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# Excluded From Universal Coverage: ESRD Patients Not Covered by Medicare

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*Medicaid is believed to serve as the major insurer for end stage renal disease (ESRD) patients who are ineligible for Medicare coverage. Demographics, receipt of dialysis services, and costs of Medicaid-only populations were compared with Medicare ESRD populations in California, Georgia, and Michigan. Notable differences in patient demographics, dialysis practice patterns, and inpatient health resource utilization between the Medicaid and Medicare ESRD populations were observed. Medicaid expenditures for Medicare-ineligible ESRD patients were considerable: in 1991, California spent \$46.4 million for 1,239 ESRD patients; Georgia and Michigan each spent nearly \$5 million for approximately 140 ESRD patients.*

## INTRODUCTION

In terms of morbidity, mortality, and economic costs, ESRD is among the most serious chronic diseases in the United States (Institute of Medicine, 1991). ESRD results from the permanent loss of kidney function and, without a regular course of dialysis or kidney transplantation, the disease is fatal. The Medicare ESRD program, established in 1973, grants a "near universal" entitlement to Medicare benefits for persons who require chronic dialysis or a kidney transplant to maintain life.

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While this entitlement provides coverage for most Americans with irreversible kidney failure, it does not ensure coverage for all persons with ESRD. In 1991, Medicare insured approximately 93 percent of the 142,488 ESRD dialysis patients with kidney failure in the United States through the ESRD program (Health Care Financing Administration, 1993).

To receive a Medicare entitlement for ESRD, a physician must certify that a person requires continuous dialysis or a kidney transplant to maintain life. Additional requirements for entitlement include the following: eligibility for monthly insurance benefits under Title II of the Social Security Act; full or current insurance under Social Security; or to be the spouse or dependent child of a person who meets at least one of the two previous requirements. Approximately 10,000 ESRD dialysis patients, representing 7 percent of chronic dialysis patients nationally, did not meet these entitlement criteria in 1991 (Health Care Financing Administration, 1993). For these persons, ESRD-related services may have been paid for by other organizations, including State Medicaid agencies, the Department of Veterans Affairs (DVA), State kidney fund programs, the Indian Health Service, State and Federal prison systems, and private health insurance. According to the most recent survey, conducted by HCFA using 1981 data (Health Care Financing Administration, 1984), 70 percent of Medicare-ineligible ESRD patients were covered by State Medicaid, DVA, or State

kidney programs. In light of an ever-expanding patient population and stable or declining DVA and State kidney program funding, State Medicaid agencies are increasingly becoming the primary financial support for ESRD patients who lack Medicare coverage (Institute of Medicine [IOM], 1991).

The IOM (1991), in its seminal study on kidney failure in the United States, reported that the existing data on the ineligible ESRD population are limited and do not include the extent and adequacy of other sources of support. In particular, the effects of ineligibility on access to or denial of treatment and differences between the benefits offered by Medicare versus other payers have not been examined. The IOM also reported that, "Although State Medicaid ESRD expenditures for . . . reported non-eligibles are undoubtedly substantial, neither a direct count nor a good estimate exists." In light of the paucity of data, the IOM recommended that studies be conducted to ascertain the demographic characteristics, health status, and access to ESRD services for Medicare-ineligible ESRD patients.

To date, there are no published studies that have examined the Medicaid-only ESRD population. Using claims submitted to the Medicaid programs in California, Georgia, and Michigan, this study identifies Medicaid enrollees receiving chronic renal dialysis in 1991 who were not covered by Medicare or private insurance. The goals of this study are the following: (1) to quantify the health resource utilization of the Medicaid-only population, including dialysis treatments, inpatient and outpatient health care, pharmaceutical use, and long-term care; (2) to determine the total and per capita Medicaid health care expenditures for this population for calendar year 1991; and (3) to compare, to the extent possible, patient demographics,

health resource utilization, and costs between the Medicaid and Medicare ESRD dialysis populations in each State.

## METHODS

We analyzed calendar year 1991 data on Medicaid and Medicare ESRD patients residing in California, Georgia, and Michigan. Two administrative data bases were used to identify and analyze demographic characteristics, dialysis practice patterns, health resource utilization, and direct medical costs of the study population. Since this article primarily presents descriptive statistics comparing the Medicaid and Medicare chronic dialysis populations in three States for which data were available, our methods section is unusually detailed to highlight the differences in the administrative data bases that may influence our results.

### Data Sources

Data for the Medicaid population were obtained from the 1991 Medicaid Tape-to-Tape (TTT) data base. The States participating in the TTT project—California, Michigan, and Georgia—voluntarily submit copies of claims payment data tapes to HCFA. The data include patient enrollment information and inpatient, outpatient, long-term care, and pharmaceutical claims, as well as provider information and associated costs for each of the study States. Because the Medicaid Management Information System and claims payment procedures vary by State, files submitted to HCFA are restructured to enhance the comparability of file contents and data definitions and to permit cross-State comparative analyses.

Data for the Medicare population were extracted from the ESRD Program Management and Medical Information

System (PMMIS) maintained by HCFA. The PMMIS includes data regarding Medicare enrollment information, inpatient stay records, and quarterly outpatient dialysis summary records for all patients enrolled in the Medicare ESRD program. For comparison with the Medicaid study population, the State of Residence code was used to identify Medicare dialysis patients residing in California, Georgia, and Michigan in 1991. Since the PMMIS does not contain cost information for all health care services provided to ESRD beneficiaries, published data from HCFA regarding Medicare ESRD program expenditures for each State were used (Health Care Financing Administration, 1994a).

## Medicaid Patient Selection

### Overview

To identify the Medicaid study population, three steps were required: (1) determination of ESRD status (i.e., the requirement for chronic dialysis) in the absence of such an administrative indicator for the Medicaid population; (2) determination of Medicaid-only eligibility to ensure that dually eligible Medicare/Medicaid patients and those on a waiting list for the Medicare program were excluded; and (3) identification of a study period during which each patient received a continuous course of dialysis reimbursed by Medicaid.

### Determination of Chronic Dialysis Status

In contrast to the Medicare data, there is no ESRD patient indicator available within Medicaid administrative data bases. This limitation required an operational definition of ESRD which could be used to identify ESRD patients from administrative bills submitted to Medicaid. To this end, we

consulted an expert panel of nephrologists and researchers focusing on ESRD.<sup>1</sup> Using the Medicare ESRD program definition as the basis,<sup>2</sup> patients were defined as being on a continuous course of dialysis treatment if they received at least four outpatient dialysis sessions in 1 month. In California, Georgia, and Michigan, 1,863, 225, and 225 patients, respectively, met this criterion. The rationale for this definition was that acute renal failure patients would receive dialysis services on an inpatient basis. Since patients with a failing graft kidney may receive dialysis on an erratic basis and interpretation of their clinical status is difficult, all patients with an inpatient primary or secondary diagnostic code for a transplant failure (*International Classification of Diseases, 9th Revision, Clinical Modification* Code 996.8) during 1991 were excluded from the study, accounting for 132, 7, and 8 patients in California, Georgia, and Michigan, respectively. Further rationale for the exclusion of dialysis patients following graft failure is that their per patient total expenditures are higher than those for non-transplant dialysis patients (\$43,373 versus \$35,652 according to 1991 HCFA statistics [Health Care Financing Administration, 1994a]). There was no reliable way to identify patients on a functioning graft kidney using Medicaid data. Therefore, our study is restricted to ESRD patients treated with a continuous course of dialysis who will subsequently be referred to as chronic dialysis patients.

<sup>1</sup>Panel members are John Sadler, M.D., University of Maryland Medical System (Chairman); Douglas Brown, Ph.D., Georgetown University; Roger Bulger, M.D., Association of Academic Health Centers; Louis Diamond, M.D., D.C. General Hospital; Diane Mundt, Ph.D., Georgetown University Medical Center; Peter McMenamin, Ph.D., PDM, Inc.; Richard Rettig, Ph.D., RAND Corporation; and Jane Sisk, Ph.D., Columbia University.

