So neither ought you to attempt to cure the body without the soul; and this is the reason why the cure of many diseases is unknown to the physicians of Hellas, because they are ignorant of the whole which ought to be studied also; for the part can never be well unless the whole is well.... For this is the great error of our day in the treatment of the human body, that physicians separate the soul from the body.

Plato, Dialogues
Preventive healthcare measures in all patient populations have begun to receive increased attention from the medical community, as researchers and health plans demonstrate that influenza and pneumonia vaccinations, as well as risk factor interventions for cardiovascular disease and diabetes, are associated with improved patient outcomes. This is especially important in individuals with chronic illnesses. Since ESRD patients are at high risk for infectious events such as pneumonia, and for complications from diabetes and ischemic heart disease, we investigated whether these measures are being utilized in this high-risk population.

In this chapter we first compare preventive care given to patients before and after the start of therapy for end-stage renal disease, including influenza vaccinations, pneumococcal pneumonia vaccinations, and diabetic preventive care. We then expand our analysis of diabetic care, looking at diabetic eye exams, lipid monitoring, and glycosylated hemoglobin (HbA1c) testing in both the ESRD and general Medicare populations. And, finally, we present data on screening for breast, cervical, and prostate cancers. Since preventive health care measures have been assessed in the Medicare population for a considerable period of time, we map data from both the ESRD and Medicare populations.

The maps on this page illustrate geographic differences in preventive measures and outcomes related to influenza. Figure 5.1, for example, shows that in some areas of the country more than two-thirds of hemodialysis patients are vaccinated against influenza. In other regions, however, an average of only 38 percent receive these vaccinations, indicating significant regional differences in clinical practice. There is a 90 percent difference between the lowest and highest quintiles. Since the current recommended practice is that all patients with chronic disease be vaccinated in order to reduce the risk of complications, these findings are of particular note.

Influenza vaccinations in non-ESRD patients have been shown to reduce morbidity and mortality related to influenza and respiratory conditions. Many studies also show a reduction in all-cause and cardiovascular hospitalizations and death. As shown in Chapter Six, the ESRD population is particularly vulnerable to these outcomes.

Geographic patterns in hospitalization during the winter months vary across the country (Figure 5.2). During this period a larger proportion of patients is hospitalized in the eastern half of the country compared to the western states, with rates between the highest and lowest quintiles differing by 24 percent. While these geographic differences may be due in part to the varying rates of influenza vaccinations, there are clearly other factors involved as well, and these
should be investigated further. The clustering of high hospitalization rates in the Southwest may, for example, reflect complications experienced by the Native American population or by other patient groups. The apparent lack of correlation between vaccination rates and overall rates of hospitalization suggests that further work is needed in this area.

Geographic patterns in mortality during the winter months vary in a manner different from the hospitalization and vaccination rates (Figure 5.3). The percent of patient deaths during the winter months is highest in the Northwest, the Northeast, and the Great Lakes states. Overall patterns of mortality appear to show some associations between vaccinations and lower death rates, particularly in the southern and south central states. These patterns are similar to those seen with the distribution of diabetes (see Figure 1.17). The impact of vaccinations may vary among patients of different races and ethnicities, a possibility deserving further exploration. The low vaccination rates in the northwestern part of the country, and the slightly higher mortality rates, may not be clinically important, but these areas should also be more closely evaluated.

More details on vaccination rates and their use in the pre- and post-dialysis period are presented in the next section. These data may provide more insight into the activities of ESRD and non-ESRD providers.

5.2 · Percent of patients hospitalized
hemodialysis patients initiating therapy before September 1, 1999 & alive on December 31, 1999, by HSA, unadjusted. Hospitalizations between January 1 & March 31, 2000. Patients enrolled in an HMO, with Medicare as secondary payor, or dying between January 1 & March 31, 2000 are excluded.

