And how can you not forgive?
You make a feast in honor of what was lost, and take from its place the finest garment, which you saved for an occasion you could not imagine, and you weep night and day to know that you were not abandoned, that happiness saved its most extreme form for you.

JANE KENYON

"HAPINESS"
In this year’s ADR we continue to report on the overall expenditures of the ESRD program relative to those of the Medicare system, and present data on the employed population as well. We also look at costs during the transition to ESRD therapy, and at costs for CKD patients who die before reaching ESRD.

Data contrasting per person per year (PPPY) costs in the Medicare and employed populations show considerably higher expenditures in the latter group, suggesting that employed patients, even though they are on average 20 years younger, are paying more for their ESRD care, and may be supplementing provider income streams and potential margins. From this standpoint, employer group health plans (EGHPs) may want to assess the source of this difference to determine the quality and value for these expenditures. Although Medicare has the ability to set payment rates, this is not the case for EGHPs, which may find few options when negotiating with dialysis and other providers for components of care.

Medicare PPPY expenditures for dialysis, for example, approach $63,000, while dialysis costs for EGHPs—which cover younger patients—now exceed $126,000. For transplant events, costs in the two populations are nearly $90,000 and $150,000, respectively. In future Annual Data Reports we will further explore these marked differences in expenditures associated with the different payor systems.

Data on components of care show considerable differences in provider revenue streams on a per person per month (PPPM) basis. Units owned by for-profit chains, for instance, have greater expenditures for erythropoietin, intravenous iron, and IV vitamin D, while hospital-based units tend to use other injectables to a greater degree. Preventive care costs vary considerably by provider. Costs for influenza vaccinations, for example, are nearly 50 percent greater in units owned by DCI than in other units, while costs for pneumonia vaccinations are highest in Renal Care Group units, and lipid testing costs are greatest in units owned by National Nephrology Associates. It is unclear how these differences may relate to overall morbidity and mortality in the ESRD population. In the future, the USRDS will analyze the relationship between degrees of expenditures for components of care and potential morbidity and mortality.

New data on vascular access and associated expenditures show that total vascular access procedures for hemodialysis have climbed considerably over the last 12 years, while peritoneal dialysis procedures and costs have been relatively constant. Data on Medicare Part B services show a shift from inpatient to outpatient treatment, a pattern also true in “pure” vascular access claims. Hospitals receive simi-
lar compensation for inpatient vascular access procedures, whether these procedures are associated with insertions, insertions and complications, or the treatment of complications alone. Facilities, however, receive significantly lower payments for outpatient services. Differences in these vascular access expenditures, particularly in the hemodialysis population, need to be considered when looking at overall vascular access trends.

Patients using simple fistulas continue to have lower overall expenditures in the next year, while expenditures are greatest for those using dialysis catheters. These associated costs do not imply causality, since patients with catheters may have multiple medical conditions and be unable to have an internal access placed, thereby biasing the data. Regardless of this, however, fistula use is clearly rising, and is associated with overall lower expenditures consistent with reduced complication rates.

In summary, ESRD program costs continue to rise and, as shown in the Precis, have exceeded $18.1 billion—6.6 percent of the total Medicare budget. EGHP expenditures for ESRD account for 2.3–2.5 percent of health plan expenditures, and that percentage is growing. PPPY costs for EGHP patients average $72,450, compared to $54,904 for Medicare patients, and appear to be increasing at a faster rate than the Medicare costs—in spite of a median age of 52 for EGHP patients, compared to that of 62 for Medicare ESRD patients.

**Figures 11.1** PPPY costs for EGHP patients averaged $72,450 in 2003, compared to $54,904 for Medicare patients, and appear to be increasing at a faster rate than Medicare costs.

Inpatient and outpatient expenditures account for the largest portion of yearly Medicare and per person per year costs for dialysis. Inpatient costs grew only 1.3 percent between 2002 and 2003. Outpatient costs, in contrast, rose 9 percent, and are 17 percent higher than those incurred for inpatient services. **Figure 11.5–6** Overall PPPY dialysis costs were nearly $63,000 in 2003 for patients covered by Medicare, while costs for those with EGHP coverage grew to $126,000—double the Medicare costs, and more than 21 percent higher than in the previous year.

