Medicaid Primary Care Services in New York State: Partial Capitation vs Full Capitation

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Background. Forty-nine states have applied to the Health Care Financing Administration for waivers to allow special program development for Medicaid recipients. In an effort to identify issues relevant to making the transition of its entire Medicaid population into a capitation model, New York State has encouraged the development of partial capitation and full capitation models. This paper is a critical description analysis of a 1-year experience, utilizing data provided by the New York State Department of Social Services.

Methods. Data collected by the New York State Department of Social Services were used to compare the costs for matched cohorts enrolled in partial capitation programs in which the primary care physician is paid a monthly fee to provide ambulatory primary care for Medicaid recipients; and full capitation programs in which a health maintenance organization (HMO) or a hospital-based prepaid health services program (PHSP) is paid a more encompassing monthly fee to provide a larger range of services, including inpatient, outpatient, and specialty care.

Results. Partial capitation programs were reported to save the state 38% compared with a matched control group enrolled in traditional, fee-for-service Medicaid ($P<.05$), and offered greater savings than HMOs and PHSPs (P=NS). The HMOs and PHSPs saved the state 9.3% and 16.8%, respectively, compared with traditional enrollment. Quality measures and patient satisfaction for partial and full capitation programs were equivalent.

Conclusions. These data suggest that New York State primary care physicians who participated in programs that reimburse a prepaid monthly fee for outpatient primary care services achieved savings comparable to those of HMOs. A partial capitation primary care model may offer an affordable and more flexible alternative to full-service HMOs in caring for Medicaid recipients, especially in communities with limited HMO penetration.

Key words. Medicaid; managed care; capitation; primary health care; insurance, health, reimbursement.
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Managed health care has been fervidly embraced as a way to integrate the financing and delivery of medical care through contractual agreements that combine physicians, hospitals, and insurance management into health care systems serving enrolled members at a lower cost. Managed care governs health care delivery by assigning primary care providers a broader gatekeeper role in patient management, with resulting decreased utilization of specialty resources.[1] Prepaid or capitated models of managed care provide an individual's health care for a predetermined monthly premium. In this rapidly changing environment, physicians and policymakers are attempting to make visionary judgments based on information available from Medicaid data sources that are essential but often incomplete.

On June 1, 1991, then Governor Mario Cuomo signed Chapter 165 of the New York State Laws of 1991 to increase the enrollment of Medicaid recipients into managed care programs.[2] Most states face the same issues that motivated the New York initiative: excessive Medi-

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caid cost increases, inappropriate patterns of use, limited access to continuity care, quality concerns, and declining physician participation.[3] New York's goals were to share financial risks with providers in exchange for improved reimbursement, to link Medicaid recipients with mainstream primary care providers under a managed care contract, and to change inappropriate utilization habits while providing a modest financial incentive to physicians willing to ensure continuous health care.[2]

Two models of capitation reimbursement were used. A partial capitation program, called Physician Case Management Program (PCMP), provided prepayment to primary care physician groups for outpatient primary care services. The other model, full capitation, provided prepayment to insurers for outpatient, inpatient, and specialty services. Full capitation insurers contract with providers, often through fee-for-service agreements, to provide primary and specialty care. This report discusses the use of data provided by the New York State Department of Social Services to explore each model's impact on costs, physician providers, Medicaid recipients, and government policy. The report further defines the pitfalls physicians and policymakers will encounter in interpreting statewide data.

