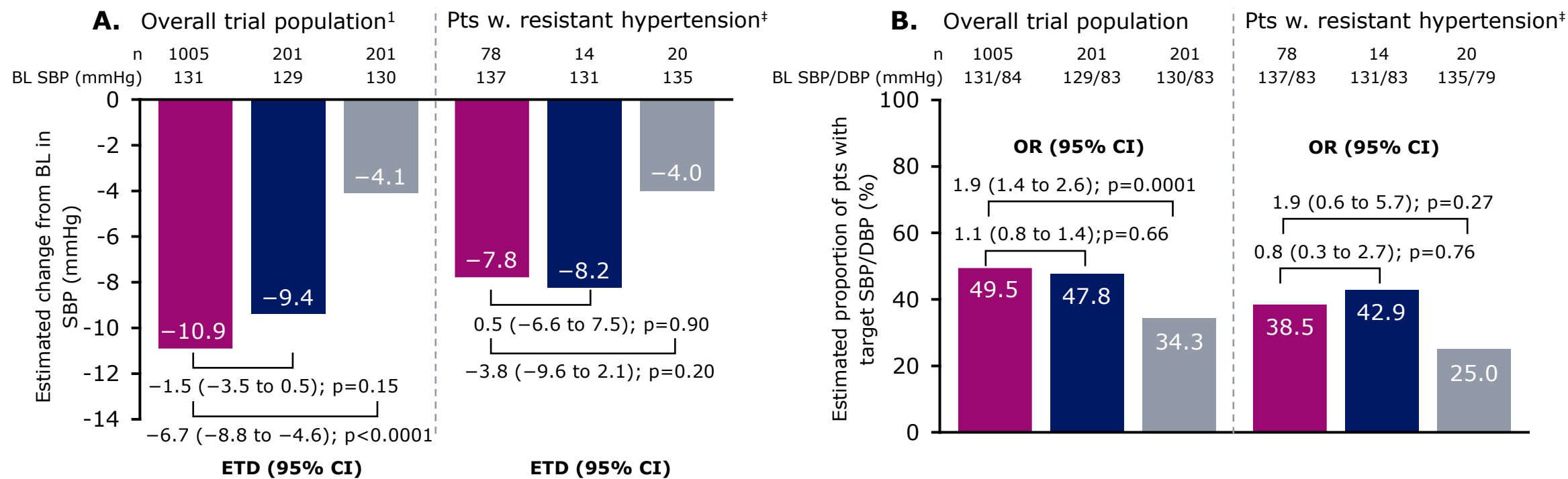
- Change in SBP in the overall study population and in pts with resistant hypertension^{†‡}
- Proportion of pts (overall/with resistant hypertension[‡]) attaining SBP/DBP targets
- Change in SBP across baseline subgroups (BMI, sex, HbA_{1c} and SBP)[†]

[†]Data are for the efficacy estimand; [‡]Resistant hypertension defined as receiving ≥3 antihypertensive agents (where ≥1 was a diuretic) at baseline.

BMI, body mass index; BP, blood pressure; DBP, diastolic blood pressure; HbA_{1c}, glycated haemoglobin; pts, participants; SBP, systolic blood pressure; s.c., subcutaneous.

1. Mancia G et al. *J Hypertens* 2023;41:1874–2071; 2. Jones DW et al. *J Am Coll Cardiol* 2025;86:1567–1678; 3. Wharton S et al. *Lancet Diabetes Endocrinol* 2025;13(11):949–963 (and Supplementary Appendix).

