

# Recurrent but Not First-Time Symptomatic Kidney Stone Formers Are at Higher Risk for ESRD and Death

## Session Information

- Mineral Disease: Nephrolithiasis  
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- 1204 Mineral Disease: Nephrolithiasis

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## BACKGROUND

Prior studies reporting an increased risk of ESRD in kidney stone formers (SFs) are limited by the use of codes, lack of diagnosis validation, and short follow-up time. In this study we determined the incidence of ESRD and mortality in a cohort of carefully characterized SFs.

## METHODS

Coded SFs (ICD-9: 592, 594 & 274.11) in Olmsted County, Minnesota between 1984-2012 were categorized after chart review into mutually exclusive groups: incident (first-time) symptomatic SF, recurrent symptomatic SF (first stone event prior to study period), asymptomatic SF, bladder SF, and miscoded (not a SF). Age and sex-matched controls were randomly sampled from the Olmsted County population (4:1 ratio). Cox proportional hazards models were used to determine the risk of ESRD (identified using the United States Renal Data System) and mortality (National Death Index) after adjustment for baseline comorbidities.

## RESULTS

The cohort of 7036 SFs and 28,136 controls (mean age 48 years and 58% male) had 94 and 183 ESRD events and had 1139 and 3923 deaths, respectively, over a mean follow-up of 9.4 years. After adjusting for baseline CKD, diabetes mellitus, hypertension, dyslipidemia, obesity and gout, recurrent SFs but not incident SFs were at higher risk of ESRD and mortality (Table). Asymptomatic SFs were also at higher risk of ESRD and mortality, while bladder SF were at higher risk of mortality and miscoded SF were at higher risk of ESRD.

## CONCLUSION

The risk of ESRD and mortality may be higher in recurrent than incident symptomatic SFs due to more substantial renal injury from more severe stone disease. Thus efforts to reduce kidney stone recurrence may have beneficial impact on ESRD and mortality risk. Other disease that leads to kidney imaging (incidental detection of asymptomatic stones) or is miscoded as kidney stones can bias the risk of ESRD or mortality in code based studies that lack chart validation.

## RISK OF ESRD AND DEATH BY SF GROUPS COMPARED TO CONTROLS : HR WITH (95% CI)

Outcome	Incident SF	Recurrent SF	Asymptomatic SF	Miscoded	Bladder SF
ESRD	1.38 ( 0.87, 2.16)	3.32 ( 1.55, 6.99)	3.79 ( 1.66, 8.68)	6.52 ( 2.46, 19.08)	1.26 ( 0.28, 4.11)
Death	1.07 ( 0.96, 1.18)	1.21 ( 1.03, 1.41)	1.41 (1.18, 1.67)	1.07 ( 0.87, 1.3)	1.37 ( 1.11, 1.68)

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Dhondup T et al. J Am Soc Nephrol 28, 2017:382.