# Effect of dapagliflozin on individual components of the Kansas City Cardiomyopathy Questionnaire in patients with heart failure with mildly reduced or preserved ejection fraction: the DELIVER trial



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# BACKGROUND

- Patients with HF experience substantial limitations in healthrelated symptoms and quality of life.
- Dapagliflozin has been shown to improve overall health status based on aggregate summary scores of the Kansas City Cardiomyopathy Questionnaire (KCCQ) in patients with HFmrEF or HFpEF.
- Whether the treatment effect of dapagliflozin may vary across components of health status, and which components of the KCCQ may benefit most remains unknown.

## PURPOSE

• This *post hoc* exploratory analysis of the DELIVER trial examined the efficacy of dapagliflozin on the 23 individual components of the KCCQ.

# METHODS

- The DELIVER trial compared dapagliflozin with placebo in 6,263 participants with HF with left ventricular EF >40%. KCCQ was administered at randomization, 1, 4, and 8 months; scores of individual components were scaled from 0-100.
- KCCQ data were available for 5,795 patients (92.5%) at baseline, of whom 4,411 (70.4% of the overall population) completed KCCQ assessments at 8 months.
- Mean score changes between baseline and 1-, 4-, and 8 months were examined for each individual KCCQ component by multivariable linear regression models.
- Overall mean score changes were analyzed by longitudinal regression models with patient-level intercepts as a random effect, including data from baseline, 1-, 4-, and 8-month follow-up.
- Responder analyses compared the proportions of patients with any worsening, no change, and any improvement on the original question-level scale (with all changes corresponding to more than 5 points on a 100-point scale) between baseline and at 8 months for each component by treatment group using an ordered logistic regression model.

# RESULTS

# at 8 Months.

Sleep Intima Ability Climbing V Yardwor
Bothere
HF-relate
Wo Fe

**KCCQ-domains** Quality of life

### Table 1. Ordinal Responder Analysis of the Effect of Dapagliflozin on Net Improvement in Individual KCCQ **Components at 8 Months.**

KCCQ Components Sleep limitation by shor Bothered by swelling in Bothered by shortness Dressing yourself Swelling in feet/ankles/ Ability limitation by she Showering/bathing Bothered by fatigue Climbing a flight of stain Visiting family/friends Change in HF symptom Feeling about life with Yardwork/housework, Hurrying or jogging Intimate relationships Knowing what to do if Working or doing house HF-related limitations i Ability limitation by fati Hobbies, recreational a Walking 1 block on leve Feeling discouraged/dov Understanding HF symp

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3.5

*P*-value for

Net Improvement

<.001 .001

.001

.005

.004

.004

.008

.007

.011

.023

.026

.026

.033

.055

.23

.09

.13

.13

.22

.22

.26

.29

.76

### Figure 1. Differences in Mean Score Change of Individual KCCQ Components Between Dapagliflozin and Placebo





	Proportion With	Any Worsening	Proportion With A	Any Improvement	
	at 8 Mor	nths (%)	at 8 Mo	nths (%)	
					Odds Ratio (95% CI)
	Dapagliflozin	Placebo	Dapagliflozin	Placebo	for Net Improvement
rtness of breath	9.4	13.2	22.6	19.9	1.33 (1.15 to 1.53)
n feet/ankles/legs	12.8	16.2	29.4	26.9	1.24 (1.09 to 1.42)
of breath	16.6	20.6	36.3	34.5	1.22 (1.08 to 1.37)
	16.5	18.2	25.2	21.3	1.20 (1.06 to 1.37)
/legs	14.6	17.9	31.7	30.1	1.20 (1.06 to 1.36)
ortness of breath	21.3	25.5	42.4	40.1	1.19 (1.06 to 1.34)
	17.3	19.3	24.0	20.9	1.19 (1.05 to 1.35)
	18.1	21.1	37.4	35.7	1.18 (1.05 to 1.32)
rs without stopping	21.9	23.9	37.0	34.3	1.17 (1.04 to 1.32)
out of home	18.9	21.1	30.4	28.3	1.17 (1.02 to 1.33)
IS	19.3	22.4	30.2	28.0	1.15 (1.02 to 1.30)
HF	18.7	20.6	44.7	41.1	1.14 (1.02 to 1.29)
carrying groceries	22.2	23.5	38.3	34.7	1.14 (1.01 to 1.29)
	22.0	23.8	34.0	31.8	1.14 (1.00 to 1.30)
with loved ones	21.5	23.2	32.9	29.7	1.14 (0.92 to 1.40)
HF gets worse	17.4	18.6	36.2	34.3	1.11 (0.98 to 1.26)
ehold chores	20.0	20.6	37.4	35.4	1.10 (0.97 to 1.25)
n enjoyment of life	20.9	21.5	37.9	35.4	1.09 (0.97 to 1.23)
igue	25.0	25.4	42.9	42.7	1.08 (0.96 to 1.21)
activities	20.2	19.3	38.1	36.5	1.08 (0.95 to 1.23)
el ground	21.7	22.9	33.6	32.1	1.07 (0.95 to 1.21)
own with HF	19.4	21.3	34.6	33.9	1.07 (0.95 to 1.20)
ptoms getting worse	17.7	17.8	36.3	36.4	1.02 (0.90 to 1.15)