A Brief History of Medicaid

The role of federal and state government in financing health care for the poor has expanded greatly since the 1965 introduction of Medicaid. Over the first decade, Medicaid availability was expanded to all recipients of Aid to Families with Dependent Children (AFDC) and to most poor elderly and disabled who receive Supplemental Security Income (SSI). In 1976, when 23 million recipients were covered and program costs rose to $14.1 billion,[4] most states imposed restrictions on benefits, abandoned inflation indexing, and reduced physician payments. While never effectively implemented, co-pay strategies were abandoned in 1980, having been successfully challenged in the *Crane vs Matthews* (42US CA1315) court case.[5] By 1985, in spite of paring the number of recipients to 21.7 million, costs had escalated to $37.5 billion. Extending coverage to low-income pregnant women and children increased enrollees to 24.2 million, raising costs to $55.5 billion by 1988. In response, many states imposed limits on hospital days and physician visits, yet 1994 costs rose to $140 billion for 28.3 million enrollees. New York's costs exceed $5577 per recipient per year, one of the highest in the United States.[6] In many states, traditional Medicaid reimbursed physicians very poorly, contributing to overutilization of hospital emergency rooms and inappropriate utilization patterns that increased Medicaid's costs more than either fraud or abuse.[7,8]

The Omnibus Budget Reconciliation Act of 1981[9] authorized the Health Care Financing Administration (HCFA) to grant waivers to states wishing to manage recipient access to health care. Arizona mandated managed care for all recipients in 1982. By 1994, 49 states anticipated implementing managed care programs.[10,11] While these programs focus on decreasing utilization by limiting emergency department visits, hospital admissions, and length of stay, they have yet to establish consistent cost savings.[1,12]

In 1987, New York State began to pilot PCMP, a partial capitation variation of primary care case management. Under PCMP, primary care physicians contract with county departments of social services to provide outpatient primary care services to a group of Medicaid clients recruited to the practice. A monthly capitation fee based on age and sex is paid to the provider who is "at risk" for office-based primary care services only. Inpatient services, specialty referral services, and emergency department services (if authorized by the primary care physician) are reimbursed under traditional Medicaid. Under PCMP, the per-member per-month fees are determined from the cost experience for primary care services, adjusted by regional cost differentials, and calculated to encourage participation by enhancing primary care reimbursement.

New York also encouraged Medicaid clients to enroll in established health maintenance organizations (HMOs) that operate Medicaid managed-care programs. These full-capitation models assume risk for a wide range of services including outpatient, inpatient, and specialty care. Most of these HMOs contract with community physicians to provide services that are reimbursed to the physician as fee-for-service. Besides HMOs, prepaid health service plans (PHSPs) were certified to provide fully capitated health care. Prepaid health service plans are hospital and physician organizations designed specifically to care for Medicaid recipients. Primary care providers affiliated with these programs were capitated by the insurer or paid a fee for service. The ceiling for full capitation rates was set at 95% of Medicaid fee-for-service cost experience.[2] To ensure participation, New York required HMOs that did not meet regional enrollment goals to pay a tax on hospital discharge payments.

All programs were required to collect and analyze encounter data, monitor utilization patterns, identify and correct quality problems, and conduct an annual patient survey. By April 1, 1995, 20% of all Medicaid recipients in New York State were enrolled in managed care programs. What follows is an analysis of New York State's 1992 cost experience with two models of managed care: partial cap-

itation for primary care only, and full-risk insurers licensed as HMOs or PHSPs.

Methods

To be included in this analysis, a plan must have been operational for all of 1992, must have covered more than 10,000 member months in 1992, and must have enrolled all eligible Medicaid age groups in the AFDC program. These selection criteria ensured reasonably mature programs and homogeneity of enrollee service need and avoided the inefficiencies of start-up programs. Of the 37 New York State Medicaid managed-care contracts operational in 1992, 11 met these criteria. Data were obtained from the Medicaid managed care annual report prepared by the New York State Department of Social Services (DSS) in September 1994.[13] The New York State DSS derived its cost data from the Medicaid management information system (MMIS) date of service files and checked the data against MMIS payment files for accuracy. Cost data included all expenditures for the recipients, including outpatient, laboratory, inpatient, specialty service, emergency department, covered medications, rehabilitation, and ancillary services for partial- to full-capitation programs. The mean cost per eligible month for the managed care enrollees was compared with the cost of a demographically similar (age, sex, region) control group under traditional fee-for-service Medicaid reimbursement. The control groups were selected by the New York State DSS based on matched actuarial class from the same region using the 1992 annual on-line recipient file. Because managed care enrollees tend to be healthier, the New York State DSS attempted to adjust for recipient selection bias by accounting for pre-enrollment health care utilization differences.

