‘I ought to say,’ explained Pooh as they walked down to the shore of the island, ‘that it isn’t just an ordinary sort of boat. Sometimes it’s a Boat, and sometimes it’s more of an Accident. It all depends.’

‘Depends on what?’

‘On whether I’m on the top of it or underneath it.’

A A Milne
Winnie-the-Pooh
The dialysis provider network continues to transform dramatically. On the next page we illustrate major changes over the past decade, showing consolidations that have resulted in two large, for-profit chains which now treat 60 percent of the dialysis population. And on the following pages we present new data on the length of time units have been under their current ownership, an issue which influences the policies and practices of individual units, as new owners imprint their own systems of care.

We next update data on patient characteristics at the start of ESRD therapy, introducing data from the newly revised Medical Evidence form. We show, for instance, that catheter use at the first outpatient dialysis treatment is similar across provider groups, at approximately 80 percent. Initial creatinine levels are also consistent, though just 44 percent of DCI patients have a level below 6 mg/dl, compared to 63 percent in NNA units (later purchased by RCG, and then by Fresenius).

Through its facility certifications, each dialysis unit must demonstrate active procedures related to unit operations, staff training, adverse event reporting, and standing orders. Many practices cover NKF’s K/DOQI guidelines, including those related to dialysis adequacy, anemia management, and vascular access. Since 1994, CMS has used its ESRD Clinical Performance Measures (CPM) project to assess care delivered by providers. CMS also uses its Dialysis Compare measures to review outcomes by unit, reporting them on its website.

Data assessing provider compliance with these guidelines show, first of all, that while dialysis adequacy and vascular access use are similar across providers, there are differences in influenza vaccination rates and diabetes preventive care.

Anemia management has received increased attention in the last several years, with recent clinical trials showing adverse outcomes when hemoglobin levels are targeted to 13 g/dl and above. We first assessed this area in last year’s ADR, demonstrating how frequently target hemoglobins are exceeded, and showing that up to 40 percent of incident patients overshoot 14 g/dl in the first six months of hemodialysis (see Chapter Five for additional data). On a provider level, DCI is the most consistent in meeting target hemoglobin levels; in 2005, the percentage of its patients with hemoglobins of 11–<12 g/dl was up to twice that found in other providers.

Across providers, 90 percent of new dialysis patients reach a hemoglobin of 12 g/dl or above in the first six months after reaching 11 g/dl or greater. But at higher levels, results differ markedly. In these first six months, just 42 and 10 percent of DCI patients reach 13+ or 14+ g/dl, respectively, compared to 86 and 55 percent of DaVita patients. Hazard ratios show that Fresenius and DaVita patients are most likely to overshoot target levels. These findings suggest that hemoglobin variability—a subject now receiving considerable attention—appears related in part to provider actions rather than non-treatable biological phenomena.

EPO dosing also varies by provider. DCI and NNA units, with the lowest percentage of patients overshooting levels of 13 and 14 g/dl, also use the lowest doses, while the highest dosing is found in Fresenius, DaVita, Gambro, and RCG units.

These data show that approaches to anemia management and ESA use need further attention. Recent FDA safety alerts, and the addition
warning to ESA package inserts, suggest that overshooting of target hemoglobin levels may be a serious issue of patient safety. The fact that some providers can achieve greater hemoglobin control points to the success of their anemia management protocols.

Dialysis providers are reimbursed for dialysis services based on the “composite rate,” which bundles a number of routine services, including monthly laboratory tests. Tests traditionally performed on a quarterly basis, but not included in the rate, include iron studies and PTH levels. It has been unclear how frequently providers are billing for extra tests. This year we show the probability of a patient receiving five or more tests, choosing this benchmark since some adjustments to therapy may require additional testing. Provider variations in testing are considerable. The probability of receiving five or more PTH tests, for instance, ranges from 0.32 in DCI units to 0.89–0.92 in units owned by Gambro, DaVita, and RCG.