**Chapter Highlights**

**Figures 11.1** PPPY costs for EGHP patients averaged $72,450 in 2003, compared to $54,904 for Medicare patients, and appear to be increasing at a faster rate than Medicare costs.

**Figures 11.5–6** Inpatient and outpatient expenditures account for the largest portion of yearly Medicare and per person per year costs for dialysis. Inpatient costs grew only 1.3 percent between 2002 and 2003. Outpatient costs, in contrast, rose 9 percent, and are 17 percent higher than those incurred for inpatient services. **Figure 11.25** Overall PPPY dialysis costs were nearly $63,000 in 2003 for patients covered by Medicare, while costs for those with EGHP coverage grew to $126,000—double the Medicare costs, and more than 21 percent higher than in the previous year.
In the six months leading up to a diagnosis of ESRD and the six immediately following, the highest per person per month (PPPM) costs are, not surprisingly, incurred by patients with the greatest disease burden—those with congestive heart failure alone or in conjunction with diabetes (Figure 11.3). In 1995, for example, PPPM costs for patients age 67 or older and with both diagnoses rose 206 percent in the month of initiation, to $13,529. In 2002, this one-month increase was 287 percent, and costs reached $18,126. This spike at the start of therapy is followed, for all groups, by a sharp fall during the next month. At month six, however, PPPM costs for patients with both CHF and diabetes remain 59 percent higher than for those with neither diagnosis, and 39 percent higher than for those with diabetes alone.

Trends are similar for patients who die with a diagnosis of chronic kidney disease (Figure 11.4). PPPM costs tend to be highest for those with both CHF and diabetes, and spike in the month before death. In 2003, for example, costs for all patients nearly doubled during this month, reaching $11,946. During this month, however, PPPM costs for patients with diabetes alone rise at a higher rate than those for patients with diabetes accompanied by CHF—in 2003, 120 and 86 percent, respectively.

Inpatient and outpatient expenditures account for the largest portion of yearly Medicare and per person per year costs for dialysis (Figures 11.5–6). It appears that inpatient costs have stabilized, by only 1.3 percent between 2002 and 2003. Outpatient costs, in contrast, show an increase of 9 percent, and are close to equaling outpatient expenditures. Per person per month expenditures parallel total costs. Spending for inpatient services, for example, are more than four times those found on the outpatient side, illustrating the high initial hospitalization costs attached to each transplant event. As is the case with overall outpatient and part B costs, per person per year costs for these services are nearly equal.

The highest costs for a functioning graft are associated with inpatient and part B services. Overall part B expenditures have increased the most over time—by more than five-fold since 1993 and 21 percent in 2003—while per person per year costs have more than tripled. Inpatient costs for graft failure seem to be leveling off, and actually declined in 2003. Outpatient costs, however, rose nearly 14 percent overall in 2003, while per person per year costs rose 10 percent. Costs for graft failures are highest for inpatient services but, similar to costs for functioning grafts, appear to be declining; costs incurred for outpatient services are moving upward and increased nearly 14 percent overall in 2003.

The greatest portion of total Medicare ESRD dollars is spent on the provision of hemodialysis (Figures 11.7–8). Total Medicare expenditures for dialysis totaled $14.8 billion in 2003, far above the $0.8 billion expended for transplant events. Per person per year costs are noticeably different, in that expenditures are highest for transplant events and graft failure, exceeding those for dialysis by nearly $33,000 and $8,000, respectively.

(Figure 11.3) incident ESRD patients age 67 & older, with Medicare as primary payor for the six months before & the six months following the first ESRD service date. (Figure 11.4) Medicare-entitled patients diagnosed with CKD in the year prior to death; data from the 5 percent Medicare sample. (Figures 11.5 & 11.7) prevalent ESRD patients; modalities determined using Model 2 methodology as described in Appendix A; patients with Medicare as secondary payor are included. Totals are paid claims for all ESRD patients starting at first ESRD service date & continuing until death or the end of the study period. (Figures 11.6 & 11.8) period prevalent ESRD patients; modalities determined using Model 2 methodology as described in Appendix A; patients with Medicare as secondary payor are excluded.
art A per person per month (PPPM) costs for chronic kidney disease (CKD) and ESRD are shown in Table 11.1 and Figures 11.9–10. Overall ESRD costs are six times higher than those incurred for CKD. A large portion of this difference is attributable to much higher inpatient medical and surgical costs for ESRD patients. ESRD medical costs, for instance, are more than three times higher than those found in CKD patients, while surgical costs are more than five times greater. Large differences also occur on the outpatient side. ESRD expenditures for dialysis and EPO, for example, are $916 and $412 per month, while CKD costs for similar services are negligible.