<sup>2</sup>To qualify clinically for the Medicare ESRD program, a requisite course of dialysis is defined as "hemodialysis one to three times per week, peritoneal dialysis 10 to 30 hours per week, or continuous cycling peritoneal dialysis (CCPD) or continuous ambulatory peritoneal dialysis (CAPD) on a daily basis" (Social Security Administration, 1991).

The expert panel's algorithm for identifying patients on a continuous course of dialysis required calculating the number of outpatient dialysis sessions per month. Outpatient claims from California and Michigan were selected according to the Service Code Group 910, which identifies dialysis and dialysis-related services. For Georgia, facility bills for dialysis were classified by Service Code Group 990, which identifies durable medical equipment and supplies. From these claims, only those for which the State-specific service code identified facility claims for dialysis were retained. (The Technical Note at the end of this article lists each State-specific code used to identify dialysis services.)

Each claim for dialysis generally represents the number of sessions during a specified time period. The actual number of dialysis sessions was calculated for each claim by dividing the amount reimbursed by the reimbursement rate for either a single session or a monthly rate. Monthly reimbursement rates have a built-in number of sessions that each patient is expected to complete. For example, California's monthly reimbursement of \$1,794 for home dialysis represents 13 dialysis sessions at \$138 each. If a patient received 14 dialysis sessions in a facility without any professional services during the month at a facility, the State-specific service code would be for a single claim with a reimbursement of  $14 \times \$138 = \$1,932$ . Many dialysis claims in the California Medicaid data file overlapped more than 1 calendar month. The number of dialysis sessions in these records was distributed proportionally to the number of days in each month of service. In Georgia, dialysis services are reimbursed at the rate of \$138 per session, for a maximum of 12 sessions during a calendar month. Therefore, the maximum allowed reimbursement for a monthly claim for dialysis is \$1,656 (Jones, 1994).

In Michigan, reimbursement rates are negotiated with each provider and are held confidential by a State law (Buryta, 1994). To estimate the reimbursement rates applicable to dialysis services in Michigan, we examined the frequency of dialysis claims to identify the reimbursement rate for a single session. The frequency was determined for each provider for each calendar month. The modal reimbursement rate for each Michigan State-specific code indicating dialysis treatment was used to calculate the number of sessions that each claim contains.

### ***Determination of Medicaid-Only Eligibility Status***

Following the determination of chronic dialysis status, Medicaid-only eligibility status was determined. Medicaid-only patients were identified using two criteria. First, any patient who had a "cross-over" claim in the Medicaid data base was excluded. Cross-over claims are those Medicaid claims that HCFA has identified as claims for services for dually eligible Medicare and Medicaid patients. In these situations, the State Medicaid program has usually paid the Medicare copayment and deductibles. Second, to eliminate Medicaid patients who were in the 3-month waiting period prior to Medicare enrollment, only patients with four or more outpatient dialysis sessions in study months 1 and 4, while remaining Medicaid eligible for the entire 4-month period, were included in the study. The 4-month criterion was used to ensure that patients whose dialysis services were reimbursed by Medicaid only during the Medicare ESRD program 3-month waiting period were excluded from the study population. Presumably, if Medicaid is the primary payer during the fourth month of ESRD, the patient is not Medicare-eligible. As a result, all patients

beginning dialysis during October, November, and December were excluded from the study. This inclusion criterion further ensured that study participants were truly suffering from chronic renal failure, since few acute renal failure patients would receive four or more outpatient treatments per month in each of 2 months spaced 3 months apart.

### ***Identification of Medicaid Population Study Period***

Since dialysis patients could have been prevalent at the beginning of 1991 or become incident during any month in 1991, study months were determined as follows: The first study month for each patient refers to the first calendar month with at least four dialysis sessions. The last study month was determined as the month prior to the month in which a patient was censored or December 1991, whichever occurred first. The study period for all patients could be a minimum of 4 months and a maximum of 12 months.

Patients were censored due to acquisition of private health insurance, loss of Medicaid benefits, or receipt of a kidney transplant. All records for services following the last study month were excluded from the analysis. For California and Michigan, acquisition of private insurance was determined by the private health insurance indicator found in the enrollment file. Since no information about the availability of private insurance was present in the Georgia enrollment file, the Other Insurance variable from the outpatient and inpatient claims files was used as a proxy. Ineligibility for Medicaid enrollment was determined by examining each State's Medicaid enrollment file which contains information on patients' eligibility for benefits on a monthly basis. Loss of eligibility results from death, change in income

or medical status affecting eligibility for Medicaid enrollment, move to another State, or voluntary withdrawal from the Medicaid program. Receipt of a kidney transplant was determined by the presence of diagnosis code V42.0 on an inpatient record during any time in 1991. In summary, our study sample of 1,239, 139, and 137 persons in California, Georgia, and Michigan, respectively, is comprised of all persons whose billing claims to Medicaid indicate they were receiving chronic renal dialysis insured by Medicaid only for 4 or more months during 1991. Although the study population of Medicaid-only chronic dialysis patients is relatively small in Georgia and Michigan, the inclusion of these States is important to examine the impact of non-coverage in different parts of the United States. Each TTT State represents a different geographic region and potentially different patient case mix and Medicaid State policies.

### **Medicare Patient Selection**

For comparison with the Medicaid-only chronic dialysis study population, dialysis claims for Medicare ESRD patients residing in California, Georgia, and Michigan, respectively, in 1991 were extracted from the Quarterly Dialysis Records file of the PMMIS data base. Only patients who had dialyzed at some point during the 1991 calendar year were included in the Medicare study population. Overall, 15,779, 4,934, and 5,319 patients in California, Georgia, and Michigan, respectively, had evidence of dialysis reimbursed by Medicare in 1991. Since the criteria for enrollment in the ESRD program are based on the requirement for a continuous course of dialysis to maintain life, verification of dialysis at least four times per calendar month was unnecessary. To construct a population equivalent to the Medicaid-only

chronic dialysis population, all Medicare patients with an inpatient claim during 1991 for which the primary or secondary diagnostic code was 996.8, transplant failure, were removed from the Medicare study population. Second, all ESRD patients who were incident in October, November, or December of 1991 were excluded accounting for 686, 179, and 224 persons in California, Georgia, and Michigan, respectively. The final study population consisted of 14,985, 4,742, and 5,054 Medicare ESRD dialysis patients residing in California, Georgia, and Michigan, respectively.

### ***Identification of Medicare Population Study Period***

The study period for the Medicare dialysis population was determined as follows: the index study month was the month in which the first dialysis session occurred in 1991. Patients were longitudinally followed until the first occurrence of one of these events—receipt of a kidney transplant, last date of dialysis, or December 31, 1991. Using the enrollment file, receipt of a kidney transplant was indicated by a date of transplant. The final date of dialysis (assuming it differs from the end of the 1991 calendar year) was indicated in the Dialysis Quarterly Record file. This date usually coincides with a kidney transplant, death, or voluntary withdrawal from dialysis. All records following a transplant operation or, in a few cases, the last date of dialysis, were removed.

### **Health Resource Utilization and Cost Measures**

#### ***Analysis of Dialysis Practice Patterns***

To compare dialysis practice patterns, we estimated the number of dialysis sessions

per quarter for Medicaid and Medicare patients who undergo dialysis for the entire quarter. For the Medicaid ESRD population, the number of dialysis sessions in each study month was estimated by dividing the reimbursed amount for the dialysis claims by the allowed charge per unit presented in the Technical Note at the end of this article. The study months were aggregated to estimate the total number of dialysis sessions per quarter. To ensure that a patient was receiving dialysis throughout each quarter, only those patients with claims for dialysis in all 3 months per quarter were included in the calculations. The mean number of sessions per quarter was calculated by averaging the sum of sessions per patient per quarter.

