Experience does not err, it is only your judgement that errs in expecting from her what is not in her power.

Leonardo da Vinci
The incident hemodialysis population is now nearly eight times larger than in 1978, and topped 101,000 patients in both 2006 and 2007. The number of new peritoneal dialysis patients peaked at 9,408 in 1995, and has since fallen to 6,506; this population now accounts for 6.0 percent of new dialysis patients, a ratio that continues to decline from its 1982–1984 peak of nearly 15 percent. As of December 31, 2007, more than 341,000 patients were receiving hemodialysis therapy, 26,340 were on peritoneal dialysis (7.2 percent of the dialysis population), and 158,739 had a functioning graft. The annual rate of growth has slowed in the prevalent hemodialysis population, from 8.7 percent in 1997 to 3.8 percent in 2007, while the prevalent peritoneal dialysis population has remained quite stable. The greatest growth has occurred in the transplant population, which has increased 5.0–6.0 percent each year since 2001. The number of patients who receive a kidney transplant as their first ESRD therapy reached 2,665 in 2007, and since 1996 has grown an average of 6.8 percent each year. In the prevalent population, the number waiting to receive a transplant reached 73,555 in 2007, with an average annual growth of 9.9 percent since 1996, though this rate of change has fallen to 7–8 percent in the last three years. In the incident hemodialysis population, Medicare only, Medicare plus Medicaid, and Medicare under health maintenance organizations or managed care plans continue to cover 75 percent of patients, while private insurers and Medicare as secondary payor cover the remaining 25 percent. Among new peritoneal dialysis patients, in contrast, the 2007 distribution was 62 and 38 percent. Medicare covers only 35.1 percent of incident transplant patients; 33.3 percent have Medicare as secondary payor coverage, and 31.7 percent are covered by other insurers. These differences may significantly affect both patient benefits—particularly those related to prescription drugs—and provider revenue streams from services such as dialysis therapy, injectables, treatments and medications for transplantation, and diagnostic testing. Maps of incident rates by modality illustrate nationwide changes since 1997, changes which may reflect the recent consolidation of ESRD providers, their varying policies regarding therapy, and their individual likelihoods of using dialytic or transplant therapies in the incident population. Changes in peritoneal dialysis use, for example, show distinct geographic patterns that differ from the distribution of the hemodialysis population. The rates may also reflect changes in access to organs for renal transplantation. The growing consolidation of providers into larger chains has long been clear, and two large chains now treat the great majority of dialysis patients in the U.S. In the early 1990s, just one in seven dialysis patients received treatment in a chain-owned unit; in 2007, the number was nearly seven in ten. The market share of independent units has been relatively stable, at 18–19 percent since 2000; hospital-based units, however, are now treating just 13 percent of the prevalent hemodialysis population. With the use of peritoneal dialysis varying considerably by provider group, further consolidation may raise concerns over modality choice and its relation to provider practices. With peritoneal dialysis long...
the dominant home therapy, home hemodialysis has received little attention in the past 15 years. Its use peaked in 1985, with 5,817 prevalent patients. A number of government programs, paying home aids to help deliver the therapy, ended soon afterwards, contributing to a steady decline in use. Now, however, there appears to be renewed interest in the use of daily home hemodialysis, fueled by publication of results from single centers using the therapy, as well as new products being introduced for therapy delivery. In addition, a new NIH study is in progress, comparing the safety and efficacy of daily or overnight home hemodialysis to that of in-center therapy. The introduction of the new “bundled” payment system for dialysis, which includes injectable medications, may have an impact on modality selection. Since peritoneal dialysis patients appear to use far lower amounts of erythropoiesis stimulating agents, IV vitamin D, and IV iron, there may be a clear incentive to use this type of home therapy, improving provider margins through lower costs under a fixed payment model. The current payment model may, however, provide a disincentive to the use of daily home hemodialysis. Based on three treatments per week — the dominant therapy regime of in-center hemodialysis — the model does not allow payment for additional weekly therapy. If the reported advantages of daily home hemodialysis, which also include lower use of ESAs, IV vitamin D, and IV iron, along with lower rates of hospitalizations for fluid overload secondary to better volume control, are demonstrated in the large randomized NIH trial, these advantages should be addressed in the payment model to encourage use of the therapy. But while the savings in Part A hospitalization services may be greater than those in Part B outpatient services, they cannot be combined into the outpatient payment system as it is currently configured. Payment reform, which was intended to control the costs of IV injectables, may therefore have unintended consequences, disadvantaging home hemodialysis therapies. The efficacy of the therapy should continue to be the basis of the payment policy, and conclusions on this need to await the results of the NIH clinical trial and other more comprehensive observational studies.