Patient comorbidity has a major impact on expenditures. In CKD patients, higher costs are sustained for those with multiple conditions. Medical costs for patients with a combination of congestive heart failure (CHF) and diabetes, for instance, are nearly triple those incurred for patients with diabetes only, while surgical costs are nearly double. And ESRD costs for patients with diabetes are noticeably greater than those found in non-diabetic patients—26–29 percent higher for medical and surgical costs, and 15 percent higher for dialysis and EPO.

Dialysis and EPO account for nearly 80 percent of total outpatient ESRD monthly expenditures, while nearly 12 percent of total cost is related to the use of injectables such as IV vitamin D and IV iron.

Part B costs for CKD and ESRD patients generally follow the same patterns found in Part A costs (Table 11.1 and Figures 11.11–12). Inpatient surgery costs for physician and anesthesia services, for instance, are more than three times higher for ESRD patients compared to CKD patients, while outpatient costs for the same services are more than double. Nephrologist hospital costs for ESRD patients are dramatically higher than those incurred for CKD patients, and ESRD costs in this category are 36 percent greater for diabetics than for non-diabetics. Non-nephrologist hospital costs for ESRD are higher as well, with monthly costs for...
### 11.11 Per person per month total Part B costs for the CKD & ESRD populations, by diagnosis

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<th>Diagnosis</th>
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### 11.12 Per person per month total Part B nephrologist & non-nephrologist costs for the CKD & ESRD populations, by diagnosis

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<th>CKD +DM+CHF</th>
<th>CKD Neither</th>
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ESRD exceeding those for CKD by more than 150 percent.

Not surprisingly, the cost for immunosuppressive drugs is much higher in ESRD patients, undoubtably due to the use of these drugs in transplant recipients. Prescription drug costs, however, are nearly 27 percent lower in the ESRD population.

Expenditures for CKD patients with both CHF and diabetes are 21 and 56 percent higher, respectively, than costs in patients with CHF or diabetes only, while monthly costs for ESRD patients with diabetes exceed those for non-diabetics by 33 percent. Total per person per month part B costs for non-nephrologist services far exceed those for services provided by nephrologists, and are higher for CKD patients with multiple comorbidities and ESRD patients who are diabetic.

(Tables 11.11–b & Figures 11.1.9 & 11.11–12) Medicare patients diagnosed with CKD in 2002 & with Medicare as primary payor (5 percent Medicare sample), & period prevalent ESRD patients, 2003, with Medicare as primary payor. Costs are per person per month for calendar year 2003. (Figure 11.10) period prevalent ESRD patients, 2003, with Medicare as primary payor. Costs are per person per month for calendar year 2003.
Expenditures for both Medicare paid claims and Medicare patient obligations increased by 7–8 percent in 2003, 2–3 percent less than growth in the prior year (Figure 11.13). Spending for non-Medicare claims rose 5 percent, slightly less than the nearly 6 percent rise in 2002. Medicare HMO spending increased by less than 1 percent in 2003 after falling 11 and 5 percent in the previous two years.

Total Medicare spending grew 5.6 percent in 2003, down nearly 6 percent from the 11.1 percent rise in 2002 (Figure 11.14). This decrease translates directly into reduced costs per patient year, which showed a 2.2 percent increase in 2003 compared to...
5.8 percent in the previous year. Growth in Medicare costs over recent years appears quite modest when compared to the recent dramatic increases in costs for EGHP patients. Total spending for these patients increased substantially in 2002 (61 percent) and while growth in 2003 was significantly lower it still reached 28 percent. Per person per year costs rose 15.3 percent in 2003, more than double the growth in 2002.

The Medicare ESRD population grew by only 2.8 percent in 2003, compared to a 13.1 percent increase in the estimated number of non-Medicare patients with ESRD (Figure 11.15).

Since 2000, growth in the Medicare population has been highest in patients age 45–64 and those age 75 and older; in the EGHP population, the greatest growth has been in the number of patients age 45–64. (Figure 11.16). Per person per year costs for children rose 7.3 percent in 2003, compared to less than 2 percent in all other age categories.

