By Beth Piraino and Judith Bernardini

The option of peritoneal dialysis for management of advanced chronic kidney disease (CKD) is best introduced while the patient is being followed up in the CKD clinic. Educational approaches to patients with CKD include classes, instruction one-on-one by a nurse educator or other allied health care professional, and information provided by the physician. A team approach is often used in peritoneal dialysis education as part of a well-run CKD program. Therefore, all members of the team should be fully informed and up to date about peritoneal dialysis. The CKD team may include medical assistants, physician assistants, nurse practitioners, dieticians, nurses, and renal fellows as well as nephrologists. Education about peritoneal dialysis should be provided to these important team members.

Educating allied health care professionals about peritoneal dialysis, a modality with which many are unfamiliar, ensures that all speak with informed voices and avoid giving incorrect information about peritoneal dialysis. It is rather common for those with little knowledge about peritoneal dialysis to tell patients that the procedure is associated with a high risk of infection, thus discouraging patients from home peritoneal dialysis. Patients may also have obtained information about renal replacement therapy from the Internet (1). Although some websites have factually, clearly presented information, others are inaccurate and may be self-serving. It is quite possible that all health care professionals have likewise been exposed to incorrect information about peritoneal dialysis, and this may unfortunately reinforce a patient’s wrong perceptions. Therefore, a structured approach to educating all members of the CKD clinic about peritoneal dialysis seems desirable.

CKD patients with GFR levels of 20 mL/min or lower who are aware that dialysis will be likely needed in their future often have major depression (25 percent) or subthreshold depression (20 percent) according to structured psychiatric interviews (2). The team approach for these patients provides support and correct information in a longitudinal fashion. Many CKD clinics do not have the services of a social worker, so other allied health care professionals in the CKD clinic may include medical assistants, physician assistants, nurse practitioners, dieticians, nurses, and renal fellows as well as nephrologists. Education about peritoneal dialysis should be provided to these important team members.

Table 1 shows resources for teaching health care professionals about peritoneal dialysis. Most of the information would be suitable for physician assistants, nurse practitioners, nurses, and social workers who work in the CKD clinic. The best approach to training these allied health care professionals is not known, but it might include attendance at one of the meetings listed, regular reading of the journal Peritoneal Dialysis International, and a review of the free slide set put together by expert members of the International Society for Peritoneal Dialysis North American Chapter (ISPD NAC) available at the ISPD website (http://ispd.org/NAC/education/pd-curriculum). A peritoneal dialysis expert in the program could present the slide sets to the health care professionals working in the CKD program.

Table 1 Peritoneal dialysis training tools for allied health care professionals

- Meetings with peritoneal dialysis courses available for allied health care professionals:
  - International Society for Peritoneal Dialysis North American Chapter meeting every other year
  - National Kidney Foundation spring meeting every year
  - ASN pre-meeting course
  - Annual Dialysis Conference
  - Online peritoneal dialysis course: freely available at ispd.org (http://ispd.org/NAC/education/pd-curriculum/)
- Journal: Peritoneal Dialysis International: free online after first year, free to members of the ISPD.

By Seth B. Furgeson and Isaac Teitelbaum

Peritoneal dialysis offers unique advantages for patients with ESRD. Peritoneal dialysis offers the convenience of home dialysis, allows continuous solute and fluid removal, and, for the incident dialysis patient, appears to be less harmful to residual kidney function (RKF). Many peritoneal dialysis patients have successfully used the therapy for a decade or longer without significant problems. To maximize success with peritoneal dialysis, providers must carefully attend to its many components. Preserving RKF, maintaining peritoneal membrane function, preventing cardiovascular disease, and avoiding infectious complications are all crucial components of therapy.

Preserving residual kidney function

It has long been recognized that peritoneal dialysis is associated with a slower decline in RKF than hemodialysis. Studies have also demonstrated that preservation of RKF correlates with improved survival. RKF allows for increased volume removal as well as improved phosphorus and middle molecule clearance. To preserve RKF, providers need to minimize nephrotoxic medications (e.g., intravenous contrast medium, nonsteroidal anti-inflammatory drugs), avoid rapid fluid shifts and hypovolemia, and, whenever possible, treat with blockers of the renin-angiotensin system. Two small randomized trials have shown that angiotensin converting enzyme inhibitors and angiotensin receptor blockers can minimize the loss in RKF (1,2). It is therefore recommended that patients with RKF receive either of these agents, assuming there are no contraindications.

Maintaining peritoneal membrane function

For peritoneal dialysis to be successful, adequate ultrafiltration is essential. However, in many peritoneal dialysis patients, anatomical changes in the peritoneal membrane affect ultrafiltration. Currently, a leading hypothesis proposes that prolonged exposure over time to bioincompatible peritoneal solutions (high glucose, high glucose degradation products, low pH) damages mesothelial cells lining the peritoneum and increases vascularity of the peritoneum.
Consequently, over time, many patients will have more rapid solute transport, quicker dissipation of the glucose-induced osmotic gradient, and less ultrafiltration. Given the available data, it seems prudent to minimize glucose exposure during dwells. Furthermore, salt restriction and judicious use of diuretics can reduce the need for hypertonic solutions. Recently, more biocompatible solutions (normal pH or low glucose degradation products) have been studied in small trials. To date, however, these trials have not conclusively determined whether biocompatible solutions preserve peritoneal membrane function, and their routine use cannot yet be recommended. Further data are necessary.