Such variations in practice may influence outcomes, assessed in the mortality and hospitalization ratios concluding this chapter. Ratios remain lowest in DCI units, with no other providers showing the same consistency in results. And both SMRs and SHRs are greatest in hospital-based units, a concern which we address in the text on these figures. Such differences raise questions on the effect of variations in clinical care—such as anemia management and the use of laboratory tests—and their impact on patient morbidity and mortality. While requiring expansion and additional adjustments, these analyses point to potential areas of overuse which demand further attention.
In Figure 10.1, on the previous page, we illustrate recent changes in the provider landscape. Here we examine those developments in numeric terms. Between 2000 and 2005, for instance, the number of units owned by Fresenius rose 30.9 percent, to 1,149 (Figure 10.2). DaVita’s holdings grew nearly 80 percent, to reach 868.

The overall number of dialysis units and patients grew at almost the same rate between 2000 and 2005—22.8 and 21.8 percent, respectively (Figure 10.3). This growth varied widely, however, by renal network. In Network 10 the number of units rose 47.4 percent, but these units treated just 18.8 percent more patients. Network 5, in contrast, had 8.1 percent more units in 2005, but 19.7 percent more patients.

Areas along the southeast Atlantic Coast, the Gulf Coast, and in southern Texas appear to have the highest concentrations of dialysis facilities, averaging 2.3 units per 100,000 population; it is not surprising that these areas contain the highest concentrations of patients as well (Figure 10.4).

This year we present new data on how long units have been under their current unit ownership, an indication of the stability of care patients receive. Across providers, the number of units owned for five or more years has grown since 2000 (Figure 10.5). In 2005, for example, Fresenius had owned 83.5 percent of its units for at least five years, up from 62.9 percent in 2000. DaVita’s rapid rate of expansion from just 53 units in 1995 (under the name of Total Renal Care) shows in the large percentage of units owned for shorter periods;
in 2000, 54.5 percent had been owned for 3–4 years, and nearly 22 percent for two years or less.

Across the country, 7.9 percent of units were under new ownership in 2000, and this rose to 14.0 percent in 2005 (Figure 10.6). The duration of ownership, however, varies widely by renal network. In Network 8—covering Alabama, Mississippi, and Tennessee—just 8.9 percent of units in 2000 had been owned for less than a year, and this fell over the next five years to 6.9 percent. In Southern California (Network 18), in contrast, nearly one in four units in 2005 was under new ownership—up from one in twenty in 2000.

Maps in Figure 10.7 present a geographic picture of these recent changes in unit ownership. In 2000, for example, more than 20 percent of units in the majority of states had been owned for 3–5 years; by 2005, the percentage of units owned for this duration had fallen to less than 14 percent across most of the country. The percentage of units under new ownership, in contrast, has grown, particularly in the eastern third of the country, and in Texas, Oklahoma, Colorado, Idaho, and California.

Figure 10.2 December 31 point prevalent dialysis patients. Facility data obtained from the CMS annual End-Stage Renal Disease Facility Survey, the CMS Independent Renal Facility Cost Reports, & the CMS "Dialysis Facility Compare" website. Figures 10.3–4 data obtained from the CMS annual End-Stage Renal Disease Facility Survey, CMS Independent Renal Facility Cost Reports, & the CMS "Dialysis Facility Compare" website. Figure 10.4 excludes patients residing in Puerto Rico & the Territories. Figures 10.5–7 data from the CMS Independent Renal Facility Cost Reports & the CMS "Dialysis Facility Compare" website. Maps exclude units in Puerto Rico & the Territories. Figure 2.56, in Chapter Two, contains a map of the ESRD networks.
New fields on the recently revised Medical Evidence form (introduced in the spring of 2005) collect data on comorbidity, biochemical test results, and pre-ESRD care and vascular access. Here we look at how some of the initial data from these fields differ by unit affiliation.

Overall, 30.7 percent of new dialysis patients are reported to have used erythropoiesis stimulating agents (ESAs) prior to starting therapy; this varies from 23.8 percent in units owned by National Nephrology Associates (NNA) to 35.5 percent in hospital-based units (Figure 10.8).

More patients have been under the care of a nephrologist before they begin therapy (Figure 10.9). Prior to starting therapy, the number ranges from 55.2 percent of those treated in Gambro owned units to 67.4 percent in Dialysis Clinics, Incorporated (DCI) facilities. Kidney dietitian care is much less frequent, reported, for prior to ESRD therapy, in only 3.7 percent of NNA patients, and 17.1 percent of those treated in hospital-based facilities (Figure 10.10).

