

Serious acute kidney injury: More common than ever

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Acute kidney injury (AKI), an abrupt or rapid decline in kidney function, is a serious and increasingly prevalent condition that can occur after major infections, major surgery, or exposure to certain medications. The incidence rates of the most serious form of AKI—which requires dialysis—increased rapidly in all patient subgroups in the past decade in the United States, and the number of deaths associated with the condition more than doubled, according to a study appearing in an upcoming issue of the *Journal of the American Society of Nephrology* (JASN).

The extent of AKI in the population is not well described. To investigate, Chi-yuan Hsu, MD, Raymond Hsu, MD (University of California, San Francisco) and their colleagues analyzed data from the Nationwide Inpatient Sample, a nationally representative dataset, to identify patients with AKI who required dialysis.

Among the major findings:

- From 2000 to 2009, the incidence of dialysis-requiring AKI increased from 222 to 533 cases per million person-years, averaging a 10% increase per year.
- Older age, male sex, and black race associated with higher incidence of dialysis-requiring AKI.
- The rapid increase in incidence was evident in all age, sex, and race subgroups examined.
- Changes over time in the population distribution of age, race,

sex, as well as trends of sepsis, [acute heart failure](#), and receipt of [cardiac catheterization](#) and [mechanical ventilation](#) accounted for about one third of the increase in dialysis-requiring AKI among hospitalized patients.

- The total number of deaths associated with dialysis-requiring AKI rose from 18,000 in 2000 to nearly 39,000 in 2009.

The findings revealed that the incidence of dialysis-requiring AKI is now higher than the incidence of end-stage renal disease that requires dialysis or a transplant. "Most of the discussion regarding the 'epidemic of kidney disease' in the past decade or more has been focused on [chronic kidney disease](#) and end-stage renal disease. We want to point out that acute kidney injury is equally important," said Chi-yuan Hsu.

Because the number of non-dialysis requiring AKI cases is approximately ten-fold higher than the number of dialysis-requiring AKI cases, and because even small acute changes in [kidney function](#) measurements are associated with increased morbidity and mortality, the data likely represent only the 'tip of the iceberg' in terms of the public health burden of AKI.

Raymond Hsu added that additional studies are needed to address reasons for the underlying disparities among sex, age, and racial groups and to determine the causes behind the rapid increase in the incidence of dialysis-requiring AKI. "Is it because there are more interventions in modern medicine that are harmful to the kidneys? We did examine four factors in this paper but those only appeared to explain a fraction of the increase in incidence," he explained. "Once we identify factors, hopefully we can intervene to reduce the number of acute kidney injury cases."

More information: *Journal of the American Society of Nephrology* [doi: 10.1681/ASN.2012080800](https://doi.org/10.1681/ASN.2012080800)

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