
NEWS ARTICLE

2003 Hemodialysis Symposium to Be Held in Seattle

The 9th International Symposium on Hemodialysis will be held in Seattle, Washington, March 2 – 4, 2003, in conjunction with the 23rd Annual Dialysis Conference and the 14th Annual Symposium on Pediatric Dialysis. The Symposium on Hemodialysis is endorsed by the International Society for Hemodialysis and the American Society of Diagnostic and Interventional Nephrology. This multi-disciplinary conference offers continuing education for physicians, nurses, technicians, dietitians, and social workers.

The award for lifetime achievements in hemodialysis will be presented to Albert L. Babb, PhD, P.Eng. Les Babb collaborated with Dr. Belding Scribner to develop equipment for the first chronic hemodialysis program in Seattle. He designed a proportioning machine, “The Monster,” for in-center hemodialysis, and later, the “Mini-I” and “Mini-II” for home hemodialysis. All currently in-use proportioning system hemodialysis machines are based on his original design. Dr. Babb was a pioneer in studying and explaining the kinetics of dialysis and was the first to elucidate how molecules of various sizes are cleared by different dialysis techniques.

The Keynote Address, “Fallacies of High Speed Hemodialysis,” will be presented by Zbylut Twardowski, MD. He will argue that short (3- to 4-hour), three times weekly hemodialysis requiring high ultrafiltration rates predisposes to intradialytic hypotension and interdialytic hypertension, which is difficult to control. High blood flow rates are required to achieve the recommended Kt/V_{urea} in a short time, and this increases demands on vascular access and contributes to blood access failure.

The “Fundamentals of Extracorporeal Therapies” sessions will be geared toward beginners (*e.g.*, renal fellows, nurses), but is also a refresher course for experienced nephrologists (Fig. 1). Topics will include

- How Hemodialysis Works
 - Diffusion, osmosis, ultrafiltration, convection, and factors influencing clearances
- Understanding Components of Hemodialysis Systems
 - Inflow tubing, pump, negative pressure monitor, infusion line; hemodialyzer types, components, and membranes; outflow tubing, bubble trap, positive pressure monitor; dialysis solution delivery (proportioning and tank systems)

- Components and Intradialytic Modeling of Dialysis Solution
 - Composition, water treatment, dry chemicals, concentrates
- Modes of Extracorporeal Therapies
 - Hemodialysis, hemofiltration, hemodiafiltration, isolated ultrafiltration
- Dialyzer- and Machine-Related Complications: Pathogenesis, Prevention, and Treatment
 - Air embolism, complications of wrong dialysis solution composition; reactions to dialyzers, sterilants, and other chemicals (*e.g.*, perfluorohydrocarbon)
- Practical Issues of Blood Access
 - Arteriovenous (AV) fistulas, AV bridge grafts, catheters for acute hemodialysis, catheters for chronic hemodialysis
- Anticoagulation in Hemodialysis Patients
 - Heparins, hirudins, argatroban, prostacyclin, citrate, fibrinolytics, warfarin, and others
- Medical Complications of Hemodialysis: Pathogenesis, Prevention, and Treatment
 - Intradialytic hypotension, cardiac arrhythmias,



FIGURE 1 Speakers for “Fundamentals of Extracorporeal Therapy” prepare for the 2002 session. From left: Thomas Depner, Richard Ward, Raymond Vanholder, Bernard Charra, John Stivelman, and Bernard Canaud.

intradialytic hypertension, muscle cramps, nausea and vomiting, headache, disequilibrium syndrome

- Dose of Dialysis
 - Historical background, urea kinetic modeling, urea reduction ratio, calculations of single-pool and equilibrated Kt/V, influence of residual renal function, calculation of protein catabolic rate, current recommendations of adequate dialysis dose
- Special Workshop on Hemodialysis Machines Commonly Used for Center Hemodialysis, moderated by Dr. James T. McCarthy
 - Astra (Baxter)
 - 2008K (Fresenius)
 - Phoenix (Gambro)

A session will be devoted to renal replacement therapy in hepatorenal failure, with talks on “Pathophysiology,” “Continuous Renal Replacement Therapy in Hepatorenal Failure,” “Anticoagulation,” and “Application of the Molecular Absorbent Recirculating System (MARS).” This year in Tampa, we had a very well attended session on “Acute Renal Failure”; however, one presentation related to hepatorenal failure was cancelled because the invited speaker was stuck in a snowstorm in Chicago.

