



Fourth Edition
Core Curriculum for the Dialysis Technician
A Comprehensive Review of Hemodialysis

Core Curriculum for the Dialysis Technician

Acknowledgments

Having worked on all four editions of Amgen's *Core Curriculum for the Dialysis Technician* since 1992, I know what a tremendous team effort goes into writing, editing, illustrating, referencing, and reviewing each module—and my gratitude toward all of the stellar individuals who contributed their time and dedication to this vital project is boundless. Our mutual goal, as always, is to help dialysis centers across the nation train patient care technicians to do the best possible job of caring for people on dialysis. This much-awaited fourth edition incorporates 2006 KDOQI™ Guidelines, USRDS figures, AAMI Standards, the national *Fistula First* breakthrough initiative, Life Options research, and much more.

The American Nephrology Nurses Association (ANNA) and the National Association of Nephrology Technicians/Technologists (NANT) contributed their tremendous expertise and focus on professionalism, and the *Core Curriculum* is better for it. Both organizations have a long tradition of initiatives to improve dialysis technician training, and their efforts are very much appreciated.

We were extremely fortunate to have an outstanding group of expert authors who worked together tirelessly via conference call and email to divide and conquer the material; update the module content, posttests, and illustrations; verify each other's suggestions; and reference each key point.

Our Advisory/Review Board contributed decades of clinical knowledge and practical experience, validating and expanding on the work of our authors, and adding an additional layer of verification so that the *Core Curriculum* will, in fact, be the resource we all intend it to be.

In addition, several members of the Medical Education Institute's team made contributions so numerous and important that I'd like to acknowledge them here:

- Susan Hossli, MSN, RN, who coordinated the entire author revision and review process, wrote and edited modules, tracked down references, contributed illustration ideas, and helped us pull everything together
- Eva Duran, who did layout for the entire project, proofread text, verified references, worked with the medical illustrator and graphic artist, managed the schedule, and fine-tuned each module
- Kristi Klicko, who proofread text, verified references, tracked figures and permissions, managed the print production process, and updated the glossary
- Paula Alt, Brian Frick, and Sharon Sahr, who provided a “fresh eye” to review each module, asked pertinent questions, and made a number of suggestions that improved the final product
- Todd S. Ing, MD, and Zbylut J. Twardowski, MD, who provided careful, thoughtful nephrologist reviews of each module to ensure that the science was accurate, clear, and up-to-date

The mission of the non-profit Medical Education Institute is to help people with chronic disease learn to manage and improve their health. Thus, the *Core Curriculum for the Dialysis Technician* is a project that has always been close to my heart, because of its potential to help improve patients' day-to-day lives by enhancing the preparation and professionalism of patient care staff. Technicians who treat patients with respect, courtesy, and dignity and who encourage patients' efforts to learn and self-manage their kidney disease have the opportunity to influence countless lives for the better.



Dori Schatell, MS
Executive Director, Medical Education Institute, Inc.
September, 2008

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Core Curriculum for the Dialysis Technician

Foreword

Each year, the number of ESRD patients rises by 5% to 7%. And, patients are getting older and have more health problems, which complicates their care. The dialysis care team must cope with fixed payment levels, more regulations, and a nursing shortage. Yet, they have the vital job of delivering optimal care. Technicians—the largest number of caregivers in dialysis—need skill, professionalism, and knowledge to meet the ever-changing challenges of dialysis. Your role as a technician is central to the delivery of safe, high quality care.

Better technology has made dialysis safer and more efficient. But, technology alone can never replace the commitment and dedication of committed patient care staff.

Other members of the care team—nurses, doctors, social workers, dietitians—complete a formal course of study to learn their jobs. Their years of learning and respect for their chosen field leads to professionalism. Plus, the history of their profession garners respect from their peers and the patients they serve. However, there are very few formal dialysis technician training programs in the United States. As of this writing, most states do not require technicians to become certified. Each dialysis provider takes on the task of training technicians, and how that training is done varies from clinic to clinic. You can obtain voluntary certification and enhance your own knowledge and professionalism.

