FINE-ONE

Finerenone in Chronic Kidney Disease and Type 1 Diabetes

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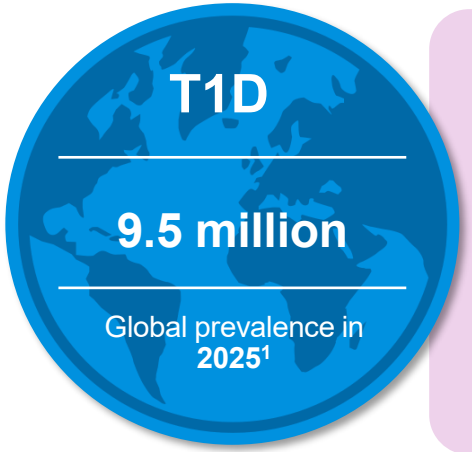
On behalf of Andreas L. Birkenfeld, David Z. I. Cherney, Helen M. Colhoun, Per-Henrik Groop, Linong Ji, Niels Jongs, Chantal Mathieu, Richard E. Pratley, Peter Rossing, Sylvia E. Rosas, Jonathan Rosen, Jay S. Skyler, Katherine R. Tuttle, Kayla Zebrowski, Meike Brinker, Robert Lawatscheck, Julie Russell, Markus F. Scheerer, Patrick Schloemer, Janet B. McGill and the FINE-ONE investigators

CKD is a common complication in T1D and increases with age



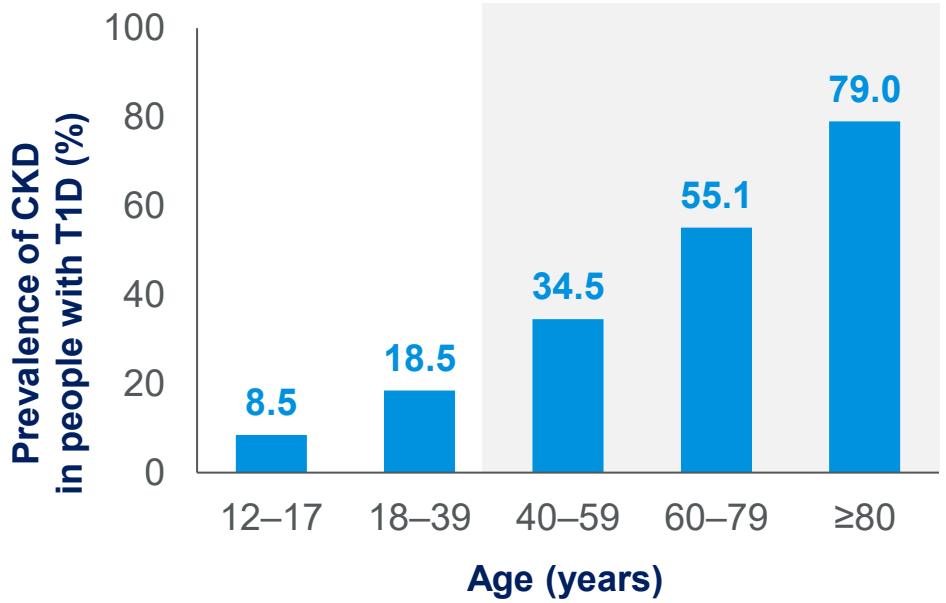
In the United States, **~27.1%** of **people with T1D** (~371,000 people)* **have CKD[2]**

Concomitant CKD and diabetes is associated with **increased CV and kidney risk**

HF, atherosclerotic CVD, death[3]

Progression to kidney failure[3]

CKD in T1D increases steeply with age[2]



- At ages 40–59, **~30%** of people with T1D have CKD
- By ages 60–79, **>50%** of people with T1D have CKD

*Based on a US T1D prevalence of 5.3 per 1000[4] and a US adult population of 258,132,000.[5]
CKD, chronic kidney disease; CV, cardiovascular; CVD, cardiovascular disease; HF, heart failinee; T1D, type 1 diabetes.

1. Ogle GD, *et al. Diabetes Res Clin Pract* 2025;112277; 2. Tuttle KR, *et al. Lancet Reg Health Am* 2025;47:101130; 3. Tuttle KR, *et al. Clin J Am Soc Nephrol* 2022;17:1092–1103; 4. Fang M, *et al. JAMA* 2024;331:1411–1413; 5. United States Census Bureau. Age and sex composition in the United States 2023 (Table 1). https://www.census.gov/data/tables/2023/demo/age-and-sex/2023-age-sex-composition.html (accessed Oct 2025).

