

Managing High-Risk, High-Cost Patients: The Southern California Kaiser Permanente Experience in the Medicare ESRD Demonstration Project

By Peter Crooks, MD

In the recent book, *Epidemic of Care*,¹ Kaiser Permanente (KP) CEO George Halvorson and coauthor George Isham show how the use of health care resources is distributed among a health plan's members. They present an illustration (adapted here as Figure 1) from which can be estimated that in a given year,

- the least expensive 70% of patients account for 10% of the expenditures; and
- the most expensive 1% of patients account for 30% of expenditures.

Clearly, two different approaches are needed for managing the care of these two groups of patients.

For the 70% of patients in the least expensive group, the health care system must deliver rapid and convenient access to care whenever and wherever it is wanted. Convenient access to doctors and medical services is what this group wants, and the high satisfaction of these healthy patients is extremely important: Health plans must retain these members as well as their membership dues so that resources are available to pay for the care of less healthy patients.

For the 1% of patients in the most expensive category, the health care system must efficiently deliver the care that is predictably needed and must successfully coordinate care when the unpredictable occurs. This approach to care may be described as a *disease management* process, in which *case management* plays an important role. The impact of disease management on the health care system should be to use medical resources more efficiently and to eliminate expenses that do not produce positive clinical results.

For the KP medical care system to survive and succeed financially, we must optimally manage both ends of the patient health spectrum: We must preserve the inflow of dues income into the system by satisfying healthy patients and at the same time eliminate excess spending on high-cost, high-risk patients—spending that does not contribute to the desired clinical outcomes.

Patients with end-stage renal disease (ESRD) consti-

tute a major portion of the most expensive 1% of health plan patients. For these patients in the Kaiser Permanente Southern California Region (KPSC), outside medical costs alone (payments for dialysis treatments plus outside hospital days) averaged \$32,430 per patient in 2002. To this cost must be added the cost of a mean 9.0 KPSC hospital days, one or more vascular access surgeries, emergency department visits, multiple

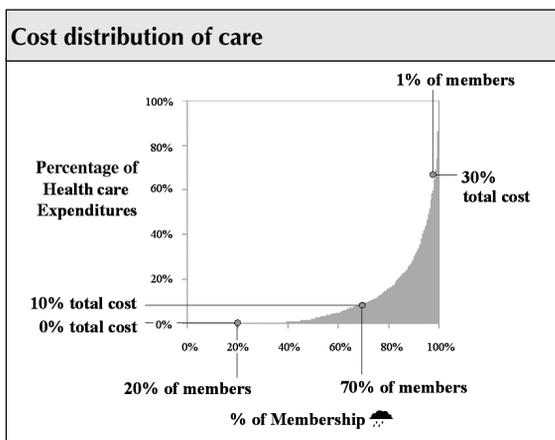


Figure 1. Typical pattern of health care expenditures among a health plan's membership.

Adapted and reproduced by permission of the publisher and author from: Halvorson GC, Isham GJ. *Epidemic of care: a call for safer, better, and more accountable health care*. San Francisco (CA): Jossey-Bass; 2003.^{1,p41} (This figure was based on data obtained from the Milliman 2001 Health Cost Guidelines-Claims Liability Distributions.)

clinic visits, and multiple medications. The mean annual Medicare cost per dialysis patient was \$57,973 in 2001.² Therefore, for about 3200 dialysis patients in KPSC at yearend 2003, the annual cost of care may be as high as \$185 million.

Since the early 1990s, KPSC has taken a proactive approach to managing high-risk, high-cost ESRD patients. Our success and confidence in our care model led to participation in a Medicare ESRD Demonstration Project,

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into which 1000 non-KP Medicare patients with ESRD were enrolled between 1998 and 2001. Our clinical and financial success in this Medicare project confirms the value of such proactive planning.

Evolution of ESRD Disease Management at KPSC, 1992-1997

The Southern California Permanente Medical Group (SCPMG) carries the full financial risk for outside ESRD patient expenses. The early 1990s brought the recognition that millions of dollars annually were being paid to non-KP community health care providers despite little evaluation of clinical outcomes. Senior SCPMG leadership decided to take more direct control of ESRD patient care and to measure the quality of care purchased. This decision led to an agreement (in 1992) between SCPMG leadership and nephrologists. In this ESRD business plan, SCPMG nephrologists agreed to internalize all ESRD patient care services except hemodialysis and kidney transplant surgery. Registered nurse ESRD case managers were

hired at each KP medical center in Southern California to work closely with the nephrologists, and the nephrologists agreed to relinquish their general internal medicine patients to focus more attention on managing the ESRD patient population. A regional office was opened to monitor expenses and to assist in processing outside claims. Outcome metrics were developed, and regional staff were put in place to support data collection and analysis. This model of care was highly successful and reduced outside medical expenses by millions of dollars per year.