Student's *t* test was used to test for group differences in the mean cost per eligible enrollee per month for partial-capitation and full-capitation programs and to compare mean cost differences among PCMPs, HMOs, and PHSPs. The Discussion section below includes insights provided by two of the authors (T.C.R. and G.S.), who have served as participating physicians in both the PCMP model and HMO Medicaid programs.

Results

Eleven programs qualified for the analysis. Only two PCMP programs, both located in Erie County (Buffalo, NY), had over 10,000 covered member months each, enrolled all ages, and were in effect during all of 1992. PCMP II is an academic family practice group operating in community-based clinics under agreement with a county-owned hospital in Buffalo. PCMP III consists of multiple community-based physician groups in Erie County. Five HMOs met criteria for inclusion, with nearly all enrollees residing in metropolitan New York or surrounding areas. Four PHSPs were included. Table 1 displays the program enrollment for comparison among the three major capitation models. Total enrollment was over 700,000 covered months, representing 65% of all New York State Medicaid managed-care-covered months for 1992. Only 4.9% of the analysis group were enrolled in PCMP.

The state expenditures per member per month for all health services (outpatient, inpatient, and specialty care) were less for PCMP than for the full capitation models ($P<.10$). The partial capitation models resulted in a 38% expenditure reduction compared with expenditures experienced by the control group derived from fee-for-service enrollees in the traditional New York State Medicaid program ($P<.05$). The percentage saved was used for comparison because of variations in the expenditures for enrollees and specific control groups for the different plans. Savings were documented for the partial capitation programs over either the HMO model or the PHSP model ($P<.05$ and $P<.10$, respectively). Overall savings across all 1992 program types used for this analysis were 13.1% (Table 2).

While not included in our analysis, it is relevant to note that the state commissioned quality assurance reviews by the Island Peer Review Organization for the HMOs and PHSPs in 1992 using the Health Employer Data Information Set (HEDIS), with modifiers added for well-child care, immunizations, and prenatal services.[13] Enrollee satisfaction was assessed by a questionnaire administered to 8456 enrollees. Neither PCMP reported here underwent the 1992 review, but PCMP II was reviewed in 1991 by the Office of Audit Control of the New York State DSS under contract with HCFA using surveys of 53 clients and audits of 37 patient records. The overall satisfaction rate was 93% for PCMP and 90% for both HMOs and PHSPs.[13] The medical records compliance rate was 86% for PCMP and 73% for the HMOs and PHSPs vs 46% for the control group. While not directly comparable, these results suggest that quality and recipient satisfaction met external standards in both models.

Discussion

Health maintenance organizations and prepaid health services programs offer states all-inclusive packages that require little state administration because the organizations, rather than the state, conduct their own marketing,

Table 1. Cost of Capitated New York State Medicaid Managed Care Plans in 1992

Type of Plan	Member Months Covered, n	Cost PMPM Adjusted, $	Cost PMPM Control, $	Cost Difference, $
Partial capitation				
PCMPs				
Erie PCMP II	20,610	85.17	132.57	47.40
Erie PCMP III	14,827	97.40	178.34	80.94
Full capitation				
HMOs				
Metropolitan	46,520	227.91	237.04	9.13
HIP Corp	358,024	122.93	142.11	19.18
Mid Hudson-Ulster	16,966	88.72	69.15	19.57*
Wellcare/Orange	16,262	99.14	81.00	13.19*
Sanus/Suffolk	40,777	114.44	105.36	9.08*
PHSPs				
Bronx PHSP	131,871	127.91	149.67	21.76
Health care plan plus	12,697	85.92	80.58	5.36*
Westchester PHSP	24,101	100.94	119.58	18.64
Manhattan PHSP	43,619	167.14	221.11	53.97