Dialysis setting and type of provider are based on the fourth month of dialysis since this is more representative of intent to treat and the actual long-term dialysis provider. Home versus in-center site of service for dialysis was determined using the State-specific dialysis codes. In California, all codes indicating home dialysis or home dialysis training sessions were used to identify home site of service; the remaining patients were identified as in-center dialysis patients. Georgia and Michigan did not have State-specific codes indicating home dialysis services. Since 99 percent of all peritoneal dialysis (PD) among Medicare ESRD patients was performed at home in 1991 (Health Care Financing Administration, 1993), peritoneal dialysis was used as a proxy for home dialysis in Georgia and Michigan. All codes in these States indicating PD, CAPD, or CCPD were deemed to be associated with home dialysis site of service. Conversely, since only 2 percent of all hemodialysis is performed at home (Health Care Financing Administration, 1993), all hemodialysis services in Georgia and Michigan were deemed to be in-center. To examine the

type of dialysis facility, freestanding or hospital-based, the Uniform Provider Type variable was used.

For the Medicare ESRD population, the number of dialysis sessions in each setting during each quarter in 1991 is indicated in the PMMIS. To ensure that a patient was receiving dialysis throughout the quarter, for each quarter, only those patients with an indication of dialysis in the first and third month of that quarter were included in the calculations. Dialysis setting and type of provider were obtained based on the second quarter of dialysis since, as described previously, this is more representative of intent-to-treat and the actual long-term dialysis provider. The type of dialysis facility was determined using provider numbers which indicate if a facility was freestanding or hospital-based.

### ***Definition of Health Care Services***

To examine health resource utilization and associated costs among the Medicaid ESRD study population, health care services were grouped into 1 of 10 categories: (1) inpatient hospital services; (2) outpatient dialysis services (see Technical Note); (3) outpatient physician services; (4) outpatient laboratory services; (5) recombinant human erythropoietin (rHuEPO) services (extracted from outpatient hospital services for Michigan and from other outpatient services for California and Georgia); (6) outpatient hospital and other services (including transportation to and from dialysis and emergency room services); (7) home health care services; (8) nursing home services; (9) intermediate care facility services; and (10) pharmacy services. To compare health resource utilization among the Medicaid chronic dialysis populations, all health care services provided during each patient's study period were analyzed. For

each of the types of health care services listed, the percent of the population receiving care was calculated by dividing the number of patients who received the health care service by the total number of patients in the study population of interest.

### ***Calculation of Inpatient Health Resource Utilization***

Several calculations were performed to compare inpatient health resource utilization between the California Medicaid and Medicare chronic dialysis populations. Because of the relatively small number of Medicaid chronic dialysis patients in Michigan and Georgia, health resource utilization was only examined for California patients. The following three measures were used to examine inpatient hospital utilization: (1) the percent of the population ever hospitalized, calculated by dividing the number of patients who were hospitalized at least once by the total number of patients in the study population of interest; (2) mean rate of hospitalization per 100 patients per study month, calculated by dividing the number of hospitalizations by the number of study months at risk for each patient divided by the total number of patients; and (3) mean length of stay, calculated by dividing the total number of days of inpatient care by the total number of inpatient stays. To mitigate potential biases due to different patient demographics between the California Medicare and Medicaid chronic dialysis study populations, total inpatient hospital utilization measures were age- and sex-adjusted using a regression analysis. Inpatient utilization measures are also presented for each study cohort based on age (under 20 years, 20-44 years, 45-64 years, and 65 years or over), sex, and race (white, African-American, and other).

## ***Comparison of Medicaid and Medicare ESRD Expenditures***

The direct medical expenditures, based on the amount reimbursed by Medicaid to the provider were determined for each State. Three categories of direct medical expenditures were calculated: (1) total expenditures, calculated by summing the payments of all services provided to a patient during his/her study period; (2) mean expenditure per recipient of service per study month, calculated by dividing total expenditures by the number of ESRD patients receiving the service by the number of months at risk; and (3) annualized mean expenditure per patient, calculated by multiplying the mean cost per recipient of service by 365 (days) and dividing by the mean length of time in the study period. The three expenditure categories are stratified by type of service as follows: inpatient, outpatient, home health care, nursing home, hospice, and pharmacy (for Medicaid patients only). To obtain comparative Medicare ESRD program expenditures, published data from HCFA for California, Georgia, and Michigan were used (Health Care Financing Administration, 1994a).

## ***Comparing Medicaid and Medicare Chronic Dialysis Populations***

To ascertain whether the observed differences in patient demographics, dialysis practice patterns, and health resource utilization in each State between the Medicaid and Medicare chronic dialysis populations were statistically significant, a *t*-test or chi-square test was used. All differences in these measures discussed later in the results section, unless noted otherwise, are statistically significant at  $p < 0.05$ .

## **RESULTS**

### **Patient Demographics**

Table 1 presents patient demographics for the Medicaid and Medicare chronic dialysis study population in each State. In 1991, 1,239 Medicaid-only chronic dialysis patients were identified in California, 139 in Georgia, and 137 in Michigan. Similarly, 14,985 chronic dialysis patients residing in California, 4,742 in Georgia, and 5,054 in Michigan were enrolled in the Medicare ESRD program. The proportion of chronic dialysis patients that was solely insured by the Medicaid program is calculated by dividing the Medicaid population identified in this study by the total number of dialysis patients (Medicare and non-Medicare) in each State obtained from the 1991 ESRD Facility Survey (Health Care Financing Administration, 1993). The proportion of Medicaid-only dialysis patients ranged from 7.6 percent in California and 2.8 percent in Michigan, comprising approximately 60 percent of all non-Medicare dialysis patients in each State, to 3.0 percent in Georgia, comprising 50 percent of all non-Medicare dialysis patients.

Compared with the Medicare ESRD population, the Medicaid chronic dialysis population in each State was younger and disproportionately female and minority. Medicaid chronic dialysis patients are approximately 10 years younger than their Medicare counterparts; the majority of the Medicaid patients are under 65 years of age—86.6 percent, 94.9 percent, and 100 percent in California, Georgia, and Michigan, respectively. In contrast, in the Medicare ESRD populations in these States, 54.2 percent, 60.7 percent, and 55.1 percent in California, Georgia, and Michigan, respectively, are under 65 years of age. Along with the younger age distribution, the Medicaid chronic dialysis pop-



**Table 1**  
**Demographic Characteristics of California, Georgia, and Michigan Medicaid**  
**and Medicare Chronic Dialysis Patients: 1991**

Characteristic	California		Georgia		Michigan	
	Medicaid	Medicare	Medicaid	Medicare	Medicaid	Medicare
Number of Patients	1,239	14,985	139	4,742	137	5,054
<b>Age</b>						
Mean Years	49.2	59.2	48.5	57.7	45.1	58.5
Standard Deviation	15.8	16.7	12.6	15.7	12.8	16.5
			Percent			
Under 20 Years	3.3	0.7	0.7	0.7	3.6	0.8
20-44 Years	35.1	20.8	38.8	20.6	43.1	22.1
45-64 Years	48.2	32.6	55.4	39.4	53.3	32.2
65 Years or Over	13.4	45.8	5.0	39.3	0.0	44.9
<b>Sex</b>						
Male	43.2	50.4	25.2	48.2	41.6	53.2
Female	56.8	49.6	74.8	51.8	58.4	46.8
<b>Race</b>						
White	18.2	60.8	7.2	29.8	36.5	55.9
African-American	18.8	19.3	78.4	65.5	48.2	38.1
Other <sup>1</sup>	29.8	19.4	0.7	4.6	4.4	5.9
Unknown	33.2	0.0	13.4	0.0	10.9	0.0

<sup>1</sup>Among the California Medicaid population, 80 percent of the other category is comprised of persons with Hispanic ethnicity. Among the California Medicare population, the other category is comprised of Asian/Pacific Islanders and Native American/Eskimo/Aleuts.

