The Healthy Start Renal Clinic: Benefits of Tracking and Early Intervention in Pre-End Stage Renal Disease Patients

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Several studies have demonstrated a strong association between the benefits of pre-end stage renal disease (ESRD) education and decreased length of hospital stay (LOS) and hospital charges, delay of renal replacement therapy (RRT), and a smooth transition to RRT. The Ochsner Healthy Start Renal Clinic (HSRC) is a multidisciplinary early education and tracking program for pre-ESRD patients and their families. We identified and educated pre-ESRD patients about kidney disease, allowing them to discuss and make informed decisions about their treatment and be better prepared to cope with the transition to RRT and the changes in their lives resulting from kidney failure. HSRC patients demonstrated a significant decrease in length of hospital stay ($p = 0.05$), a trend towards decreased hospital episodes and charges, decreased use of temporary venous access, and a smooth transition to RRT. The control group was made up of patients who had either refused the structured education or had been referred to HSRC late and received only conventional instruction by a social worker at the point where dialysis was imminent. We compared the number of episodes of hospitalization, LOS, and overall hospital charges for the period immediately surrounding initiation of chronic dialysis (2 months before and 1 month following onset) of all 36 patients who began chronic hemodialysis in our facility between November 1997 and November 1998. HSRC patients had LOS half as long ($p=0.05$), fewer hospital episodes, and hospital charges of $5,000 less per patient than the non-HSRC group. Initial data strongly suggest that early education and intervention through the coordination of a multidisciplinary team maximize the continuity of patient care.

Early intervention through patient education and tracking is an essential factor in the outcomes of pre-end stage renal disease (ESRD) patients (1, 2). Several studies conducted during the last decade have contributed direct evidence to the importance of early intervention and patient education to patient outcomes (2,3). Campbell et al (3) reported a significant decrease in first year mortality when patients were referred early (at least 4 months before hemodialysis was initiated) to a nephrologist. Patients who had urgent (less than 1 month before hemodialysis was initiated) rather than early referrals to a nephrologist were hospitalized three times longer, and their hospital charges were five times more expensive (3). Levin et al (4) and Binik et al (5) have demonstrated that patients receiving pre-dialysis education through multidisciplinary teams had significantly prolonged delays in the start of dialysis and decreased needs for urgent dialysis. In a series of 139 uremic patients who initiated hemodialysis, Ifudu et al reported that those who received prior nephrology care demonstrated a significant decrease in length of hospital stay (LOS) and the use of temporary venous access compared with patients who did not see a nephrologist before starting hemodialysis (6).

With this information in mind, the Ochsner Healthy Start Renal Clinic (HSRC) was developed to educate and address the needs of pre-ESRD patients and their families. The Healthy Start Team educated 125 patients between August 1997 and November 1998. A tracking system was developed for the

12 month period between November 1997 and November 1998 to determine if educating pre-ESRD patients resulted in improved emotional and physical preparation for dialysis; decreased use of temporary venous access, LOS, and hospital episodes and charges; and delayed progression of renal failure.

Methods

We identified all patients starting chronic hemodialysis in our facility between November 1997 and November 1998 and compared the number of episodes of hospitalization, LOS, and overall hospital charges between those who were educated through the HSRC and those who did not receive HSRC education. Thirty-six patients referred by a nephrologist or primary care physician (PCP) started chronic hemodialysis during the study period. The data collection period comprised 2 months before and 1 month following the initiation of chronic hemodialysis. Data analysis was statistically analyzed using the Mann-Whitney Ranked "t" test. Prior to the initiation of dialysis, 15 patients received HSRC education and 21 did not, due either to patient refusal or late referral to the clinic (defined as patients needing RRT within less than 1 month). The 21 patients not receiving HSRC education were educated by a social worker using the conventional method of a video program.

Patients entered the HSRC through either nephrologist or PCP referral and began either basic or advanced education depending upon the projected length of time before RRT. Patients entered basic education when their serum creatinine was between 1.5 mg/dl and 3.9 mg/dl and RRT was >6 months away and returned for advanced education when their serum creatinine reached ≥ 4.0 mg/dl or RRT was <6 months away. Both tracks emphasized the patient-focused team approach, including nurse educator, renal dietitian, and renal social worker.