**The plan cost more than the control group.*
PMPM denotes per-member per-month; PCMP, physician case management program; HMO, health maintenance organization; PHSP, prepaid health service plan; NYS, New York State.
NOTE: To be included in the analysis reported here, the plans must have been in effect during all of 1992, must have covered more than 10,000 member months in 1992, and must have enrolled all eligible Medicaid age groups in the Aid to Families with Dependent Children program. The control groups were developed by the New York State Department of Social Services based on matched actuarial class and program characteristics using the 1992 annual on-line recipient file. New York State adjusted the figures for the difference in population distribution between the managed care enrollees and their control groups and for a selection bias to account for pre-enrollment health care history differences.

enrollment, client education, credentialing, and utilization review. In the New York State PCMP model, the local county social service districts retain responsibility for variable portions of these activities requiring approximately one employee equivalent for every 1000 PCMP enrollees. This adds 3% to the cost of the PCMP programs but does not alter the comparison of savings between PCMP and control (t=3.38; P<.05), between PCMP and HMOs (t=2.56; P<.05), and between PCMPs and PHSPs (t=1.75; P<.10).

This study illustrates the hazards of interpreting statewide data, which are inevitably confounded by imperfect selection of control group, recipient selection bias, and regional differences. Inherently, control groups are part of the traditional group of recipients, a group already considered to be in a system that encourages overutilization. Managed care enrollees are somewhat more likely to be new entrants to Medicaid and, therefore, not habituated by the traditional system.[1] Patients who select capitation programs may prefer to use health services less often than traditional recipients. Sicker individuals or those who prefer to access care through emergency de-

Table 2. Aggregated Data Showing Overall Savings from All New York State Medicaid Managed Care Plans in 1992

Type of Plan	Member Months Covered, n	Cost PMPM Adjusted, $	Cost PMPM Control, $	Cost Difference, $	Percentage Saved
PCMP	35,437	94.04	151.79	57.75	38.0*
HMOs	478,549	130.19	143.50	13.31	9.3†
PHSPs	212,288	130.29	156.68	26.39	16.8‡
Total	726,274	128.45	147.74	19.29	13.1
All NYS 1992 capitated Medicaid managed care plans	1,111,618	116.88	126.70	11.82	9.3

**PCMP savings over control:* t=*3.38,* P=*.05.*
†Significance of PCMP savings vs HMOs: t=*2.56,* P=*.05.*
‡Significance of PCMP savings vs PHSPs: t=*1.75,* P=NS.
PMPM denotes per-member per-month; PCMP, physician case management program; HMO, health maintenance organization; PHSP, prepaid health service plan; NYS, New York State.
NOTE: To be included in the analysis reported here, the plans must have been in effect during all of 1992, must have covered more than 10,000 member months in 1992, and must have enrolled all eligible Medicaid age groups in the Aid to Families with Dependent Children program. The control groups were developed by the New York State Department of Social Services based on matched actuarial class and program characteristics using the 1992 annual on-line recipient file. New York State adjusted the figures for the difference in population distribution between the managed care enrollees and their control groups and for a selection bias to account for pre-enrollment health care history differences.

partments are not as likely to enroll in managed care plans, may be more likely to cancel enrollment, or may prefer the full capitation models. Previous studies have suggested that pregnant women have been underrepresented in capitation programs.[1] Some PCMP enrollees were patients in the primary care office before enrollment, and therefore can be assumed to have a preselected appreciation for the use of a primary care gatekeeper and after-hours access protocols. Regionally, upstate Medicaid recipients may not have the same access to health services as downstate recipients, or downstate recipients may see physicians who are traditionally higher utilizers of tests and procedures. Further confounders include change in the hospital used, change in physician group, and the different reporting formats required of HMOs, PHSPs, and PCMPs. Alhough New York has continually readjusted its methodology over the years, there is no way to be certain that the pre-enrollment expenditure history used to select the control group was adequately adjusted for these various confounders. Thus, it would be easy to overinterpret data presented here. It can be said, however, that compared with patients remaining in traditional fee-for-service control groups, patients enrolled in prepaid plans cost less to care for, and that by using control groups with similar demographics and historical use patterns, some types of programs may offer greater savings.