Most dialysis patients use a catheter at their first outpatient visit to dialysis (Figure 10.11). The number who start with an arteriovenous fistula—the access recommended by the National Kidney Foundation’s K/DOQI guidelines—is only 11.9 percent overall, ranging from 9.5–9.7 percent in units owned by NNA and Gambro to 14.3 percent in units owned by DCI. New dialysis patients treated in NNA units are the most likely to have received information on their transplant options, at 82.3 percent, compared to 67.3–68.1 percent of those receiving therapy in hospital-based or Fresenius units.

Hemoglobin levels at the initiation of dialysis do not vary widely across providers (Figure 10.13). Overall, 23.9 percent of patients begin with a hemoglobin less than 9 g/dl, with a range from 22.4 to 26.1 percent in independent and hospital-based units, respectively. The number of patients beginning at a hemoglobin level of 11 g/dl or greater varies even less, and in a reversed pattern—from 28.6 percent in hospital-based units to 30.9 percent in those owned independently.

One in four patients begins therapy with a serum creatinine of 8 mg/dl or above (Figure 10.14). By affiliation, this ranges from 16.0 percent in facilities owned by NNA to 39.0 percent in those owned by DCI. Patients in hospital-based units are most likely to begin therapy with a serum albumin less than the test’s lower limit of normal, at 65.4 percent, compared to 57.3 percent in DCI units, and 62.0 percent overall (Figure 10.15).

Glycosylated hemoglobin (HbA1c) levels at initiation are relatively consistent across providers (Figure 10.16). The number of patients beginning with an HbA1c between 5 and 7 percent, for example, ranges from 58.2 to 61.8 percent in DCI and Gambro units, respectively.

Twenty percent of new dialysis patients begin therapy with a total cholesterol of 200 mg/dl or above (Figure 10.17). This ranges from 16.7 percent in NNA units to 23.0–23.5 percent of those treated in DCI and DaVita facilities. NNA also has the lowest percentage of patients starting therapy with a triglyceride level of 200 mg/dl or above, at 14.3 percent (Figure 10.18). It should be noted, however, that the cholesterol and triglyceride fields on the new Medical Evidence form were completed for fewer than 60 NNA patients in 2005. Twenty-four percent of all patients, and 25.5 percent of those treated in independently owned units, have a triglyceride level above 200 mg/dl.

Most diabetic patients who begin dialysis therapy are receiving insulin or another oral medication—81 percent overall, ranging from 79.5 percent in NNA units to 85.9 percent in those owned by DCI (Figure 10.19).

Of those patients who are institutionalized when they begin dialysis, 85.4 percent live in a nursing home, and 7.7 percent in an assisted living facility (Figure 10.20). Ten percent of institutionalized patients treated in DaVita units are in assisted living, compared to 6.1 percent of those in DCI units.

\[ \text{figure 10.8-12 & 10.16-20: incident dialysis patients, 2005, with new (revised edition) Medical Evidence forms. figure 10.19-15: incident dialysis patients, 2005, with new (revised edition) & old Medical Evidence forms.} \]
10.11 Access use at first outpatient dialysis by unit affiliation incident dialysis patients, 2005

10.12 Pts informed at initiation of tx options, by unit affiliation incident dialysis pts, 2005

10.13 Hemoglobin at initiation, by unit affiliation incident dialysis patients, 2005

10.14 Creatinine at initiation, by unit affiliation incident dialysis patients, 2005

10.15 % w/albumin < test’s lower limit of normal at init., by aff. incident dialysis pts 2005

10.16 HbA1c level at initiation, by unit affiliation incident dialysis patients, 2005

10.17 Total cholesterol at initiation, by unit affiliation incident dialysis patients, 2005

10.18 Triglyceride level at initiation, by unit affiliation incident dialysis patients, 2005

10.19 Diabetic patients at initiation, by unit affiliation incident dialysis patients, 2005

10.20 Patients institutionalized at initiation, by unit affiliation incident dialysis pts, 2005

More on patient characteristics at initiation: ei. 9–17, Chapter Three, 8.2–12 (pediatric patients).
A urea reduction ratio (URR) of 65 percent or greater is recommended to ensure adequate dialysis therapy (K/DOQI guidelines). Overall, 93 percent of all hemodialysis patients received this level of therapy in 2005 (Figure 10.21).

