Daily and Nocturnal Hemodialysis
Contributions to Nephrology
(Founded 1975 by Geoffrey M. Berlyne)

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Frequency of hemodialysis sessions for treatment of chronic renal insufficiency has been a major problem since the first use of the artificial kidney. As early as 1960, Dr. Scribner was aware that sessions performed too infrequently were unable to address cardiovascular, nutritional, and neurological complications. This is why he rapidly proceeded to modify his first strategy of treatment sessions once every two or three weeks to twice per week, and finally to three times per week. Why did he stop at only three sessions weekly? The exterior arteriovenous shunts would have allowed more, but this was a great advance for the time and the main complications were avoided. The long duration of the sessions (8–10 h) allowed a slow, well-tolerated correction of the two-day interdialytic abnormalities.

In 1970, the beneficial effects of the long duration disappeared when Dr. Cambi proposed a 4-hour three times weekly treatment strategy. This strategy was well received by patients, and accepted by providers for economical reasons. This strategy was also supported by the Kt/V index, an optimal level being obtained using the 4-hour three times weekly treatment strategy. However, the non-physiologic aspects of the two-day interdialytic period were neglected and not easily corrected in the shorter 4-hour sessions.

I had known Dr. Scribner since 1961, when he came to Lyon to help us set up our own program. I visited him again in 2003. Treatment frequency had become his greatest concern, along with duration. This is reflected in the new adequacy index he recently proposed. As such, Dr. Scribner foresaw, with great clarity, the beginning of a new era in hemodialysis.
Edited by Dr. R.M. Lindsay, with its many competent contributors, this book represents an important and timely fundamental contribution to the practical development of daily hemodialysis. At the same time, the reader will benefit from being made aware of many aspects of daily hemodialysis remaining to be investigated in order to define the proper indications of the different daily strategies, along with the relative importance of dose and frequency.

J. Traeger
Interest in quotidian (daily) hemodialysis appears to be growing worldwide. Some clinical investigators have advocated short high-efficiency daily hemodialysis, whereas others promote long slow hemodialysis while the patient sleeps. The latter is invariably carried out in the patient’s own home. Short hours daily hemodialysis likewise has been used as a home therapy but has also been used in center to treat chronic hemodialysis patients. The first report on daily hemodialysis goes back as far as 1969. Since then, publications were scant until the Toronto program of long slow nightly dialysis began in 1994. There are now over 400 publications on quotidian dialysis coming from Canada, the USA, Italy, Belgium, the Netherlands, and France. While these reports are of generally small and often uncontrolled studies, they are nevertheless consistent in reporting physiological benefits, improvement in patient well-being and quality of life, and overall potential cost savings as compared with current conventional hemodialysis. The reports have been sufficient to convince providers in the Netherlands to recognize daily therapies in the home environment and to apply an appropriate reimbursement system. The government of Ontario, Canada, is also considering recognizing these therapies in the home environment, but a final decision has not yet been reached. In the USA, the published results have stimulated the National Institutes of Diabetes, Digestive and Kidney Diseases/National Institutes of Health (NIDDK/NIH) to fund further research in the form of randomized prospective clinical trials. These trials are desperately indicated now that the results of the HEMO study are known. This latter study showed that increasing the dose of dialysis (Kt/V) beyond the minimum recommended by the Dialysis Outcomes Quality Initiative does not improve outcomes with three times weekly hemodialysis treatments. The HEMO study tells us that the limits have been reached with intermittent therapy and that we must now explore more frequent treatments. The interest in daily therapies has also stimulated the establishment of a quotidian dialysis registry for initially North American patients but eventually will encompass patients worldwide. This venture is also supported by NIDDK/NIH along with the International Society for Hemodialysis, the dialysis
industry, and by existing registries such as the US Renal Data System and the Canadian Organ Replacement Registry. It is anticipated that this registry may provide data regarding patient morbidity and mortality long before the results of definitive NIH-sponsored studies are available. It is believed by many in the field that 2005 and 2006 will be the ‘watershed’ years for daily dialysis therapies and that considerable growth in them will be expected thereafter.

With the growth of any new therapy it is clearly important to provide the necessary information on the implementation of a daily dialysis program. The concept of writing a textbook on ‘Daily and Nocturnal Hemodialysis’ came after the London group published the results of their study. The London Daily/Nocturnal Hemodialysis Study was solely funded by the Ontario Ministry of Health and Long-Term Care (MOH) who also funded the Toronto initiative. Part of the MOH funding for the London study went toward the dissemination of study results. This funding was augmented by generous unrestricted financial support toward publication costs given by Fresenius Medical Care of North America. These funds allowed 11 manuscripts from the London study to be published together as a single supplement in the American Journal of Kidney Diseases in 2003. J. Balwit and his colleagues at Ahrens Balwit & Associates, Inc. (Madison, Wisc.) helped in manuscript and issue preparation. It was during this phase that the notion of the writing of a text concentrating on clinical and technical issues of importance came about. The initial idea was to have the members of the London team who had taken responsibility for the writing of specific scientific papers maintain their ‘ownership’ of their specific area and be the appropriate chapter authors with Dr. R.M. Lindsay as editor. The latter, in discussion with J. Balwit, then felt that the textbook would be enhanced by utilizing the experience and knowledge of other workers in the field of daily dialysis. All were delighted when Drs. Buoncristiani, Lockridge, Pierratos, and Ting accepted the invitation to co-edit this work and again when other prominent investigators agreed to participate in chapter writing. The result is the first text devoted solely to daily hemodialysis therapies put together by the current experts in the field. The project is honored by the fact that Professor Jules Traeger, one of the pioneers in this field, has reviewed the collected material prior to publication and has kindly agreed to write the Foreword to the text.

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