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EMBARGOED FOR RELEASE UNTIL 5:00 PM ET ON JULY 30, 2009

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NEW STATISTICAL METHOD SHOWS IMPORTANCE OF DIALYSIS DOSE

'Accelerated Failure Time' Model Better Explains Survival Rates in Hemodialysis Patients

Washington, DC (July 23, 2009) — A new approach to statistical analysis may be better suited to study the relationship between higher “dose” of dialysis and survival time for patients with advanced kidney disease, according to an upcoming paper in the *Journal of the American Society of Nephrology* (JASN).

Some studies have shown longer survival times for patients receiving a higher dose of dialysis, while others show no such relationship. Thus, Christos Argyropoulos, MD, PhD (University of Pittsburgh Medical Center) and colleagues analyzed data from a large group of U.S. dialysis patients using the new statistical technique as well as conventional methods.

The "accelerated failure time" model (inspired by considerations of what happens when kidneys cease working and many unidentified toxins start building up in the patient's bloodstream) showed longer survival times at a higher dose of dialysis, compared to no significant effect with the conventional model. Upon analysis using this technique, patient survival increased steadily along with dialysis dose, after adjustment for other risk factors (age, heart disease, diabetes, comorbid conditions, etc).

The results suggest that the conflicting results of previous studies may be related to the limitations of the statistical methods used. Small to moderately sized clinical trials may be particularly sensitive to this effect, adds Argyropoulos. "From a public health perspective, it may be reasonable to re-examine the clinical trial data with unconventional, yet scientifically valid statistical techniques and encourage relevant basic research in statistics and epidemiology to facilitate future clinical studies in this area."

The study was limited by the lack of follow-up information on the dose of dialysis the patients received at multiple clinic visits. "Consequently, no conclusions could or should be drawn about the validity of existing national and international guidelines concerning an adequate dialysis dose," says Argyropoulos. He also stresses that the findings cannot be generalized to non-U.S. patients.

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Co-authors included Chung-Chou H. Chang, PhD, and Mark Unruh, MD (University of Pittsburgh); Nancy Fink, MPH (John Hopkins University, Baltimore); and Laura Plantinga, MSc, and Neil Powe, MD (University of California, San Francisco). The research was supported by an unrestricted grant through the Renal Discoveries–Baxter Extramural Grant program from Baxter Healthcare International to the authors and by grants from the Agency of Healthcare Research and Quality (AHRQ), the National Institutes of Diabetes and Digestive and Kidney Diseases (NIDDK) and the National Heart, Lung and Blood Institute (NHLBI).

The study entitled, “Considerations in the Statistical Analysis of Hemodialysis Patient Survival,” will appear online at <http://jasn.asnjournals.org/> on July 30, 2009, doi 10.1681/ASN.2008050551.

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