The Asian population continues to show the highest yearly percent growth, reaching nearly 4 percent in 2003 compared to 2–2.5 percent in other racial groups (Figure 11.17). Increases in program costs in 2003 were similar for all races, ranging between 4.6–6.3 percent.

Diabetes continues to be the most common primary cause of renal failure in Medicare ESRD patients, affecting nearly 40 percent of the total ESRD population (Figure 11.18). Total yearly expenditures for patients with diabetes are 64 percent higher than those for patients with glomerulonephritis, and 300 percent higher than for patients whose ESRD is caused by hypertension.

For all vintage groups, both the size of the Medicare population and the costs incurred rose less in 2003 than in 2002 (Figure 11.19).

(Figure 11.15) Medicare ESRD costs are obtained from claims files, & include all Medicare as primary payor claims as well as amounts paid by Medicare as secondary payor. Medicare patient obligations are estimated deductibles & copays. HMO costs are estimated as the number of HMO months times the Medicare AAPCC, & organ acquisition costs are estimated as $25,000 per transplant. The non-Medicare estimate includes all non-Medicare patients (using the AAPCC primary payor estimate for Medicare as secondary payor patients), & estimated patient obligations. (Figure 11.14) Total Medicare ESRD costs obtained from claims data, & include all Medicare as primary payor claims as well as amounts paid by Medicare as secondary payor. PYYY costs include only patients with Medicare as primary payor. (Figure 11.15) December 31 point prevalent patients; non-Medicare status determined from payor sequence. (Figures 11.16–19) period prevalent ESRD patients; non-Medicare & MSP patients excluded. As-treated economic model (see Appendix A for details). EGHP data are not available for ages 65 & over or by race, primary diagnosis, or vintage. — EGHP data are derived from the Medstat claims database. See Appendix A for further details.
With few exceptions, yearly Medicare expenditures for ESRD patients increase steadily along with patient age (Figure 11.20). In dialysis patients, for example, costs for patients age 65 and older are 47 percent higher than those for pediatric patients; expenses for these older patients reached $68,000 in 2003. Transplant costs for patients age 65–74 are 14 percent higher than those incurred for children, and post-event costs for these patients exceed those for children by more than $5,000 per annum. In sharp contrast to dialysis and transplant costs for Medicare patients, costs for patients insured by Employer Group Health Plans (EGHPs) in 2003 were 52–68 and 36–61 percent higher, respectively; children had the highest costs in both modalities.

In Medicare patients, dialysis and graft failure costs are nearly 10 percent higher for women compared to men, while transplant...
costs are similar between the two genders (Figure 11.21). Dialysis and transplant costs for women enrolled in EGHPs, in contrast, are 8.3 and 11.9 percent lower that those incurred by their male counterparts.

Dialysis costs for whites and blacks show only slight differences, while those for transplant events are 5 percent higher for black patients (Figure 11.22). A more striking difference is evident in costs for patients with a functioning graft; since 1991, spending has been consistently higher for blacks when compared to whites, reaching a difference of nearly 21 percent in 2003.

By primary diagnosis, per person per year (PPPY) expenditures are highest for patients whose ESRD is caused by diabetes (Figure 11.23). In dialysis patients with diabetes, for instance, spending exceeded $68,000 in 2003—nearly 13 percent higher than for patients with hypertension, and almost 30 percent higher than for patients with glomerulonephritis. The greatest differences are seen in patients with a functioning graft; expenditures for diabetics exceed those for patients with hypertension, glomerulonephritis, and other primary diagnoses by 49, 95, and 76 percent, respectively. Differences in patients with graft failure are 30, 45, and 32 percent.

In the dialysis population, PPPY expenditures are highest in patients who have been on dialysis for less than two years (Figure 11.24). In the transplant population, in contrast, costs are 7.4 percent lower in newer transplant patients compared to patients who have had their transplant for 2–5 years, and 11 percent lower than those for patients of the longest vintage.

Overall PPPY dialysis costs were nearly $61,000 in 2003 for patients covered by Medicare, while costs for those with EGHP coverage grew to $126,000—double the Medicare costs, and more than 20 percent higher than in the previous year (Figure 11.25). Expenditures continue to rise for patients on dialysis and for those with graft failure, while they are falling for newly transplanted patients and those with a functioning graft.