Since the first International Symposium on Hemodialysis, Baltimore, 1995, at least one session each year has been devoted to quotidian hemodialysis (Fig. 2). Although the method is called quotidian (every day), it is usually performed six times weekly. There are two methods of quotidian hemodialysis: long (6 – 8 hours) nocturnal (nighttime), and short (90 – 180 minutes) hemeral (daytime). Because of excellent results, quotidian hemodialysis is practiced in an increasing number of dedicated centers, in spite of lack of appropriate reimbursement. It is not surprising that quotidian hemodialysis will again be discussed in Seattle, and will include topics interesting to the uninitiated and to those who already practice this method:

- The Rationale for Daily Dialysis
- Dialysis Dose in Daily Dialysis: What Parameter to Measure?
- Kinetics of Middle Molecules in Daily Dialysis
- Hemodynamic Considerations
- A Report of the Daily Dialysis Registry
- Access Considerations
- Remote Monitoring
- Organization and Administration
- Special Workshop on Home Hemodialysis Machines, moderated by Dr. Robert Lockridge, Jr.
 - PHD® (Aksys)
 - Aurora (Baxter)
 - 2008Home (Fresenius)
 - AK95 (Gambro)
 - Allient Sorbent Hemodialysis System (Renal Solutions)
 - NxStage Therapy System (NxStage)



FIGURE 2 Robert Lockridge, Jr., presented the 2002 Keynote Address, “Daily Dialysis Gives Excellent Results. What’s Holding It Back?” He will moderate a special workshop in Seattle on home hemodialysis machines.

The number of machines modified or designed specifically for home hemodialysis (including quotidian) indicates that industry predicts a significant increase in home hemodialysis therapy (Fig. 3).

In the early days of chronic hemodialysis, it was noted that many symptoms were significantly more frequent in hemodialysis patients than in the general population, and were



FIGURE 3 The Personal Hemodialysis System (PHD®; Aksys, Ltd.), one of the machines designed for daily home hemodialysis and exhibited at the 2002 Annual Dialysis Conference in Tampa, will be demonstrated in the special workshop on home hemodialysis machines.

considered indicators of inadequate dialysis. These symptoms include peripheral neuropathy, restless leg syndrome, depression, and sleep disturbances. Nowadays, it has been questioned whether the above-mentioned clinical symptoms indicate inadequate dialysis, as they do not respond to higher diffusional removal of toxins (increased Kt/V_{urea} or urea reduction ratio) with routine three times weekly dialysis. However, the introduction of daily dialysis resulted in resolution or marked decrease in such symptoms. One of the examples is sleep apnea, which responds to nocturnal hemodialysis (Fig. 4). This prompted us to devote a session to “Sleep Abnormalities in Dialysis Patients,” which will include the following topics:

- Pathophysiology and Diagnosis of Sleep Abnormalities
- Pulmonary Function, Gas Exchange, and Blood Gases During Hemodialysis
- Sleep Apnea in Dialysis Patients – Sign of Inadequate Dialysis?
- Improvement of Sleep Apnea with Nocturnal Hemodialysis
- Clinical Correlates of Sleep Behavior in Hemodialysis Patients (KOPE Study)

One session in Tampa (2002) was devoted to the pathogenesis and treatment of intradialytic hypotension, the most common side effect of short (3 – 4 hours), three times weekly hemodialysis (Fig. 5). The session was extremely well attended, so we decided to discuss the problem further, looking at it from a different angle. In this session, the role of sodium

in hemodialysis will be discussed, including the following topics:

- Sodium Balance in Hemodialysis – Implications for Therapy
- High Crimes and Misdemeanors – The Neglect of Sodium Restriction in Dialysis Patients
- Intradialytic Hypotension: Does Sodium Modeling Help?
- Thirst, Sodium, Vasopressin, and Interdialytic Weight Gains
- Are Sodium Profiling and Dietary Sodium Restriction Necessary in Nocturnal Hemodialysis?

