Organization and Structure of a Successful Peritoneal Dialysis Program

By Fredric O. Finkelstein

One important reason for the limited use of peritoneal dialysis in the United States involves problems with the organization of peritoneal dialysis facilities. The basic structure and function of peritoneal dialysis facilities needs to be quite different from that of in-center hemodialysis facilities. Four key elements need to be addressed in organizing a peritoneal dialysis facility:

• Adequate chronic kidney disease (CKD) education program
• Adequate size and structure of peritoneal dialysis centers
• Development of appropriate support systems: a team approach
• Development of appropriate continuous quality improvement (CQI) programs to monitor a variety of domains

CKD education

The importance of developing and implementing adequate CKD education programs cannot be overemphasized. The vast majority of CKD patients do not have contraindications to receiving peritoneal dialysis. The majority of patients approaching ESRD have surprisingly little knowledge about treatment options. This occurs even if patients have been referred to nephrologists, indicating that the process of providing education for CKD patients needs to be reexamined. Funds should be allocated to support education programs and train educators and to incorporate CKD education into the routine fabric of care.

Center size

Several studies have documented the impact of center size and structure of peritoneal dialysis programs. It has been suggested that the growth of peritoneal dialysis programs in the United States has been limited by the attempts to grow small peritoneal dialysis programs rather than the consolidation of small peritoneal dialysis programs into larger centers. Certainly, the experience in the Far East suggests that large programs may be extremely successful. Many programs in China, Taiwan, and Hong Kong care for more than 300 peritoneal dialysis patients and report excellent results of this therapy, with low rates of peritonitis and technique failure.

Appropriate support systems: a team approach

The peritoneal dialysis unit needs to use a team approach to treating the patient. Nurses are the backbone of the program. Nurses who are dedicated to the peritoneal dialysis program, have sufficient experience, and are readily available to patients 24 hours a day are critically important to program success. Social work and dietary input are also crucial ingredients for a successful program. Psychosocial assessments and interventions are particularly important for patients receiving maintenance therapy at home because various psychosocial factors can have an adverse impact on outcomes, including depression and anxiety in patients and stress in caregivers. Attention to dietary input is also essential. The importance of sodium restriction in terms of controlling blood pressure and limiting the dextrose exposure required to maintain fluid balance with peritoneal dialysis needs to be emphasized. Limitations of phosphate clearance with peritoneal dialysis require that careful attention be paid to restriction of dietary phosphate and compliance with the administration of phosphorus binders.

CQI programs

CQI programs are critical to the success of a peritoneal dialysis program, as has been discussed in the KDOQI guidelines. A modification of the domains suggested in the KDOQI guidelines for CQI is summarized in Table 1. Successful peritoneal dialysis programs need to track their outcomes and address the important areas that affect the outcomes in peritoneal dialysis patients. Difficulties in managing a peritoneal dialysis unit vary from facility to facility, and each facility must identify and deal with the problem areas that are unique to its program.

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Table 1. Continuous quality improvement domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Peritonitis rates</td>
<td>The number of peritonitis episodes per patient year.</td>
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<tr>
<td>2. Exit site infection rates</td>
<td>The rate of exit site infections.</td>
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<tr>
<td>3. Technique failure rates</td>
<td>The rate of technique failure.</td>
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<tr>
<td>4. Patient satisfaction</td>
<td>The patient satisfaction scores.</td>
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<tr>
<td>5. Health-related quality of life</td>
<td>The health-related quality of life scores.</td>
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<tr>
<td>6. Catheter-related problems and catheter survival rates</td>
<td>The catheter-related problems and catheter survival rates.</td>
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<td>7. Adequacy of dialysis</td>
<td>The adequacy of dialysis scores.</td>
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<tr>
<td>8. Anemia management</td>
<td>The anemia management scores.</td>
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<tr>
<td>9. Calcium and phosphorus metabolism</td>
<td>The calcium and phosphorus metabolism scores.</td>
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<tr>
<td>10. Blood pressure and volume control</td>
<td>The blood pressure and volume control scores.</td>
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<tr>
<td>11. Lipid control</td>
<td>The lipid control scores.</td>
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<tr>
<td>12. Weight management</td>
<td>The weight management scores.</td>
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<tr>
<td>13. Dextrose use</td>
<td>The dextrose use scores.</td>
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Dr. Gregory Braden interviews Gayle Gray, peritoneal dialysis patient for three years

Dr. Braden

Gayle, I know you just received a kidney transplant and are doing great with it, but how long were you on peritoneal dialysis?

Gayle Gray

I was on peritoneal dialysis for three years.

Dr. Braden

Why did you choose peritoneal dialysis instead of in-center hemodialysis or home hemodialysis?

Gayle Gray

I chose peritoneal dialysis because I didn’t want to have the ups and downs of both fluid and toxin removal, which I did not think would be good for my body since I have had type 1 diabetes for the last 35 years.

Dr. Braden

Why did you choose continuous ambulatory peritoneal dialysis (CAPD) over CCPD (continuous cycling peritoneal dialysis)?

Gayle Gray

I did not have enough room in my bedroom to store all the supplies and the machine for CCPD. In addition, I have to get up at night to go to the bathroom often and I did not want to have to use a bedside commode.

Dr. Braden

What do you feel were the greatest benefits of performing home peritoneal dialysis?

Gayle Gray

I enjoyed doing home peritoneal dialysis because I was playing an active role in my care. I have to watch my diabetes carefully, and although the sugar in the fluid caused me to use more insulin, with peritoneal dialysis I thought I was in charge of my health.

Dr. Braden

Do you have any regrets about your decision to perform home peritoneal dialysis?

Gayle Gray

As I look back on my three years of dialysis I really have no regrets. I know that I live in an old house and I live with my older parents and I even had at times to do the exchanges in the bathroom with the door closed so there was no air moving, but overall I am glad I did it. It would have been nice if my house was larger, but it just wasn’t. Also when I look at my body after peritoneal dialysis I did have some abdominal skin stretching and weakened abdominal muscles from the 2 liters of abdominal fluid with each exchange.

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