All patients starting hemodialysis from the HSRC received advanced education from a multidisciplinary team consisting of a nurse, dietitian, and social worker, and received both didactic and slide presentations analogous to the patient handbook. Patients and their families were identified as the focus of the health care team, encouraged to participate in the class, and provided basic information concerning kidney function, failure, and treatment (Table 1). A post test was administered to assess patient knowledge and reinforce key principles. The goal of this structured education was to provide knowledge that allowed patients to recognize the functional impact of renal disease and participate in their care by being better prepared to discuss and make informed decisions about their treatment with their physician. We also hoped to better prepare patients to cope emotionally and physically with the transition to RRT and the changes in their lives resulting from kidney failure.

Table 1. Information provided to patients in Healthy Start Renal Clinic pre-end stage renal disease education classes.

Work and function of the kidneys
Causes of kidney failure
Signs and symptoms of kidney failure
Assessment of key laboratory values: (BUN, creatinine, creatinine clearance, potassium, calcium, phosphorus, albumin, hematocrit, and hemoglobin)
Understanding prescription and over-the-counter medications
Anemia and the role of erythropoietin in chronic renal failure
Treatment modalities
Individualized food plans
Fluid management and fluid status
Exercise
Effective coping methods
Utilization of community resources

Results

HSRC patients had a significantly ($p=0.05$) shorter LOS: 7.9 days compared with 15.4 days for patients who did not receive HSRC education (Table 2). The primary contributing factor for the shorter LOS for HSRC patients is that the majority of these patients had a permanent access placed before starting hemodialysis. These patients, therefore,

Table 2. Summary of Length of Hospital Stay, Number of Hospital Episodes and Hospital Charges for Hemodialysis Patients Educated Through the Healthy Start Clinic vs Hemodialysis Patients not Educated Through Healthy Start

		Healthy Start Renal Education n= 15	Non-Healthy Start Renal Education n = 21	p-value
Length of Hospital Stay (Days)	Mean SD	7.9 7.9	15.4 14.7	p = 0.05
Number of Hospital Episodes	Mean SD	2.9 2.4	3.9 2.3	p = 0.25
Hospital Charges ($1000)	Mean SD	21.3 13.8	26.5 20.9	p = 0.57

did not require excessive hospital days for temporary venous access and the need for surgery at the time of hospitalization. Patients educated through HSRC also had fewer hospital episodes and lower hospital charges (Table 2). The reasons for hospitalizations have yet to be analyzed.

Discussion

In a report on multidisciplinary pre-dialysis programs, Levin et al (4) reported that several small non-randomized studies with various types of pre-dialysis interventions have demonstrated a reduction in morbidity, mortality, temporary line insertions, urgent dialysis starts, and hospital days. Their study of two Canadian programs found that patients educated through multidisciplinary structured programs that relied heavily on education and standardized follow-up demonstrated a positive impact on clinical outcomes (reduced urgent dialysis start, reduced hospitalization during the first month of dialysis) and an improvement in physiologic parameters (blood pressure, hemoglobin, calcium, phosphate). Patients also demonstrated an improved emotional preparedness for dialysis. Binik et al (5) randomized patients to standard or enhanced education programs and found that patients with an enhanced education survived RRT 4.6 months longer than individuals not part of the enhanced education group. Campbell et al (3) reported a decrease in LOS with early referral (at least 4 months before hemodialysis was initiated) to a nephrologist. Patients that had urgent referrals to a nephrologist had hospital stays three times longer and five times more expensive than patients with early referrals. The average total charge for urgent referrals(at least 4 months before hemodialysis was initiated) was about $24,000 for each hospital stay as compared with approximately $5,000 total charges for early referrals (3).

We have found the HSRC to be an innovative method of providing education for pre-dialysis patients. Preliminary data analysis reveals that those patients who started chronic hemodialysis during the 12-month study period had significantly decreased LOS and were better prepared emotionally and physically for dialysis. Patients educated through the Healthy Start Program demonstrated decreased anxiety, isolation, and apprehension during the transition to RRT compared with patients not educated by HSRC.

Preliminary data from this study also reveal a tendency towards fewer hospital episodes for HSRC patients. Although not statistically significant, probably due to small sample size, there were marked financial savings in hospital charges for HSRC patients when compared with patients not receiving HSRC education (p=0.25 and p=0.57, respectively). Patients who did not receive Healthy Start Education had 25% more hospital episodes than those who did (3.9 episodes vs 2.9 episodes), and the hospital charges were about $5,000 more per patient

for those not receiving the formal pre-ESRD education. Although additional data are needed to prove conclusively that early screening and education delay the progression of renal disease, initial data strongly suggest that early education and intervention through the coordination of a multidisciplinary team maximize the continuity of patient care and may even maintain or improve the health status of patients.

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