The Medicare ESRD Demonstration Project (1997-2001)

A diagnosis of ESRD entitles Medicare-eligible patients to Medicare coverage, even for patients less than 65 years of age. Unlike other Medicare patients, however, ESRD patients are not allowed to participate in managed care health plans unless these patients were already enrolled at the onset of ESRD. In 1993, the US

Table 1. Key results from each site participating in the three-year ESRD managed care demonstration project

Outcome measure	Comparison group	Kaiser Permanente Southern California	p value	Health Options, Inc, Florida	p value
Medicare fee-for-service (FFS) enrollees		1056		967	
Adjusted death rates (Figure 2):		18%		23%	
• Standardized mortality ratio	DOPPS	18%/26% = 0.69	p = 0.001	23%/24% = 0.96	p = 0.945
Unadjusted hospital days per patient-year at risk:					
• Only first-year data reported	DOPPS	7.6 vs 9.6	ns	9.1 vs 10.1	ns
Hemodialysis adequacy:					
• Patients with KtV ≥ 1.2 at one year	Baseline	71.8% vs 86.2%	p < 0.01	81.4% vs 89.7%	p < 0.01
• Condition improved compared with general Southern California community	DOPPS	Yes	p < 0.01	No	ns
Hemodialysis arteriovenous fistula prevalence at one year ^a	Baseline	28.6% to 34.7%	ns	33.8% to 34.1%	ns
Kidney transplant access:	Baseline	Doubled at one year	p < 0.001	Nearly doubled at one year	p < 0.001
• Odds of remaining on waitlist after one year	UNOS	Matched California odds		Still below Florida odds ^c	
Quality of life ^b (SF-36™):	DOPPS	FFS enrollees: four measures improved (p < 0.01), four remained unchanged			
• Change at one year vs community		All measures declined			
Patient satisfaction ^b	Community controls	Overall ESRD patient satisfaction was high, primarily because of financial benefits and access to nutritional supplements.			
Annual costs for all medical care:					
• Medicare payment		• \$3K over predicted		• \$5.2K over predicted	
• Health plan profit or loss		• Income covered expense		• Income reported far short of expense	
• Contribution by patients or secondary payers		• Estimated \$9K annual savings		• Estimated \$9K annual savings	
• Estimated annual savings		\$6K per patient per year		Uncertain that savings resulted	

ns = not statistically significant.

UNOS = United Network for Organ Sharing.

DOPPS refers to a same-state representative sample of US in-center adult hemodialysis patients from the Dialysis Outcomes and Practice Patterns Study.

^a Creation of fistulas is considered a medically superior procedure and is preferred over placing arteriovenous grafts.

^b Data for the Kaiser Permanente Southern California site and for the Health Options, Inc site in Florida were combined.

^c HOI was unable to secure a transplant contract in the Miami area. Patients were referred to a Jacksonville (Florida) transplant center, more than 300 miles away.

Congress called for a demonstration project to compare clinical and financial outcomes observed among Medicare ESRD beneficiaries in managed care plans to those of patients receiving usual fee-for-service care. Medicare initially accepted four sites for the demonstration project. Before enrolling patients, one of the four sites—PacifiCare of Southern California—dropped out, citing financial concerns. Xanthus Health Care Corporation (in Nashville, Tennessee) terminated its participation early after enrolling about 50 patients. Two of the original four sites—KPSC and Health Options, Inc (HOI) (a subsidiary of Blue Cross/Blue Shield of Florida)—completed the three-year project. HOI used a network model in Florida and offered a capitated rate to contracted nephrologists who enrolled HOI patients. This model offered multidisciplinary case management, but the vertical integration present in the KP medical care system was not available. No Institutional Review Board (IRB) approval was sought for the project, because it was a federally funded public policy project which did not require IRB action during the review period.

Before opening enrollment at KPSC, a multidisciplinary workgroup carefully evaluated the anticipated needs of ESRD patients, and with the help of the KPSC Department of Operational Analysis developed a detailed staffing model driven both by tasks to be accomplished and by number of ESRD patients. The care coordination responsibilities for nurses were expanded to include managing vascular access and evaluating patients for kidney transplantation. At each KP medical center, we added renal social workers and renal dietitians and created a new role: the renal pharmacist. These renal teams were based at the medical centers and were usually located near the nephrologists' offices so that formal and informal interaction could occur on a daily basis.