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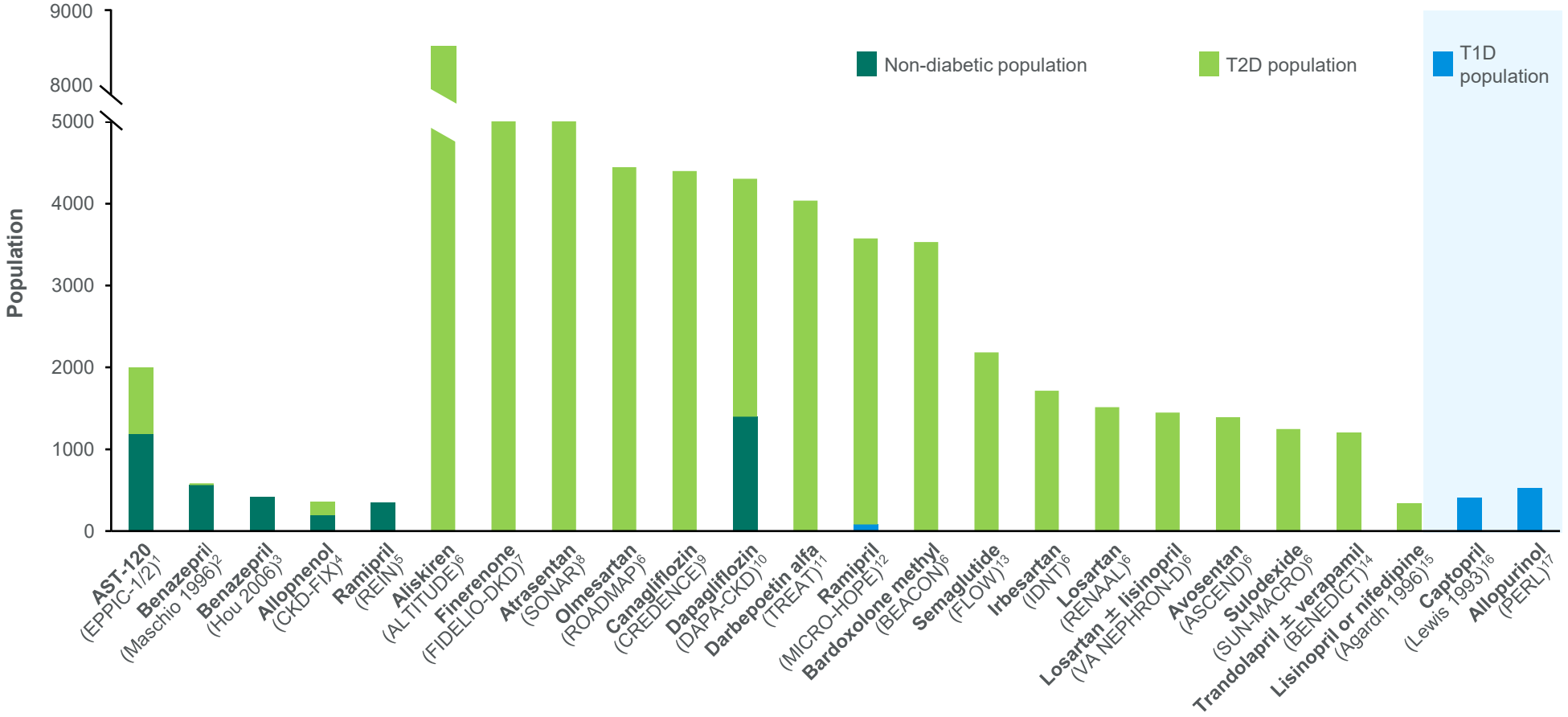
T1D with CKD is under-studied with no advancement of therapy options since the 1990s



Despite RASi treatment, **kidney, CV and mortality risk remain substantial** for people with T1D[18]

GLP-1RA and SGLT-2i are not recommended for use in people with T1D due to safety concerns[19]

CKD, chronic kidney disease; CV, cardiovascular; GLP-1RA, glucagon-like peptide-1 receptor agonist; RASi, renin–angiotensin system inhibitor; SGLT-2i, sodium-glucose co-transporter-2 inhibitor; T1D, type 1 diabetes; T2D, type 2 diabetes.

1. Schulman G, *et al. J Am Soc Nephrol* 2015;26:1732–1746; 2. Maschio G, *et al. N Engl J Med* 1996;334:939–945; 3. Hou FF, *et al. N Engl J Med*. 2006;354:131–140; 4. Badve SV, *et al. N Engl J Med* 2020;382:2504–2513; 5. The GISEN Group. *Lancet* 1997;349:1857–1863; 6. Chan GCW & Tang SCW. *Nephrol Dial Transplant* 2016;31:359–368; 7. Bakris GL, *et al. Am J Nephrol* 2019;50:333–344; 8. Heerspink HJL, *et al. Diabetes Obes Metab* 2018;20:1829–1835; 9. Perkovic V, *et al. N Engl J Med* 2019;380:2295–2306; 10. Heerspink HJL, *et al. N Engl J Med* 2020;383:1436–1446; 11. Pfeffer MA, *et al. N Engl J Med* 2009;361:2019–2032; 12. HOPE Study Investigators. *Lancet* 2000;355:253–259; 13. Perkovic V, *et al. N Engl J Med* 2024;391:109–121; 14. Ruggenenti P, *et al. N Engl J Med* 2004;351:1941–1951; 15. Agardh CD, *et al. J Hum Hypertens* 1996;10:185–192; 16. Lewis EJ, *et al N Engl J Med* 1993;329:1456–1462; 17. Doria A, *et al. N Engl J Med* 2020;382:2493–2503; 18. Poulsen CG, *et al. Kidney Int Rep* 2024;9(12):3403–3413; 19. American Diabetes Association. *Diabetes Care* 2024;47 (Suppl 1):S158–S178.

