Preface

_Hemodialysis International_, Volume 7, issue 4, is a collection of proceedings of the 9th International Symposium on Hemodialysis held March 2–4, 2003, in Seattle, Washington, in conjunction with the 23rd Annual Dialysis Conference. The issue contains a Laudatio, 9 original articles, 3 review articles, a case report, and correspondence.

Albert Leslie Babb (Twardowski, page 269), Professor Emeritus of Chemical Engineering and of Nuclear Engineering at the University of Washington in Seattle, Washington, and Professional Engineer, received the Award for Lifetime Achievements in Hemodialysis (HD). When asked about his lifelong dedication to his profession, Dr Babb is fond of quoting Herbert Hoover, the engineer-turned-U.S. president, “The job of the engineer is to clothe the bare bones of science with life, and comfort, and hope.” Throughout his career, he has done exactly that. Although his achievements in chemical and nuclear engineering are legion, the HD community is lucky that he decided to work in the HD field. It all started with an invitation by Dr Belding H. Scribner to collaborate in matters of HD in 1963. Dr Babb is the father of proportioning kidney machines for in-center and home HD. Based on the middle-molecule concept he created the first mathematical models to assess dialysis efficiency including the “square meter-hour hypothesis” and the “dialysis index.” His research contributed to the spread of chronic dialysis throughout the world and stimulated further clinical research.

Home HD has long been a common Australian support modality owing to both the vast geography and to the concentration of the Australian population in relatively few urban areas. Agar et al. (page 278) report on the first government-funded, home-based, 6-nights-per-week nocturnal HD program in Australia that began in July 2001. As in other reports on nocturnal HD, they noted improvements in blood pressure control, restorative sleep, mood, and cognitive functions. Pre- and postdialysis phosphate levels were within the normal ranges without phosphate binders. Erythropoietin doses were only slightly higher than those on regular HD. The authors concluded that nocturnal HD is a viable, safe, effective, and well-accepted modality with significant lifestyle and reemployment benefits. Although initial setup costs are significant, nocturnal HD has a cost advantage over in-center HD that progressively accrues as program numbers exceed 12 to 15 patients.

Bell and Espinosa (page 290) describe the results of increased dialysis time (4 to 5 hr in thrice-weekly HD) in 20 children treated in center. This type of HD was associated with excellent growth, nutrition, and control of Ca, P, anemia, and blood pressure. In the authors’ opinion, prolonged, in-center HD is a reasonable method of reducing cardiovascular risk for children in whom slow nightly or daily dialysis is not an option.

It is well known that individuals with advanced chronic renal insufficiency have a significantly lower rate of vaccination response than that of the general population. Chin (page 296) analyzed patient factors at the start of maintenance HD for end-stage renal failure that influence response to hepatitis B virus (HBV) vaccination. The study showed that recombinant HBV vaccine nonresponders, as defined by lack of seroconversion within two series of vaccination, were more likely to be older and heavier and had diabetes mellitus at the time of HD initiation. Nonresponders were also less well nourished, as gauged by a lower serum albumin and normalized protein catabolic rate, than vaccine responders and had lower spKt/Vurea.

HD-access-related infection is a major cause of morbidity and mortality. Indwelling catheters are complicated by bacteremia more frequently than fistulas or synthetic grafts. Host factors, which have been shown to predispose to access infection in HD patients, include age, duration of access, comorbidities such as diabetes mellitus, immunocompromised states such as human immunodeficiency virus infection, site of insertion, and type of access. Adeyemi and Tzamaloukas (page 304) compared preinfection serum albumin levels in 79 patients hospitalized for HD access infection with the serum albumin levels of 198 control patients on chronic HD, hospitalized for multiple causes, without HD access infection and determined that hypoalbuminemia is associated with increased risk of HD access infection. The lower the albumin levels, the higher the risk of access infection.

The major source of infection in catheters is contamination of the catheter hub during connection and disconnection procedures. Periluminal migration of bacteria along the external surface of the catheter as a source of infection is less common, as most catheter-associated bacteremias do not have simultaneous exit or tunnel infection in tunneled-cuffed catheters. The next two articles describe studies on a new technique (air-bubble method) of prevention of HD catheter-related bacteremia. In this method, an anticoagulant is injected first,
followed by 0.1-mL air bubble and a bactericidal solution. Thus, the external portion of the catheter lumen (close to the hub) is filled with bactericidal solution, and the internal portion of the lumen (close to the tip) is filled with anticoagulant to prevent clotting. The air bubble separates the two solutions and prevents their mixing. Moore and Twardowski (page 311) found that acidified (pH 2.0) concentrated (27%) sodium chloride has excellent bactericidal properties and postulated that it may be a preferred agent for the air-bubble method of catheter locking. A pilot clinical study by Twardowski et al. (page 320) determined that the method is easy to perform with available syringes and that a full-scale prospective randomized study is feasible and warranted.