NOTE: For all three States, the Medicaid age, sex, and race distribution is significantly different from the corresponding Medicare distribution at  $p < 0.01$  value using a chi-square test (unknowns excluded).

SOURCE: Health Care Financing Administration: Data from the Medicaid Tape-to-Tape project and the End Stage Renal Disease Program Management and Medical Information System, 1991.

ulations were disproportionately female. In 1991, more than one-half of all Medicaid chronic dialysis patients in Michigan and California and three-fourths of all patients in Georgia were female.

For both the Medicaid and Medicare populations, race is self-reported as follows: white, African-American, and other. In California, the majority of the "other" racial category is comprised of Hispanics among the Medicaid population and Asian/Pacific Islanders or Native Americans/Alaska Natives among the Medicare population. For example, approximately 80 percent of all Medicaid chronic dialysis patients in California who were classified in the other race category were persons of Hispanic ethnicity. The racial and ethnic composition of the Medicaid chronic dialysis populations in each State was overwhelmingly minority and contrasts sharply with their Medicare ESRD counterparts. Assuming that the popula-

tion with a missing race code in California is distributed in the same manner as the population with known race and ethnicity, the percentage of persons in the other category increases to about one-half of the population. In Georgia and Michigan, the largest number of Medicaid chronic dialysis patients were African-American—78.4 percent and 48.2 percent, respectively, compared with 65.5 percent and 38.1 percent of the Medicare ESRD patients in each State.

### Dialysis Practice Patterns

Table 2 summarizes the receipt of chronic dialysis services among the California, Georgia, and Michigan Medicaid populations. The results in Table 2 indicate that the criteria used to select chronic dialysis Medicaid patients in this study do indeed identify persons undergoing a continuous course of dial-

**Table 2**  
**Receipt of Outpatient Dialysis Services Among California, Georgia, and Michigan**  
**Medicaid Chronic Dialysis Patients: 1991**

Measure	California	Georgia	Michigan
<b>Number of Study Months</b>		<b>Cumulative Percent Receiving Dialysis</b>	
12	52.3	66.2	62.0
11	60.7	74.1	71.5
10	65.9	76.3	73.0
9	71.1	81.3	77.4
8	77.2	84.2	80.3
7	82.1	87.1	88.3
6	87.3	90.7	90.5
5	94.0	93.6	94.9
4	100.0	100.0	100.0
<b>Number of Study Months</b>		<b>Percent Missing 1 or More Months of Dialysis</b>	
0	81.9	85.6	75.2
1	13.2	10.1	16.8
2	3.5	3.6	5.1
3	0.9	0.7	2.2
4	0.5	—	0.7
<b>Number of Dialysis Sessions</b> <b>in Study Month 4<sup>1</sup></b>		<b>Percent of Patients</b>	
4 - 7	5.2	10.1	8.8
8 - 10	13.5	20.1	15.3
11 - 13	73.4	69.8	48.2
14 or More	7.9	—	227.7

<sup>1</sup>Mean number of dialysis sessions in study month 4 was 11.9, 10.5, and 12.3 in California, Georgia, and Michigan, respectively.

<sup>2</sup>Eighty-four percent of these patients had 14-15 dialysis sessions in study month four.

SOURCE: Health Care Financing Administration: Data from the Medicaid Tape-to-Tape project and the End Stage Renal Disease Program Management and Medical Information System, 1991.

ysis associated with ESRD during 1991. Overall, more than 50 percent of the study population in each State received 12 months of dialysis, approximately 75 percent received 9 months of dialysis, and more than 90 percent received 5 months of dialysis. It should be noted that a proportion of the population became new dialysis patients or obtained Medicaid eligibility in the middle or end of 1991 and other patients received a kidney transplant, died, moved out of State, or lost Medicaid coverage. Second, Table 2 indicates that the vast majority of chronic dialysis patients in each State received dialysis services in every study month; 86 percent in Georgia, 82 percent in California, and 75 percent in Michigan did not miss a single month of dialysis during their respective study periods. Only a small minority of patients, 1 to 3 percent, had no record of dialysis services for more than 2 study months.

Third, the distribution of the number of dialysis sessions and the mean number of sessions (see footnote 1 in Table 2) suggest that the majority of study patients is receiving the average 11 to 13 number of dialysis sessions associated with ESRD.

Table 3 presents outpatient dialysis practice patterns and site of service for the Medicaid and Medicare ESRD populations in each State. In 1991, in each of the States studied, the Medicaid chronic dialysis population received fewer dialysis sessions per quarter compared with their Medicare ESRD counterparts. In California, the Medicaid chronic dialysis population received approximately two sessions fewer per quarter; in Georgia and Michigan, the differences were more pronounced—the Medicaid chronic dialysis population received three to five sessions fewer per quarter. Medicaid chronic dialysis patients received fewer sessions compared with

**Table 3**  
**Comparison of Outpatient Dialysis Practice Patterns and Site of Service Among California, Georgia, and Michigan Medicaid and Medicare Chronic Dialysis Patients: 1991**

Measure	California		Georgia		Michigan	
	Medicaid	Medicare	Medicaid	Medicare	Medicaid	Medicare
<b>Mean Number of Sessions per Quarter</b>						
Total	*35.6 (5.7)	37.4 (8.7)	*31.3 (4.6)	35.6 (10.0)	*35.1 (8.6)	38.4 (11.0)
In-Center	*35.4 (5.8)	37.1 (6.5)	*31.3 (4.6)	36.9 (6.8)	**36.2 (7.3)	37.2 (8.9)
Freestanding	*35.6 (5.5)	37.2 (8.4)	*31.3 (4.6)	35.5 (10.3)	—	36.7 (10.0)
Hospital-Based	*35.0 (8.0)	38.0 (9.7)	—	36.0 (7.7)	*35.1 (8.7)	39.8 (11.6)
<b>Site of Service</b>						
			Percent			
In-Center	*90.3	87.5	*97.1	88.5	77.4	76.4
Home	9.7	12.5	2.9	11.5	22.6	23.6
Freestanding	*97.3	79.4	*100.0	85.5	*0.0	44.7
Hospital-Based	2.7	20.6	0.0	14.5	100.0	55.3

\* Statistically significant at  $p < 0.01$ .

\*\* Statistically significant at  $p < 0.05$ .

NOTES: Numbers in parentheses are standard deviations. Total mean number of sessions per quarter is averaged over four quarters. For each quarter, only patients receiving dialysis throughout the quarter were included in the calculations. Site of service is based upon study month 4. In Georgia and Michigan, peritoneal, continuous ambulatory peritoneal dialysis (CAPD) and continuous cycling peritoneal dialysis (CCPD) sessions were defined as home dialysis, while hemodialysis was defined as in-center. Dialysis practice patterns among Medicare recipients were calculated only for persons who had at least 1 full year of Medicare entitlement prior to 1991. Thus, any patients for whom Medicare was a secondary payer were not included.

SOURCE: Health Care Financing Administration: Data from the Medicaid Tape-to-Tape project and the End Stage Renal Disease Program Management and Medical Information System, 1991.

their Medicare counterparts in in-center dialysis facilities, including both freestanding and hospital-based facilities. These findings should be viewed with caution, however, in light of the different methodologies used to ascertain dialysis service use for each population; namely, actual counts of dialysis sessions were used for the Medicare population, and imputed estimates based on reimbursed amounts were used for the Medicaid population. Finally, interstate differences in mean dialysis sessions were also evident, although these were not tested statistically.