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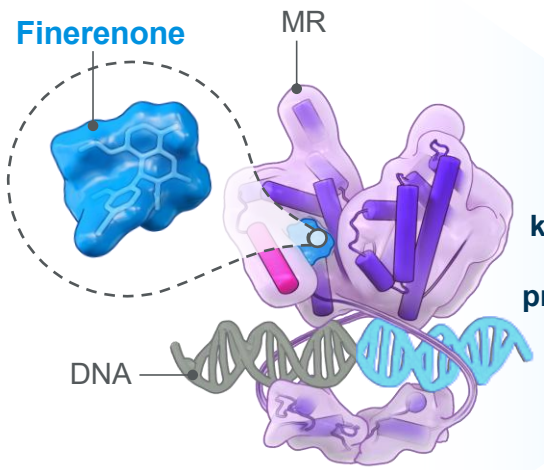
Finerenone blocks MR overactivation and reduces UACR, which can be used as a bridging biomarker for benefits in long-term kidney outcomes

MR overactivation blockade[1–3]



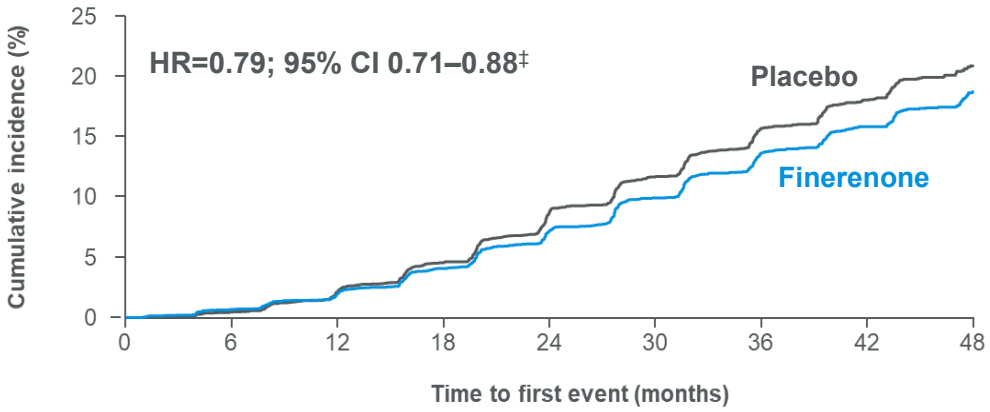
Impacts key drivers of CKD progression

- Hemodynamic factors
- Inflammation and fibrosis
- Albuminuria

Slows CKD and HF progression[1–3]

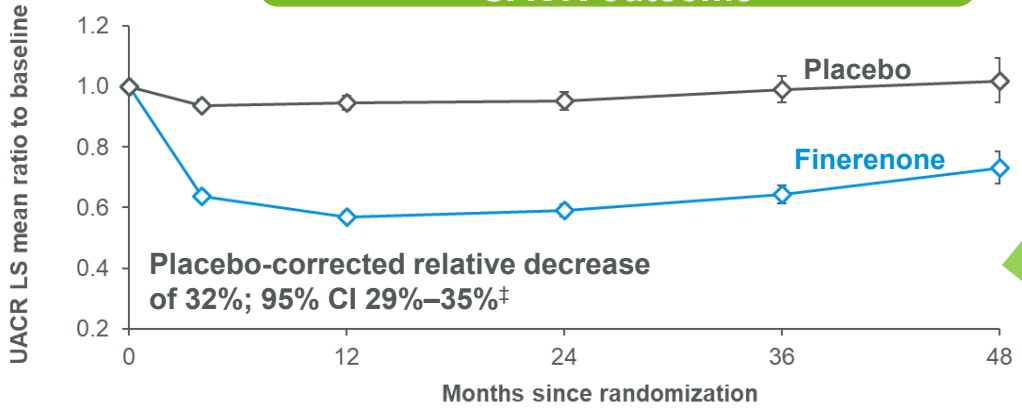
Key outcomes in patients with CKD and T2D (FIDELITY*)[2]

Composite kidney outcome#



87% of effect explained by early UACR reduction[4]