Adequate dialysis therapy can also be measured by a Kt/V of 1.2 or greater in hemodialysis patients or a weekly Kt/V of 2.0 or greater (changed to 1.7 in 2006) in peritoneal dialysis patients. In 2004, providers reached an overall compliance level of 93.2 percent in the hemodialysis population (Figure 10.22). In the peritoneal dialysis population, however, compliance reached only 68 percent overall. More than 80 percent of peritoneal patients treated in DaVita and Fresenius units reach a weekly Kt/V of 2.0 or greater.

Rates of diabetic preventive care testing vary across dialysis providers (Figure 10.23). Across all units, for example, 55.9 percent of patients with diabetes received the recommended four or more glycosylated hemoglobin tests in 2005; by provider, this ranged from 41.6 percent in hospital-based units to nearly 64 percent in units owned by Gambro and DaVita. Forty-four percent of all diabetic patients received two or more lipid tests in 2005; this ranged from just under 21 percent in RCG and DCI units to 59.9 percent in independent units.

Sixty-two percent of dialysis patients were known to receive an influenza vaccination in 2005 (Figure 10.24). The rate ranged from 21.4 percent in RCG and DCI units to 53.1 percent of patients treated in hospital-based units to three in four patients in units owned by National Nephrology Associates.

The percent of new patients with an arteriovenous (AV) fistula as their first access varied little across providers in 2004 (Figure 10.25). Overall, 37.8 percent of patients starting hemodialysis had an AV fistula—ranging from a high of 42–43 percent in units owned by Dialysis Clinics, Incorporated (DCI) and DaVita, to a low of 35–36 percent in independent units and in those owned by Gambro. In 2004, 41.2 percent of all prevalent hemodialysis patients had an AV fistula as their current access, with a range of 38–46 percent by affiliation (Figure 10.26).

In 2005, 40.4 percent of prevalent patients had an average hemoglobin for the year within the target range of 11–12 g/dl (Figure 10.27). More than 48 percent, however, had an average above 12 g/dl, raising concerns about possible adverse effects of higher levels. Sixty-three percent of patients in units owned by DCI had hemoglobins within the target range; in DaVita units, in contrast, almost 64 percent of patients exceeded the target.

The higher percentage of DCI patients with a mean hemoglobin in the target range is reflected as well in data on the number of months in which patients meet that target during a six-month period (Figure 10.28). Fifty-three percent of DCI patients in 2005 had a level of 11–12 g/dl for three or more months—compared to just 35 percent of all patients, and 27.5 percent of those treated in units owned by DaVita.
After achieving a first hemoglobin of 11 g/dl or higher, the cumulative probability of achieving 12 g/dl in the next six months is almost equal across providers, with a range of only 0.94–0.98 (Figure 10.29). The probability of achieving higher levels, however, varies widely, and is consistently greatest in DaVita units and lowest in those owned by DCI. A hemoglobin of 14 g/dl, for example, is achieved by month six in 55 percent of DaVita patients, but in only 10 percent of those treated by DCI. Figure 10.30 provides a different perspective on these data, showing that the hazard ratio of achieving higher hemoglobin levels is lowest in DCI units, and greatest in those owned by DaVita.

Average weekly EPO doses, not surprisingly, fall at higher hemoglobin levels (Figure 10.31). DCI, NNA, and hospital-based units use the lowest doses at all hemoglobin levels, while at levels of 11–12 g/dl doses are highest in units owned by Gambro.
calcium and phosphorus are valuable markers in determining bone and mineral abnormalities, and laboratory tests to determine levels in patients are included in the composite rate for dialysis services. It appears that extra tests beyond those included in the rate are being ordered to varying degrees across many providers (Figure 10.32). By month five, for example, the cumulative probability of receiving five or more extra tests is 0.35 and 0.42, respectively, in units owned by Gambro and DaVita, in contrast to 0.17 and 0.18, respectively, in units owned by Renal Care Group (RCG) and Dialysis Clinics, Incorporated (DCI).