The use of sodium bicarbonate as a dialysate buffer promotes the growth of many so-called water-borne bacteria, fungi, and yeasts. Pyrogenic substances of bacterial origin derived from contaminated dialysate can penetrate intact dialyzer membranes, and the consequence is the induction of an inflammatory response. Low-level inflammatory stimulation during hemodialysis activates circulating mononuclear cells to produce proinflammatory cytokines, which are mediators of the acute-phase response resulting in elevated levels of acute-phase reactants. The consequences are malnutrition, inflammation and atherosclerosis, and anemia. A session will discuss “The Influence of Dialysis Solution Quality on Chronic Inflammation.” This session will include

- State of the Art
- Malnutrition–Inflammation–Atherosclerosis (MIA) Syndrome



FIGURE 4 Andreas Pierratos spoke this year in Tampa about middle molecule removal in nocturnal hemodialysis. Next year in Seattle, he will present data on improvement of sleep apnea in nocturnal hemodialysis patients.



FIGURE 5 Richard Sherman presided over the 2002 session, “Management of Dialysis Hypotension,” and in Seattle will preside at the session, “Role of Sodium in Hemodialysis.”

- Benefits of Ultrapure Dialysis Solution
- Preparation of Ultrapure Dialysis Solution in the Personal Hemodialysis (PHD®; Aksys) System
- The Role of Inflammation in the Anemia of End-Stage Renal Disease

Many middle and large molecules, which are uremic toxins, are poorly removed, even with high flux membranes. The session, “Beyond High Flux: Sorbent Technology,” will address this problem (Fig. 6). Topics in this session are

- History of Hemoperfusion
- Sorbents: From Bench to Bedside
- Sorbents for Acute Intoxication
- Sorbents in Acute Renal Failure and Sepsis
- Sorbents for Special Indications

With the belief that it is time to go beyond adequate dialysis and strive for optimal dialysis, for the second year a session is scheduled on “Optimal vs Adequate Dialysis” (Fig. 7):

- How to Define Optimal Dialysis
- Uremic Toxins
- Are Clearances of Small Molecules Appropriate Indices of Adequate Dialysis?
- Hypertension as an Index of Suboptimal Dialysis
- The Economic Impact of Optimal Dialysis

Practices and outcomes vary greatly among hemodialysis centers throughout the world. The Dialysis Outcomes and Practice Patterns Study (DOPPS) was created to evaluate whether there is a relationship between practices and outcomes, or whether outcomes are related to comorbid conditions and demographic characteristics. A session in



FIGURE 6 James Winchester spoke in Tampa this year on dialytic removal of poisons. Next year he will present “History of Hemoperfusion.”



FIGURE 7 Raymond Vanholder who, at the 2002 meeting, discussed kinetics of middle molecules removal, will address uremic toxins in the session, “Optimal vs Adequate Dialysis” in 2003.

Seattle will provide an update of the DOPPS results, including

- Adequacy of Dialysis
- Vascular Access
- Quality of Life

A growing body of evidence suggests that abnormalities in serum phosphorus and the calcium–phosphorus product ($\text{Ca} \times \text{P}$) result in vascular and visceral calcifications, thereby contributing to the substantially increased risk of cardiovascular death in this population. There have been suggestions that the use of calcium-based phosphate binders contributes to the increased $\text{Ca} \times \text{P}$, with consequent increase in the risk of tissue calcifications; however, this notion has been strongly opposed. This prompted us to plan a session, “Controversy: Do Calcium-Based Phosphate Binders Kill Dialysis Patients?” where these opposing views will be presented in a heated discussion (Fig. 8).

Many assays measure both active and inactive parathormone (PTH) fragments. Surprisingly, some patients with adynamic bone disease have very high PTH levels by some assays. This is because they measure inactive fragments. A relatively new assay measures only the active fragment of PTH. Results from this new assay have clarified findings that were puzzling in the past. There will also be a special session, “PTH and Renal Osteodystrophy and Calcification,” with emphasis on this assay. The following topics will be presented:

- Physiology and Pathophysiology of PTH in Dialysis Patients
- What Are the Optimal PTH Values for Dialysis Patients?