Physicians Under Medicaid Capitation Programs

As physicians become familiar with the safeguards and oversight required in managed care, they become more satisfied with managed care programs.[14,15] Capitating primary care providers separately from specialty care providers facilitates stratification of quality management, ie, generalists judge generalists and specialists judge specialists. Rather than high utilizers (specialists) judging low utilizers (generalists), as is prototypical of HMOs, low utilizers evaluate each other.[16,17] New York State PCMP generalists did not need prior approval for referrals or hospitalizations, and therefore were enfranchised to define appropriateness of care and to seek specialist reassurance based on their own skills and aptitude as judged by their peers.

In partial capitation the burden for quality assurance, 24-hour availability, continuity of care, medical record audits, use of standards, data recovery, and utilization review with corrective actions falls directly on the generalist physician groups. This added burden becomes one rationale for enhanced reimbursement for primary care services. While simply increasing New York's fee-for-service reimbursement has not effectively increased the number of physicians participating in traditional Medicaid, physicians who participate to a limited extent indicate that they would increase participation if better reimbursed in a system where they felt more empowered.[18,19] To date, general internists, general pediatricians, and family physicians have received a return on educational costs that is less than that of students entering medical specialties, business careers, law, or dentistry.[20] Capitation programs structurally improve the Medicaid system and enhance rates in accordance with the generalist's contribution to a population's health care.

The effect of limiting direct patient access to specialty physicians is subtly different in partial capitation as compared with full capitation. Under New York's partial capitation program, a physician is not penalized for making a referral. Under many full capitation programs, physician remuneration is subject to a "withhold" sum that is not returned if the expenditure for specialty services is too great. While erecting barriers to specialists results in fewer invasive procedures, these barriers have the potential to result in compromised functional outcomes or untimely implementation of treatment advances.[21] Another concern is guidelines that have been hastily adopted, resulting in increased morbidity (eg, ultrasound screening for ovarian cancer of asymptomatic women) and the suggestion that, compared with self-referrals, referrals directed by generalists improve outcomes for some specialty procedures.[22–27] The PCMP program, as constructed in New York State, erected few barriers to specialty referral yet still resulted in savings, suggesting that the philosophy of generalist care has as great an impact on expenditures as do financial barriers.

Medicaid Recipients and Capitation

The gatekeeper relationship in either capitation model addresses one source of primary care physician frustration: the freedom of the traditional Medicaid patient to enter and reenter the system through poorly planned emergency department visits, where workups are often repeated, medications are changed, and original treatment plans aborted.[28] The community care model also appears to be popular with Medicaid recipients who, when offered the opportunity, often switch from hospital clinics to office-based physicians.[29,30] Offices operating on appointment times with assigned patient-specific providers, however, may frustrate recipients who may have become accustomed to accessing the nearest available provider—often an emergency department—on a convenience basis. Care-seeking behavioral changes may be most problematic for mentally disabled clients and clients with limited transportation resources.[31] While partial capitation can increase the number and variety of access points for recipients, it places a burden of patient education and behavior

modification on the primary care office. Health maintenance organizations generally have an infrastructure in place that is prepared to teach the rules for accessing care to new enrollees. The high turnover rate of Medicaid eligibility (44% every 3 years) requires a continual reeducation effort.

Rural Communities and Populations with Little Managed Care Penetration

Developing managed care strategies in rural communities remains a challenge. While 46% of New Yorkers were enrolled in managed care plans in January 1995, 17 rural New York counties had less than 10% enrollment. This discrepancy is further complicated by a lack of large employers, nonuniform infrastructures, need for cooperative agreements with tertiary care centers, lack of provider consensus about where to refer, lack of critical population size for full capitation, and concern about surrendering local control. If one large health care insurer becomes dominant in a rural community, antitrust challenges can be successful, as in Wisconsin, where one insurer/provider was successfully litigated for recruiting the majority of providers within a previously underserved geographic area. In New York State, PCMPs have been established for populations as small as 1000, suggesting applicability in communities with little or no HMO penetration, few HMO participating providers, or low Medicaid density.[32] Referral arrangements in several surrounding urban areas are often essential for small communities equidistant from two or more referral centers and more easily maintained under these partial capitation arrangements.

