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# Impact of Finerenone on Albuminuria in T1D by Baseline HbA1c Level and Diabetes Duration: An Exploratory Analysis of the FINE-ONE Trial


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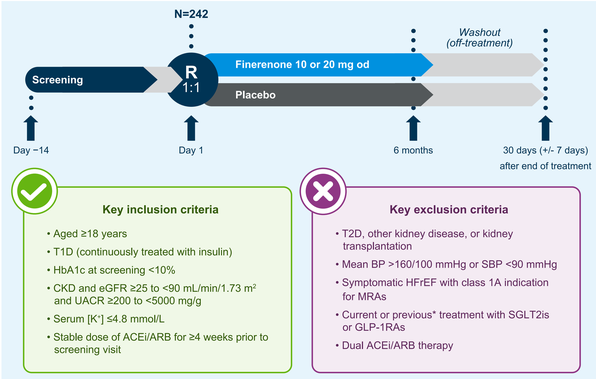
## Background

- Up to 40% of patients with type 1 diabetes (T1D) develop chronic kidney disease (CKD).[1] Despite treatment with renin–angiotensin system inhibitors, CKD in patients with T1D continues to be associated with an increased risk of kidney failure, cardiovascular disease, and premature mortality, highlighting the need for new therapies[2-5]
- Treatment with the nonsteroidal mineralocorticoid receptor antagonist finerenone has demonstrated reduced risk of CKD progression and cardiovascular events in patients with type 2 diabetes (T2D) and CKD, with benefits largely mediated by reductions in urine albumin-to-creatinine ratio (UACR)[6-8]
  - As albuminuria plays a similar role in the progression of CKD in T1D and T2D, UACR provides a "bridging biomarker" to translate kidney-protective effects across patients with T1D and T2D[8]
- In the global FINE-ONE trial (NCT05901831), finerenone significantly reduced UACR over 6 months compared with placebo in patients with T1D and CKD[9]
- As poor glycemic control and longer T1D disease duration are independently associated with increased UACR and faster kidney function decline in patients with T1D,[10-13] it is clinically important to determine whether the effects of finerenone are consistent across the spectrum of glycemic control and diabetes duration

## Methods

- This prespecified post hoc analysis of the FINE-ONE phase III trial (**Figure 1**) evaluated change in UACR from baseline over 6 months across tertiles of baseline HbA1c (<7.1% [<54 mmol/mol], ≥7.1 to ≤8.1% [≥54 to ≤65 mmol/mol], and >8.1% [>65 mmol/mol]) and T1D duration (<25 years, ≥25 to ≤38 years, and >38 years)
  - Additional exploratory analyses evaluated treatment effects across the continuous ranges of baseline HbA1c and diabetes duration
- We also report change from baseline in HbA1c to month 6, and adverse events by treatment group and baseline HbA1c tertiles

**Figure 1.** FINE-ONE trial design[8]




*Within 8 weeks prior to the screening visit
ACEi, angiotensin-converting enzyme inhibitor; 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; UACR, urine albumin-to-creatinine ratio

## Results

### Baseline characteristics

- Baseline HbA1c was available for 240 of 242 participants enrolled in FINE-ONE. Mean (standard deviation) baseline HbA1c and diabetes duration were 7.6% (1.1; 60 [12.0] mmol/mol) and 32.0 (14.2) years, respectively
- Overall, most characteristics were similar across HbA1c tertiles (**Table 1**)

