More than 2 million people die prematurely every year because treatment for kidney failure is unavailable

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New estimates published in *The Lancet* indicate that at best only half of people worldwide needing kidney dialysis or transplantation to treat kidney failure in 2010 received it. This suggests that at least 2.3 million people may have died prematurely from kidney failure because they could not access this life-saving treatment.

The research shows that most of these preventable deaths occurred in China, India, Indonesia, Pakistan, and Nigeria, where less than a quarter of eligible patients receive treatment for kidney failure.

"The high cost of current dialysis techniques (US$ 20 000-100 000 per person each year) are unaffordable to most people who need it," says lead author Professor Vlado Perkovic of The George Institute for Global Health and The University of Sydney, Australia.

"With the number of people receiving dialysis or kidney transplantation set to more than double to over 5 million by 2030 there is a dire need for low-cost dialysis techniques, as well as population-wide prevention programmes to tackle the key risk factors for end-stage kidney disease including diabetes, high blood pressure, and obesity."

Perkovic and colleagues systematically reviewed observational studies, renal registries, and contacted national experts to collect data on the actual numbers of patients receiving renal replacement therapy (RRT;

dialysis and kidney transplantation) in 123 countries, representing 93% of the world population. They used mathematical modelling to develop both upper and lower estimates of the likely need for RRT in each country, and projected needs to 2030.

The findings show that 2.62 million people were actually treated with RRT in 2010, with 78% of them given dialysis (see table 2 page 3). Most (92.8%) of those treated in 2010 lived in high- or high-middle income countries, and just 7.2% in low- and low-middle income countries.

However, the authors calculated that worldwide the number of patients needing RRT in 2010 were 4.9 million in a conservative model (in which RTT was only partly implemented) and 9.7 million if RRT access were high in all countries. "These scenarios suggest that between 2.3 million and 7.1 million individuals who could have been kept alive with RRT in 2010 died prematurely because treatment was unavailable," explains Perkovic.

The authors also forecast that the number of people receiving RRT will more than double to 5.4 million by 2030, mostly in developing regions such as Asia (from 0.968 million in 2010 to 2.162 million by 2030) and Africa (from 0.083 million to 0.236 million; see figure 5 page 6).

According to Professor Perkovic, "Quantifying the burden of end-stage kidney disease is vital because without good numbers there can be no targets for improvement or evidence for industry to invest in developing new low-cost technologies for RRT. The large number of deaths occurring because of poor access to treatment sets a demanding task for the nephrology community and the health-care and research communities in general."

Writing in a linked Comment, Josef Coresh from John Hopkins University, Baltimore, USA, and Tazeen Jafar from Duke-NUS

Graduate Medical School in Singapore say, "Reduction in worldwide inequity in access to RRT needs attention to chronic kidney disease from international donors and developmental agencies. Engagement of powerful new partners, such as the Bill & Melinda Gates Foundation and the UK Department for International Development, might be needed to make substantial progress in low-income and middle income countries. The time has come to include treatment of kidney failure, and its prevention by detection and management of chronic kidney disease, in the global health agenda."

As a result of this research, three leading players in global kidney health have joined together to create a world-wide competition, with a prize of $100,000, to design the world's first truly affordable dialysis machine. The prize is sponsored by The George Institute, the International Society of Nephrology and the Asian Pacific Society of Nephrology with the support of the Farrell Family Foundation.

According to Perkovic, "Dialysis machines purify the blood, replacing an essential function of the kidneys. If we can develop an affordable dialysis machine with low operating costs, that runs on solar power and uses local water sources, many more people will have access to the treatment and millions of lives could be saved."

More information: *The Lancet*, www.thelancet.com/journals/lan … (14)61601-9/abstract

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