

## Variations in Primary Medical Care: Influence of Health Plans and Practice Organizations

Eugene C. Rich, MD

Problematic variations in US medical practice have been repeatedly documented over the past 25 years.<sup>1</sup> These variations have been attributed to a variety of factors, including physician characteristics and practice environment.<sup>2,3</sup> In recent years, the organization and financing of medical practice have been changing dramatically. Managed care organizations have introduced a variety of interventions, both financial and administrative, in hopes of influencing primary care physician practice.<sup>4,5</sup> At the same time, the organization of medical practice has been changing in size and composition, with increasing numbers of physicians joining group practices.<sup>6</sup> These changes in the financing and the organization of medical practice create the potential for powerful new environmental influences on the treatment of common problems by primary care physicians.

The study by Meyer et al<sup>7</sup> uses a cross-sectional survey research design to describe primary care physicians' self-reported management of common problems. Investigators relate variations in the standardized cost calculated from these self-reported treatment plans to physician practice characteristics and to health plan, financial, and administrative interventions. One of the strengths of this study is the fact that it draws on a national sample of more than 1700 primary care physicians who are participants in 53 managed care organizations. Although the response rate was only 37%, the authors are able to demonstrate that the respondents were similar to nonrespondents on many characteristics available through the American Medical Association (AMA)

Master File. Another strength of this study derives from the fact that the survey was conducted relatively recently, with the sample drawn from the 1997 AMA physician database.

Of course, one potential limitation to this study is the observation of primary care practice through case scenarios. A variety of studies have demonstrated that case scenarios of physician practice are an imperfect reflection of actual care, often reflecting more the aspired practice than the care routinely delivered.<sup>8,9</sup> Nonetheless, studies have also demonstrated that differences in practice setting or physician characteristics can be meaningfully related to variations in management of case scenarios.<sup>10,11</sup> Thus, the case scenario methodology of Meyer et al<sup>7</sup> is an appropriate technique to efficiently observe practice variations by a number of primary care physicians in various markets and settings.

Since the outcome under investigation is standardized cost, the method of calculating these costs is also important to determining the validity of the findings. The authors explain that costs of tests and consultations were standardized through assigning each service a Current Procedural Terminology (CPT) code, which was then priced using the Medicare resource-based relative value scale and the 1997 Medicare Fee Schedule for a representative metropolitan area (Baltimore). The authors acknowledge that this technique may underestimate the cost of referrals to specialists, because the cost of specialty care included only the standard cost of an initial visit to the consultant (excluding any additional tests or therapies that might have been provided by the specialist). The cost of prescription drugs may be somewhat overestimated. If the physician wrote for a brand-name product, the cost was calculated for the branded product rather than for an available generic equivalent. Furthermore, if a drug category was ordered without the specific product name, then the calculation was based on the cost of the drug with the leading market share (which, of

---

From the Center for Practice Improvement and Outcomes Research, Creighton University, Omaha, NE.

Address correspondence to: Eugene C. Rich, MD, Director, Center for Practice Improvement and Outcomes Research, Creighton University, 601 N. 30th St, Suite 5850, Omaha, NE 68131. E-mail: richcec@creighton.edu.

course, might not be the least expensive drug in the category). These limitations are modest, however, and unlikely to confound the findings reported by the authors.

Among these findings is that primary care physicians in multispecialty groups ordered less expensive treatment than did the physicians in solo or single-specialty group practice. On bivariate comparison, this finding was significant for all conditions except fatigue; the association remained significant for the multivariate analysis of depression and of low back pain (controlling for physician age, gender, and specialty, for percentage of patients in managed care, and for various administrative and financial interventions by health plans).

This finding adds to the growing evidence regarding the influence of group practice organization on physician decisions. Because multispecialty group practices that include primary care physicians tend to be larger than single-specialty primary care practices, this finding could relate as much to the influence of size of practice as to presence of multiple specialties. Older literature investigating the influence of practice size on cost has suggested that any economies of scale are quickly achieved and that larger group practices may be more costly than moderately sized groups.<sup>12</sup> Nonetheless, more recent studies suggest that larger group practices deliver care for lower cost per member per year than smaller practice organizations.<sup>13</sup> The continuing consolidation of physician practices within larger organizations may be motivated in part by efforts to improve efficiency.<sup>14</sup> In addition to the larger size typically observed in multispecialty group practices, the presence of specialists in the practice may have an influence on cost. Recent studies suggest that primary care physicians may have a less expensive style of practice than specialist physicians when caring for common problems.<sup>15</sup> Indeed group practices with higher proportions of primary care physicians have been associated with lower cost per member per year.<sup>13</sup> These findings, however, do not directly address whether collaborative practice between primary care physicians and specialists is associated with lower cost. One recent study has found that primary care clinics where primary care physicians practice with specialists have lower costs per patient per year than primary care clinics without specialists on site, when controlling for numbers of physicians at the site and other clinic and patient characteristics.<sup>16</sup>