**Table 1.** Baseline characteristics by baseline HbA1c tertiles (FAS)*

| | Tertile 1: <7.1% (<54 mmol/mol) | | Tertile 2: ≥7.1 to ≤8.1% (≥54 to ≤65 mmol/mol) | | Tertile 3: >8.1% (>65 mmol/mol) | |
|---|---|---|---|---|---|---|
| | Finerenone (n=31) | Placebo (n=45) | Finerenone (n=43) | Placebo (n=41) | Finerenone (n=46) | Placebo (n=34) |
| Age, years, mean ± SD | 51.5 ± 13.9 | 51.3 ± 13.3 | 53.7 ± 16.0 | 50.8 ± 13.9 | 48.8 ± 12.3 | 53.2 ± 12.2 |
| Female, n (%) | 10 (32.3) | 15 (33.3) | 15 (34.9) | 12 (29.3) | 16 (34.8) | 16 (47.1) |
| Race, n (%) | | | | | | |
| White | 21 (67.7) | 32 (71.1) | 32 (74.4) | 32 (78.0) | 32 (69.6) | 24 (70.6) |
| Asian | 7 (22.6) | 12 (26.7) | 8 (18.6) | 8 (19.5) | 8 (17.4) | 5 (14.7) |
| Black or African American | 1 (3.2) | 1 (2.2) | 2 (4.7) | 0 | 6 (13.0) | 5 (14.7) |
| Other[#] | 2 (6.5) | 0 | 1 (2.3) | 1 (2.4) | 0 | 0 |
| BMI, kg/m², mean ± SD‡ | 27.2 ± 5.2 | 26.3 ± 5.9 | 28.0 ± 5.9 | 28.5 ± 5.9 | 27.8 ± 5.1 | 27.1 ± 8.0 |
| HbA1c | | | | | | |
| %, mean ± SD | 6.5 ± 0.5 | 6.5 ± 0.5 | 7.5 ± 0.3 | 7.5 ± 0.3 | 8.9 ± 0.5 | 8.8 ± 0.4 |
| mmol/mol, mean ± SD | 48 ± 5.5 | 48 ± 5.5 | 58 ± 3.3 | 58 ± 3.3 | 74 ± 5.5 | 73 ± 4.4 |
| eGFR, ml/min/1.73 m², mean ± SD§ | 56.2 ± 17.8 | 56.7 ± 19.6 | 59.0 ± 20.5 | 59.2 ± 16.6 | 60.9 ± 19.7 | 60.9 ± 21.4 |
| UACR, mg/g, median (Q1–Q3) | 622 (282–1066) | 500 (248–1401) | 566 (400–924) | 484 (325–1079) | 604 (307–1301) | 570 (320–913) |
| Serum [K+], mmol/l, mean ± SD | 4.7 ± 0.4 | 4.5 ± 0.5 | 4.6 ± 0.4 | 4.6 ± 0.4 | 4.6 ± 0.4 | 4.6 ± 0.4 |

*All participants with baseline HbA1c measurements (120/120 participants randomized to finerenone, 120/122 patients randomized to placebo) †Two participants in the finerenone group were Native American or Native Alaskan, and race or ethnic group was not reported for 1 participant in each group ‡Data were missing for 2 participants across the HbA1c subgroups: 1 in the finerenone group (tertile 2) and 1 in the placebo group (tertile 1) §Calculated with the use of the Chronic Kidney Disease Epidemiology Collaboration equation
BMI, body mass index; eGFR, estimated glomerular filtration rate; FAS, full analysis set; HbA1c, glycated hemoglobin; IQR, interquartile range; K+, potassium concentration; SD, standard deviation; UACR, urine albumin-to-creatinine ratio

### Safety

- Across HbA1c tertiles, the overall rates of adverse events and serious adverse events were similar between treatment groups (**Table 2**)
- Within each tertile, the frequency of investigator-reported hyperkalemia was higher with finerenone than with placebo and occurred in fewer than 11% of participants in any treatment group
  - Treatment discontinuation due to hyperkalemia occurred in 2 of 119 participants receiving finerenone (1.7%, tertiles 2 and 3) and in none of the 120 participants receiving placebo[9]
- Incidence of diabetic ketoacidosis and treatment-emergent hypoglycemia remained low

