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## Severe Acute Kidney Injuries Rise Rapidly in U.S.

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Severe acute kidney injuries are becoming more common in the United States, rising 10 percent per year and doubling over the last decade, according to a retrospective study at the University of California, San Francisco (UCSF).

The study, published online last week in the *Journal of the American Society of Nephrology*, analyzed information from a national database that monitors all causes of hospitalizations and used this data to estimate the total number of acute kidney injuries in the United States that were severe enough to require a patient to be placed on dialysis.

The results showed that these injuries, caused by such incidents as major infections, trauma, complications following surgery and adverse reactions to drugs, increased by 10 percent per year from 2000 to 2009, from 222 to 533 cases per million people. The study also showed that the total number of deaths associated with acute kidney injury more than doubled during that time, from 18,000 in 2000 to nearly 39,000 in 2009.

"That was a staggering revelation of how increasingly common and how life-threatening acute kidney injury has become over the past decade in the United States," said Raymond K. Hsu, MD, a UCSF nephrologist who led the research.

The UCSF team estimated that about 30 percent of the increase can be attributed to commonly known causes, such as the rise in severe infections, ventilator usage, acute heart failure and cardiac catheterizations over the same time period. But doctors do not yet know what else accounts for the rise in acute kidney injury and what hospitals nationwide can do to address the problem, Hsu said.

UCSF is one of the world's leading centers for kidney disease treatment, research and education, and its Division of Nephrology is nationally ranked among the best programs in the nation by U.S. News & World Report.

## Acute Kidney Injury: What's Next?

The epidemic of acute kidney disease is largely a silent one, because the organ itself is so redundant in structure and steadfast in function, according to Chi-yuan Hsu, MD, who is chief of the Division of Nephrology in the UCSF School of Medicine and senior author on the paper. Composed of more than a million identical structures called nephrons, which filter blood and produce urine, a single kidney can function even if a large part of it is damaged or shut down.

"Even if you were to lose 80 percent of your kidney function, you wouldn't feel it," said Chi-yuan Hsu, who is not related to Raymond Hsu. But once the insult to the kidneys becomes severe enough to require a patient to go on dialysis, he said, the result is often fatal -- about one-fifth of patients with acute kidney injury requiring dialysis in the study died.

Analyzing a decade's worth of data and coming up with national statistics on acute kidney injury is a first step towards discovering why this condition has been steadily rising and developing measures to prevent them in the future, the UCSF team said.

"We hope that clinicians, researchers and the general public can gain a higher appreciation of the devastating impact of acute kidney injury that is comparable to the near universal, basic understanding of other forms of acute organ injury, such as heart attack and stroke," Raymond Hsu said.

The article, "Temporal Changes in Incidence of Dialysis-Requiring AKI," by Raymond K. Hsu, Charles E. McCulloch, R. Adams Dudley, Lowell J. Lo and Chi-yuan Hsu will be published online by the *Journal of the American Society of Nephrology* on Dec. 6, 2012.

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### Journal Reference:

1. R. K. Hsu, C. E. McCulloch, R. A. Dudley, L. J. Lo, C.-y. Hsu. **Temporal Changes in Incidence of Dialysis-Requiring AKI**. *Journal of the American Society of Nephrology*, 2012; DOI: [10.1681/ASN.2012080800](https://doi.org/10.1681/ASN.2012080800)

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