Meyer et al<sup>7</sup> also investigated whether managed care administrative interventions have a significant

association with cost of primary care. Physicians who reported health plan preauthorization requirements for expensive tests, hospital admissions, and surgery provided more costly care on the case scenarios. In the multivariate analysis, this finding was statistically significant for the case scenarios of anxiety, impaired memory, depression, and fatigue. This finding of preauthorization associated with higher cost is certainly interesting and contradicts common wisdom in many managed care organizations and some limited previous research.<sup>17</sup> This finding should be interpreted with caution, however, because it could arise as a result of regional or local differences in health plan response to variations in primary care physician practice. For example, a managed care organization might be more likely to institute preauthorization requirements in communities or regions where physicians have higher rates of ordering expensive technologies such as magnetic resonance imaging. These health plan interventions are often market-specific, so that controlling for the major geographic region of the United States (as the authors had available in their study) might not solve this problem. Thus, this finding might be confounded by health plan response to local resource utilization, and might represent an example of the difficulties inherent to demonstrating causality in a cross-sectional analysis such as that by Meyer et al.

The study presents intriguing findings on the association of primary care physician compensation with cost of care. In 5 of the 6 case scenarios, primary care physicians who reported health plan compensation by salary ordered lower cost treatment than did physicians reporting health plan compensation by capitation or by fee for service. This finding was statistically significant on bivariate analysis for the depression, impaired memory, low back pain, and hypercholesterolemia case scenarios. On multivariate analysis, this finding remained significant for the problems of depression and hypercholesterolemia. Meyer et al also evaluated the association of withholds or bonuses superimposed on the salary, capitation, or fee-for-service payment strategies. While only 17% of the responding physicians were paid a salary by their dominant health plan, 50% of these reported a withhold or bonus component to this compensation. Forty-three percent of the responding physicians reported capitation as the predominant reimbursement method of the health plan for their patients; 68% of these physicians noted withhold or bonus incentives as a feature of their capitated payment. Forty percent of the physicians reported fee for service to be the reim-

bursement method of their dominant health plan; 60% of these physicians also had withhold or bonus incentives. On bivariate analysis, the authors found that compensation incentives with withholds and bonuses were associated with higher costs for the case scenarios of depression and impaired memory. In multivariate analysis, however, these higher costs disappeared; indeed, in the multivariate model, the use of withholds or bonuses was associated with significantly lower cost in the management of depression.

These findings may demonstrate the complicated interplay between the changing financial incentives presented to physicians by managed care organizations and the evolving physician compensation plans implemented by medical group practices. Previous research has indicated that physicians who receive incentives through fee for service may have higher costs related to tests,<sup>18</sup> consultations,<sup>19</sup> elective procedures,<sup>20</sup> and hospitalizations.<sup>15,21</sup> Physicians in prepaid group practice are less likely to refer for invasive procedures<sup>11</sup> and patients in prepaid group practice have fewer overall hospitalizations<sup>22</sup> and see specialists less often.<sup>23</sup> Not surprisingly, health plans have developed various payment methods to direct some financial risk for utilization to physicians in their group practices.<sup>5</sup> Because individual primary care physicians in medical group practices may be insulated from the incentives of health maintenance organization (HMO) contracts,<sup>24</sup> the compensation plans established within medical group practices may also be important and are increasingly diverse.<sup>25</sup> Not surprisingly, group practices with a greater proportion of their income from fee-for-service contracts are significantly more likely to present their primary care physicians with incentives for fee-for-service productivity and less likely to compensate physicians through a substantial salary.<sup>26</sup> Some investigators have found little systematic influence on cost of care of these group practice physician incentive plans.<sup>27</sup> Other recent research suggests that group practices that provide incentives to primary care physicians based on the financial performance of the medical group (eg, for the net revenue of the group) provide care at lower cost per member per year.<sup>16</sup>

Accordingly, particular care needs to be taken in considering the results of this current study of physician reimbursement. As the authors acknowledge, the survey collected information on how the physician's practices are compensated by health plans (in contrast to how the physicians themselves are compensated by the group practice). The physicians reimbursed by salary would likely be

working part-time or full-time for the health plan (ie, members of a staff-model HMO or prepaid group practice). Thus, the physicians reporting remuneration by salary are likely to be in very different practice arrangements from those reporting other reimbursement methods. The full extent of these differences in group practice arrangement is not likely to be measured by the additional group practice variables obtained through this survey (solo vs single-specialty group vs multispecialty group). Furthermore, the salaried physician responses to questions on withholds and bonuses are likely to refer to the incentive plan within their own group practice; other physicians are likely describing the payment methods of their health plans (in contrast to their own medical practice). Finally, primary care physicians vary substantially in their understanding of the details of their contracts with health plans. While physician perceptions of the incentives presented by health plans (however erroneous) would plausibly influence their self-reported care in case scenarios, the aggregate, actual incentives implemented by the various health plans would likely have an equal or greater effect on group practice style and individual physician decisions.