With regard to site of service, a similar proportion of all patients in Michigan (approximately one-fourth) received home dialysis services, regardless of insurance status. In California and Georgia, however, Medicaid patients were significantly less likely than their Medicare counterparts to dialyze at

home. Specifically, 2.9 percent and 9.7 percent of all Medicaid chronic dialysis patients in Georgia and California, respectively, dialyzed at home compared with 11.5 percent and 12.5 percent of their Medicare ESRD counterparts. Examination of the type of dialysis facility used in each State revealed that nearly all Medicaid chronic dialysis patients in California and Georgia (97.3 percent and 100.0 percent, respectively) were treated in freestanding as opposed to hospital-based facilities. For the Medicare ESRD populations in these States, however, 20.6 percent and 14.5 percent of all patients, respectively, received dialysis services in hospital-based facilities. In sharp contrast to California and Georgia, in Michigan all Medicaid chronic dialysis patients and the majority of Medicare ESRD patients (55.3 percent) received dialysis services in hospital-based facilities.

## **Hospitalization and Mean Length of Stay**

Table 4 compares hospitalizations between California Medicaid and Medicare dialysis patients. Two-thirds of Medicaid chronic dialysis patients in California (67.0 percent) were hospitalized during 1991 compared with 60.1 percent of Medicare patients, reflecting the considerable morbidity associated with chronic kidney failure. A higher percentage of California Medicaid dialysis patients 20 to 64 years of age, males, females, African-Americans, and persons in the other race category were hospitalized compared with their Medicare-covered counterparts. Notably, within the Medicaid chronic dialysis population, African-Americans were significantly more likely than other demographic subgroups to be ever hospitalized.

To compare the frequency of being hospitalized between the California Medicaid and Medicare chronic dialysis populations, a mean rate per 100 patients per study month was calculated. The total rate of hospitalization, standardized by age and sex, and the rates for specific demographic subgroups were greater for the Medicaid chronic dialysis population compared with the Medicare population. Overall, the mean rate per 100 patients per study month for the Medicaid and the Medicare chronic dialysis populations was 19.5 versus 17.6, respectively. It is worth noting that the 17.6 hospitalizations per 100 person study months is nearly equivalent to the 2.2 hospitalizations per person per year reported by HCFA for this population (Health Care Financing Administration, 1994a). The differences in rates of hospitalization between the Medicaid and Medicare chronic dialysis populations were especially pronounced for persons 20 to 44 years of age (22.1 versus 17.8), males (20.7 versus 17.3), and African-Americans

(26.6 versus 18.6). Differences in rates of hospitalization based on insurance status were not significant for persons under 20 years of age, 65 years of age or over, females, whites, and persons in the other race category.

The third measure of inpatient resource utilization used in this study was the average length of stay for each hospitalization. Hospitalizations of Medicaid chronic dialysis patients overall and for those 20 to 64 years of age, males and females, and all racial categories were approximately 1 day shorter compared with similar cohorts of Medicare ESRD patients. Note that the higher rate of hospitalization found in the Medicaid chronic dialysis population is almost exactly offset by the lower length of stay. Total mean inpatient days per patient in 1991, calculated by multiplying the rate of hospitalization by the mean length of stay, were almost identical between the Medicaid and Medicare chronic dialysis populations (12.7 versus 13.0 days, respectively). In sum, the inpatient health resource utilization data presented in Table 4 indicate that in 1991 the California Medicaid chronic dialysis population—especially persons 20 to 44 years of age, males, and, most dramatically, African-Americans—was more likely to ever be hospitalized, was hospitalized more frequently, and had a shorter mean length of stay compared with the California Medicare ESRD population.

## **Health Resource Utilization and Payments**

Table 5 describes the health resource utilization and associated payments for Medicaid chronic dialysis patients residing in California, Georgia, and Michigan in 1991. Health care services are disaggregated into six categories: inpatient, outpatient, home health care, nursing home, hos-

**Table 4**  
**Comparison of Inpatient Health Resource Utilization Among California**  
**Medicaid and Medicare Chronic Dialysis Patients: 1991**

Characteristic	Number of Hospitalizations (Aggregate)		Ever Hospitalized (Percent)		Mean Rate/100 Patients (per Study Month)		Mean Length of Stay (Days)	
	Medicaid	Medicare	Medicaid	Medicare	Medicaid	Medicare	Medicaid	Medicare
<b>Total</b>								
Adjusted for Age and Sex	2,234	13,146	*67.0	60.1	*19.5	17.6	*6.5	7.4
<b>Age</b>								
Under 20 Years	64	150	63.4	50.0	16.6	15.0	6.4	7.0
20-44 Years	931	3,221	*67.6	58.6	*22.1	17.8	*6.1	7.1
45-64 Years	1,007	4,727	*68.0	61.0	*19.1	17.9	**6.7	7.5
65 Years or Over	232	5,048	61.4	60.5	16.1	17.2	6.9	7.4
<b>Sex</b>								
Male	1,004	6,185	*67.1	59.3	*20.7	17.3	**6.2	7.1
Female	1,230	6,961	*66.6	60.8	18.9	17.8	**6.7	7.5
<b>Race</b>								
White	420	8,066	65.8	62.0	21.4	18.3	*6.5	7.4
African-American	598	3,157	*73.4	63.2	*26.6	18.6	**6.5	7.2
Other	544	1,864	*63.7	50.4	17.1	14.4	*6.4	7.4

\* Statistically significant at  $p < 0.01$ .

\*\* Statistically significant at  $p < 0.05$ .

NOTES: Results for the unknown race category are not presented. Patients for whom Medicare was a secondary payer were not included. Inpatient health resource utilization measures were age- (by 5-year increments) and sex-adjusted using a regression analysis technique.

SOURCE: Health Care Financing Administration: Data from the Medicaid Tape-to-Tape project and the End Stage Renal Disease Program Management and Medical Information System, 1991.

pice, and outpatient pharmaceuticals. Outpatient medical services are further disaggregated into five components: dialysis, physician services, laboratory, rHuEPO, and outpatient hospital and other services. In all three States, nearly all Medicaid chronic dialysis patients received physician services, laboratory services, and pharmaceuticals in 1991. Use of rHuEPO (a relatively expensive drug used to treat anemia among ESRD patients) varied considerably among the three States; 80.6 percent, 17.3 percent, and 67.2 percent of all chronic dialysis patients in California, Georgia, and Michigan, respectively, received rHuEPO at some point in 1991. Another striking interstate variation in health resource utilization was the use of home health care services in Michigan compared with California and Georgia. Nearly one-half of all chronic dialysis patients in Michigan used home health care services, compared with 15 percent and 9 percent in Georgia and California, respectively.

The mean expenditure per recipient of service per study month, which represents reimbursed payments by Medicaid for persons receiving treatment, is related to various factors, including State-specific reimbursement rates and patient case mix. Overall, monthly per patient payments associated with outpatient services among Medicaid chronic dialysis patients were similar in all three States, ranging from \$2,550 to \$2,957 in 1991. The largest component of outpatient services, accounting for at least 50 percent of all payments in each State, was dialysis services. In California, Georgia, and Michigan, rHuEPO accounted for 9.1 percent, 1.8 percent, and 5.3 percent of all outpatient payments. Per recipient inpatient and pharmaceutical monthly payments were similar among the three Medicaid chronic dialysis populations, ranging from \$1,150 to \$1,490 for hospitalizations and \$76 to \$99 for outpatient pharmaceuticals. Other health care services, such as home health

**Table 5**  
**Health Resource Utilization and Payments by Type of Service for California, Georgia,**  
**and Michigan Medicaid Chronic Dialysis Patients: 1991**