Change in SBP (A) and the proportion of pts reaching the SBP/DBP target of <130/80 mmHg (B) by treatment group at week 72[†]

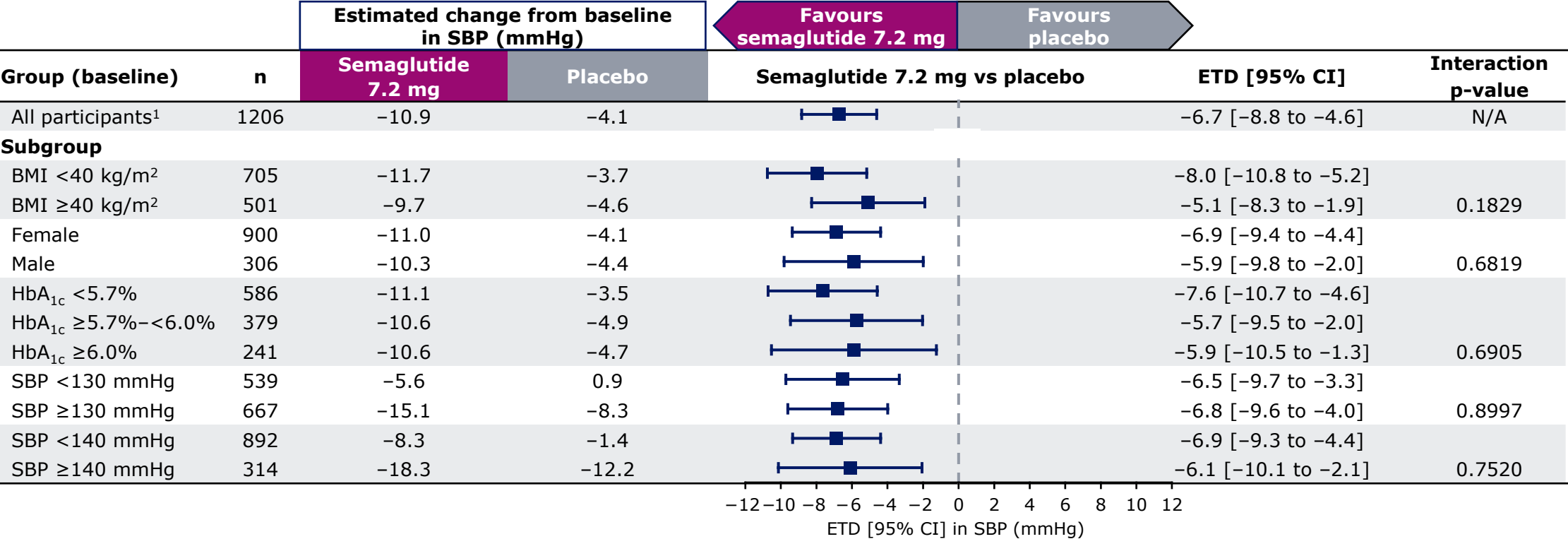


In the overall trial population, once-weekly s.c. semaglutide produced greater SBP reductions and enabled more pts to achieve SBP/DBP targets (<130/80 mmHg) vs placebo

Semaglutide 7.2 mg
Semaglutide 2.4 mg
Placebo

Week 72 responses were analysed by MMRM with randomised treatment, subgroup, and treatment-by-subgroup interaction as factors and baseline value as a covariate, all nested within visit. [†]Data are for the efficacy estimand. [‡]Resistant hypertension defined as receiving ≥3 antihypertensive agents (where ≥1 was a diuretic) at baseline. BL, baseline; CI, confidence interval; DBP, diastolic blood pressure; ETD, estimated treatment difference; n, number of pts in the full analysis set (overall trial population or pts with resistant hypertension at week 72); MMRM, mixed model for repeated measurements; OR, odds ratio; pts, participants; SBP, systolic blood pressure. 1. Wharton S et al. Lancet Diabetes Endocrinol 2025;13(11):949–963; Supplementary Appendix.

Effect of semaglutide 7.2 mg on SBP vs placebo across baseline subgroups at week 72[†]



Once-weekly s.c. semaglutide 7.2 mg provided consistent reductions in SBP vs placebo across clinically relevant baseline subgroups, with no heterogeneity between these subgroups

Week 72 responses were analysed by MMRM with randomised treatment, subgroup, and treatment-by-subgroup interaction as factors, and baseline value as a covariate, all nested within visit. Interaction p-values are for the treatment-by-subgroup interaction. [†]Data are for the efficacy estimand. BMI, body mass index; CI, confidence interval; ETD, estimated treatment difference; HbA_{1c}, glycated haemoglobin; MMRM, mixed model for repeated measurements; n, number of pts in the full analysis set per group/subgroup; N/A, not applicable; SBP, systolic blood pressure. 1. Wharton S et al. Lancet Diabetes Endocrinol 2025;13(11):949–963; Supplementary Appendix. Hjelmæsæth J et al. Presented at the 62nd Annual Meeting of the European Association for the Study of Diabetes (EASD), 28 September–2 October 2026, Milan, Italy.