The most urgent health system need for many rural communities is recruiting and retaining providers. If existing community providers challenge introduction of an urban-based full capitation plan, many communities may choose to delay implementation. A stepwise approach to capitation reimbursement initiated with a partial capitation program under local control has been perceived as less intrusive, more flexible, and more acceptable by several rural New York State counties (eg, Chautauqua and Orleans). Community-sensitive payment initiatives are more likely to capture local market share, strengthen infrastructure, and recruit providers.[33,34]

New York State is now planning a demonstration project that will place special care populations (eg, patients with acquired immune deficiency syndrome [AIDS] and mental illness, and those who abuse drugs and alcohol) in a PCMP as a strategy to achieve savings, mainstream medical care, and ensure the flexibility needed by these recipients and their families to access appropriate community-based services. Partial capitation facilitates enrollment of these special populations where necessary to carve out counseling or rehabilitation services that are intermittent, high intensity, and unpredictable. The varied risk profiles of these patients have made it difficult for commercial HMOs to establish a per-member per-month rate.

Policy Issues: The Future

The development of Medicaid managed care accentuates concerns about America's limited primary care capacity, the ability to implement accurate quality monitoring, and the need to educate recipients for a new health care relationship. Progress has been slowed by the inadequacy of information systems that track the utilization patterns of Medicaid recipients, which makes the selection of comparison groups very difficult and interferes with rigorous analysis of programs. New York State has refined its information process several times and produced data that are being used by policymakers and politicians to support the prevailing inclination to have managed care adopted by all populations. No single strategy yet developed, however, adequately provides for the multifaceted needs of chronically disabled recipients, copes with the instability of Medicaid eligibility, ensures a degree of recipient choice, or is proven applicable to underserved rural communities.

The data reported here suggest a contributory role for primary care partial capitation programs in the Medicaid managed care market. The New York State partial-capitation experience implies that primary care case management is the essential function of managed care and that savings and quality can be achieved by limited risk arrangements utilizing office-based generalist physicians. It is a strategy that could be employed by HMO intermediaries working with a panel of community physicians, but it may be particularly useful for local government-run programs such as Medicaid. The experience reported here suggests that partial capitation is cost-effective, and as such, may be useful as a transition strategy for communities with low HMO penetration or physician groups inexperienced with full capitation. A pluralistic approach to public policy is more likely to be perceived as being sensitive to recipient needs, provider capacity, and local health market characteristics. With appropriate implementation, partial capitation can be as competitive as full capitation and facilitate the evolution of health care systems.

