chapter FOUR

treatment modalities

You must not change one thing, one pebble, one grain of sand, until you know what good and evil will follow on that act.

Ursula Le Guin, A Wizard of Earthsea
The incident hemodialysis population is now nearly eight times larger than in 1978, and reached 102,876 patients in 2008. The peritoneal dialysis population, in contrast, peaked in 1995, at 9,400 patients, and has since fallen to below 6,600; these patients now account for 6.0 percent of new dialysis patients, a ratio that continues to decline from its 1982–1984 peak of nearly 15 percent. The new CMS bundled payment system, paying a composite rate across all dialysis patients, may promote renewed attention to peritoneal dialysis, as patients on this therapy use significantly lower amounts of injectable medications and thereby save costs for providers.

As of December 31, 2008, 354,600 patients were receiving hemodialysis therapy, 26,517 were on peritoneal dialysis (7.0 percent of the dialysis population), and 165,639 had a functioning graft. The annual rate of growth has slowed in the prevalent hemodialysis population, from 8.7 percent in 1997 to 3.7 percent in 2008, while the prevalent peritoneal dialysis population rose 1.3 percent in 2008, the first increase since 2003. The greatest growth has occurred in the transplant population, at 5.0–6.0 percent each year since 2001; in 2008, however, this growth slowed to 4.4 percent.

The number of patients who receive a kidney transplant as their first ESRD therapy reached 2,641 in 2007, then fell to 2,644 in 2008. In the prevalent population, the number waiting to receive a transplant reached 77,695 in 2008, with a one-year growth of 5.8 percent.

In the incident hemodialysis population, Medicare only, Medicare plus Medicaid, and Medicare Advantage within HMOs or managed care plans cover 74.2 percent of patients; the remaining 25.8 percent are covered by private insurers and Medicare as secondary payor, with the primary insurer being an employer group health plan (EGHP). Among new peritoneal dialysis patients, in contrast, the 2008 distribution was 62 and 38 percent. Medicare covers only 32 percent of incident transplant patients; 35 percent have Medicare as secondary payor EGHP coverage, and 33.1 percent are covered by other insurers. These differences may significantly affect both patient benefits — particularly as related to prescription drugs — and provider revenue streams from services such as dialysis therapy, injectables, treatments and medications for transplantation, and diagnostic testing.

Home hemodialysis has seen a resurgence over the last four years, with patients receiving either short daily treatments or longer, overnight...
therapy. The prevalent home hemodialysis population reached 3,826 individuals in 2008. Illinois continues to have the largest number of new patients on the therapy, accounting for almost 40 percent of new cases in 2006–2008. The prevalent population is also largest in Illinois, at 17 percent. By geographic location, the 60/40 split between urban and rural locations seen in the late 1970s has changed, with approximately four in five patients now living in a urban setting.

Use of home hemodialysis may also be altered by the changes to Medicare payments scheduled to take place in 2011, with the new bundled composite rate to include all intravenous medications as well as some prescription drugs. It is not clear how this bundling will incorporate the new daily home dialysis therapy, as there are no specific payment adjusters for this treatment. The NIH-funded study on frequent hemodialysis, which compares daily hemodialysis to dialysis received three times per week, may change how the therapy is positioned in the new payment system; it will not, however, be completed for several more years.

We conclude this chapter with new information on modality-specific enrollment in the Medicare Part D prescription drug benefit. In the incident population, nearly 80 percent of Medicare-eligible hemodialysis patients are enrolled in Part D, with enrollment for peritoneal dialysis patients being slightly higher than that found among hemodialysis patients or those with a transplant. In the prevalent population, for example, 67, 59, and 48 percent of patients, respectively, were enrolled in Part D. Enrollment data from 2008–2009 will be included in the 2011 ADR.

† Figures 4.1–2; see page 472 for analytical methods. Incident ESRD patients (4.1); December 31 point prevalent patients (4.2).
In 2008, 101,033 new ESRD patients began therapy on hemodialysis, 6,455 were placed on peritoneal dialysis, and 2,465 received a preemptive transplant (these data exclude patients with missing demographic information). The rate of ESRD reached 322 per million population for hemodialysis, 20.7 for peritoneal dialysis, and 7.9 for transplant. Dramatic differences by race persist, with the rate for African Americans initiating on hemodialysis, for example, at 936 per million population — close to four times greater than the rate of 247 reported for whites. The rate for patients receiving a preemptive transplant, in contrast, is highest among Asian patients, at 29 per million compared to 6–7 among whites and African Americans, and 17 among Native Americans.