**Table 2.** Adverse events by HbA1c tertiles (SAS)*

| Investigator-reported adverse events,[#] n (%) | Tertile 1: <7.1% (<54 mmol/mol) | | Tertile 2: ≥7.1 to ≤8.1% (≥54 and ≤65 mmol/mol) | | Tertile 3: >8.1% (>65 mmol/mol) | |
|---|---|---|---|---|---|---|
| | Finerenone (n=30) | Placebo (n=45) | Finerenone (n=43) | Placebo (n=41) | Finerenone (n=46) | Placebo (n=34) |
| Any adverse event | 15 (50.0) | 27 (60.0) | 19 (44.2) | 16 (39.0) | 22 (47.8) | 17 (50.0) |
| Adverse events leading to treatment discontinuation | 0 | 1 (2.2) | 2 (4.7) | 0 | 1 (2.2) | 2 (5.9) |
| Any serious adverse event | 3 (10.0) | 6 (13.3) | 6 (14.0) | 3 (7.3) | 5 (10.9) | 5 (14.7) |
| Serious adverse events leading to treatment discontinuation | 0 | 0 | 2 (4.7) | 0 | 1 (2.2) | 1 (2.9) |
| Death | 0 | 0 | 0 | 0 | 0 | 1 (2.9) |
| Hyperkalemia‡ | 2 (6.7) | 2 (4.4) | 5 (11.6) | 2 (4.9) | 5 (10.9) | 0 |
| Leading to treatment discontinuation | 0 | 0 | 1 (2.3) | 0 | 1 (2.2) | 0 |
| Diabetic ketoacidosis | 0 | 1 (2.2) | 0 | 1 (2.4) | 2 (4.3) | 1 (2.9) |
| Hypoglycemia | 0 | 2 (4.4) | 1 (2.3) | 2 (4.9) | 1 (2.2) | 3 (8.8) |

*Including all randomized participants with baseline HbA1c measurements who received at least one dose of study medication #Treatment-emergent adverse events were defined as events that started or worsened after the first dose of study medication and up to 3 days following any temporary or permanent interruption of study intervention ‡In the assessment of hyperkalemia, the investigators used the preferred terms "hyperkalemia" and "blood potassium increased" in the Medical Dictionary for Regulatory Activities
HbA1c, glycated hemoglobin; SAS, safety analysis set

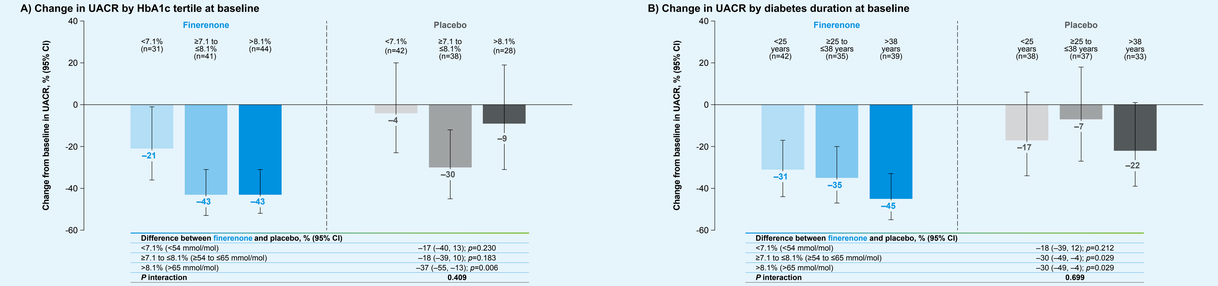
### HbA1c effect

- At month 6, HbA1c remained stable in both treatment groups; mean change from baseline was 0.03% in the finerenone group and 0.00% in the placebo group, with a between-group difference of 0.08% over 6 months ($p$=0.37)