Nonetheless, the work by Meyer et al is a helpful addition to our understanding of the rapidly changing environment of medical practice. As managed care arrangements with physician groups continue to evolve, and as medical practice organizations continue to grow and adapt in response, the administrative and financial environment of primary care practitioners will change, with inevitable effects on the process and outcome of medical care. Disentangling the separate influences of managed care arrangements and group practice setting will remain difficult work in this changing environment. It is critically important work for health plan administrators and group practice physicians, however, who are trying to identify those interventions that are beneficial and those that are problematic for effective, efficient primary medical care.

... REFERENCES ...

1. Wennberg J, Gittelsohn A. Small area variations in health care delivery. *Science* 1973;182:1102-1108.
2. Wennberg JE, Barnes BA, Zubkoff M. Professional uncertainty and the problem of supplier-induced demand. *Soc Sci Med* 1982;16:811-824.
3. Weiner JP, Starfield BH, Powe NR, Stuart ME, Steinwachs DM. Ambulatory care practice variation within a medicaid program. *Health Serv Res* 1996;30:751-770.

4. Grumbach K, Bodenheimer T. Mechanisms for controlling costs. *JAMA* 1995;273:1223-1230.
5. Gold MR, Hurley R, Lake T, Ensor T, Berenson R. A national survey of the arrangements managed-care plans make with physicians. *N Engl J Med* 1995;333:1678-1683.
6. Kletke PR, Emmons DW, Gillis KD. Current trends in physicians' practice arrangements: From owners to employees. *JAMA* 1996;276:555-560.
7. Meyer CM, Ladenson PW, Scharfstein JA, Danese MD, Powe NR. Evaluation of common problems in primary care: Effects of physician, practice, and financial characteristics. *Am J Manag Care* 2000;6:457-469.
8. Langley GR, Tritchler DL, Llewellyn-Thomas HA, Till JE. Use of written cases to study factors associated with regional variations in referral rates. *J Clin Epidemiol* 1991;44:391-402.
9. Woo B, Woo B, Cook EF, Weisberg M, Goldman L. Screening procedures in the asymptomatic adult. Comparison of physicians' recommendations, patients' desires, published guidelines, and actual practice. *JAMA* 1985;254:1480-1484.
10. Wennberg DE, Dickens JD, Biener L, Fowler FJ, Soule DN, Keller RB. The inclination to test and its association with coronary angiography rates. *J Gen Intern Med* 1997;12:172-176.
11. Hlatky MA, Lee KL, Botvinick EH, Brundage BH. Diagnostic test use in different practice settings: A controlled comparison. *Arch Intern Med* 1993;143:1886-1889.
12. Barr DA. The effects of organizational structure on primary care outcomes under managed care. *Ann Intern Med* 1995;122:353-359.
13. Rich EC, Kralewski J, Feldman R, Dowd B, Bernhardt T. Variations in the management of primary care: Effect on cost in an HMO network. *Arch Intern Med* 1998;158:2363-2371.
14. Conrad DA, Shortell SM. Integrated health systems: Promise and performance. *Front Health Serv Manage* 1996;13:3-40, (discussion) 57-58.
15. Greenfield S, Nelson EC, Zubkoff M, et al. Variations in resource utilization among medical specialties and systems of care: Result from the Medical Outcomes Study. *JAMA* 1992;267:1624-1630.
16. Kralewski JE, Rich EC, Feldman R, et al. The effects of medical group practice and physician payment methods on costs of care. *Health Serv Res*. In press.
17. Rosenberg SN, Allen DR, Handte JS, et al. Effect of utilization review in a fee-for-service health insurance plan. *N Engl J Med* 1995;333:1326-1330.
18. Epstein AM, Begg CB, McNeil BJ. The use of ambulatory testing in prepaid and fee-for-service group practices. Relation to perceived profitability. *N Engl J Med* 1986;314:1089-1094.
19. Clement DG, Retchin SM, Brown RS, et al. Access and outcomes of elderly patients enrolled in managed care. *JAMA* 1994;271:1487-1492.
20. Goldzweig CL, Mittman BS, Carter GM, et al. Variations in cataract extraction rates in Medicare prepaid fee-for-service settings. *JAMA* 1997;277:1765-1768.
21. Miller RH, Luft HS. Managed care plan performance since 1980. *JAMA* 1994;271:1512-1518.
22. Manning WG, Leibowitz A, Goldberg GA, et al. A controlled trial of the effect of a prepaid group practice on use of services. *N Engl J Med* 1984;310:1505-1510.
23. Cooper RF, Nichols LM, Taylor AK. Patient choice of physician: Do health insurance and physician characteristics matter? *Inquiry* 1996;33:237-246.
24. Hillman AL, Welch P, Pauly MV. Contractual arrangements between HMOs and primary care physicians: Three-tiered HMOs and risk pools. *Med Care* 1992;30:136-148.
25. Levine JK. Compensation models and issues for a multi-specialty group practice. *J Ambulatory Care Manage* 1996;19(3):50-59.
26. Pedersen CA, Rich EC. Primary care physician incentives in medical group practices. *Arch Fam Med*. In press.
27. Conrad DA, Maynard C, Cheadle A, et al. Primary care physician compensation method in medical groups. Does it influence the use and cost of health services for enrollees in managed care organizations? *JAMA* 1998;279:853-858.