Past studies have suggested high mortality and significant movement between modalities in the first 90 days after initiation of ESRD therapy. Besides a small number of patients regaining kidney function, most of the 8.3 percent of 2008 incident patients lost during the first 90 days died during that period. The hemodialysis population at day 90 was 13.4 percent smaller than at initiation; the peritoneal dialysis and transplant populations, in contrast, gained 3.4 and 23.1 percent, respectively. Nearly 4 percent of patients were listed as having an unknown modality at day 90, up from just 0.2 percent at initiation; this is due primarily to the number of sicker patients being admitted to hospitals and dialyzed with “unspecified” dialysis modality (a billing issue) during their stays.

Between initiation and day 90, the rate per million population for hemodialysis fell from 322 to 278, while the rate for transplant rose from 7.9 to 9.7, and that for peritoneal dialysis remained relatively steady, rising from 20.7 to 21.4.

**Table 4a.1** see page 472 for analytical methods. *Incident ESRD patients, 2008; unknowns dropped. Ref: 2005 patients. *Values for cells with ten or fewer patients are suppressed.

Chain-owned units treated nearly 66 percent of incident hemodialysis patients in 2008 — up from 55 percent in 2000 — while non-chain and hospital-based units treated 18.4 and 13.1 percent, respectively. The number of peritoneal dialysis patients treated in chain-owned units has remained stable since the early part of the decade, at near 4,000.

**Figure 4.3:** see page 472 for analytical methods. *Incident dialysis patients.
Forty-six percent of new hemodialysis patients are covered solely by Medicare, 13.6 percent have dual Medicare/Medicaid coverage, and 14.4 percent are covered by a Medicare HMO provider — up from 7.9 percent in 2004. Medicare covers 43 and 25 percent of new peritoneal dialysis and transplant patients, while 9.7 and 3.8 percent are dually-enrolled, and 8.6 and 3.0 percent have HMO coverage. Coverage by non-Medicare insurers has increased for hemodialysis patients from 5.4 percent in 1978 to nearly 16 percent in 2008; for peritoneal dialysis patients, growth has been from 6.9 to 17 percent. *Figure 4.4; see page 472 for analytical methods. Incident ESRD patients.*

Choices of initial modality vary widely across the country. In 2007–2008, unadjusted incident rates for patients starting therapy on hemodialysis were highest in the Gulf Coast states and along the Atlantic Seaboard, averaging 437 per million population in the upper quintile — more than double that found in the lower quintile. Rates for patients who received a preemptive transplant were highest in the Upper Midwest, averaging 12.4 in the upper quintile — nearly seven times higher than in the lower quintile. And rates for patients initiating therapy on peritoneal dialysis tended to be higher in the southern regions as well as in areas of the Texas Panhandle and parts of Northern Montana, averaging 49 per million population in the upper quintile. *Figure 4.5; see page 472 for analytical methods. Incident ESRD patients; unadjusted.*
On December 31, 2008, more than 347,000 ESRD patients were receiving hemodialysis therapy, 25,979 were being treated with peritoneal dialysis, and 161,022 had a functioning graft. Disease rates in the prevalent population continue to be highest among African Americans, at 4,116 per million population for hemodialysis, 191 for peritoneal dialysis, and 889 for transplant. Rates for peritoneal dialysis and transplant are similar in the Native American and Asian populations; at 1,972, however, the rate of Native Americans receiving hemodialysis is 59 percent greater than that found in the Asian population. *Table 4.D; see page 472 for analytical methods. December 31 point prevalent ESRD patients, 2008; unknowns dropped. Ref: 2005 patients.*

Between 2000 and 2008, the percentage of prevalent patients treated by chain-owned providers rose from 61 to 73 for hemodialysis, and from 56 to 68 for peritoneal dialysis. Hospital-based units, in contrast, now treat 13.6 and 15.1 percent of prevalent hemodialysis and peritoneal dialysis patients, down from 18.8 and 22 percent in 2000. *Figure 4.E; see page 472 for analytical methods. December 31 point prevalent dialysis patients.*
Nine in ten prevalent hemodialysis patients had some type of Medicare coverage in 2008, with 41 percent covered solely by Medicare, and 32 percent under Medicare/Medicaid. In the transplant population, in contrast, just 33 percent are covered solely by Medicare. Transplant patients younger than 65 and not disabled lose their entitlement after three years with a functioning graft. Coverage by non-Medicare insurers continues to increase in the dialysis population, in 2008 reaching 10.3 and 9.7 percent in the hemodialysis and peritoneal dialysis populations, respectively. + Figure 4.7; see page 472 for analytical methods. December 31 point prevalent ESRD patients.

