Major step forward reduces mortality in kidney failure patients: Clinical trial

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Mortality in patients with kidney failure has been found to be 23% lower among those treated with high dose hemodiafiltration compared to those treated with high flux hemodialysis, according to new research from the

CONVINCE consortium led by University Medical Center Utrecht.

The study, published today in the *New England Journal of Medicine*, is the first international, randomized trial to compare the two treatments. The findings indicate that wider use of high dose hemodiafiltration would have clear benefits for patients.

Chronic kidney disease is a leading global health problem that affects an estimated 830 million people globally. When the kidneys can no longer do their job, dialysis is used to clean the blood by removing waste products, a function normally performed by the kidneys themselves. Around four million people are on dialysis worldwide.

Hemodialysis is the most common form of dialysis used in the treatment for kidney failure. Though it has improved over the years, it is not good at removing larger molecules from the blood. Hemodiafiltration is a newer technology that can remove larger molecules, but it is not suitable for all patients due to the fact that it requires a higher blood flow rate to be effective. Previous studies have failed to conclusively prove that one method is more effective than the other.

The CONVINCE trial has been led by researchers at UMC Utrecht together with collaborators at University College London (UCL), Charité Universitätsmedizin Berlin, University of Bari, The George Institute for Global Health and Imperial College London, along with dialysis providers Fresenius Medical Care, Diaverum and B. Braun Avitum. It is the first multinational, randomized trial to compare high-flux hemodialysis and high-dose hemodiafiltration, with the aim of clarifying which method is superior.

At 61 centers in eight European countries, a total of 1,360 patients were randomized, with 683 treated with high-dose hemodiafiltration and 677 treated with high-flux hemodialysis three times a week.

During a median follow-up of 30 months, all-cause mortality was 21.9% among those treated with high-flux hemodialysis, compared to 17.3% for those treated with high-volume hemodiafiltration. This 4.6% difference represents a 23% reduction in the risk of death.

Lead investigator, Professor Peter Blankestijn (UMC Utrecht), said, "Our results show clear survival benefits for using hemodiafiltration over hemodialysis to treat kidney failure, akin to a 23% reduction in all-cause mortality. My hope is that hemodiafiltration can become the new standard."

Professor Matthias Rose (Charité University, Berlin), a senior author of the study and expert in patient-reported outcomes, said, "In addition to clinical events, patient perception and thus reported outcomes are very important. We are currently performing in-depth analyses of the extensive data on patient-reported outcomes that have been collected in the CONVINCE study, with results expected later this year."

While hemodialysis is standard treatment in most countries, hemodiafiltration is less widely used in some places and is not used at all in places like the US. Most modern dialysis machines can perform either method, which would make a switch to hemodiafiltration relatively easy.

Professor Andrew Davenport (UCL Medicine and the Royal Free Hospital), a senior author of the study, said, "During my career I've watched new treatments emerge for many diseases, from diabetes to cancer, but we haven't seen the same advances in the treatment of chronic kidney disease. This study proves that targeting different molecules through hemodiafiltration has clear benefits for patients. I would say that this is the first major step forward in many years and is good news for kidney disease patients and their families."

More information: Peter J. Blankestijn et al, Effect of

Hemodiafiltration or Hemodialysis on Mortality in Kidney Failure, *New England Journal of Medicine* (2023). DOI: 10.1056/NEJMoa2304820

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