Type of Service	California			Georgia			Michigan		
	Percent Received Service	Mean Payment/Recipient per Study Month	Total Cost	Percent Received Service	Mean Payment/Recipient per Study Month	Total Cost	Percent Received Service	Mean Payment/Recipient per Study Month	Total Cost
Total	—	\$3,745	\$46,368,655	—	\$3,242	\$4,788,059	—	\$3,468	\$4,959,526
Inpatient	66.7	\$1,388	\$10,075,167	64.0	\$1,150	\$1,039,206	62.0	\$1,490	\$1,231,640
Outpatient		\$2,957	\$34,395,574		\$2,550	\$3,537,783		\$2,606	\$3,280,631
Dialysis	100.0	\$1,604	\$19,859,328	100.0	\$1,431	\$2,113,639	100.0	\$1,648	\$2,356,807
Physician	97.6	\$410	\$4,735,347	94.2	\$248	\$323,072	98.5	\$271	\$380,660
Laboratory	98.9	\$133	\$1,596,034	98.6	\$151	\$216,491	99.3	\$84	\$118,896
Erythropoietin	80.6	\$311	\$3,127,089	17.3	\$225	\$63,669	67.2	\$174	\$174,236
Hospital and Other <sup>1</sup>	96.4	\$425	\$5,077,776	99.3	\$560	\$820,912	93.4	\$187	\$250,032
Home Health Care	8.9	\$70	\$65,916	15.1	\$169	\$40,286	46.7	<sup>2</sup> \$293	\$197,745
Nursing Home	5.6	\$1,025	\$678,366	2.2	\$201	\$6,941	0.0	\$0	\$0
Intermediate Care Facility	0.2	\$582	\$17,496	2.9	\$1,248	\$59,883	4.4	\$1,674	\$106,023
Pharmacy	97.7	\$95	\$1,136,136	94.2	\$76	\$103,960	98.5	\$99	\$143,487

<sup>1</sup>Other outpatient services for all States include transportation to and from dialysis, ambulance services, and other State-specific services.

<sup>2</sup>Two patients in Michigan used \$12,000 each of home health care services in 1991 resulting in a high mean payment/recipient per study month.

SOURCE: Health Care Financing Administration: Data from the Medicaid Tape-to-Tape project and the End Stage Renal Disease Program Management and Medical Information System, 1991.

care, nursing home care, and intermediate facility care, were used by a minority of patients and therefore per recipient reimbursements vary widely. Overall, our results indicate that the average payment per study month for all Medicaid-financed health care services used by Medicaid chronic dialysis patients in 1991 was \$3,242 for Georgia patients, \$3,468 for Michigan patients, and \$3,745 for California patients. In aggregate, the California Medicaid program spent \$46.4 million on 1,239 chronic dialysis patients who were ineligible for Medicare coverage in 1991. Michigan and Georgia spent \$4.9 million and \$4.8 million on 137 and 139 chronic dialysis patients, respectively.

### **Medicaid Versus Medicare Chronic Dialysis Patient Expenditures**

Medicaid and Medicare ESRD program expenditures for chronic dialysis patients in California, Georgia, and Michigan in 1991 are presented in Table 6. Since Medicare does not reimburse for pharmaceuticals, these expenditures were not included in the total costs for the Medicaid chronic dialysis populations to facilitate comparisons with the Medicare population. The total costs per patient in 1991 were remarkably similar in each State regardless of insurance status: California Medicaid and Medicare expenditures were \$36,507 and \$39,250, respectively; Georgia Medicaid and Medicare expenditures were \$33,698 and \$33,524, respectively; and Michigan Medicaid and Medicare expenditures were \$35,154 and \$34,364, respectively. The components of the total costs, disaggregated by type of service, differed significantly based on insurance status. Importantly, inpatient costs per patient accounted for approximately 40 percent of the total costs for the Medicare ESRD populations compared with 22 to 25 percent for

each of the three chronic dialysis Medicaid populations. Conversely, costs for outpatient services per patient accounted for 44 percent to 49 percent of the total costs among the State Medicaid programs compared with 37 percent to 40 percent for the Medicare ESRD populations. Physician/supplier per patient costs were higher among the Medicaid populations in California and Georgia compared with their Medicare counterparts while other costs (home health care, nursing home care, and intermediate facility care) were similar in each of these States.

The annualized total cost per patient, which adjusts for differences in the length of time a given patient was followed (i.e., patient's study period), is also reported in Table 6. The mean length of time in the study was very similar between the Medicaid and Medicare chronic dialysis populations in each State; the largest difference of 24 days was found in Michigan. When the direct medical costs were annualized, Medicare ESRD beneficiaries had somewhat higher annualized per capita expenditures compared with Medicaid chronic dialysis patients. In California, Medicare ESRD patients incurred annualized direct medical costs that were 10 percent greater than their Medicaid counterparts (\$49,401 versus \$44,269, respectively), whereas Medicare ESRD patients incurred costs that were approximately 5 percent greater than their Michigan (\$40,251 versus \$38,557, respectively) and Georgia (\$42,955 versus \$40,605, respectively) Medicaid counterparts.

### **LIMITATIONS**

Although this study has, for the first time, examined a population of chronic dialysis patients that is ineligible for Medicare benefits, there are several limitations that need to be addressed in

**Table 6**

**Health Care Expenditures for Chronic Dialysis Patients in the California, Georgia, and Michigan Medicaid Programs Compared With the Medicare End Stage Renal Disease Program: 1991**

	California		Georgia		Michigan	
	Medicaid	Medicare	Medicaid	Medicare	Medicaid	Medicare
<b>Expenditures (per Patient)</b>						
Inpatient	\$8,132	\$16,041	\$7,476	\$13,372	\$8,990	\$13,518
Outpatient	16,028	14,590	15,206	12,383	17,203	13,950
Physician/Supplier	11,733	8,161	10,246	7,362	6,743	6,419
Other	615	459	771	407	2,217	478
Total	36,507	39,250	33,698	33,524	35,154	34,364
<b>Mean Length of Time in Study (Days)</b>	301	290	319	304	316	292
<b>Annualized Mean Costs</b>	\$44,269	\$49,401	\$38,557	\$40,251	\$40,605	\$42,955

NOTES: "Other" category consists of home health care, skilled nursing home care and hospice care services. To permit comparisons with the Medicare end stage renal disease population, pharmaceutical expenditures for Medicaid patients were not included in calculating the total expenditures for each State. Any patients for whom Medicare was a secondary payer were not included.

SOURCE: Health Care Financing Administration: Data from the Medicaid Tape-to-Tape project, 1991; (Health Care Financing Administration, 1994a).

reviewing the results as well as in planning future research in this area. Limitations regarding the data and analytic methods used include:

- Lack of data to ascertain dialysis modality among the California Medicaid chronic dialysis population and dialysis site of service among the Georgia and Michigan chronic dialysis populations. California, for example, does not have codes distinguishing between different types of dialysis (e.g., hemodialysis, PD, CAPD, CCPD). Dialysis modality and site of service are of significant interest to policymakers and clinicians since they relate to quality of life, patient outcomes, and costs (Serkes et al., 1990; Wolfe et al., 1990; Burton and Walls, 1989; Simmons, Anderson, and Kamstra, 1984).
- The number of dialysis sessions is not directly observable for the Medicaid chronic dialysis populations and could only be estimated using the reimbursed Medicaid amount. The assumption underlying the calculation of dialysis sessions per quarter is that Medicaid reimburses based on the allowable charge as stipulated by each State's

reimbursement manuals. If Medicaid reimbursed at higher rates than the allowable charge, our methodology would overestimate the actual number of dialysis sessions received each month. Conversely, if Medicaid reimbursement rates were, in the real world, lower than the stated rates, our methodology would underestimate the actual number of dialysis sessions received each month. There is no reason, however, to believe that Medicaid is reimbursing at any rates other than the stated allowable rate. Additionally, in Georgia, it was also assumed that Medicaid chronic dialysis patients did not receive over 12 dialysis sessions per calendar month, as dictated by State-specific regulations.

- Lack of information regarding the characteristics of dialysis providers for Medicaid chronic dialysis patients. Identifying the characteristics of those providers that have a disproportionate number of Medicaid-only chronic dialysis patients would provide important public policy insights. Characteristics of interest that are not reported in the Medicaid data bases include type of ownership (e.g., profit status and chain



information), facility size, staff training and staff to patient ratios (Lowrie and Hampers, 1981; Held, Pauly, and Diamond, 1987).