### UACR by baseline HbA1c and T1D duration

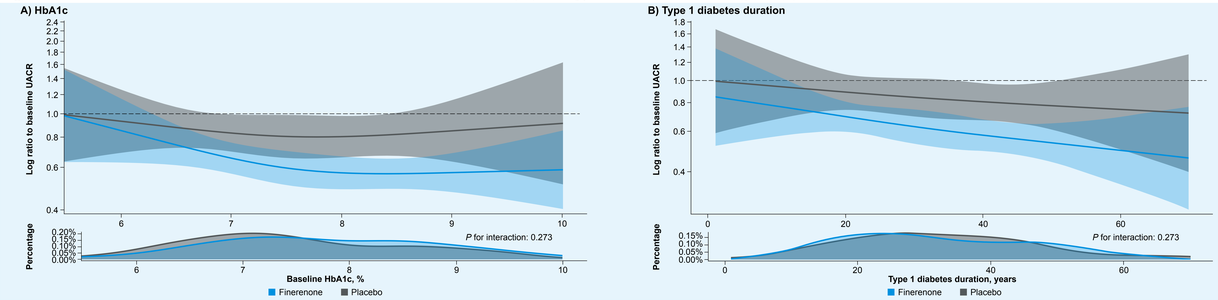
- Median UACR decreased from 574.6 to 373.5 mg/g with finerenone and from 506.4 to 475.6 mg/g with placebo, corresponding to a –25% (95% CI –35, –13; $p$<0.001) placebo-corrected change[9]
- Overall, percentage change in UACR did not differ significantly by HbA1c and T1D duration tertiles ($P$ interaction = 0.409 and 0.699, respectively; **Figure 2**)
- When modeled as continuous variables (**Figure 3**), finerenone reduced UACR across the full range of baseline HbA1c and T1D duration ($P$ interaction = 0.273)

**Figure 2.** UACR response by baseline HbA1c (%) and diabetes duration (years) over the 6-month study period (FAS)*




*All participants with baseline HbA1c measurements (120/120 participants randomized to finerenone, 120/122 patients randomized to placebo)
Log-transformed UACR ratios from baseline through month 6 were analyzed using an MMRM including fixed effects for treatment group, visit, treatment-by-visit interaction, baseline log-transformed UACR, and baseline-by-visit interaction, with an unstructured within-patient covariance matrix across visits. Model estimates were back-transformed and presented as geometric mean ratio. Subgroup analyses were performed using an extension of this model that additionally included fixed effects for subgroup and corresponding interaction terms
CI, confidence interval; FAS, full analysis set; HbA1c, glycated hemoglobin; LS, least squares; MMRM, mixed model for repeated measures; UACR, urine albumin-to-creatinine ratio

**Figure 3.** Effect of finerenone on UACR across continuous baseline HbA1c (%) and type 1 diabetes duration (years) (FAS)




Analyses were based on an MMRM evaluating treatment effects across the continuous range of baseline HbA1c and diabetes duration using restricted cubic splines and their interactions with treatment and visit, adjusting for baseline log-transformed UACR and baseline-by-visit interaction, with an unstructured within-patient covariance matrix across visits
FAS, full analysis set; HbA1c, glycated hemoglobin; MMRM, mixed model for repeated measures; UACR, urine albumin-to-creatinine ratio

## Conclusions

- In adults with T1D and CKD, finerenone treatment resulted in a reduction in UACR irrespective of baseline HbA1c level and diabetes duration
- Moreover, no notable differences were observed in the overall rates of adverse events including hyperkalemia, diabetic ketoacidosis and hypoglycemia by baseline HbA1c levels
- Given the prior evidence highlighting the strong prognostic importance of HbA1c and diabetes duration in this population,[10-13] these results support the potential applicability of finerenone across diverse clinical profiles of adults with T1D and CKD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### References


1. Mora-Fernández C, *et al. J Physiol* 2014;592:3997–4012.
2. Poulsen CG, *et al. Kidney Int Rep* 2024;9:3403–3413.
3. Costacou T & Orchard TJ. *Diabetes Care* 2018;41:426–433.
4. Sigfrids FJ, *et al. Lancet Diabetes Endocrinol* 2022;10:489–498.
5. Kristófi R, *et al. Diabetes Care* 2021;44:1211–1218.
6. Bakris GL, *et al. N Engl J Med* 2020;383:2219–2229.
7. Pitt B, *et al. N Engl J Med* 2021;385:2252–2263.
8. Heerspink HJL, *et al. Diabetes Res Clin Pract* 2023;204:110908.
9. Heerspink HJL, *et al. N Engl J Med* 2026;394:947–957.
10. Rawshani A, *et al. Lancet* 2018;392:477–486.
11. Lind M, *et al. N Engl J Med* 2014;371:1972–1982.
12. Hovind P, *et al. BMJ* 2004;328:1105.
13. Rossing P, *et al. Kidney Int* 2005;68:1446–1450.



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