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Aim

- This analysis compared systolic blood pressure (SBP) changes by baseline subgroups and the proportion of participants (pts) attaining current guideline targets for SBP/diastolic blood pressure (DBP) (<130/80 mmHg).

Introduction

- Guidelines recommend blood pressure targets of <130 mmHg for SBP and <80 mmHg for DBP in most adults.^{1,2}
- In the STEP UP trial of adults with obesity without type 2 diabetes, once-weekly subcutaneous (s.c.) semaglutide 7.2 mg vs placebo led to the following outcomes at week 72:³
 - Greater body weight loss (-20.7% vs -2.4%).
 - A higher proportion of participants (pts) attaining ≥5% weight loss (93.2% vs 35.7%).
 - Greater reductions in SBP/DBP (-10.9/-4.9 mmHg vs -4.1/-2.1 mmHg).

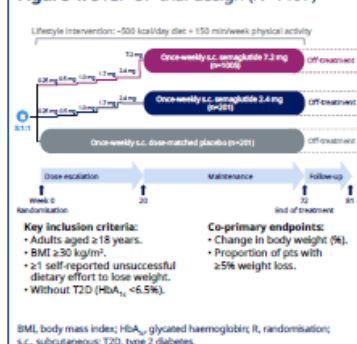
Methods

- STEP UP was a phase 3b, randomised, double-blind, placebo- and active-controlled trial (NCT05646706).³
- Pts (N=1407) were randomised 5:1:1 to once-weekly s.c. semaglutide 7.2 mg, s.c. semaglutide 2.4 mg, or placebo, in addition to lifestyle intervention, for 72 weeks (Figure 1).³
- This *post hoc* analysis of STEP UP by treatment group compared:
 - Change in SBP in the overall study population and in pts with resistant hypertension.⁴
 - Proportion of pts (overall/with resistant hypertension) attaining SBP/DBP targets.
 - Change in BP across baseline subgroups: body mass index (BMI), sex, glycated haemoglobin (HbA_{1c}) and SBP.

³Data are for the efficacy estimate.

⁴Resistant hypertension is defined as receiving ≥3 antihypertensive agents (where ≥1 was a diuretic) at baseline.

Figure 1. STEP UP trial design (N=1407)³



Results

- In the overall trial population,³ baseline characteristics were generally well balanced across treatment groups (Table 1).
- Pts with resistant hypertension tended to be older, more likely to be male and have higher BMI and SBP at baseline across treatment groups compared with the overall trial population.