Figures 4.1–2; see page 366 for analytical methods. Incident ESRD patients (4.1); December 31 point prevalent patients (4.2).
In 2007, close to 100,000 new ESRD patients began therapy on hemodialysis, 6,376 were placed on peritoneal dialysis, and 2,500 received a preemptive transplant (these numbers exclude patients with missing demographic information). The rate of ESRD incidence reached 325 per million population for hemodialysis, 20.8 for peritoneal dialysis, and 8.1 for transplant. Dramatic differences by race persist, with the rate for African Americans starting therapy on hemodialysis, for example, at 952 compared to just 6–7 in the white and African American populations.

Past studies have suggested high mortality and significant movements between modalities in the first 90 days after ESRD initiation. Besides a small number regaining kidney function, most of the nearly 8 percent of 2007 incident patients lost during the first 90 days died before reaching day 90. Nearly 13 percent of those on hemodialysis at initiation were lost at 90 days, while transplant and peritoneal dialysis therapies gained 22.5 and 5.3 percent, respectively. More than 3 percent of patients were listed as having an unknown modality at day 90, up from only 0.12 percent at initiation; this is due primarily to a large number of sicker patients being admitted to hospitals and dialyzed with “unspecified” dialysis modality (a billing issue) during their hospital stays.

Between initiation and day 90, rates per million population fell from 325 to 283 for hemodialysis, while those for other modalities increased — from 8.1 to 10.0 for transplant, and from 20.8 to 21.9 for peritoneal dialysis. (Table 4A; see page 366 for analytical methods. Incident ESRD patients, 2007; unknowns dropped. *Values for cells with ten or fewer patients are suppressed. . Zero values in this cell.

![Incident dialysis patient counts, by first modality & unit type](pg 252)

Chain-owned units treated nearly 65 percent of incident hemodialysis patients in 2007 — up only slightly from 64 percent the prior year — while non-chain and hospital-based units treated 18.5 and 14.0 percent of patients, respectively. The number of peritoneal dialysis patients treated in chain-owned units has remained stable since 2002, at just over 4,000. (Figure 4.32 see page 366 for analytical methods. Incident dialysis patients.)
Forty-eight percent of new hemodialysis patients are covered solely by Medicare, 13.8 percent have dual Medicare/Medicaid coverage, and 13.5 percent are covered by a Medicare HMO provider—up from 11.6 percent in 2006. Medicare covers 43.4 and 28.0 percent of new peritoneal dialysis and transplant patients, while 9.6 and 4.4 percent are dually-enrolled, and 8.9 and 2.7 percent have HMO coverage. Figure 4.4; see page 366 for analytical methods. Incident ESRD patients.

Choices of initial modality vary widely across the country. In 2006–2007, for example, unadjusted incident rates for patients initiating treatment on hemodialysis were greatest in states along the Atlantic Seaboard and the Gulf Coast, averaging 425 per million population in the upper quintile—more than two times greater than the lower quintile. An opposite pattern is evident for patients with a preemptive transplant. Rates for these patients are highest in the Upper Midwest, averaging 12.2 per million in the upper quintile—nearly six times higher than in the lower quintile. Rates for patients starting therapy on peritoneal dialysis are highest in the southern regions, averaging 48.7 per million in the upper quintile. Figure 4.5; see page 366 for analytical methods. Incident ESRD patients.
On December 31, 2007, nearly 334,000 ESRD patients were receiving hemodialysis therapy, 25,752 were being treated with peritoneal dialysis, and 154,373 had a functioning graft. The African American population has by far the greatest disease rates per million population, at 4,050 for hemodialysis, 195 for peritoneal dialysis, and 858 for transplant. Rates for peritoneal dialysis and transplant are nearly equal in the Native American and Asian populations; at 2,003, however, the rate of Native Americans receiving hemodialysis is 65 percent greater than that found among people of Asian descent. (Table 4.6; see page 366 for analytical methods. December 31, 2007 point prevalent ESRD patients; unknowns dropped.*Values for cells with ten or fewer patients are suppressed. Between 2000 and 2007, the percentage of prevalent patients treated by chain-owned providers rose from 60.3 to 69.2 for hemodialysis, and from 55.5 to 66.2 for peritoneal dialysis. Hospital-based units, in contrast, now treat 12.7 and 14.4 percent of prevalent hemodialysis and peritoneal dialysis patients, down from 18.8 and 21.9 percent in 2000. (Figure 4.6; see page 366 for analytical methods. December 31 point prevalent dialysis patients.)
In 2007, prevalent rates for patients on hemodialysis averaged 1,586 per million population in the upper quintile, while those for patients with a transplant averaged 592 per million and were highest in the northern tier of states, the Upper Midwest, portions of Texas, and the upper regions of Arizona and New Mexico. (Figure 4.8; see page 366 for analytical methods. December 31 point prevalent ESRD patients.)