I've been a witness to more than 30 years of challenges and changes in dialysis. I became a dialysis technician straight out of the military, and at the time, had no concept of what the job would entail. My training back then was entirely done on the job. The pace, patient load, and focus was quite different then than it is now. Typical treatment times were 5 to 6 hours. The shift turnover time wasn't such a stress. Nursing shortages were not an issue, and staff-to-patient ratios were not yet a concern. We didn't focus on kinetic modeling and had no concept of sodium profiling. Our goal was to have the patient feeling "well." My educator had my undivided attention to her teaching, and she, in turn, was able to dedicate her time to me.

Today, a typical treatment time is 3 hours. A Kt/V goal must be met. A 4:1 patient/staff ratio is not unusual. Training can be with a preceptor. Learning "how to do dialysis" becomes the focus, and the rationale for why things are done may become secondary. I've always approached dialysis as "a life sustaining treatment, a life threatening procedure." In the fast pace of today's dialysis clinics, the severity and incidence of errors can be exaggerated. You, as a dialysis technician, are in the forefront of ensuring each patient's safe and efficient treatment. How well you understand the treatment and the consequences of improperly applied procedures is critical to keeping your patients safe and healthy. As technicians, we hold our patients' lives in our hands by virtue of our skill and knowledge of dialysis.

The *Core Curriculum for the Dialysis Technician* is a tool that has been widely used and accepted for educating new patient care technicians about the history, principles, theory, application, and practices of dialysis care. The *Core Curriculum* can improve the consistency of training content between clinics and across the nation. With the *Core Curriculum* in hand, you can learn to care for your patients safely and efficiently.



Danilo B. Concepcion, CCHT, CHT
President, National Association of Nephrology Technicians/Technologists (NANT)
February, 2006



The Future in Renal Technology

Providing quality dialysis in today's healthcare environment presents many challenges. Skilled technicians, with the help and supervision of the nephrology nurses who work alongside them, play a critical role. As Danilo Concepcion points out, the need for comprehensive dialysis technician training is as great—or greater—than it was when the first edition of the *Core Curriculum for the Dialysis Technician* was published in 1992.

The newly-revised 4th edition of the *Core Curriculum* will help to fill that need. Like previous editions, it will serve as a single, comprehensive source of information on every aspect of dialysis, including scientific principles, devices, reprocessing, water treatment, and more.

Producing this edition was a collaborative effort. Many dialysis nurses and other professionals spent hours of their own time updating the contents, illustrations, and references to reflect current dialysis practices. Speaking for the ANNA members involved in the process, I can assure you that we take pride in our contributions. Our work on the *Core Curriculum* is a reflection of our longstanding commitment to improve the training and educational opportunities available to dialysis technicians.

Nephrology nurses and skilled dialysis technicians share a common goal—providing safe, effective dialysis care that enables our patients to live long and live well. We must come to our task as well-prepared as possible, using all the resources available to enhance our skills and knowledge. The newly-revised *Core Curriculum* will be a welcome addition.



Suzann VanBuskirk, BSN, RN, CNN
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This *Core Curriculum for the Dialysis Technician* is offered as a general educational guide for dialysis technicians and other medical professionals. When using these materials, the reader must be aware of certain limitations.

This *Core Curriculum* is not to be used as a substitute for professional training, or as a substitute for practice guidelines and protocols of the particular hospital or clinic providing dialysis treatment. This is important, since certain hospital or clinical protocols may differ from those discussed in this *Core Curriculum*. There may also be local, state, and federal regulations imposed on the technicians, hospital, or clinic which require different practices from those outlined in this guide. It is important to consult product labeling for any pharmaceutical or medical device referenced in this *Core Curriculum*.

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The reader must recognize that dialysis involves certain risks, including the risk of death, which cannot be completely eliminated, even when the dialysis procedure is undertaken under expert supervision. Use of these materials indicates acknowledgment that neither the Medical Education Institute, Inc., the authors, the reviewers, nor the funder will be responsible for any loss or injury, including death, sustained in connection with, or as a result of, the use of this *Core Curriculum*.

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