- Lack of important clinical information for the Medicaid chronic dialysis populations; for example, underlying cause of ESRD, duration of ESRD, date of death and history of transplantation are difficult to ascertain using the TTT data bases. This information is critical in comparative patient outcomes studies that examine the Medicaid ESRD populations.
- The methodology used to identify the Medicaid chronic dialysis study population underestimates the actual number of patients. Specifically, the criterion that each patient must receive dialysis services in months 1 and 4 excludes anyone who was an incident chronic dialysis patient subsequent to September 30, 1991, or died prior to April 1, 1991. Not including these patients results in an underestimate of the total costs incurred by each State Medicaid program for the provision of services to Medicaid-only chronic dialysis patients.
- The expenditure data presented in this study are not adjusted for differences in age, race, or sex. As shown, the Medicaid chronic dialysis population in all three States is younger, more female, and more minority compared with the Medicare ESRD population.

Despite the caveats and limitations of this study, information regarding the demographics, health resource utilization, and costs for three Medicaid chronic dialysis populations has not been previously available. The similarities observed in many measures between the Medicaid and Medicare chronic dialysis populations in each State—notably, length of study period, mean number of dialysis sessions, in-center dialysis versus home site-of-service trends,

and overall per capita annual costs—provide confidence in the methods employed.

## DISCUSSION

This study is significant in reporting on the demographics, health resource utilization, and expenditures for individuals with irreversible kidney failure who—due to administrative qualifications defined under the Social Security Act and its amendments—are not eligible for Medicare coverage. A survey conducted by the Intergovernmental Health Policy Project (1989) for fiscal years 1983-87 showed that the State Medicaid programs themselves had very limited data on chronic dialysis patients and their expenditures. Of the 47 States surveyed, only 23 could provide expenditure data for these patients for fiscal year 1988. Although the reported expenditures were substantial, the States indicated that the methodology employed underestimated the real magnitude of the costs of providing health care services for non-Medicare ESRD patients.

In this article, we report that the California Medicaid program spent \$46 million in 1991 for 1,239 ineligible ESRD patients; this represents 0.6 percent of the total California Medicaid expenditures for that year (Health Care Financing Administration, 1994b). Furthermore, in contrast to a mean per capita 1991 expenditure of \$1,395 for each California Medicaid recipient, chronic dialysis patients averaged \$37,424 per capita. Although constituting proportionately a smaller share of the total Medicaid expenditures compared with California, expenditures for non-Medicare ESRD patients in Georgia and Michigan were nevertheless substantial, accounting for 0.3 percent and 0.2 percent of all expenditures, respectively, for fewer than 140 patients in each State. These Medicaid expenditures are the

“lower bound” of the total amount spent on ESRD since they exclude (1) patients dying, losing Medicaid coverage, or receiving a transplant during the first 3 months of 1991; (2) incident dialysis patients during the last 3 months of 1991; and (3) patients covered by Medicaid during the Medicare 3-month waiting period.

The majority of Medicaid-only chronic dialysis patients identified in this study are poor, minority, and female. Persons not eligible for Medicare include those who (1) have no work experience (e.g., non-working mothers and their children); (2) are employed in occupations not covered by Social Security (e.g., domestics, farm workers); (3) are employed in covered occupations but have not applied for Social Security; and (4) who are neither a spouse nor dependent child of an eligible person (Social Security Amendment, 1972). In California, Georgia, and Michigan, 82 percent, 79 percent, and 53 percent, respectively, of the Medicaid-only chronic dialysis population were found to be minority (assuming that the population with a missing race code in California is distributed in the same manner as the population with known race and ethnicity). These proportions exceed the percentage of minority populations found among the total Medicaid population for each State: 66 percent, 63 percent, and 43 percent in California, Georgia, and Michigan, respectively, in 1991 (Health Care Financing Administration, 1994b). Low-income minority populations are at especially high risk for illness and death associated with chronic health conditions (Kitagawa and Hauser, 1973; Haan, Kaplan, and Camacho, 1987). In particular, ESRD is more prevalent in the United States among African-Americans, Native Americans, and Hispanics than among whites (Health Care Financing Administration, 1993; U.S. Renal Data System, 1993; Institute of Medicine, 1991).

Results from this study confirm findings from other surveys that have addressed the extent of Medicaid coverage for ESRD services (Laudicina, 1990). The three States examined—California, Georgia, and Michigan—provide Medicaid coverage for nearly all of the 15 benefits associated with ESRD services.<sup>3</sup> Furthermore, the three study States reimburse for outpatient dialysis at rates of \$134 to \$138 per session, which is equivalent to Medicare’s maximum allowable composite rate of \$138 for these States (Health Care Financing Administration, 1994c). Future research on access to care, quality of care, and expenditures for the non-Medicare ESRD populations should focus on States with limited coverage for ESRD services. Three examples were cited in the IOM’s 1989 survey of coverage of ESRD services for those with Medicaid coverage only: Florida reimbursed only for dialysis services in hospital-based centers and maintained an annual cap of \$1,000 per ESRD patient; Louisiana reimbursed up to 72 percent of dialysis services in hospital-based centers only; and Texas did not reimburse for home and routine hemodialysis (Intergovernmental Health Policy Project, 1989).

In our study, despite *de jure* coverage for home dialysis services, only 2.9 percent of all Medicaid chronic dialysis patients in Georgia received such services in 1991. This stands in contrast to their Medicare counterparts, of whom 11.5 percent received home dialysis services. It must be noted that this comparison is based on a small Medicaid sample size and assumes that the correct code to indicate hemodialysis versus peritoneal, both of which have the same allowable charge, was used. Although the differ-

<sup>3</sup>These services include outpatient dialysis, in-center peritoneal dialysis, inpatient hemodialysis, kidney transplantation, blood transfusions, transportation, home dialysis, intermittent PD, CCPD, CAPD, dialysis equipment and support services, self-dialysis training, and paid aides to assist at home.

ence in home dialysis was not as dramatic, California Medicaid chronic dialysis patients were also significantly less likely to dialyze at home compared with their Medicare counterparts. No differences in use of home dialysis were observed in Michigan. Because home dialysis is a proxy for PD, our study suggests that Medicaid patients in Georgia and California are less likely to use this dialysis modality. It is not known whether the lower use of home dialysis reflects physician and patient choices or existing disincentives in these State Medicaid programs. The selection of dialysis site of service, especially if it is influenced by State Medicaid policies, is important since studies have shown that home dialysis is associated with increased patient quality of life (Evans et al., 1985; Simmons, Anderson, and Kamstra, 1984; Bremer et al., 1989).

A second important related finding is the lower number of dialysis sessions found among Medicaid chronic dialysis patients in all three States in 1991 compared with Medicare ESRD patients. If it can be confirmed that this finding is not a result of billing artifacts, the effect of restrictive State policies, such as capped reimbursement rates, as well as patient compliance on the use of dialysis services among the Medicaid population warrants additional research. A third issue related to dialysis practice patterns is the almost exclusive use among the chronic dialysis Medicaid population of either freestanding (in California and Georgia) or hospital-based (in Michigan) dialysis facilities. Regardless of insurance status, a disproportionate number of ESRD patients utilize freestanding facilities in California and Georgia and hospital-based facilities in Michigan, suggesting that State regulatory and licensing policies influence the number and type of facilities in each State. The near exclusive

use, however, of each type of facility by the Medicaid-only chronic dialysis population may be a result of geographic and financial barriers. For example, the Medicaid-only chronic dialysis population may reside in the same geographic area, namely in highly concentrated urban centers. They may, therefore, be clustered in the same facilities in these urban areas. Secondly, access to dialysis facilities may be affected by Medicaid reimbursement rates and other restrictive policies, for example, limitations in the number of reimbursed dialysis sessions per month. If these findings are representative of trends in dialysis practice patterns among the Medicaid-only chronic dialysis population, the impact on patient outcomes, quality of care, and costs should be examined.