UACR outcome



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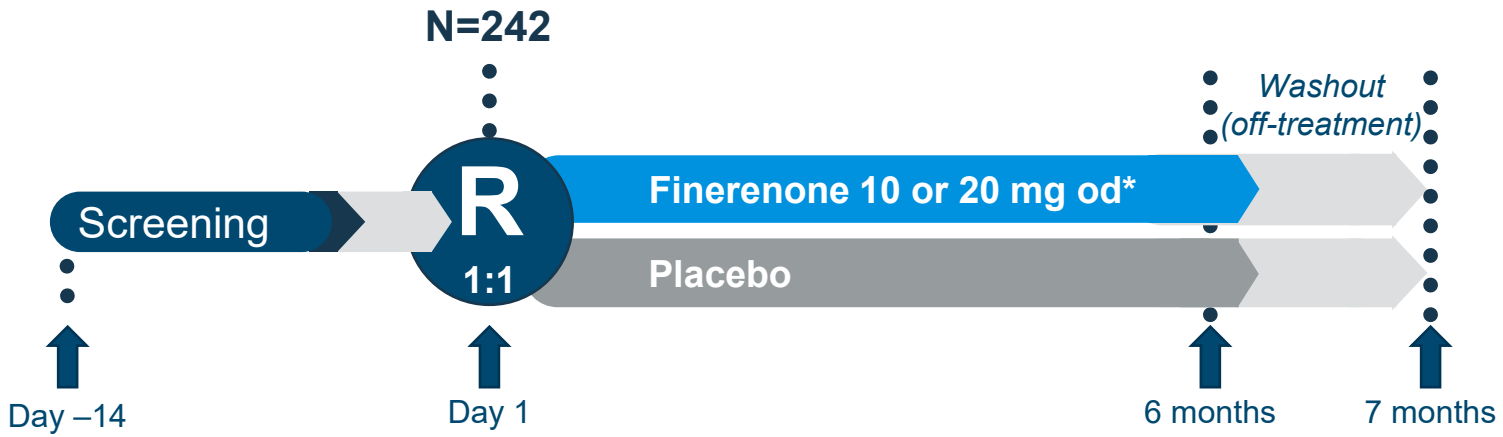
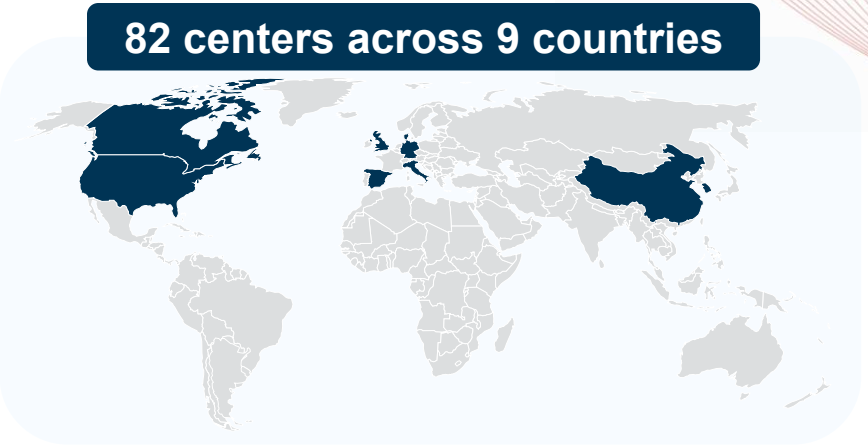
*Pooled analysis combining patient-level data from the phase III finerenone trials FIDELIO-DKD and FIGARO-DKD; #time to kidney failure, sustained ≥40% decrease in eGFR from baseline, or renal death; ‡Based on a dataset restricted to patients with UACR ≥ 200 mg/g (22.6 mg/mmol) and eGFR ≥ 25 and < 90 ml/min/1.73m². CKD, chronic kidney disease; CV, cardiovascular; HF, heart failure; HR, hazard ratio; LS, least squares; MR, mineralocorticoid receptor; MRA, mineralocorticoid receptor antagonist; UACR, urinary albumin-to-creatinine ratio.

1. Kintscher U, *et al. Br J Pharmacol* 2022;179:3220–3234; 2. Agarwal R, *et al. Eur Heart J* 2022;43:474–484; 3. Agarwal R, *et al. Nephrol Dial Transplant* 2022;37:1014–1023.
4. Heerspink HJL, *et al. Diabetes Res Clin Pract* 2023;204:110908.

FINE-ONE is a global, randomized, phase III clinical trial evaluating UACR reduction in people with T1D and CKD





Key exclusion criteria

- T2D, other kidney disease or kidney transplantation
- Mean BP >160/100 mmHg or SBP <90 mmHg
- Symptomatic HFrEF with class 1A indication for MRAs
- Current or previous* treatment with SGLT-2is or GLP-1RAs

Key inclusion criteria

- Aged ≥18 years
- T1D (continuously treated with insulin)
- HbA1c at screening <10%
- CKD and eGFR ≥25 to <90 mL/min/1.73 m² and UACR ≥200 to <5000 mg/g
- Serum [K⁺] ≤4.8 mmol/L
- Stable dose of ACEi/ARB for >1 month prior to screening visit

Primary outcome: efficacy

- Change in UACR from baseline (ratio to baseline) over 6 months

Secondary outcomes: safety

- Number of participants with TEAEs or serious TEAEs
- Number of participants with hyperkalemia (an AE of special interest)

*Within 8 weeks prior to the screening visit.