5.3 · Percent of patients dying
hemodialysis patients initiating therapy before September 1, 1999 & alive on December 31, 1999, by HSA, unadjusted. Deaths between January 1 & March 31, 2000. Patients enrolled in an HMO or with Medicare as secondary payor are excluded.
Preventive healthcare measures have been widely recommended for the general population, specifically the elderly and those with chronic illnesses. On this spread we look at preventive healthcare received by ESRD patients, age 67 and older, before and after the start of ESRD therapy.

Patients with chronic kidney disease and those with ESRD should receive an influenza vaccination each year. In 1999, however, fewer than one-third of the patients studied received a vaccination in the year prior to ESRD treatment, and fewer than 60 percent received it the autumn after treatment began (Figure 5.4). Rates did, however, almost double between the pre- and post-ESRD periods.

Influenza vaccination rates vary considerably across racial and ethnic groups. The lowest pre-ESRD rates, and the greatest increase between pre- and post-ESRD rates, are seen in the Native American patient population. These rates should be interpreted with caution, however, since influenza vaccinations may not always be billed to Medicare. This is particularly true for Native American patients, who may receive care at Indian Health Service facilities.

Even fewer patients are vaccinated for pneumonia. We found that only 12 percent of patients receive this vaccination in the two years prior to ESRD treatment, and only 18 percent in the two years after (Figure 5.5). Pre-ESRD rates are again lowest in Native American patients. Figure 5.6 shows the percent of patients receiving pneumococcal vaccinations during the four-year period surrounding the start of treatment. Rates are clearly higher in the northern half of the country, particularly the Midwest, and there is a 60 percent difference in rates between the lowest and highest quintiles. While pneumococcal pneumonia vaccinations are given only once every five to ten years, pneumonia is a major infectious complication in ESRD patients, and it appears that preventive care aimed at its reduction is significantly underutilized.

The provision of preventive care to diabetic patients does not vary as widely as vaccination rates do in the pre- and post-ESRD periods, nor, in general, do testing rates vary as greatly by race or ethnicity. Approximately 50 percent of diabetic ESRD patients receive diabetic eye exams; rates are highest for white patients, and lowest for Native Americans (Figure 5.7). These rates have remained relatively stable since 1995.

Lipid testing tends to be less frequent after the start of ESRD therapy, with 60 percent of patients tested prior to ESRD, and 49 percent after (Figure 5.8). Testing is,
Glycosylated hemoglobin testing tends to occur at similar rates before and after the start of ESRD, with the exception of Native Americans, for whom testing is more frequent after the start of therapy (Figure 5.9). Approximately 60 percent of all patients receive testing, and these rates have increased steadily since 1995.

Of the preventive healthcare measures examined here, only influenza and pneumococcal pneumonia vaccinations are pursued more actively after the start of ESRD therapy than before. Since cardiovascular disease and death are extremely common in the diabetic population, these data suggest that there is a lack of active risk factor monitoring after the development of ESRD.

All figures: ESRD patients age 67 or older; patients enrolled in an HMO or with Medicare as secondary payor are excluded.

Figure 5.4: Patients initiating therapy between January 1 & August 31, 1999, & alive on December 31, 1999. Pre-ESRD vaccinations: between September 1 & December 31, 1998; post-ESRD vaccinations: between September 1 & December 31, 1999.

Figures 5.5–6: Patients initiating therapy between January 1 & December 31, 1997, & alive two years after ESRD initiation. Part A & B claims searched for CPT code 90669 or 90732 & for HCPCS code J6065 or G0009. Pre-ESRD vaccinations: two years prior to ESRD initiation; post-ESRD vaccinations: two years after initiation.