Table 1. Demographics and baseline characteristics

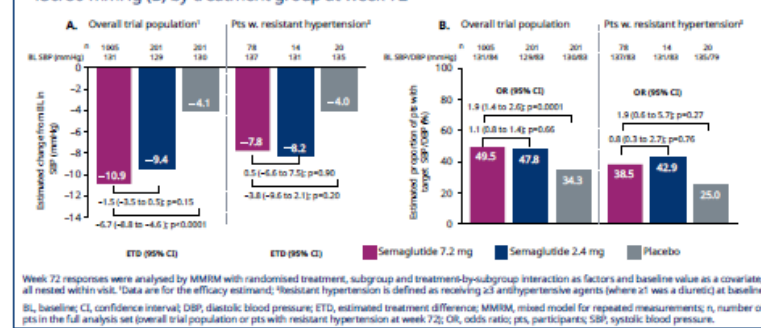
Characteristic	Semaglutide 7.2 mg		Semaglutide 2.4 mg		Placebo	
	Overall trial population ³ (n=1005)	With resistant hypertension ⁴ (n=78)	Overall trial population ³ (n=201)	With resistant hypertension ⁴ (n=14)	Overall trial population ³ (n=201)	With resistant hypertension ⁴ (n=20)
Age, years	47 (12)	55 (10)	46 (12)	51 (9)	48 (12)	60 (11)
Sex (female), %	74.9	65.4	68.2	64.3	73.1	60.0
Body weight, kg	112.4 (23.8)	122.2 (23.3)	116.5 (26.2)	125.2 (35.5)	112.4 (22.8)	110.2 (16.3)
BMI, kg/m ²	39.8 (7.0)	42.8 (7.8)	40.5 (7.8)	43.7 (8.8)	39.7 (6.6)	39.5 (4.9)
SBP, mmHg	131 (14)	137 (15)	129 (13)	131 (17)	130 (14)	135 (18)
DBP, mmHg	84 (9)	83 (9)	83 (9)	83 (9)	83 (10)	79 (12)
HbA _{1c} , %	5.7 (0.3)	5.8 (0.4)	5.6 (0.4)	5.8 (0.4)	5.7 (0.3)	5.9 (0.3)

Data are mean (SD) unless otherwise stated. ⁴Resistant hypertension defined as receiving ≥3 antihypertensive agents (where ≥1 was a diuretic) at baseline.

BMI, body mass index; DBP, diastolic blood pressure; HbA_{1c}, glycated haemoglobin; n, number of pts in the full analysis set (overall trial population or pts with resistant hypertension at baseline); SBP, systolic blood pressure; SD, standard deviation.

- In the overall trial population, both semaglutide doses led to numerically greater SBP reductions than placebo at week 72 (-10.9 mmHg, -9.4 mmHg and -4.1 mmHg with semaglutide 7.2 mg, semaglutide 2.4 mg and placebo, respectively) (Figure 2A):
 - Estimated treatment difference (ETD) with 95% confidence interval (CI) for semaglutide 7.2 mg vs placebo=-6.7 (-8.8 to -4.6); p<0.0001.
 - ETD (95% CI) for semaglutide 7.2 mg vs 2.4 mg=-1.5 (-3.5 to 0.5); p=0.15.
- In pts with resistant hypertension, mean SBP changes were -7.8 mmHg, -8.2 mmHg and -4.0 mmHg with semaglutide 7.2 mg, semaglutide 2.4 mg and placebo, respectively, with no significant ETDs between treatment groups (Figure 2A):
 - Estimated treatment difference (ETD) with 95% CI for semaglutide 7.2 mg vs placebo=-3.8 (-6.6 to -1.0); p=0.001.
 - OR (95% CI) for semaglutide 7.2 mg vs 2.4 mg=1.9 (0.8 to 4.1); p=0.14.
- In the overall trial population, more pts attained SBP/DBP targets (<130/80 mmHg) with either semaglutide dose than with placebo at week 72 (49.5%, 47.8% and 34.3%, with semaglutide 7.2 mg, semaglutide 2.4 mg and placebo, respectively) (Figure 2B):
 - Odds Ratio (OR) (95% CI) for semaglutide 7.2 mg vs placebo=1.9 (1.4 to 2.6); p<0.001.
 - OR (95% CI) for semaglutide 7.2 mg vs 2.4 mg=1.1 (0.8 to 1.4); p=0.66.
- In pts with resistant hypertension, the proportion attaining SBP/DBP targets were 38.5%, 42.9% and 25.0% with semaglutide 7.2 mg, semaglutide 2.4 mg and placebo, respectively, with no significant ORs between treatment groups (Figure 2B).

