

## Dedication to Nils Alwall

In the mid-1940s the artificial kidney was independently developed for clinical use by Alwall in Sweden, Kolff in The Netherlands and Murray in Canada. The development was the inevitable result of over 200 years' work with dialysis membrane and the principle of dialysis, and anticoagulants coupled with a growing understanding and quantification of uremia.

The early delineation of the many clinical uses for acute dialysis was almost solely the result of the school of Nils Alwall at the University of Lund. The school's discoveries were described in a series of 30 papers entitled 'On the Artificial Kidney' that appeared in *Acta Medica Scandinavica* between 1947 and 1955. Technical and quantitative problems of dialysis were studied and solved. The use in acute uremia, anticoagulation and the outcome of patients were carefully studied. Unlike its competitors, the Alwall artificial kidney not only reduced uremia and regulated electrolytes, but it could also be used for ultrafiltration. This was achieved by preventing distention of the blood-containing cellophane tubing by compressing it between two perforated metal drums. A pressure difference could then be used, driving fluid from blood to the dialysate. Thus much interest was devoted to fluid overload states. These studies clarified the relative role of uremic intoxication and fluid overload in what until that point had been called 'uremic pneumonitis'. Nils Alwall coined the much better term 'fluid lung'. The first papers describing the use of the artificial kidney in barbiturate intoxication and nephrotoxicity from radiographic contrast media were published. Experimental aspects and a dialysis apparatus small enough to dialyze rabbits were developed and used to clarify the fluid lung problem. Because of the trailblazing clinical work, and the important clinical development, a personal professorial chair and a special Department of Nephrology were created for Nils Alwall at the University of Lund in 1957.

Nils Alwall immediately grasped the importance of dialysis for chronic renal failure and several patients at



the nephrology department at Lund are among the oldest survivors on chronic hemodialysis in Europe, now going into their third decade of treatment.

The artificial kidney division, later the Department of Nephrology, became the leading school of clinical nephrology, visited by researchers from all over the world. It also became the training ground for physicians both from Eastern and Western Europe, the Americas and Northern Africa. The names and present places of work of many of the co-workers in this book attest to this.

Many honors have been given to Nils Alwall, culminating in the Presidency of the European Dialysis and Transplant Association in 1970 and Presidency of the International Society of Nephrology in 1975.

A medical technique such as dialysis needs basic research early on, and this was amply supplied by Nils Alwall and co-workers. Later, the techniques needed to be taught and the list of co-workers shows Nils Alwall's ability as an international teacher. Like all modern medical technology, it is expensive and later needs thoughtful organization and finally political leverage. Here also Nils Alwall contributed by a review of the need for dialysis,

suggestions for regionalization in Sweden and elsewhere. Finally he was a participant in the political process by being a counselor in the local region of the University of Lund. Thus from its earliest research stages to the final political application of dialysis, Nils Alwall has served as a scientist, teacher, organizer and political advocate. The international community of nephrologists owes him a great debt and the authors of the research papers in this issue of *Nephron* dedicate their work to Nils Alwall with grateful admiration.

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