In the 1990s, vascular access surgery was the leading cause of hospitalization for hemodialysis patients in the United States. SCPMG leadership recognized that success in the ESRD demonstration project would require cost-effective management of vascular access. Therefore, we initiated a regionwide Vascular Access Continuous Quality Improvement Project, which is still ongoing.

Results of the Medicare ESRD Demonstration Project

Independent evaluators (The Lewin Group^a and the University Renal Research and Education Association^b) were selected by Medicare to analyze the Medicare ESRD Demonstration Project and to prepare a report

for the US Congress.³ To compare fee-for-service enrollees with patients in the community who did not enroll in the project, the evaluators used same-state data from the Dialysis Outcomes and Practice Patterns Study (DOPPS), an ongoing, worldwide study of dialysis patient care.⁴ Table 1 summarizes some key results of the analysis.

As shown in Figure 2, the crude mortality rate at KPSC was 13% (representing 13 patient deaths per 100 patients per year) compared with 26% in the general Southern California community. However, enrollees were substantially younger and had fewer comorbid conditions than nonenrollees. Therefore, the evaluators statistically adjusted for age and comorbid conditions; this calculation resulted in an adjusted death rate of 18%, a rate 31% lower than in the general Southern California community ($p = 0.001$). Although the crude death rate was 17% for HOI enrollees versus 24% for Florida DOPPS, this difference was nullified by adjustment for age and comorbid conditions.

Both KPSC and HOI substantially increased the percentage of patients who achieved the recommended amount of dialysis (shown by a $Kt/V \geq 1.2$, $p < 0.01$). At KPSC, this improvement was significantly better than the improvement observed in the general Southern California community ($p < 0.01$). Patient satisfaction was high and was linked primarily to satisfaction with re-

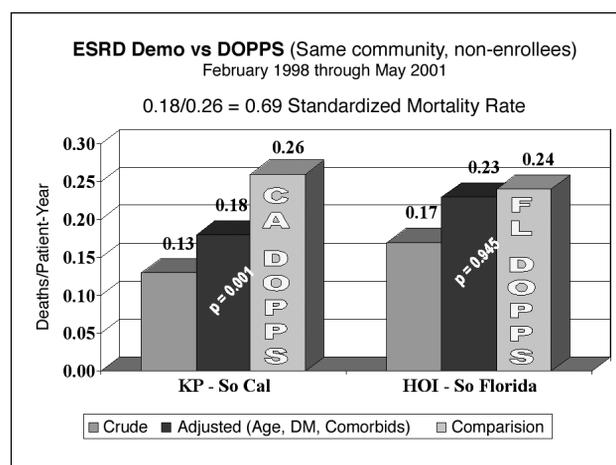


Figure 2. Crude and adjusted death rates observed from the ESRD Managed Care Demonstration Project.

Adapted and reproduced by permission from: Dykstra D, Shapiro JR, Oppenheimer CC, et al. Final report on the evaluation of CMS's ESRD Managed Care Demonstration: prepared for The Centers for Medicare and Medicaid Services: prepared by The Lewin Group, University Renal Research and Education Association [monograph on the Internet]. 2002 [cited 2005 Feb 8].³ Available from: www.cms.gov/researchers/reports/2002/dykstra.pdf.

duced out-of-pocket medical expenses and with receiving nutritional supplements free of charge.

All quality-of-life measures improved or remained unchanged for ESRD project enrollees between baseline and follow-up one to two years later. This result is particularly noteworthy because measured quality of life tends to decrease over time for most dialysis patients. For comparison, the evaluators reviewed a non-KPSC community sample over a one-year period and found that, indeed, all quality-of-life measures were declining.

During the first year of the project, ESRD patients at KPSC had fewer mean hospital days (7.6 hospital days per patient) than did ESRD patients in the general Southern California community (9.6 hospital days per patient), although the probability did not reach 95% statistical significance. As shown in Table 1, the per-patient annual cost of health care (Medicare contribution + health plan contribution + secondary payer or patient contribution) was \$6000 less at KPSC than was predicted for fee-for-service care.

Discussion

Optimal care for high-risk, high-cost patients cannot be achieved within the traditional office-based, acute care model, where nearly all interventions must be initiated by the physician. An ever-growing number of evidence-based and consensus-based guidelines are targeted to different groups of patients, and physicians cannot reasonably be expected to keep pace with and remember all the latest such guidelines. In addition, implementing an intervention should not depend on a patient having a doctor's appointment; for example, flu and pneumonia vaccinations save lives and save money, especially in the chronically ill—but we cannot rely on patients visiting their physicians at an appropriate time and on physicians remembering to order vaccine during busy clinics. The solution is to support physicians with a disease management system to ensure that all candidates for vaccination are educated about and offered the vaccination at the appropriate time.