Because Medicare coverage precludes reimbursement for outpatient pharmaceuticals (with a few exceptions), data on such expenditures among the Medicare ESRD population are unavailable. The analysis in this study of pharmaceutical expenditures among three Medicaid chronic dialysis populations fills an important gap in the research on health resource utilization among persons with kidney failure. Our findings indicate that approximately 3 percent of the total expenditures in 1991 for Medicaid-only chronic dialysis patients in each State were for pharmaceuticals. In per capita terms, approximately \$1,000 was spent on medications in 1991. Pharmaceutical costs among Medicaid chronic dialysis patients were more than 10 times greater compared with other Medicaid recipients; in 1991, mean per capita pharmaceutical expenditures for Michigan, Georgia, and California Medicaid recipients were \$75, \$74, and \$67, respectively (Health Care Financing Administration, 1994b). While it was outside of the purview of this study, State-specific restrictions regarding pharmaceutical

coverage, particularly in the treatment of ESRD, should be examined.

A crucial finding of this study is the higher rates of hospitalization in conjunction with shorter lengths of stay found among the California Medicaid chronic dialysis population compared with their Medicare ESRD counterparts. In particular, Medicaid patients 20-44 years of age, males, and, most dramatically, African-Americans, appear to be hospitalized at rates that are significantly higher than their Medicare ESRD counterparts. Mean length of stays, however, were shorter—1 day, on average. Although Medicaid chronic dialysis patients in California were hospitalized 12 percent more often than their Medicare counterparts, Medicaid inpatient expenditures were only one-half as great. These findings may be largely explained by examining California's Medicaid inpatient reimbursement policies (Tyler, 1995). Approximately 80 percent of all California hospitals have negotiated contracts with the Medicaid program to treat Medicaid patients on a per diem rate. Treatment authorization, usually by a Medicaid field nurse, is required prior to a hospital admission. Furthermore, during the hospital stay, field nurses follow up on Medicaid inpatients to confirm the medical reasons for continuing hospitalization. These incentives result in short lengths of stay and low reimbursement rates for California Medicaid patients. In Georgia and Michigan, Medicaid officials also negotiate with each hospital to determine the most cost-effective reimbursement rates.

In summary, Medicaid reimbursement policies designed to minimize expenditures for hospital services, such as negotiated reimbursement rates, prior authorization, and strict followup, have resulted in dramatically lower hospitalization expenditures for the Medicaid chronic dialysis population compared with the Medicare ESRD

population in each study State. Regardless of these financial incentives, our findings indicate that California Medicaid chronic dialysis patients are hospitalized more frequently than Medicare patients. Future research that adjusts for patient case mix including severity-of-illness and comorbid conditions is required to isolate the effect of insurance status on inpatient quality of care and health outcomes.

The Medicare ESRD program is the only extant disease entitlement in the United States. As such, it has been closely scrutinized both for its achievements and limitations since its enactment in 1972 (Institute of Medicine, 1991; Levinsky, 1993). In the most comprehensive evaluation of the program to date, the IOM concluded that there is "no justifiable basis for restricting Medicare eligibility other than citizenship or resident alien status. It [the IOM Committee] recommends that Congress modify the Medicare eligibility criteria for individuals with ESRD and extend the entitlement to all U.S. citizens and resident aliens" (Institute of Medicine, 1991). This study has shown that extension of the Medicare ESRD entitlement to the Medicaid-only chronic dialysis population, at least in three States, would have a minimal impact on the number of Medicare ESRD program eligibles. Extending eligibility would remove the disparate impact on States that current coverage policies have regarding the size of the Medicaid-only ESRD population and the corresponding financial burden. California, with less stringent Medicaid enrollment criteria and a huge immigrant population, for example, covers almost three times as many non-eligible chronic dialysis patients, proportionately, as Georgia or Michigan. It seems inequitable that California bears a disproportionately greater burden than other States for the care of chronic dialysis patients excluded from Medicare cover-

age. Management of ESRD patients also may be more clinically effective under the Medicare program compared with other payers of service because of Medicare's experience in setting prospective rates for ESRD services. Including Medicaid-only patients under the umbrella of the Medicare program could be a more efficient manner of distributing government outlays for the ESRD population.

The reasons stated notwithstanding, universal coverage of ESRD patients in the United States does not appear to be politically sustainable at this time. The inexorable rise in Medicare ESRD program expenditures since its enactment has been widely noted and with increasing concern (Levinsky, 1993). The expansion of this program to include the Medicaid-only chronic dialysis population in the foreseeable future seems highly unlikely. What is increasingly likely, however, is the adoption of block grants which would place a cap on Federal funding of Medicaid programs. States will be faced with difficult choices regarding who should be served in their Medicaid programs, which may result in the loss of eligibility for some chronic dialysis patients or a substantial reduction in the extent of coverage for ESRD services. With universal coverage

seemingly untenable and potential reductions in Medicaid coverage imminent, the future for the unentitled ESRD population—the majority of whom are covered by Medicaid—appears to be precarious.

In summary, this article reported on a population of patients in three States who require a continuous course of dialysis to remain alive and who are excluded from the "universal" coverage offered by Medicare for persons with ESRD. In California, chronic dialysis patients who are insured only by Medicaid comprised 8 percent of all such patients in that State; in Georgia and Michigan, Medicaid-only chronic dialysis patients comprised 3 percent of all ESRD patients. The Medicaid-only dialysis population represented 50 to 60 percent of the entire non-Medicare entitled dialysis population in all three States. This article reports significant differences in patient demographics, dialysis practice patterns, inpatient health resource utilization, and distribution of expenditures in each State between the Medicaid and Medicare chronic dialysis populations. Additional research focusing on quality of care and patient outcomes for persons not covered by the Medicare ESRD program will indicate if the justification for a near-universal coverage is warranted.

## TECHNICAL NOTE

### State-Specific Service Codes for Dialysis

#### *California (Service Code Group 910)*

State-Specific Service Code	Definition	Allowable Charge (1991)
08150	Single dialysis session, professional charges, and laboratory services	\$158
08151	Single dialysis session and professional charges	\$145

08152	Single dialysis session and laboratory services	\$138
08153	Single dialysis session	\$133
08154	Single dialysis home training session, professional charges, and laboratory services	\$176
08155	Single dialysis home training session and professional charges	\$165
08156	Single dialysis home training session and laboratory services	\$158
08157	Single dialysis home training session	\$153
08158	Exception - Single dialysis session, professional charges, and laboratory services	\$212
08159	Exception - Single dialysis session and professional charges	\$202
08160	Exception - Single dialysis session and laboratory services	\$154
08161	Exception - Single dialysis session	\$133
08165	Monthly home dialysis, support services, laboratory services, supplies, and injections	\$1,794
08168	Exception - Single dialysis home training session, professional charges, and laboratory services	\$176
08169	Exception - Single dialysis home training session and professional charges	\$165
08170	Exception - Single dialysis home training session and laboratory services	\$158
08171	Exception - Single dialysis home training session	\$153

### Georgia (Service Code Group 990)

State-Specific Service Code	Definition	Allowable Charge (1991)
821	Hemodialysis - Single session	\$138
831	Peritoneal dialysis - Single session	\$138

### Michigan (Service Code Group 910)

State-Specific Service Code	Definition	Allowable Charge (1991)		
		1/1-3/31	4/1-5/31	6/1-12/31
169272	Single hemodialysis session	\$134	\$107	\$134
169273	Peritoneal 0-19 hours session (up to 13 times per month)	\$199	\$122	\$166
169275	Peritoneal 30 or more hours per week (up to 5 times per month)	\$582	\$376	\$582
169481	CAPD, CCPD per week (up to 5 per month)	\$582	\$376	\$582
169482	Self-care dialysis training	\$155	\$124	\$155

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