Figure 5.7: Patients initiating therapy in each year from 1995 to 1998, with diabetes one year prior to ESRD initiation, & alive two years after initiation. For patients with diabetes as the primary cause of ESRD, claims examined for one year prior to (pre-ESRD) or following (post-ESRD) initiation; for other diabetic patients, claims examined for two years prior to or following the initiation of ESRD. Figures 5.8–9: Patients initiating therapy in each year from 1995 to 1999, with diabetes one year prior to ESRD initiation, & alive one year after initiation. Claims examined one year prior to (pre-ESRD) or following (post-ESRD) ESRD initiation.
In this spread we compare diabetic care in the ESRD and general Medicare populations. The diabetic care measures assessed by the National Committee for Quality Assurance (NCQA) in its HEDIS® 2002 program include diabetic eye examinations, lipid monitoring (for the treatment of large vessel complications), and glycemic control monitoring (to assess small vessel complications).

Fewer diabetic eye examinations are performed in the ESRD population than in general Medicare patients, though geographic patterns are somewhat similar (Figure 5.10). There are slight differences in examination rates between dialysis and transplant patients by age and racial groups (Figure 5.11). The fact that younger diabetics receive fewer examinations is paradoxical, since young ESRD patients are likely to have Type I diabetes, which has long been addressed by guidelines from the American Diabetes Association. It is possible that examinations may be performed and reimbursed by other insurers, but since Medicare is usually the primary payor this seems unlikely.

Racial differences in testing rates are also clear. The lower rates in Native Americans may be attributed to patients receiving care from the Indian Health Service, as this care does not appear in the Medicare billing information.

The most striking differences in diabetic preventive care between ESRD and general Medicare patients occur with lipid and glycemic control testing (Figures 5.12–16). ESRD patients, particularly those on dialysis, are markedly under-served in both of these basic components of care. Also clear from these figures is that the frequency of testing recommended by the ADA is not being addressed in the ESRD population. These guidelines suggest glycosylated hemoglobin monitoring at least twice per year in less complicated diabetics, and four times per year for patients with more complex disease burdens. Since diabetics with ESRD are considered more complicated, the lack of more intensive monitoring requires far more attention from providers.

**All figures** patients enrolled in an HMO or with Medicare as secondary payor are excluded.

**Figure 5.10** ESRD population: patients age 65–75 initiating therapy prior to January 1, 1998, alive on December 31, 1999, & with diabetes in 1999; by HSA, unadjusted. Non-ESRD population: general Medicare patients age 65–75 entering Medicare before January 1, 1998, in the program through December 31, 1999, & with diabetes in 1999; patients enrolled in an HMO or diagnosed with ESRD are excluded. Claims from 1998 & 1999 searched for eye exam codes. **Figure 5.11** dialysis & transplant patients age 18–75 initiating therapy prior to January 1, 1999, alive on December 31, 2000, & with diabe-
Glycosylated hemoglobin (HbA1c) testing in diabetic patients

5.14 - Geographic variations in percent of patients tested

5.15 - Testing, by age, race/ethnicity, & modality

5.16 - Testing, by number of tests in ESRD & general Medicare diabetics

Clinical practice guidelines for the general population include cancer screening for high-risk populations, and health plans are frequently assessed on their provision of this screening. Such guidelines and assessments do not, however, receive similar attention in the ESRD community.

Only 40 percent of female ESRD patients receive mammograms, with the test slightly more frequent in the Northeast (Figure 5.17). The number is similar for Pap smears, though rates are more variable nationwide (Figure 5.18). Screening for prostate cancer shows no clear geographic pattern, and rates vary almost 82 percent between the highest and lowest quintiles (Figure 5.19).

Transplant patients are more likely than those on dialysis to receive mammograms, but less likely to receive cervical or prostate cancer screening (Figures 5.20, 5.22, 5.24). Patients in the general Medicare population are more likely than ESRD patients to receive breast or prostate cancer screening, but less apt to be tested for cervical cancer.