Preventing cardiovascular disease

As is true of patients receiving hemodialysis, cardiovascular disease is the primary cause of death in peritoneal dialysis patients. The majority of patients beginning dialysis have evidence of left ventricular hypertrophy (LVH) that correlates with an increased risk of sudden cardiac death. Hypertension and chronic volume overload likely contribute to LVH. Randomized controlled trials comparing a daily icodextrin dwell with a dextrose dwell have shown improved ultrafiltration and LVH. Peritoneal dialysis providers must use a comprehensive care plan to help patients remain euvolemic. Dietary sodium restriction, diuretics, and icodextrin (in appropriate patients) are all components of this care plan.

In some patients, atherosclerotic coronary disease contributes to the increased risk of cardiac death. The SHARP study, a trial comparing ezetimibe/simvastatin with placebo in chronic kidney disease and dialysis patients, enrolled 496 patients in peritoneal dialysis. Although there was a trend toward reduced atherosclerotic events in the treatment group, it was not statistically significant (3). By contrast, observational U.S. Renal Data System data from Dialysis Morbidity and Mortality Study wave 2 do indicate a significant decrease in both all-cause and cardiovascular mortality in peritoneal dialysis patients using lipid-lowering therapy (4). We routinely treat our peritoneal dialysis patients with lipid-lowering therapy targeting low-density lipoprotein <100 mg/dL.

Avoiding infectious complications

Both peritonitis and refractory infections of the exit site or tunnel are associated with significant morbidity. Catheter loss, ultrafiltration failure, and death are all associated with peritonitis. To minimize the risk for peritonitis, proper patient training and sterile technique are essential. Controlled trials have also shown that local antibiotic prophylaxis at exit sites, such as gentamicin cream or mupirocin, can reduce the risk of peritonitis and should therefore be routinely used.

In conclusion, peritoneal dialysis is a well-tolerated treatment for ESRD patients. Paying attention to these aspects of therapy will maximize the chances of successful peritoneal dialysis.

References


Getting the Right Care at the Right Time: Empowering Patients with Effective CKD Modality Education

By Leanna B. Tyshler and Mary Dooley

Most new dialysis patients start dialysis without permanent access and unaware of home therapies. Making informed decisions and starting with a permanent access are strongly associated with patients getting the right care at the right time. Northwest Kidney Centers, a nonprofit dialysis provider, has made a significant commitment to predialysis modality education. We educate about 300 patients per year, plus their families and friends. About 30 percent of our incident dialysis patients have attended our classes before starting renal replacement therapy. The focus is simple: help patients consider home therapies and renal transplantation, and start dialysis with a permanent access.

These are some elements essential to effective education:

1. The primary responsibility of program educators is education about chronic kidney disease (CKD). We have a dedicated CKD nurse and a social worker who are knowledgeable and passionate about modality education.

2. Program structure is flexible, is widely available, and provides the right amount of information. Scheduling and location should not be barriers for patients. We offer Choices, a 2.5-hour class that gives an overview of treatment options, four times a month, each at a different location in our service area. We see patients individually when education is needed urgently, if an interpreter is required, or if concerns need to be discussed privately. We use a phased model of education because every patient needs to know the basics, but some may need more information. After attending the Choices overview class, a patient can attend “graduate school”—shorter classes focused on one modality (peritoneal dialysis, home hemodialysis, or transplantation). These “next step” classes provide more in-depth information and emphasize treatment planning.

3. The right curriculum is key. We have developed a curriculum that is understandable, is relatable, and facilitates informed consent based on three principles:

   - Health literacy: The CKD population and the low health literacy population overlap. We use standardized PowerPoint materials with minimal words, many pictures, and stories. All handouts are written at a 5th to 6th grade reading level.

   - Patient-centered: The choice of a dialysis modality is a psychosocial one, made in the context of personal goals and lifestyle. To make education relevant, we try to understand the patient’s personal situation rather than simply present information.

   - Evidence-based: Educating for informed consent means presenting understandable and compelling facts on survival, risks, and benefits.

4. CKD patients must be reached at the right time. The KDOQI guidelines state that every patient with stage 4 disease should receive modality education. Dialysis providers have access to CKD patients only through nephrologists’ referrals. Marketing to nephrologists is essential to create a culture in which referral to modality education is routine and expected. We emphasize the value to the nephrologist of having an educated patient—better patient compliance, better outcomes, and time saved in the office. We provide literature and posters in offices, reminders in our publications directed to nephrologists, reminders at meetings, and informal contacts from our staff and from the highest level in the organization. We look for a nephrologist “champion” in every group, and we partner with office staff to facilitate the referral process. After we receive referrals from nephrologists, we make several attempts to reach patients and to track those who refuse treatment or are unreachable. With aggressive follow-up on all referrals, 80 to 90 percent of referred patients attend our classes.

5. Continuing communication with nephrologists is a must. We keep the referring nephrologists in the loop at every step. We report whether a patient attends, summarize the patient’s modality preference, and discuss any barriers. Feedback underscores the credibility and effectiveness of our program. We give nephrologists “report cards” that show how many of their patients attended class, how many new patients started peritoneal dialysis, and how many started hemodialysis with permanent access. Each report reiterates outcomes data that support the efficacy of our program: Attendees are 2.5 times more likely to choose peritoneal dialysis and 44 percent more likely to start hemodialysis with permanent access in place and in use.

The immediate goal of education is not education—it is action. Patients may leave class planning on peritoneal dialysis but then start later with in-center hemodialysis. To address this, we retooled the Choices curriculum to focus on coach-