(Figures 11.20–25) Period prevalent ESRD patients; patients with Medicare as secondary payer are excluded. As-treated model, modalities determined using Model 2 methodology as described in Appendix A. In Figures 11.20–21 & 11.25, EGHP data are derived from the Medstat claims database. See Appendix A for further details.
While PPPM costs for dialysis rose 2.2 percent between 2002 and 2003, costs for EPO and IV iron rose 5.2 and 9.8 percent, respectively (Figure 11.26). Medicare spent nearly $1.6 billion on EPO in 2003—11 percent more than in the previous year (Figure 11.27). PPPM costs for dialysis, EPO, and IV iron are greatest in units owned by DaVita (Figure 11.28).

PPPM costs for injectables are highest in the eastern portions of the country, especially in the Gulf Coast states and those along the Atlantic Seaboard (Figure 11.29). Nationwide PPPM costs for EPO and IV iron are $609, while those for IV vitamin D and other injectables are $154.

On a national level, PPPM inpatient and outpatient costs are very similar, at $1,839 and $2,167, respectively; outpatient non-dialysis, dialysis, and Part B costs are $1,025, $1,142, and $988 (Figure 11.31).

Preventive care costs are greatest for eye examinations, followed by hepatitis B vaccinations (Figures 11.32–33). Medicare costs for eye examinations reached $254.4 million in 2003; only $3 million, in contrast, was spent on cancer screening. PPPM costs for lipid testing are greatest in NNA units, and lowest in units owned by RCG or DCI (Figure 11.34).

Sixty percent of patients now use Zemplar and only 6.3 percent use Calcijex; the use of Hectoral grew from 6.6 to 9.1 percent between 2002 and 2003 (Figure 11.35). For IV iron therapy, 45 percent of patients are now using Ferrlecit, and 36 percent are on Venofer (Figure 11.36). PPPY costs for Zemplar exceeded $2,500 in 2003 (Figure 11.37).
Since 1991, the number of vascular access procedures for hemodialysis and peritoneal dialysis patients has grown 392 and 27 percent, respectively (Figure 11.38). Costs during that same period rose at a slower pace—134 and 10 percent (Figure 11.39). Between 2002 and 2003, however, total costs increased at a higher rate than did the number of procedures. Costs rose 10.8 and 3.3 percent for hemodialysis and peritoneal dialysis, compared to an 8.7 and 2.5 percent growth in procedures.

In 1991, more than three-quarters of all access procedures were placed by nephrologists. When most such accesses were placed by radiologists (Figure 11.44). Most peritoneal catheters are placed almost equally by surgeons and nephrologists; hemodialysis catheters, in contrast, facility costs were 73 percent of total costs. For procedures done on an outpatient basis, in contrast, facility costs were 73 percent of total costs for insertions only, 77 percent for insertions and complications, and 84 percent for complications only.

By access type, costs per procedure for hemodialysis accesses are highest for catheters, at $11,700 for an insertion only and $14,251 for a combined insertion and complication; costs are lowest for fistulas (Figure 11.43). For peritoneal dialysis catheters, costs for a combined insertion and complication reach $16,376, almost three times the cost for an insertion-only procedure.

As reflected by total physician dollars, most fistulas and grafts are placed by surgeons; hemodialysis catheters, in contrast, are placed almost equally by surgeons and radiologists (Figure 11.44). Most peritoneal dialysis catheters are now placed by surgeons as well, a change from earlier years when most such accesses were placed by nephrologists.

The use of hemodialysis fistulas and catheters has been growing since 1999, as graft use has declined (Figure 11.45). During this time, total annualized Medicare expenditures for vascular access have increased 39.5 percent; costs for fistulas and
Vascular access use, by access type

Total per person per year Medicare expenditures, by vascular access type

Per person per year Medicare expenditures for vascular access procedures, by vascular access type

ECONOMIC COSTS OF ESRD

2003 Annual Data Report

graffs have grown 20.8 percent, while those for catheters have risen at a lower rate of 13.9 percent (Figure 11.46). Outpatient costs have grown between 14 percent for fistulas to 18.5 percent for catheters, while physician costs have increased at higher rates—31 percent overall, and 34 percent for inpatient and physician costs.

