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## Lipids and the Kidney

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The Kidney Disease Improving Global Outcome (KDIGO) guidelines [1] and the European Renal Best Practice guidelines [2] on lipid lowering in CKD share common elements, advising treatment with a statin or statin/ezetimibe combination for all adults aged  $\geq 50$  years with estimated glomerular filtration rate (eGFR)  $< 60$  ml/min/ $1.73$  m<sup>2</sup> but not treated with chronic dialysis or kidney transplantation. This recommendation is grade 1A. To summarize the situation for patients not on dialysis, the treatment recommendation based on evidence is telling us a YES for lipid lowering in CKD.

When patients progress to end-stage kidney disease and transition into renal replacement therapy (RRT), lipid-lowering treatment with a statin or a statin/ezetimibe combination should be continued. There are no data or a 'stopping statins' trial that provide guidance how to proceed. However, the SHARP study encourages patients to remain on treatment. If the patient has progressed to dialysis and has not been treated with a statin, treatment should not be started in patients with type 2 diabetes or in those  $> 50$  years of age (grade 2A). Apparently the guidelines distinguish between stages of CKD (3a-5 versus 5D) and provide a NO for patients new to dialysis without prior lipid-lowering treatment.

All other adults aged  $> 50$  years with CKD and eGFR  $> 60$  ml/min/ $1.73$ m<sup>2</sup> (categories G1 and G2) should be treated with a statin, similar to the approach in the general population (grade 1B). In all patients after kidney transplantation treatment is also recommended (grade 2B). In patients after kidney transplantation specific statins and specific doses of statins are recommended

owing to the metabolic pathways and interaction (avoid cytochrome P450 3A4 subunit and prefer fluvastatin - the ALERT Study)

We are far from having implemented the recommendation to provide statin or statin/ezetimibe treatment for most CKD patients in stages 3-5. A recent analysis from a large cohort in Germany (the German Chronic Kidney Disease cohort study [GCKD]) told us that implementation of the KDIGO guideline on lipid management requires a substantial increase in statin prescription rates. Approximately 50% of the cohort and a total of 707 patients with type 2 diabetes mellitus and nephropathy (an extremely high-risk group) had no statin treatment prescribed [3]. Half of these patients had a low-density lipoprotein (LDL) cholesterol  $> 130$  mg/dl, a value that should be substantially lower according to international guidelines (the European Society of Cardiology 2016 guidelines). The reasons behind this gap may be multiple and may include not only the choices of the doctor but also of the patient, the side effects of treatment and polypharmacy. Details need to be worked out in future investigations.

Overall, KDIGO guidelines prefer the 'fire and forget' approach and are not yet prepared to 'treat to target'. The guidelines are based on risk assessment and treat high-risk patients. Maximum doses of statins should be avoided due to occasional side effects and a risk-benefit analysis must be done by the individual nephrologist for patients with stages 2-5 CKD and not yet having received a kidney transplant.

## ► References

1. Kidney Disease Improving Global Outcome (KDIGO) clinical practice guideline for lipid management in chronic kidney disease. *Kidney Int* 2014;86:1244-52
2. Clinical Practice Guideline on management of patients with diabetes and chronic kidney disease stage 3b or higher (eGFR <45 mL/min). *Nephrol Dial Transplant* 2015;Suppl 2:ii1-142)
3. Schneider MP, Hubner S, Titze SI, et al. Implementation of the KDIGO guideline on lipid management requires a substantial increase in statin prescription rates. *Kidney Int* 2015;88:1411-18)