ACEi, angiotensin-converting enzyme inhibitor; AE, adverse event; ARB, angiotensin receptor blocker; BP, blood pressure; CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; GLP-1RA, glucagon-like peptide-1 receptor agonist; HbA1c, glycated hemoglobin; HFrEF, heart failure with reduced ejection fraction; [K+], potassium concentration; MRA, mineralocorticoid receptor antagonist; od, once daily; R, randomization; SBP, systolic blood pressure; SGLT-2i, sodium-glucose co-transporter-2 inhibitor; T1D, type 1 diabetes; T2D, type 2 diabetes; TEAE, treatment-emergent adverse event; UACR, urinary albumin-to-creatinine ratio.

Heerspink HJL, *et al*. *Diabetes Res Clin Pract* 2023;204:110908.

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FINE-ONE participants had a high risk of CKD progression and CVD at baseline

Characteristic	Finerenone (n=120)	Placebo (n=122)
Age, years, mean	51	52
Sex, male, n (%)	79 (65.8)	79 (64.8)
Race, n (%)		
White	85 (70.8)	90 (73.8)
Asian	23 (19.2)	25 (20.5)
Black	9 (7.5)	6 (4.9)
Other*	3 (2.5)	1 (0.8)
BMI,# kg/m^2, mean	28	27
eGFR, mL/min/1.73 m^2, mean	59	59
UACR, mg/g, median (Q1–Q3)	575 (316–1225)	506 (288–1182)
Serum [K$^+$], mmol/L, mean	4.6	4.6

Characteristic	Finerenone (n=120)	Placebo (n=122)
Blood pressure, mmHg, mean		
Systolic	137	134
Diastolic	78	77
HbA1c,‡ %, mean	7.8	7.5
Duration of diabetes, years, mean	32	32
Medical history, n (%)		
CVD§	35 (29.2)	26 (21.3)
Hypertension	104 (86.7)	103 (84.4)
Medication use,¶ n (%)		
ACEi	59 (49.6)	52 (42.6)
ARB	60 (50.4)	68 (55.7)

Balanced between treatment arms

*Race was not reported in 1 participant in the placebo and finerenone groups; 2 participants in the finerenone group were American Indian or Alaska Native; #BMI values missing for 1 finerenone and 1 placebo recipient; ‡HbA1c values missing for 2 placebo recipients; § history of CVD was determined by the presence of 1 of the following medical history preferred terms: myocardial infarction, coronary artery stenosis, cerebrovascular accident, transient ischemic attack, peripheral arterial occlusive disease or cardiac failure; ¶use of sodium–glucose co-transporter-2 inhibitors and glucagon-like peptide-1 receptor agonists was not permitted.
ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; BMI, body mass index; CKD, chronic kidney disease; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; HbA1c, glycated hemoglobin; [K$^+$], potassium concentration; Q, quartile; UACR, urinary albumin-to-creatinine ratio.

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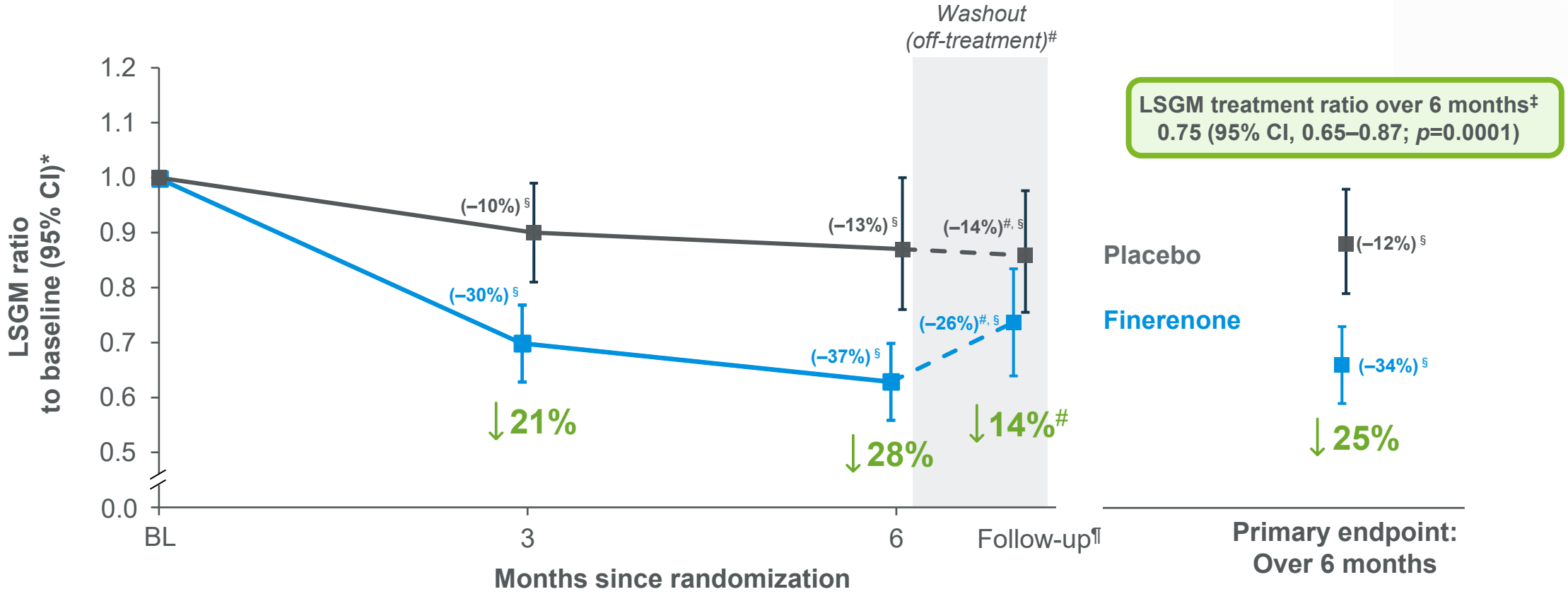
Finerenone significantly reduced UACR over 6 months