Nine in ten prevalent hemodialysis patients had some form of Medicare coverage in 2007; 42 percent were covered solely by Medicare, while nearly 33 percent had dual Medicare/Medicaid coverage — a number stable since the mid-1990s. In the transplant population, in contrast, just 34 percent are covered solely by Medicare. Transplant patients who are younger than 65 and not disabled lose their entitlement after three years with a functioning graft. (Figure 4.7; see page 366 for analytical methods. December 31 point prevalent ESRD patients.)
New ESRD patients treated with home hemodialysis are far more likely to receive assistance than those treated with center hemodialysis or with peritoneal dialysis, at 51 percent compared to 16–17 percent. While these data may seem to imply that home hemodialysis patients are very disabled, many of those classified as home patients may be institutionalized and receiving their dialysis in a nursing home setting. 

Illinois and Florida accounted for 53 percent of incident home hemodialysis patients in 2005–2007, with 31.0 and 22.4 percent. Nine percent of patients lived in Ohio. 

Incident dialysis patients, by modality & assistance, 2007. 

Incident home hemodialysis patients, by geographic location, 2005–2007 combined.

Incident dialysis patients, by modality & assistance, 2007.
The percentage of prevalent home hemodialysis patients residing in urban areas peaked at 75.0 in 2004, and since then has remained near 73.2. Twenty-four percent live in rural areas, down from a high of nearly 39 percent in 1982. 

**Figure 4.12;** see page 366 for analytical methods. December 31 point prevalent home hemodialysis patients, 2007.

Seventeen percent of prevalent patients treated with home hemodialysis in 2007 lived in Illinois, while California, Florida, and Texas each accounted for 7–8 percent of the home hemodialysis population. 

**Figure 4.12;** see page 366 for analytical methods. December 31 point prevalent home hemodialysis patients, 2007.

In 2007, 11.1 percent of prevalent home hemodialysis patients received assistance, compared to 7.4 percent of those on center hemodialysis and 2.5 percent of those receiving peritoneal dialysis. 

**Figure 4.13;** see page 366 for analytical methods. December 31 point prevalent dialysis patients, 2007.
In 2007, the rate of ESRD incidence reached 325 per million population for hemodialysis, 20.8 for peritoneal dialysis, & 8.1 for transplant. • 4.a

CHAIN-OWNED units treated 65% of incident hemodialysis patients in 2007. • 4.3

MEDICARE covers 85% of new hemodialysis patients, compared to 68% of patients starting therapy with a transplant. • 4.4

In 2007, the prevalent rate for hemodialysis patients reached 4,050 per million population among African Americans, compared to 702 among whites. • 4.b

Chain-owned units treated 69% of prevalent hemodialysis patients in 2007. • 4.6

NINE IN TEN prevalent hemodialysis patients had some form of Medicare coverage in 2007. • 4.7

In 2005–2007, 1,253 patients began ESRD therapy on HOME HEMODIALYSIS. • 4.c

ILLINOIS & FLORIDA account for 53% of incident ESRD patients treated with home hemodialysis in 2005–2007. • 4.9

In 2007, 2,999 prevalent ESRD patients received home hemodialysis. • 4.d

Illinois accounted for 16.8% of prevalent ESRD patients receiving home hemodialysis in 2007. • 4.12

summary