Chronic kidney disease (CKD) is associated with significantly increased morbidity and mortality owing to cardiovascular diseases. CKD leads to various abnormalities in lipid fractions, which may contribute to the increased incidence of coronary heart disease (CHD). An elevated lipoprotein (a) (Lp(a)) level is increasingly recognized worldwide as an independent risk factor for CHD. Kalra et al. (page 326) showed that increases in Lp(a) levels start early during the course of CKD and become more pronounced with increased severity of disease. Initiation of maintenance HD lowers Lp(a) levels and may have a long-term beneficial effect on cardiovascular morbidity and mortality.

Chronic diseases cause a substantial amount of distress not only to patients but also to persons caring for a family member. The psychological health status of caregivers affects patients’ perceptions of social support and also may influence the course of management. Sezer et al. (page 332) report that somatization and depression are greater in the caregivers of center HD patients compared to peritoneal dialysis patients and control groups. According to the findings of this study, the authors suggest that caregiving family members of dialysis patients, especially those on HD, should be evaluated for psychosocial problems and supported as needed.

Yeoh et al. (page 338) report on the impact of a structured multidisciplinary predialysis care program on clinical outcomes in patients treated at Kaiser Permanente Medical Center in Los Angeles, California. The authors compared two groups of patients: those who participated in the predialysis education program and those who opted not to participate or started maintenance HD on an emergency basis. The patients who participated in the predialysis education program had reduced complications, emergency room visits, and hospitalizations and reduced need for temporary catheter placement.

Three review articles discuss “hot topics.” Charra and Chazot (page 342) present arguments for the importance of salt restriction in HD patients. Whereas the question of a low-salt diet for nonuremic, hypertensive patients is still debatable, the problem is different in advanced renal failure because natriuresis becomes progressively inadequate, and patients become progressively sodium overloaded. In the majority of HD patients, blood pressure may be controlled if true dry body weight (DW) is achieved. Unfortunately, in patients treated with short dialysis, the attainment of true DW is difficult if interdialytic weight gain is high, because rapid ultrafiltration is poorly tolerated. To achieve DW with short HD duration, it is mandatory to reduce the interdialytic weight gain. This may be accomplished by restricting salt intake in the diet.

Continuous renal replacement therapy (CRRT) is becoming the treatment of choice for critically ill patients with combined liver and acute renal failure, because they are often hemodynamically unstable. The question arises as to whether the use of CRRT should be extended to those patients with acute and chronic liver failure, but who do not have dialysis dependent renal failure. After an in-depth discussion of this problem, Davenport (page 348) concludes that high-volume CRRT, with or without plasma exchange, can be successfully used in patients with fulminant hepatic failure, supporting them until liver function is regained, or acting as a bridge until a liver become available for transplantation.

The early sessions of home HD in the 1960s were conducted with minimal or no monitoring and with a partner generally present during the procedure. Diz-Buxo et al. (page 353) review the evolution over the past 30 years of systems for monitoring HD patients at home. The system consists of hardware and software to record dialysis events from the home HD machine and transmit them to a server, which in turn sends the data to a remote central monitoring center. Most of the parameters monitored are related to machine function and events. At present, the only commonly monitored patient vital functions are pulse and blood pressure. Who should be monitored remains a topic for discussion among patients, physicians, providers, and regulators. Opinion is divided, but favors the use of monitoring for patients who self-dialyze while sleeping at home with minimal or no supervision from a partner.

Ruiz and Agraharkar (page 356) from Galveston, Texas, report two cases of infection owing to unusual marine pathogens in HD patients. Both patients were infected with halophilic Vibrio species because their trivial wounds were exposed to coastal waters. These two cases of life-threatening cellulitis and bacteremia illustrate the need for rapid identification of microorganisms and prompt initiation of treatment in immunocompromised hosts.

The reasons for differences in mortality of HD patients in Europe, Japan, and the United States are hotly debated. There are two main possible explanations,
which were debated in the first issue, Volume 7, of *Hemodialysis International*. Drs Kjellstrand and Blagg emphasized the differences in treatment methods, whereas Dr Friedman argued that the selection biases are responsible for the discrepancies in mortality. The controversy continues in this issue with a letter from Dr Charra and Dr Friedman’s reply.

This issue is the last edited by Dr Twardowski. Regular issues of Volume 8 in 2004 will be edited by Dr Allen Nissenson. The proceedings of the Hemodialysis Symposia held in conjunction with the Annual Dialysis Conference will be edited by Dr Madhukar Misra.

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Finally, we share the sad news that Dr Scribner, our consulting editor, passed away on June 19, 2003 (In Memoriam—page 268).

Editors