In 2008, prevalent rates for patients on hemodialysis averaged 1,581 per million population in the upper quintile, and followed geographic patterns similar to those found in the incident hemodialysis population, with the highest rates in southern Texas and in states along the Gulf Coast and Atlantic Seaboard. In 2008, prevalent rates for patients on peritoneal dialysis averaged 166 per million in the upper quintile; this was slightly lower than the 2007 rate of 172 per million. Rates for transplant patients averaged 609 in the upper quintile and were highest in Montana, the Upper Midwest, and portions of the Ohio Valley and southern Texas. + Figure 4.8; see page 472 for analytical methods. December 31 point prevalent ESRD patients; unadjusted.
Patient distribution by age and primary diagnosis differs in the incident and prevalent home hemodialysis populations. Patients age 75 and older, for example, accounted for nearly one-third of the 1,382 incident home hemodialysis patients in 2008, but just 12.8 percent of the 3,826 prevalent patients. And primary diagnoses of hypertension and glomerulonephritis accounted for 39.4 and 5.1 percent of the incident population, but 24.3 and 18.8 percent among prevalent patients.

Illinois patients accounted for 39 percent of new home hemodialysis patients in 2006–2008, and 17 percent of prevalent patients in 2008. *Table 4.C & Figure 4.9; see page 472 for analytical methods. Incident home hemodialysis patients, 2006–2008 combined, & December 31 point prevalent home hemodialysis patients, 2008. *Values for cells with ten or fewer patients are suppressed.

New ESRD patients treated with home hemodialysis are far more likely to receive assistance than those treated with center hemodialysis or peritoneal dialysis, at 53 compared to 17 and 4.6 percent. In the prevalent population, in contrast, just 10.3 percent of home hemodialysis patients receive assistance. (Many of those classified as home patients may be institutionalized and receiving their dialysis in a nursing home setting.) *Figure 4.10; see page 472 for analytical methods. Incident & December 31 point prevalent dialysis patients, 2008. Assistance is defined as any one of the following pre-existing conditions, as identified on the Medical Evidence form: inability to ambulate, inability to transfer, needing assistance with daily activities, institutionalized, assisted living, nursing home, or other institution.

In 2008, 82 percent of new home hemodialysis patients lived in an urban setting, down from nearly 90 percent in 2004; 16 percent lived in a location classified as rural. Distribution in the prevalent population was slightly different, at 73 and 25 percent, respectively. *Figure 4.11; see page 472 for analytical methods. Incident & December 31 point prevalent home hemodialysis patients.
Between 2006 and 2007, the percentage of incident hemodialysis and transplant patients continuously enrolled in Medicare Part D remained stable, at 76–77 and 77, respectively, while the number dropped from 83 to 81 among incident peritoneal dialysis patients. Changes were more dramatic in the prevalent population, with the percentage rising from 57 to 67 among hemodialysis patients, from 49 to 59 among peritoneal dialysis patients, and from 36 to 48 among those with a transplant. Nearly 73,000 incident patients, and 273,366 prevalent patients, were enrolled in Part D in 2007. * Figures 4.12–13 & Tables 4.4–4.5; see page 472 for analytical methods. Incident & December 31 point prevalent ESRD patients. Peritoneal dialysis counts include CAPD & CCPD only. "." Zero values in this cell. *Values for cells with ten or fewer patients are suppressed.
In 2008, the rate of ESRD incidence reached 322 per million population for hemodialysis, 20.7 for peritoneal dialysis, and 7.9 for transplant. TABLE 4.A

In 2008, the incident rate of ESRD for African Americans initiating on hemodialysis reached 936 per million population — close to four times greater than the rate of 247 reported for whites. TABLE 4.A

On December 31, 2008, more than 347,000 ESRD patients were receiving hemodialysis therapy, 25,979 were being treated with peritoneal dialysis, and 161,022 had a functioning graft. TABLE 4.B

In 2008, the prevalent rate for hemodialysis patients reached 4,116 per million population among African Americans, compared to 718 among whites. TABLE 4.B

Chain-owned units treated nearly 73 percent of prevalent hemodialysis patients in 2008 — up from 61 percent in 2000 — while non-chain and hospital-based units treated 17.0 and 13.6 percent, respectively. FIGURE 4.6

In 2006–2008, 1,382 patients began ESRD therapy on home hemodialysis; 3,826 patients were receiving home hemodialysis on December 31, 2008. TABLE 4.C

Nearly 73,000 incident patients, and 273,366 prevalent patients, were enrolled in Medicare Part D in 2007. TABLES 4.D–E