All figures: patients enrolled in an HMO or with Medicare as secondary payer are excluded. Figure 5.17 female ESRD patients age 52–69 initiating therapy prior to January 1, 1999 & alive on December 31, 2000, by HSA, unadjusted. Patients with bilateral mastectomies are excluded. Figure 5.18 female ESRD patients age 21–64 initiating therapy prior to January 1, 1998 & alive on December 31, 2000, by HSA, unadjusted. Patients with hysterectomies are excluded. Figure 5.19 male ESRD patients age 50 & older initiating therapy prior to January 1, 1998 & alive on December 31, 2000, by HSA, unadjusted. Patients with prostatectomies are excluded. Figure 5.20 female ESRD patients age 52–69 initiating therapy prior to January 1, 1999 & alive on December 31, 2000; patients with bilateral mastectomies are excluded. Figure 5.21 ESRD: female patients age 52–69 initiating therapy prior to January 1, 1999, & alive on December 31, 1999; patients with bilateral mastectomies are excluded. Non-ESRD: general Medicare patients age 52–69 entering Medicare before January 1, 1999 & in the program through December 31, 1999; ESRD patients & patients with bilateral mastectomies are excluded. Figure 5.22 female ESRD patients age 21–64 initiating therapy prior to January 1, 1998 & alive on December 31, 2000; patients with hysterectomies are excluded. Figure 5.23 ESRD: female patients age 21–64 initiating therapy prior to January 1, 1998 & alive on December 31, 1999; patients with hysterectomies are excluded. Non-ESRD: general Medicare patients age 21–64 entering Medicare before January 1, 1998 & in the program through December 31, 1999; ESRD patients & patients with hysterectomies are excluded. Figure 5.24 male ESRD patients age 50 & older initiating therapy prior to January 1, 1998 & alive through December 31, 2000; patients with prostatectomies are excluded. Figure 5.25 ESRD: male patients age 50 & older initiating therapy prior to January 1, 1997 & alive through December 31, 1999; patients with prostatectomies are excluded. Non-ESRD: general Medicare patients age 50 & older entering Medicare before January 1, 1997 & in the program through December 31, 1999; ESRD patients & patients with prostatectomies are excluded.
With the exception of figures that show pre- versus post-ESRD rates, we analyzed prevalent rather than incident populations for this chapter. All ESRD patients should be receiving preventive health screening regardless of the time elapsed since renal failure.

For figures on diabetic eye exams, glycosylated hemoglobin testing, and breast and cervical cancer screening, we followed HEDIS® 2002 (Health Plan Employer Data and Information Set) specifications. HEDIS® measures are generally used by health plans to assess the quality of care delivered to their enrollees.

Figures that include data from the general Medicare population are created using the Medicare five percent files, which contain a random sample of five percent of all Medicare beneficiaries, and include Part A and Part B claims. Individuals with ESRD are excluded from calculations using these data. Results for patients younger than 65 are for disabled individuals whose care is covered by Medicare.

Since Native American patients may receive care from the Indian Health Services that is not billed to Medicare, data for these patients may not be available.

In the first three months of the year, rates of all-cause mortality vary almost 20 percent across the country.

Once they have begun ESRD therapy, patients are 40 percent more likely to be vaccinated against pneumococcal pneumonia than they are before the start of treatment.

Rates of pneumococcal pneumonia vaccinations vary 60 percent between the southern states, where rates are low, and the northern half of the country.

Rates of diabetic eye examinations have remained stable since 1995, and are comparable in the pre- and post-ESRD periods.

Lipid monitoring of diabetic patients has become more frequent since 1995, and is performed more often prior to the start of ESRD treatment than after.

The frequency of monitoring glycosylated hemoglobin levels has increased since 1995 by almost 40 percent. Rates are comparable in the pre- and post-ESRD periods.

Diabetic eye examinations are used to a greater extent among transplant patients than in the dialysis population, and transplant patients are 45 percent more likely to receive lipid monitoring. Patients in the two populations are, however, equally likely to receive glycosylated hemoglobin monitoring.

Geographic patterns in the provision of diabetic eye examinations are similar in the ESRD and non-ESRD populations.

Both lipid monitoring and glycosylated hemoglobin testing are used more widely in the general Medicare population than in ESRD patients, and the number of glycosylated hemoglobin measurements per year is greater in the general population.