

# Identifying kids, teens with kidney damage risk after first urinary tract infection

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Children and adolescents with an abnormal kidney ultrasonography finding or with a combination of a fever of at least 102 degrees and infection with an organism other than *E.coli* appear to be at high risk for renal scarring with their first urinary tract infection (UTI).

UTIs are a common and potentially serious [bacterial infection](#) in [young children](#). UTIs can lead to permanent renal scarring in up to 15 percent of cases in this population. Significant scarring can lead to reduced [kidney function](#), which has been associated with hypertension, pre-eclampsia and end-stage [renal disease](#) later in life.

The authors reviewed available medical literature to identify factors linked to the development of renal scarring and to develop a clinical prediction model that could be used to identify children at risk for scarring. The meta-analysis included data from nine cohort studies with 1,280 children (up to age 18 years).

Of the 1,280 children, 199 (15.5 percent) had renal scarring. Factors associated with renal scarring were a fever of at least 102 degrees, infection with an organism other than *E.coli*, an abnormal kidney [ultrasonography](#) finding, polymorphonuclear cell count of greater than 60 percent, C-reactive protein level of greater than 40 mg/L and the presence of vesicoureteral reflux (abnormal urine flow backward from the bladder to the urinary tract). Children appear to have twice the baseline risk of scarring if they have an abnormal kidney ultrasonography finding or with a combination of a fever of at least 102

degrees and infection with an organism other than *E.coli*. According to the authors, this [prediction model](#) could be used to identify nearly 45 percent of the children who go on to scar.

"Early identification of children at risk for renal scarring using the prediction rules developed in this study could help clinicians deliver specific treatment and follow-up for this small subgroup in the future." Nader Shaikh, M.D., of the Children's Hospital of Pittsburgh, and colleagues wrote in their paper.

In a related editorial, Kenneth B. Roberts, M.D., of the University of North Carolina School of Medicine, Chapel Hill, writes: "In this issue of JAMA Pediatrics, Shaikh and colleagues report their analysis of risk factors for renal scarring in infants and young children following a [urinary tract infection](#) (UTI). The methods are notable."

"The major contribution of this report is its focus on renal scarring. A link between UTIs in [children](#) and renal damage leading to hypertension and/or end-stage renal disease in adults was postulated at least a half-century ago," Roberts notes.

"As we reflect on the past 50 years and the data regarding asymptomatic bacteriuria, VUR [vesicoureteral reflux] and antimicrobial prophylaxis, we need to keep our focus on the concern of central importance beyond the acute UTI, which, as the article by Shaikh et al reminds us, is renal damage."

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