No. of patients					
Finerenone	120	120	120	114	120
Placebo	122	122	122	106	122

*Up to 3 daily UACR measures were combined into a geometric mean UACR prior to the analysis of the ratio to baseline of geometric mean UACR; #assessment of data for the washout period was conducted using an ANCOVA model for the ratio to baseline in UACR at follow-up with the model including log baseline UACR; ‡geometric mean ratio of treatment group ratios to baseline over the study period (i.e. average of geometric mean of treatment effect at month 3 and month 6 visits); § LSGM difference from baseline; ¶30 days after last dose of study intervention.

ANCOVA, analysis of covariance; BL, baseline; CI, confidence interval; LSGM, least-squares geometric mean; UACR, urinary albumin-to-creatinine ratio.

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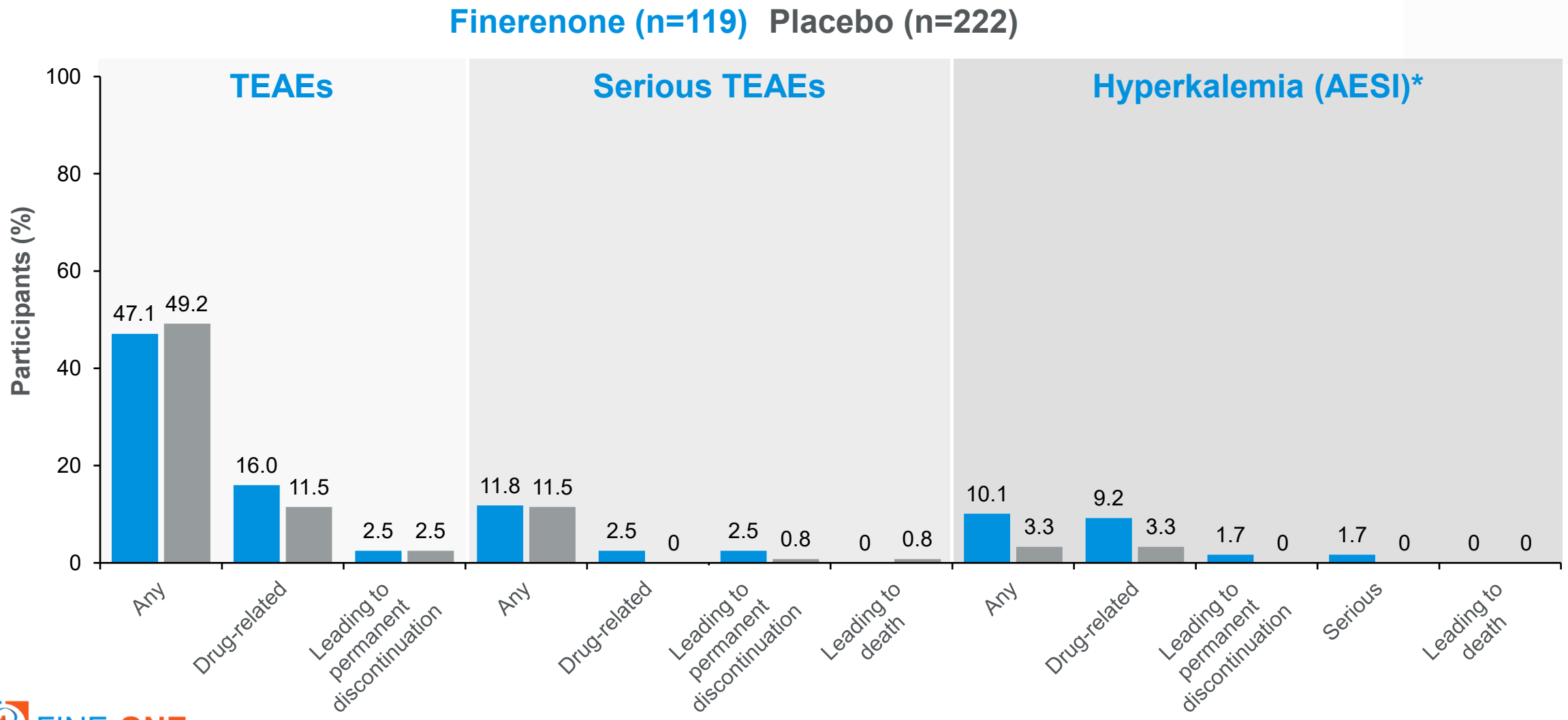
The overall incidence of treatment-emergent AEs was similar between the finerenone and placebo groups