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References

1. Hurley RE, Fennell ML. Managed-care systems as governance structures: a transaction-cost interpretation. In: Mick S, ed. Innovations in health care delivery. San Francisco, Calif: Jossey Bass, 1990.
2. New York State Managed Care Plan. Albany, NY: New York State Department of Social Services, October 1, 1991.
3. Hurley RE. Status of the Medicaid competition demonstrations. Health Care Finance Rev 1986; 8:65–75.
4. Eisenberg JM. A decade of physician payment reform. Acad Med 1995; 70:126–7.
5. Rasell ME. Cost sharing in health insurance, a reexamination. N Engl J Med 1995; 332:1164–8.
6. Iglehart JK. Health policy report: the American health care system, Medicaid. N Engl J Med 1993; 328:896–900.
7. Davis K, Rowland D. Financing health care for the poor. In: Eli Ginsberg, ed. Health services research: key to health policy. Cambridge, Mass: Harvard University Press, 1991.
8. Sullivan LW. Interim report to Congress: patterns of health care utilization in the nonelderly Medicaid population of selected states. Baltimore, Md: Health Care Financing Administration, 1992.
9. Omnibus Budget Reconciliation Act (OBRA), 1981. PL 93–35.
10. Fisher RS. Medicaid managed care: the next generation? Acad Med 1994; 69:317–22.
11. Shenkel RC. Medicaid miracle in the mountains. Fam Pract Manage 1994:45–8.
12. Buchanan IL, Leibowitz A, Keesey J, Mann J, Damberg C. Cost and use of capitated medical services: evaluation of the program for prepaid managed care. Santa Monica, Calif: Rand Corporation, 1992. (R-4225-HCFA).
13. New York State Department of Social Services. Medicaid managed care: annual report. Albany, NY: New York State Managed Care Program Advisory Council, September 1994.
14. Schulz R, Girard C, Scheckler WE. Physician satisfaction in a managed care environment. J Fam Pract 1992; 34:298–304.
15. Loeffler RT. Measuring quality of care in physicians' offices. J Ambulatory Care Manage 1992; 15:62–8.
16. Greenfield S, Nelson EC, Zubkoff M, et al. Variations in resource utilization among medical specialties and systems of care: results from the Medical Outcomes Study. JAMA 1992; 267:1624–30.
17. Starfield B, Powe NR, Weiner JR, Stuart M, Steinwachs D, Hudson Scholle S, Gerstenberger A. Costs vs quality in different types of primary care settings. JAMA 1994; 272:1903–8.
18. Fanning T, de Alteriis M. The limits of marginal economic incentives in the Medicaid program: concerns and cautions. J Health Polit Policy Law 1993; 18:27–42.
19. Perloff JD, Kletke P, Fossett JW. Which physicians limit their Medicaid and why. Health Serv Res 1995; 30:7–26.
20. Weeks WB, Wallace AE, Wallace MM, Welch HG. A comparison of the educational costs and incomes of physicians and other professionals. N Engl J Med 1994; 330:1280–6.
21. Mark DB, Naylor CD, Hlatky MA, et al. Use of medical resources and quality of life after myocardial infarction in Canada and the United States. N Engl J Med 1994; 331:1130–5.
22. Ayanian JZ, Hauptman PJ, Guadagnoli E, Antman EM, Pashos CL, McNeil BJ. Knowledge and practices of generalist and specialist physicians regarding drug therapy for acute myocardial infarction. N Engl J Med 1994; 331:1136–42.
23. Franks P, Clancy CM, Nutting PA. Gatekeeping revisited—protecting patients from overtreatment. N Engl J Med 1992; 327:424–9.
24. Roos NP. Who should do the surgery? Tonsillectomy-adenoidectomy in one Canadian province. Inquiry 1979; 16:73–83.
25. Singh BM, Holland MR, Thorn PA. Metabolic control of diabetes in general practice clinics: comparison with a hospital clinic. BMJ 1984; 289:726–8.
26. Shortell SM, Vahovich SG. Patient referral differences among specialties. Health Serv Res 1975; Summer:146–61.
27. Rosenthal TC, Riemenschneider TA, Feather J. The changing generalist/specialist interaction under managed care. Am J Med 1996; 100.
28. Freund DA, Hurley RE. Managed care in Medicaid: selected issues in program origins, design, and research. Annu Rev Public Health 1987; 8:137–53.
29. Temdin-Greener H, Winchell M. Medicaid beneficiaries under managed care: provider choice and satisfaction. Health Serv Res 1991; 26:509–29.
30. Blumenthal D, Mort E, Edwards J. The efficacy of primary care for vulnerable population groups. Health Serv Res 1995; 30:253–73.
31. Ware JE, Prook RH, Rogers WH, et al. Comparison of health outcomes of a health maintenance organization with those of fee-for-service care. Lancet 1986; 1:1017–22.
32. Horwitz ME, Wysong JA, James PA, Rosenthal TC. Health care reform for rural Medicaid: finding solutions with limited resources. Working paper No. 4. Buffalo, NY: New York Rural Health Research Center, July 1994.
33. Christianson JB. Alternative delivery systems in rural areas in a rural health services agenda. Health Serv Res 1989; 23:853.
34. Shouldice RG. Introduction to managed care. Arlington, Va: Information Resources Press, 1991.