### Table 2. Overall Mean Score Change in Individual KCCQ Components.

		<b>Overall Mean Score Change Difference</b>	P-value for overal
*	KCCQ Components	(95% CI)	follow-up
	Swelling in feet/ankles/legs	+3.1 (+2.0 to +4.3)	<.001
	Sleep limitation by shortness of breath	+1.4 (+0.4 to +2.4)	.005
	Intimate relationships with loved ones	+2.0 (-0.1 to +4.1)	.07
	Ability limitation by shortness of breath	+1.9 (+0.8 to +3.0)	<.001
	Climbing a flight of stairs without stopping	+2.2 (+1.0 to +3.3)	<.001
	Visiting family/friends out of home	+1.2 (+0.2 to +2.2)	.025
	Bothered by shortness of breath	+1.7 (+0.7 to +2.6)	.001
	Yardwork/housework, carrying groceries	+1.6 (+0.5 to +2.7)	.005
	Bothered by swelling in feet/ankles/legs	+2.3 (+1.4 to +3.1)	<.001
	Bothered by fatigue	+1.8 (+0.8 to +2.8)	<.001
	Walking 1 block on level ground	+1.3 (+0.3 to +2.3)	.012
	Hobbies, recreational activities	+0.9 (-0.1 to +2.0)	.08
	Hurrying or jogging	+1.9 (+0.6 to +3.1)	.004
	HF-related limitations in enjoyment of life	+1.2 (+0.2 to +2.1)	.014
	Dressing yourself	+1.3 (+0.5 to +2.1)	.002
	Showering/bathing	+1.6 (+0.7 to +2.4)	<.001
	Ability limitation by fatigue	+1.4 (+0.3 to +2.4)	.011
	Feeling about life with HF	+1.1 (+0.1 to +2.1)	.029
	Working or doing household chores	+0.9 (-0.2 to +1.9)	.10
	Feeling discouraged/down with HF	+1.4 (+0.5 to +2.3)	.003
	Change in HF symptoms	+1.3 (+0.5 to +2.1)	.001
	Knowing what to do if HF gets worse	+0.1 (-0.7 to +1.0)	.79
	Understanding HF symptoms getting worse	+0.1 (-0.7 to +0.9)	.78

- In patients with HF with mildly reduced or preserved EF, dapagliflozin improved almost all individual KCCQ components, with the greatest benefit observed in
- domains of symptom frequency and physical limitations. These results complement previous findings from the DELIVER trial and highlight the broad range of improvement in symptoms, function, and quality of life seen with dapagliflozin that are apparent within months of treatment initiation.

# SIMULTANEOUS PUBLICATION



Peikert A. et al. Effect of Dapagliflozin on Individual Components of the Kansas City Cardiomyopathy Questionnaire in Patients with Heart Failure With Mildly Reduced or Preserved Ejection Fraction: A Secondary Exploratory Analysis of the DELIVER Trial. JAMA Cardiol. 2023.

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# DISCLOSURE INFORMATION

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