Parathyroid hormone (PTH) is a regulator of calcium and phosphorus in extracellular fluid. With the exception of DCI patients, the cumulative probability of patients receiving five or more PTH tests in a year increases at month four, and by month six stands at 0.36, 0.60, 0.54, and 0.55, respectively, in Fresenius, Gambro, DaVita, and RCG units (Figure 10.33). The probability of five or more tests is 0.04 in month six in units owned by DCI, and 0.32 by years end; in units owned by Gambro, DaVita, RCG, and National Nephrology Associates (NNA), the cumulative probability of receiving five or more tests by year’s end is 0.92, 0.89, 0.89, and 0.86.

Iron saturation tests are used to evaluate iron metabolism. By month five the probability of five or more tests ranges from 0.74 to 0.78 in units owned by Fresenius, Gambro, and DaVita, and, with the exception of DCI, independent, and hospital-based units, from 0.91 to 0.95 by the end of the year (Figure 10.34).

Ferritin is a protein that enables the body to store iron for later use, and the amount of ferritin in a patient’s blood can be used as a direct indication of the amount of iron being stored. The probability of patients receiving five or more ferritin tests in a year varies widely by provider (Figure 10.35). At month six it is 0.13 and 0.18, respectively, in DaVita and NNA units, compared to 0.37 and 0.42 in independent and RCG units. By year’s end, the probability is 0.70 in Gambro units, and 0.65 and 0.62 percent, respectively, in units owned by DCI and RCG.

A complete blood count (CBC)—also included in the monthly composite rate for dialysis services—determines the types and number of cells in the blood and is an important hematologic diagnostic tool used to identify disease conditions. CBC testing beyond routine intervals does not appear to be common among chain-affiliated and independent providers (Figure 10.36). The probability of receiving five or more extra tests is less than 0.15 by month six, and less than 0.30 at the end of the year. The probability of five or more tests in hospital-based units, in contrast, is 0.24 by month six and 0.39 by month twelve.

Epoetin alfa (EpoGen) and Darbepoetin alfa (Aranesp) are two agents used to treat anemic conditions in ESRD patients. Epoetin alfa accounts for 95 percent of ESA claims (Figure 10.37). Darbepoetin does find favor in hospital-based units, where 32 percent of patients are treated with the medication.

In months four through nine of ESRD therapy, the cumulative probability of vitamin D use is consistently greatest in Gambro units, and lowest in units owned by DCI (Figure 10.38). In 2005, the average total months of vitamin D use ranged from 5.7 in DCI units to 8.2 in Fresenius and Gambro facilities (Figure 10.39). And
overall, almost 53 percent of patients are placed on Zemplar, and 24 percent on Hectorol; in DCI units, however, nearly half are placed on Hectorol, and only 15 percent on Zemplar (Figure 10.40).

The cumulative probability of IV iron use in months four through nine after initiation varies less by unit affiliation than does that of vitamin D use, and is lowest in hospital-based units (Figure 10.41). Average total months of use in 2005 ranged from 5.4 in NNA units to 6.9 in those owned by Gambro (Figure 10.42). One-third of patients overall are placed on Ferrlecit, and 52 percent on Venofer; in units owned by DaVita and DCI, however, four in five patients use Venofer (Figure 10.43).
Diabetic preventive care

10.44 Diabetic patients receiving 4+ glycosylated hemoglobin tests per year, by unit affiliation point prevalent dialysis patients

10.45 Diabetic patients receiving 2+ lipid tests per year, by unit affiliation point prevalent dialysis patients

10.46 Diabetic patients receiving one diabetic eye examination, by unit affiliation point prevalent dialysis patients

Vaccinations

10.47 Patients receiving influenza vaccinations, by unit affiliation point prevalent dialysis patients

10.48 Patients receiving pneumococcal pneumonia vaccinations, by unit affiliation point prevalent dialysis patients

10.49 Patients receiving hepatitis B vaccinations, by unit affiliation point prevalent dialysis patients

Chain affiliation

All units F Fresenius G Gambro D Davita R Renal Care Group DC Dialysis Clinics Inc. NN Nephrology National Associates IN Independent units HB Hospital-based units
Among point prevalent dialysis patients, the percentage of those with diabetes who receive four or more glycosylated hemoglobin tests per year (the number recommended by the American Diabetes Association) rose from 45.9 in 2002 to 55.9 in 2005 (Figure 10.44). Testing rates rose across most providers, with the greatest increase—from 49.5 to 63.6 percent—occurring in units owned by DaVita.

