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# Association between Intensity of statin therapy and progression of CKD: Results from KNOW-CKD

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**Background/Aims:** Statins are the cornerstone of lipid-lowering therapy for primary and secondary prevention of cardiovascular disease. There is evidence that high-intensity statins are associated with lower risk of cardiovascular events and mortality. However, little is known about the impact of different statin intensity on progression of chronic kidney disease (CKD). Here, we investigated this issue among Korean CKD patients. **Methods:** Data were retrieved from the KoreaN Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD), a prospective cohort study. We included in the analysis 1,079 non-dialysis CKD patients who had been treated with statins at baseline. Subjects were categorized into two groups according to the intensity of statin: low intensity vs. moderate-to-high intensity. Primary endpoint was a composite of a  $\geq 50\%$  decrease in estimated glomerular filtration rate (eGFR) from baseline value or end-stage kidney disease defined as initiation of chronic dialysis or kidney transplantation. **Results:** There were 213(19.7%) and 866(80.3%) patients with low and moderate-to-high statins, respectively. During the median follow-up of 3.14 years (3708 person-year), 303(28.5%) subjects reached the primary endpoint. The kidney outcome events occurred in 63(29.5%) patients in the low-intensity statin group as compared with 240(27.7%) in the moderate-to-high intensity statin group (by log-rank test,  $p=0.69$ ). Furthermore, there was no statistically significant difference in the risk of CKD progression between the two groups after adjusting confounders (Hazard ratio, 1.04; 95% confidence interval, 0.77-1.40;  $p=0.80$ ). **Conclusions:** The intensity of statin therapy was not associated with the progression of CKD.

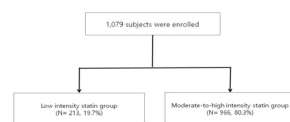


Figure 1. Subjects Categorization; Intensity of statin  
Low intensity vs. moderate-to-high intensity

Table 1. Outcome event rates according to statin intensity.

| Outcomes            | Overall     | Statin intensity group |                  |
|---------------------|-------------|------------------------|------------------|
|                     |             | Low                    | Moderate-to-high |
| No. of participants | 1,079       | 213                    | 866              |
| Renal outcome       | 303 (28.0%) | 63(29.5%)              | 240(27.7%)       |

Primary outcome was defined as a composite of a  $\geq 50\%$  decrease in eGFR from baseline value or initiation of renal replacement therapy.  
eGFR, estimated glomerular filtration rate

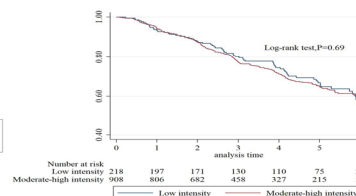


Figure 2. Log-rank test for renal outcome according to statin intensity

Table 2. Cox hazard ratios for composite outcome according to statin intensity groups

| Statin intensity | Model 1            |       | Model 2            |       | Model 3            |      | Model 4            |       |
|------------------|--------------------|-------|--------------------|-------|--------------------|------|--------------------|-------|
|                  | HR (95% CI)        | P     | HR (95% CI)        | P     | HR (95% CI)        | P    | HR (95% CI)        | P     |
| Low              | 1.00               | -     | 1.00               | -     | 1.00               | -    | 1.00               | -     |
| Moderate-to-high | 1.09 (0.83 - 1.45) | 0.504 | 1.07 (0.81 - 1.42) | 0.614 | 1.09 (0.82 - 1.45) | 0.56 | 1.04 (0.77 - 1.40) | 0.798 |

Model 1: Unadjusted  
Model 2: Adjusted for age, CCI  
Model 3: Model 2 + Sex, UPCR and eGFR  
Model 4: Model 3 + LDL-C, economic status, educational status and SBP  
HR, hazard ratio; CI, confidence interval; CCI, Charlson comorbidity index; UPCR, spot urine protein-creatinine ratio; eGFR, estimated glomerular filtration rate; LDL-C, low-density lipoprotein cholesterol; SBP, systolic blood pressure