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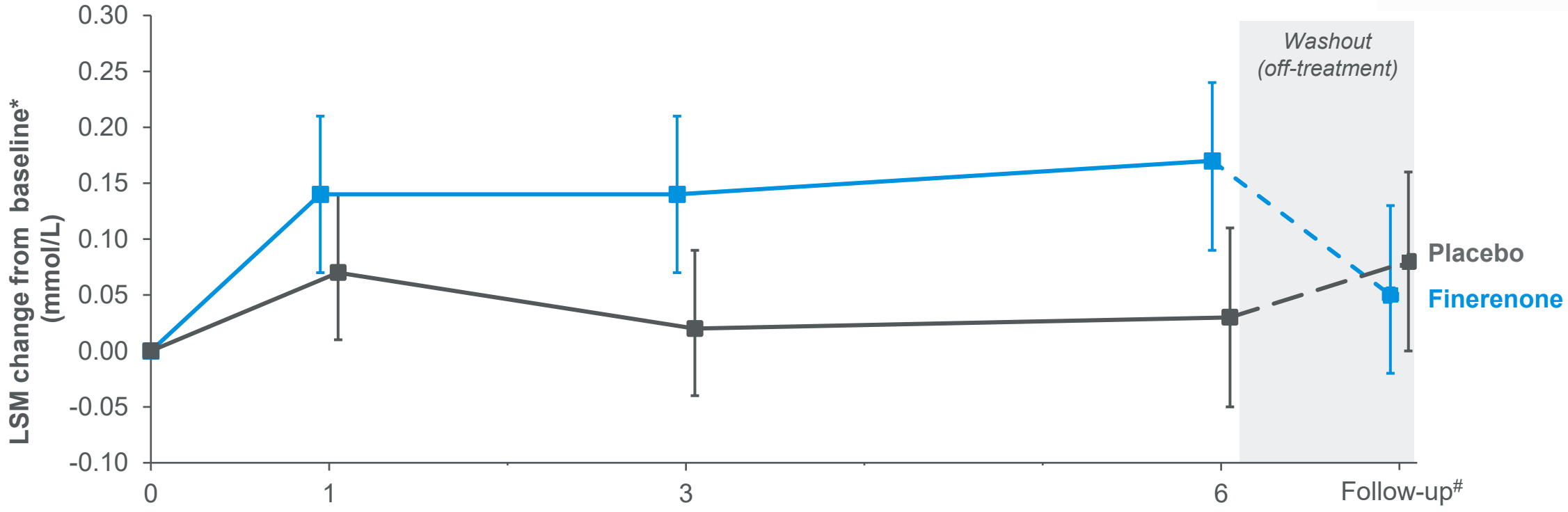
*Hyperkalemia includes investigator reported AEs with MedDRA codes hyperkalemia and blood potassium increased.
AE, adverse event; AESI, adverse event of special interest; TEAE, treatment-emergent adverse event.

Finerenone led to a small increase in serum potassium compared with placebo

Maximum difference in mean serum potassium between groups: 0.14 mmol/L at month 6



