

# Growth more stunted in lower-income youth with kidney disease

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Even with more prescriptions for growth hormone, children and adolescents with chronic kidney disease were less likely to grow to normal height ranges if they came from lower-income families, according to research funded by the National Institutes of Health. Results from the Chronic Kidney Disease in Children (CKiD) Study are published in the December issue of the *American Journal of Kidney Diseases* and online today.

The [children](#) with lower socio-economic status (SES) who had CKD were likely to be substantially shorter than children their age from all income levels who didn't have the disease. Also, among all children with CKD, those from lower-income families were likely to be shorter than those from higher-income families. All participants had health insurance, a pediatric nephrologist, a doctor who treats kidney diseases in children, and no other known cause of growth deficiency.

Unlike findings from studies in adults, kidney disease progressed at similar rates across all income groups in CKiD. This came as a surprise to investigators, who expected faster kidney function decline with lower SES, as is found in adult CKD. Disease progression was defined by a decline in estimated glomerular filtration rate – a measure of kidney function.

CKiD, the largest study of children with CKD, is the first to study the effects of income on kidney [disease progression](#) and complications in this population. The current study examined growth failure, common in

children with CKD, because the disease can interfere with the normal effect of a child's own [growth hormone](#).

"Since these lower SES children received higher proportions of prescriptions for growth hormone, it's possible that these families are not filling all their prescriptions or are filling them but not sticking to their treatment regimen as closely as higher-income families are," said Dr. Marva Moxey-Mims, a pediatric kidney specialist at the NIH's National Institute of Diabetes and Digestive and Kidney Diseases, the study's primary funder. "Although there also could be other issues like nutrition or household finances contributing to this difference, the main lesson is that we may need to learn how to help families better follow treatment plans for their children with CKD."

Dr. Susan Furth, the study's lead author and a researcher at The Children's Hospital of Philadelphia, agrees. "More aggressive intervention or other programs to help support what's happening outside the doctor's office could help. For example, more frequent contact with nurses and other medical staff could help children and families understand and follow prescribed treatments," she said.

Also, blood pressure control – a factor associated with [kidney disease](#) progression – improved across the groups, though children with lower SES took an average of 4.5 years to get their blood pressure down within the normal range, compared to two years for those with a higher income. However, the longer time period did not appear to result in more advanced CKD in children from [low income families](#).

"Clearly, we need to find better ways to achieve good [blood pressure control](#) in all the children," said Furth. "Like the growth hormone question, [blood pressure](#) could be a matter of being able to afford or regularly take the medications prescribed, or genetics, or may involve factors like diet, interactions with other medications, or other exposures

that could hinder the treatments from working as well for some children."

Moxey-Mims added that more research is proposed in CKiD to examine treatment adherence, and a partnership with the NIH-supported Chronic Renal Insufficiency Cohort Study (in adults) will look at associations between health literacy and SES. Health literacy is the capacity to understand basic health information to make appropriate health decisions.

SES was based on reported annual family income: \$75,000 or higher (high), \$30,000 to \$75,000 (middle), and less than \$30,000 (low). Low and middle household incomes were more often associated with minority ethnicity (African-American and Latino), compared to higher income – 39 percent and 20 percent vs. 7 percent.

Provided by National Institute of Diabetes and Digestive and Kidney Diseases

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