Lipid testing has also improved, though only 43.7 percent of all diabetic dialysis patients received two or more tests in 2005 (Figure 10.45). The greatest increase is seen in units owned by Fresenius; 46.1 percent of their patients received recommended testing in 2005, compared to 30.3 percent in 2002. The highest testing rate, however, continues to occur in independently owned units.

Little change has taken place since 2002 in the percentage of diabetic patients receiving an eye examination during the year (Figure 10.46). In 2005, close to 43 percent of all patients were tested, with a small range from 38.8 percent of those in NNA units to 43.5 percent of those in facilities owned by Gambro.

According to the target set by Healthy People 2010, 90 percent of adults should receive an annual vaccination against influenza. Across dialysis providers the percentage of patients vaccinated has risen slightly since 2002, but is still only 62.1 percent (Figure 10.47). Rates in 2005 ranged from a low of 53.1 percent in hospital-based units to a high of 75 percent in units owned by NNA.

Some providers appear to have made efforts to increase the rate of vaccination for pneumococcal pneumonia (Figure 10.48). In units owned by Renal Care Group, for example, just one in four patients was vaccinated in 2002; this rose to nearly one in two in 2005. The overall vaccination rate rose from 12.2 to 21.6 percent.

Similar growth has not occurred in rates of vaccination for hepatitis B (Figure 10.49). Rates have been relatively stable or have fallen among most providers; the largest growth, found in Gambro units, was of only 6 percentage points. Across all units, 26.3 percent of patients were vaccinated in 2005.
All-cause Bayesian hospitalization & mortality ratios, by unit affiliation (see list)

Numbers on the diagonal show each provider's SMR or SHR for the year, as compared to the national SMR or SHR.

Chain affiliation

All units: F Fresenius, G Gambro, DV DaVita, R Renal Care Group, DC Dialysis Clinics, Inc., IN Nephrology National Associates, HB Hospital-based units

To read grids

Ratios are of column to row. In Figure 10.54, for example, the number 1.152 in column F and row R is the SMR for Fresenius divided by the SMR for Renal Care Group. Numbers on the diagonal show each provider’s SMR or SHR for the year, as compared to the national SMR or SHR.
mortality and morbidity comparisons on a provider level have routinely been reported in recent ADRs. This year we present comparisons over a six-year period, examining the consistency of results by provider, and comparing providers to one another.

In Figure 10.50 we present Bayesian mortality and hospitalization ratios for 2000 and 2005, comparing all providers to the national average (see page 293 of Appendix A for methodology). Hospital-based units have outcomes consistently different from the average and from those of all other providers, with higher mortality and hospitalization ratios that have been suggested to relate to their treatment of more complex patients. Data here are adjusted for age, gender, race, cause of ESRD, and time on dialysis (vintage). Earlier in this chapter we looked at incident patient characteristics by provider, showing that while hospital-based units have a greater percentage of patients with a low serum albumin, almost all other characteristics are similar to those of patients in non-hospital-based units and in for-profit and non-profit chains. These outcomes of patients treated in hospital-based units are a major area of concern, requiring detailed study and further adjustments.

Comparisons of chain and independent units are also quite revealing. While there are some differences in the patient population is improving, which suggests that other aspects of care—such as those presented by the Cardiovascular Special Studies Center in Chapter Nine—may be more important. Revascularization procedures and evaluations for ischemic disease, for example, have each increased, consistent with the reductions in cardiovascular death rates reported in the HP2010 chapter. Catheter use is high across all providers at the first outpatient dialysis, but it is unknown whether replacement of catheters with an internal access, or the timeliness of catheter removal, differs across providers. In the 2008 ADR the USRDS will focus on more comprehensive assessments of these providers while assessing the effects of varying processes of care on patient outcomes.

Comparisons of hospitalization and mortality need to be placed in the context of other data shown throughout the ADR. Providers vary considerably in their delivery of care and cost structures, yet, when they are stacked against one another, there appears to be little relationship of these variables to the most basic outcomes.