No. of patients					
Finerenone	119	118	119	116	111
Placebo	122	118	116	111	107

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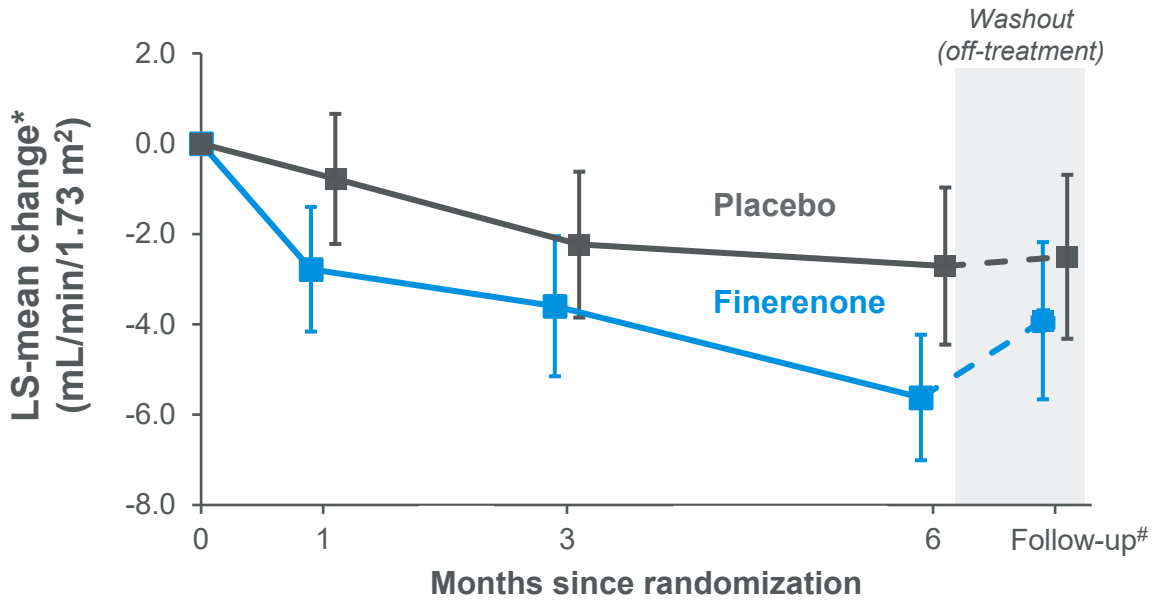
*Analyzed using a mixed model for repeated measures with the following factors: treatment group, visit, treatment by visit interaction, baseline value of parameter of interest, and baseline value by visit included as covariates; #30 days after last dose of study intervention with a ±7-day window permitted.
[K^+], potassium concentration; LSM, least-squares mean

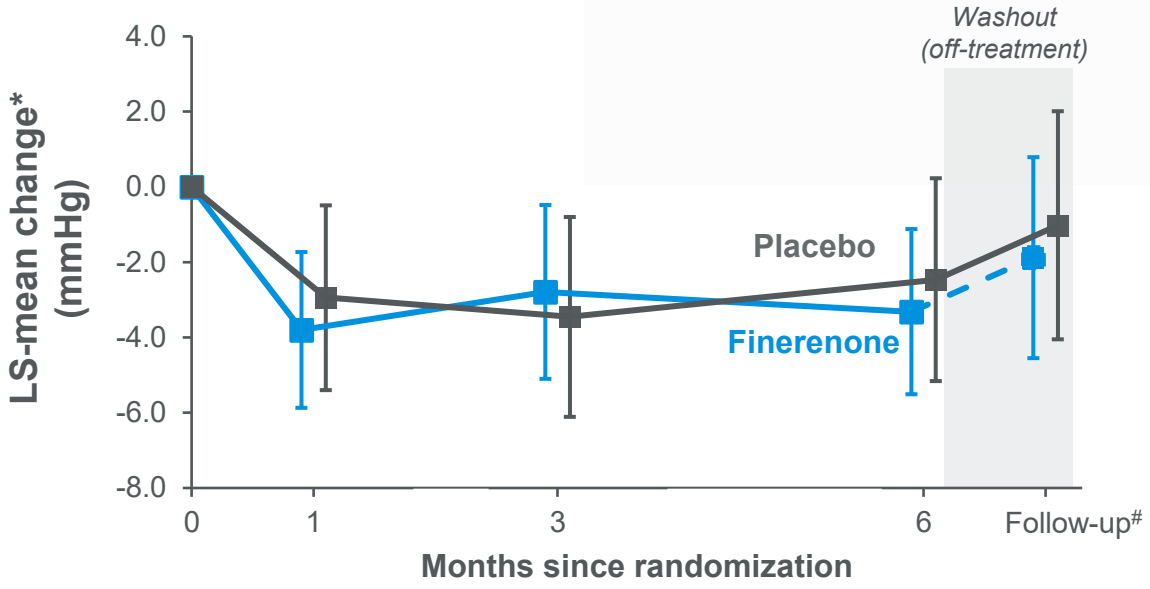
The eGFR decline with finerenone was reversible after discontinuation and SBP was reduced in both treatment arms

Change from baseline in eGFR



No. of patients					
Finerenone	119	116	118	116	112
Placebo	122	118	115	112	109

Change from baseline in SBP



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eGFR, estimated glomerular filtration rate; LS, least squares; SBP, systolic blood pressure.

Summary and conclusion

FINE-ONE was a **well conducted, global trial** evaluating the efficacy and safety of **finerenone in a high-risk population with CKD and T1D**

FINE-ONE met its primary endpoint with finerenone significantly reduced UACR by 25% over 6 months compared with placebo

Finerenone was generally well tolerated and had a safety profile consistent with finerenone phase III trials in CKD and T2D; although there was a higher incidence of hyperkalemia with finerenone than placebo, its clinical impact was low

Finerenone is a novel therapeutic option with a **favorable benefit-risk profile** that may **reduce adverse kidney outcomes** in people with CKD and T1D

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CKD, chronic kidney disease; T1D, type 1 diabetes; T2D, type 2 diabetes; UACR, urinary albumin-to-creatinine ratio.