FIGURE 8 Jill Lindberg presented, at the 2000 meeting in New Orleans, the Keynote Address, "Bone Disease in Dialysis Patients." Next year in Seattle she will moderate the controversy, "Do Calcium-Based Phosphate Binders Kill Dialysis Patients?"

- The Management of PTH and Its Impact on Calcification and Renal Osteodystrophy

Diagnostic and interventional nephrology sessions, presented in cooperation with the American Society for Diagnostic and Interventional Nephrology, were well received at the 2001 and 2002 conferences. Next year's session in Seattle will include the following topics related to hemodialysis:

- How to Increase Fistula Use in the U.S.A.
- Internal Jugular Catheter Placement
- Fistula De-Clotting
- Vascular Access Monitoring

A special workshop on arteriovenous access will include a demonstration of access flow and recirculation measurement, and a video showing the development of stenosis at different access sites.

Clotting of the hemodialysis access is a common complication in chronic hemodialysis patients. Urokinase was used to de-clot catheters and arteriovenous grafts in the past, but has recently been unavailable. Tissue plasminogen activator (tPA) was initially used for treatment of coronary artery thrombosis, but is now widely used to open clotted hemodialysis accesses. One session devoted to "Managing Failing Hemodialysis Accesses" will include

- Managing the Patient with a Failing Hemodialysis Catheter
- Managing the Patient with a Failing Access Graft
- Future Directions in the Use of Fibrinolytic Agents for Prevention and Treatment of Hemodialysis Access Complications

Two recent studies, HEMO and ADEMEX, stirred tremendous interest, even before full reports were published. The HEMO study showed that increasing Kt/V_{urea} from 1.2 to 1.6 in a three times weekly schedule, without changing the dialysis time, did not improve mortality rates. The ADEMEX study showed that the K/DOQI-recommended minimal adequate Kt/V_{urea} of 2.0 in CAPD patients did not provide better results than a Kt/V_{urea} of 1.7. These findings will be further discussed in the session, "Dialysis Dose and Outcomes – What Have We Learned from the HEMO and ADEMEX Studies?"

A special session for medical directors was well attended in Tampa, so will be offered again in Seattle. Topics will include "Quality Management" and "Infection Control in Hemodialysis Units." Dr. Van Stone will preside over the session (Fig. 9).

"Industry Speaks" sessions, introduced in New Orleans in 2001 and continued in Tampa in 2002, were well attended and well received. These sessions feature company-sponsored presenters that speak on topics related to dialysis, and related in some way to the product(s) manufactured or services offered by the company. Most of the speakers are not company employees and presentations are scientific, not a sales pitch. In Seattle, we will have five "Industry Speaks" sessions highlighting clinical data related to recently developed products and methods.

Abstracts may be submitted for either slide or poster forums. For more information regarding abstract submission or the Hemodialysis Symposium, contact the Annual Dialysis Conference at www.muhealth.org/~dialysis, or the Office of Medical Continuing Education at dialysis@health.missouri.edu or 573.882.4105 (phone) or 573.882.5666 (fax).

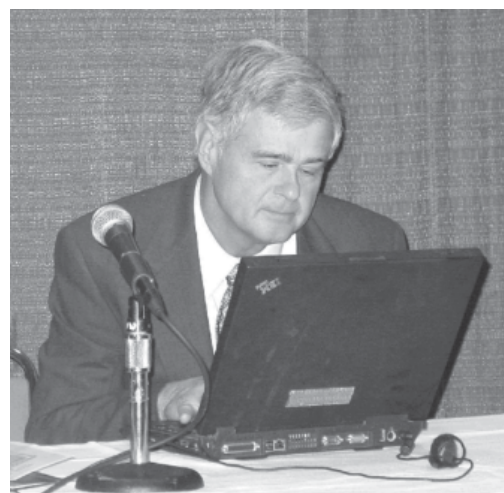


FIGURE 9 John Van Stone prepares for his lecture on dialyzer reuse (2002 meeting). He will preside at a special session for medical directors of dialysis clinics at the 2003 meeting in Seattle.