Despite these observations, survival of the entire dialysis population is improving, which suggests that other aspects of care—such as those presented by the Cardiovascular Special Studies Center in Chapter Nine—may be more important. Revascularization procedures and evaluations for ischemic disease, for example, have each increased, consistent with the reductions in cardiovascular death rates reported in the HP2010 chapter. Catheter use is high across all providers at the first outpatient dialysis, but it is unknown whether replacement of catheters with an internal access, or the timeliness of catheter removal, differs across providers. In the 2008 ADR the USRDS will focus on more comprehensive assessments of these providers while assessing the effects of varying processes of care on patient outcomes.

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provider growth

Across the country, 7.9 percent of units were under new ownership in 2000; this rose to 14.0 percent in 2005. The duration of ownership, however, varies widely by renal network. In Network 8—covering Alabama, Mississippi, and Tennessee—just 8.9 percent of units in 2000 had been owned for less than year, and this fell over the next five years to 6.9 percent. In Southern California (Network 18), in contrast, nearly one in four units in 2005 was under new ownership—up from one in twenty in 2000.

patient characteristics

Overall, 30.7 percent of new dialysis patients are reported to have used erythropoiesis stimulating agents (ESAs) prior to starting therapy; this varies from 23.8 percent in units owned by National Nephrology Associates to 35.5 percent in those owned by Dialysis Clinics, Inc. New dialysis patients treated in NNA units are the most likely to have received information on their transplant options, at 82.3 percent, compared to 67.3–68.1 percent of those receiving therapy in Fresenius or hospital-based units.

compliance with preventive care & anemia guidelines

Across all units, 55.9 percent of diabetic patients received four or more glycosylated hemoglobin tests in 2005; by provider, this ranged from 41.6 percent in hospital-based units to nearly 64 percent in units owned by Gambro and DaVita. Forty-four percent of diabetic patients received two or more lipid tests in 2005; this ranged from just under 21 percent in RCG and DCI units to nearly 64 percent in units owned by Gambro and DaVita. The rate of known influenza vaccinations in 2005 ranged from 53.1 percent of patients in hospital-based units to three in four patients in units owned by National Nephrology Associates. After achieving a first hemoglobin of 11 g/dl or higher, the probability of a patient achieving higher levels varies widely across providers, and is consistently greatest in DaVita units and lowest in those owned by DCI.

clinical monitoring

By month five, the cumulative probability of receiving five or more extra calcium and phosphorus tests is 0.55 and 0.42, respectively, in units owned by Gambro and DaVita, in contrast to 0.17 and 0.18, respectively in units owned by Renal Care Group and Dialysis Clinics Incorporated. CBC testing beyond routine intervals does not appear to be common among chain-affiliated and independent providers. The probability of receiving five or more extra tests is less than 0.15 by month six, and less than 0.30 at the end of the year. The probability of five or more extra tests in hospital-based units, in contrast, is 0.24 by month six and 0.39 by month twelve.

injectable use

Epoetin alfa accounts for 95 percent of ESA claims. Darbepoetin does find favor in hospital-based units, where 32 percent of patients are treated with the medication. In months four through nine of ESRD therapy, the cumulative probability of vitamin D use is consistently greatest in Gambro units, and lowest in units owned by DCI. The cumulative probability of IV iron use in months four through nine after initiation varies less by unit affiliation than does that of vitamin D use, and is lowest in hospital-based units.

preventive care

In the point prevalent dialysis population, the greatest growth in the number of diabetic patients receiving recommended glycosylated hemoglobin testing occurred in units owned by DaVita; 63.6 percent of their patients received four or more tests in 2005, compared to 49.5 percent in 2002. Close to 43 percent of all diabetic patients received an eye examination, with a small range from 38.8 percent of those in National Nephrology Associates units to 43.5 percent of those in facilities owned by Gambro. Rates of influenza vaccinations in 2005 ranged from a low of 53.1 percent in hospital-based units to a high of 75 percent in units owned by NNA.

hospitalization & mortality ratios, by provider

Hospital-based units have outcomes consistently different from the average and from those of all other providers, with higher mortality and hospitalization ratios that have been suggested to relate to their treatment of more complex patients.

maps

National means & patient populations for maps can be found in the Excel file for this chapter—on our website at www.usrds.org, & also on the CD-ROM included at the back of this book.