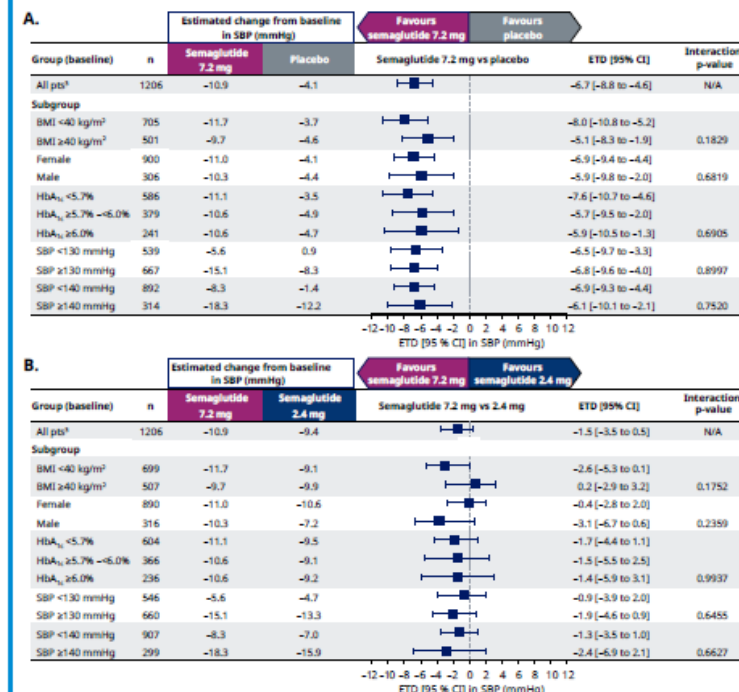
Figure 2. Change in SBP (A) and the proportion of pts reaching the SBP/DBP target of <130/80 mmHg (B) by treatment group at week 72³



Week 72 responses were analysed by MMIM with randomised treatment, subgroup and treatment-by-subgroup interaction as factors and baseline value as a covariate, all nested within visit. ³Data are for the efficacy estimate. ⁴Resistant hypertension is defined as receiving ≥3 antihypertensive agents (where ≥1 was a diuretic) at baseline. BMI, baseline; CI, confidence interval; DBP, diastolic blood pressure; ETD, estimated treatment difference; MMIM, mixed model for repeated measurements; n, number of pts in the full analysis set (overall trial population or pts with resistant hypertension at baseline); OR, odds ratio; pts, participants; SBP, systolic blood pressure.

Figure 3. Effect of semaglutide 7.2 mg on SBP vs placebo (A) and vs semaglutide 2.4 mg (B) across baseline subgroups at week 72³

Key results



Week 72 responses were analysed by MMIM with randomised treatment, subgroup and treatment-by-subgroup interaction as factors and baseline value as a covariate, all nested within visit. ³Data are for the efficacy estimate. ⁴Resistant hypertension is defined as receiving ≥3 antihypertensive agents (where ≥1 was a diuretic) at baseline. BMI, body mass index; CI, confidence interval; ETD, estimated treatment difference; HbA_{1c}, glycated haemoglobin; MMIM, mixed model for repeated measurements; n, number of pts in the full analysis set per group/subgroup; N/A, not applicable; SBP, systolic blood pressure.

- At week 72, reductions in SBP were consistently greater with semaglutide 7.2 mg vs placebo and tended to be numerically greater with semaglutide 2.4 mg, across clinically relevant baseline subgroups of BMI, sex, HbA_{1c} and SBP, with no evidence of heterogeneity between these subgroups (Figures 3A and 3B).

Conclusions

- In the overall trial population, once-weekly s.c. semaglutide 2.4 mg and 7.2 mg produced greater reductions in SBP and enabled more participants to achieve current guideline SBP/DBP targets of <130/80 mmHg compared with placebo.
- Once-weekly s.c. semaglutide 7.2 mg consistently reduced SBP vs placebo across clinically relevant baseline subgroups (BMI, sex, HbA_{1c} and SBP), with no between-subgroup heterogeneity, and a tendency toward greater reductions than with semaglutide 2.4 mg.

References

- (1) Mancia G et al. *J Hypertens* 2021;29:1804–2017.
- (2) Jones DW et al. *J Am Coll Cardiol* 2025;86:1560–1578.
- (3) Wharton S et al. *Lancet Diabetes Endocrinol* 2025;13(11):949–963 (and Supplementary Appendix).