

## Profile

### Giuseppe Remuzzi—a pioneer in nephrology

A career in medicine looked unlikely for Giuseppe Remuzzi. Born in 1949, in Bergamo, Italy, he was raised in a family whose business was in marble, sculpture, and art. But an urge to help others switched his focus first to psychology and then to a medical degree at Milan University. Remuzzi's specialism in kidney medicine was pure chance—he needed a full-time job, and Bergamo Hospital had a vacancy in nephrology. Here he applied his knowledge of platelet function and coagulation to haemolytic-uraemic syndrome, which can lead to chronic kidney disease and renal replacement therapy. Papers published in these areas—including two in *The Lancet* in 1977—were the catalysts to what has become a career in nephrology spanning almost four decades.

Now Head of Nephrology and Dialysis and Chairman of the Department of Transplantation at Bergamo Hospital and Research Coordinator of Mario Negri Institute for Pharmacological Research in Bergamo, Remuzzi has seen big changes in kidney medicine since the 1980s. Back then, work focused on improving the outlook for patients with end-stage renal disease. Remuzzi pays tribute to the work of pioneers such as Barry Brenner, who delved deep into the processes behind glomerular function and their possible reversibility. Early work on the use of angiotensin-converting enzyme (ACE) inhibitors to slow the decline of glomerular filtration rates proved dialysis was avoidable, not inevitable. In 1998, Remuzzi wrote about his dream of no more dialysis in this journal. Asked 12 years on how close he thinks this is, Remuzzi says the aim is not some miracle solution for people on dialysis—it is about early detection of renal dysfunction so that patients never reach dialysis to begin with. "In the majority of patients with urinary protein excretion, non-diabetic and diabetic renal disease can be prevented from progressing." Remuzzi and his team have designed a remission protocol—involving multidrug treatment and lifestyle advice to reduce proteinuria—that can prevent most patients developing end-stage renal disease.

Despite such advances, Remuzzi points out that "The heart beats, the lung breathes—the kidney does not make any noise, and often people end up presenting with end-stage kidney disease having never realised anything was wrong." Lack of awareness of kidney disease among the public is compounded by the fact it receives little attention in health agendas. Remuzzi points to the enormous effect that chronic kidney disease has on cardiovascular health: "By protecting the kidney, you can avoid cardiovascular disease, heart failure, and coronary artery disease. It's a simple message—protect the kidney, protect the heart." Yet this remains an overlooked health issue. WHO's Global Burden of Disease Initiative, for example, has not referred to the kidney at all. But Remuzzi says there are signs this is changing, with WHO recently

contacting the International Society of Nephrology (ISN) to establish a contact who can provide information on kidney function as a risk factor for cardiovascular disease.

A key concern for ISN is how early detection of increased protein excretion through a simple urine test can reveal kidney dysfunction—well before the need for dialysis or transplantation. And in low-income and middle-income countries such interventions are the difference between life and death. To this end, Remuzzi and colleagues worldwide are implementing the ISN Commission for the Global Advancement of Nephrology project. In countries such as Bolivia, Uruguay, and Nepal, health workers are visiting homes and testing urine to detect kidney problems, and then providing cheap drugs and lifestyle advice to those who need it. Yet the attitude of richer nations to screening for chronic kidney disease is not so enthusiastic. "There is a feeling among wealthy nations that since they have dialysis and transplantation options for the worst cases, there is no need to screen for earlier problems", explains Remuzzi. "Poorer countries are really showing the richer countries the way ahead with their attitude to screening", says Remuzzi, adding that "the costs of a screening programme, especially just for those at high risk, would be far outweighed by the savings from preventing dialysis and transplantation".

Alongside these efforts, Remuzzi is investigating the kidney's ability to regenerate itself: "One of the most pressing issues facing kidney medicine is trying to understand if the kidney has the ability to regenerate itself and see whether we can intervene and modulate that process." His team has also recently had a protocol approved by the Italian Government to use bone marrow cells to help repair acute kidney injury caused by cisplatin chemotherapy. Remuzzi believes drug development for chronic kidney disease needs more interaction between science and medicine, so that a problem diagnosed at the bedside can be analysed quickly by the same team in the laboratory with animal models. He also thinks research into rare diseases, in which the metabolic processes of the kidney are implicated, could aid drug development.

Remuzzi's work is an inspiration for many of his colleagues. According to David Warnock, of the University of Alabama's Division of Nephrology, "Giuseppe Remuzzi is one of the most remarkable individuals in the field of kidney medicine, with contributions to a multitude of areas that span the spectrum from clinical science to basic research endeavours. He has a marvellous global perspective on the importance of kidney health, and has made very significant contributions to public health initiatives, especially in developing countries."

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