Per person per year costs for outpatient vascular access services have, since 1993, grown at rates greater than those of the annualized Medicare expenditures: 145, 161, and 167 percent for fistulas, grafts, and catheters, respectively (Figure 11.47). Inpatient PPPY costs for fistulas and grafts, however, have increased less than 2 percent, while costs for catheters have risen nearly 14 percent. Overall, PPPY costs have increased 30–33 percent.

Figures 11.38–40 Medicare ESRD Part B vascular access claims, identified by CPT codes & ICD-9-CM diagnosis codes; location derived from the CMS "Place of Service" variable. Figure 11.41 Medicare ESRD Part B vascular access claims, where Part B claim can be matched with corresponding Part A claim. Figures 11.42–43 "pure" inpatient & outpatient claims, 2003. Figure 11.44 all inpatient & outpatient claims, 2003. Figures 11.45–47 hemodialysis patients from the 1999 & 2003 CPM data with Medicare as primary payer & vascular access data. Intent-to-treat model. Vascular access type in use in December 1998 & 2002. In Figure 11.47, facility costs for vascular access include only "pure" vascular access inpatient & outpatient claims; physician costs include all vascular access claims.
Chapter summary

Figures 11.1–2 PYYY costs for EGHP patients averaged $72,240 in 2003, compared to $54,904 for Medicare patients, and appear to be increasing at a faster rate than Medicare costs.

Figures 11.5–6 Inpatient and outpatient expenditures account for the largest portion of yearly Medicare and per person per year costs for dialysis. Inpatient costs grew only 1.3 percent between 2002 and 2003. Outpatient costs, in contrast, rose 9 percent, and are 17 percent higher than those incurred for inpatient services. Figures 11.7–8 The greatest portion of total Medicare ESRD dollars is spent on hemodialysis. Total Medicare expenditures for dialysis totaled $14.8 billion in 2003, far above the $0.8 billion expended for transplant events.

Table 11.a ESRD medical costs are more than three times higher than those for CKD patients, while surgical costs are more than five times greater. Table 11.b Inpatient surgery costs for physician and anesthesia services are more than three times higher for ESRD patients compared to CKD patients, while outpatient costs for the same services are more than double. Figure 11.11 Expenditures for CKD patients with both CHF and diabetes are 21 and 56 percent higher, respectively, than costs in patients with CHF or diabetes only, while monthly costs for ESRD patients with diabetes exceed those for non-diabetics by 33 percent.

Figure 11.13 Expenditures for both Medicare paid claims and Medicare patient obligations increased by 7–8 percent in 2003, 2–3 percent less than growth in the prior year. Figure 11.14 Total Medicare spending grew 5.6 percent in 2003, down nearly 6 percent from the 11.1 percent rise in 2002. Figure 11.15 The Medicare ESRD population grew by only 2.8 percent in 2003, compared to a 13.1 percent increase in the estimated number of non-Medicare patients with ESRD.

Figure 11.20 In sharp contrast to dialysis and transplant costs for Medicare patients, costs for patients insured by Employer Group Health Plans in 2003 were $2–68 and 36–61 percent higher, respectively. Figure 11.25 Overall PYYY dialysis costs were nearly $63,000 in 2003 for patients covered by Medicare, while costs for those with EGHP coverage grew to $126,000—double the Medicare costs, and more than 21 percent higher than in the previous year.

Figure 11.27 Medicare spent nearly $1.6 billion on EPO in 2003—11 percent more than in the previous year. Figure 11.33 Medicare costs for eye examinations reached $25.4 million in 2003; only $3 million, in contrast, was spent on cancer screening.

Figure 11.42 Total inpatient vascular access costs per procedure in 2003 reached $11,715 for insertions only, $13,045 for insertions and complications, and $12,070 for complications only; outpatient costs were $1,494, $2,245, and $2,153, respectively. Figure 11.46 Total annualized Medicare expenditures for vascular access have increased 19.5 percent since 1999; costs for fistulas and grafts have grown 20.8 percent, while those for catheters have risen at a lower rate of 13.9 percent. Figure 11.47 Per person per year costs for outpatient vascular access services have, since 1993, grown at rates greater than those of the annualized Medicare expenditures.

MAPS: NATIONAL MEANS & PATIENT POPULATIONS

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