High-risk, high-cost patients need more than the provision of *predictable*, guidelines-based interventions; for these patients, clinicians must manage *unpredictable* events. Chronically ill patients often have unplanned episodes of care; and if poorly managed, these episodes can result in poor medical outcomes as well as unnecessary medical expenditures. Moreover, these episodes cannot be managed optimally by physicians alone; care in these circumstances must be coordinated

to ensure that patients efficiently obtain the medical services needed to prevent deterioration and hospitalization. For example, during dialysis rounds, a nephrologist may advise a patient with chest pain to see the cardiologist. Without care coordination, the patient's angina is very likely to be addressed next in the emergency room. In contrast, a nurse care coordinator working with the nephrologist can make the appointment with the cardiologist, inform the family, and ensure that transportation is arranged. Another common situation requiring care coordination is vascular access failure in a hemodialysis patient. Vascular access failure is an urgent problem, but with proper care coordination, same day management can be arranged without hospital admission or loss of dialysis treatment time.

The functions performed by multidisciplinary team members directly improve clinical outcomes. In our model of care, the renal pharmacist periodically reviews the full medication regimen for each ESRD patient (usually more than ten medications per patient). This review provides an opportunity to detect duplicate prescriptions; to prevent prescription of nephrotoxic or otherwise inappropriate medication; and to adjust doses for patients with low kidney function. Patients and family members receive education, and medication issues are communicated to the nephrologist. Parallel reviews are performed by our renal dietitians and renal social workers, who then communicate their findings and recommendations to the patient, the family, and to clinicians. Renal nurse specialists not only provide care coordination and manage vascular access but also coordinate kidney transplant evaluation and referral.

Conclusion

In managing high-risk, high-cost patients, KP enjoys a tremendous advantage over most other systems of medical care in the United States. This advantage results directly from the financial structure of KP, in which the Permanente Medical Groups assume much of the financial risk and where delivery of services is highly integrated. This system creates a strong incentive for the Permanente Medical Groups to proactively plan for the management of high-risk, high-cost patients.

The benefits of proactive disease management at KPSC were clearly shown in the Medicare ESRD Demonstration Project: Mortality rates among ESRD patients were decreased, quality of life for these patients was improved, and medical costs were reduced. Empowered by Medical Group and Health Plan leadership, the

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SCPMG nephrologists and multidisciplinary renal teams were able to develop what is now recognized as a national model of ESRD disease management. The same proactive approach can—and should—be applied to other high-risk, high-cost KP members, such as patients requiring chemotherapy or the frail elderly approaching the end of life.

The value of this proactive, disease management approach for chronically ill patients has been increasingly recognized by Medicare and by non-KP health plans. During the past decade, an entirely new disease management industry—with its own trade associations and professional journals—has evolved. Non-KP health plans have been willing to invest considerable resources into disease management with the understanding that physicians cannot do everything by themselves, and that patient education and appropriate interventions should be supplied to all members diagnosed with a chronic medical condition.

Or, to put it another way, the health care industry has realized that some things are just too important to be left up to the doctor. ❖

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^b University Renal Research and Education Association, 315 W Huron, Suite 260, Ann Arbor, MI 48103.

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References

1. Halvorson GC, Isham GJ. Epidemic of care: a call for safer, better, and more accountable health care. San Francisco (CA): Jossey-Bass; 2003.
2. US Renal Data System. USRDS 2003 annual report: atlas of end-stage renal disease in the United States [monograph on the Internet]. Bethesda (MD): National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2003 [cited 2005 Feb 8]. Available from: www.usrds.org/atlas_2003.htm.
3. Dykstra D, Shapiro JR, Oppenheimer CC, et al. Final report on the evaluation of CMS's ESRD Managed Care Demonstration: prepared for The Centers for Medicare and Medicaid Services; prepared by The Lewin Group, University Renal Research and Education Association [monograph on the Internet]. 2002 [cited 2005 Feb 8]. Available from: www.cms.gov/researchers/reports/2002/dykstra.pdf.
4. DOPPS: The Dialysis Outcomes and Practice Patterns Study [homepage on the Internet]. [cited 2005 Feb 8]. Available from: www.dopps.org/dopps.php.



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