
Physician Fee Levels: Medicare Versus Canada

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Adjusted for differences in purchasing power and practice expenses, Canadian physician fees are, on average, 59 percent of Medicare fees. The general perception that Medicare fees are low is the result of comparison with U.S. private fees, not to the much lower Canadian fees. In the context of the current U.S. health care system, lowering Medicare fees to Canadian levels could jeopardize access to care by Medicare beneficiaries. However, if all payers used the same fee schedule, fees that differed substantially from those currently used by private insurers might be viable.

INTRODUCTION

The new Medicare fee schedule, a major reform of physician payment in the United States, has accomplished two goals. First, by incorporating a resource-based relative value scale (RBRVS), it partially corrects historical inequities in payment for procedure and cognitive services. Second, by reducing these inequities, it focuses debates over Medicare fees on the overall generosity of payments, both now and in the future. Although the relative values may be revised and the extent of geographic equity is sometimes questioned, it is the overall

fee levels and how they are adjusted over time that is likely to be the single most important issue faced under the Medicare fee schedule.

Thus far, assessment of the appropriateness of Medicare payment rates has been confined to comparisons with rates paid by private insurers in the United States (Physician Payment Review Commission, 1992c). Because private rates are higher, the comparison raises concerns that the elderly's access to care could be impaired if physicians prefer to treat patients covered by private insurance rather than Medicare enrollees. The experience of the Medicaid program, whose rates are substantially lower than private insurance rates, is an example of how low physician fees can restrict access to care within the U.S. health care system (Holahan, Wade, and Gates, 1992). Of course, given Medicare's larger share of physician revenues, physicians might respond differently to low Medicare fees than they do to low Medicaid fees.

Fees under private insurance are not the only reasonable source of comparison. Physician fees in other countries may be just as appropriate a "benchmark." Canada is an obvious source for comparison for several reasons beyond its geographic proximity to the United States. First, physicians in both countries are generally paid on a fee-for-service basis. Second, although the negotiations between the provincial medical associations and the governments are not directly analogous to Medicare, they result

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in fee schedules that are generally similar to Medicare's structure. Third, the Canadian health care system has been suggested by some as a solution to the problems of the U.S. system. Finally, Canadian fees are established in a single-payer context and, as such, provide a useful contrast to Medicare, which is forced to operate in a market with private insurers. In this sense, Canadian fees suggest what U.S. fees might be under a system in which all payers adhered to the same rate schedule.

In spite of these reasons, few Canadian-U.S. comparisons of physician fees have been made. The present study fills a void by comparing the physician fees paid by Medicare to those paid by Canadian provinces. In addition to comparing physician fees in the aggregate, we compare fees by type of service.

One of the few contributions in this area is by Fuchs and Hahn (1990), who compared fee levels in the two countries. Beyond the Medicare focus, the methods employed in this study extend the work by Fuchs and Hahn in two respects. First, we use fees from the four largest Canadian provinces, whereas Fuchs and Hahn used fees from a single small province (Manitoba) adjusted to represent all of Canada. Second, our U.S. fees are consistently derived from a single source, the Medicare fee schedule. Fuchs and Hahn combined data from Health Insurance Association of America and Blue Shield plans in Iowa and California and treated this as representative of the country as a whole. In light of the weakness of their underlying fee data, and given the introduction of the Medicare fee schedule, the issue of relative fees across the two countries needs to be revisited.

METHODS

To compare fees, we developed indexes that are weighted averages of fees in Canada relative to those paid under Medicare. Although our primary objective is aggregate comparisons of relative fees, we also compare fees disaggregated by type of service. For this we need to define the unit of Medicare services, select services, and ensure comparability of Canadian and Medicare fees. Ensuring comparability involves addressing differences in coding systems, payment rules, and economic conditions.

Our basic unit of observation is the *Common Procedural Terminology* (CPT) code. Although CPT codes are used by most payers in the United States, each Canadian province has its own coding system. Because of the difficulty of identifying Canadian provincial codes that are equivalent to CPT codes, it was not feasible to work with all the CPT codes and all the provinces. We therefore focused on fees in the four largest provinces, which together have 83 percent of the Canadian population. In order of population size, they are Ontario, Quebec, British Columbia, and Alberta.

Selection of Codes and Construction of Index

We classified CPT codes by type of service to help ensure that the selected codes were representative of a wide range of services and to allow us to compare fees at a somewhat disaggregated level. In particular, we employed a type-of-service classification system devised by Berenson and Holahan (1992). The system divides physician services into 6 (major) categories and 23 subcategories.

Evaluation and management services comprise the first category. Its subcategories are office visits, hospital visits, emergency room services, home and nursing home visits, consultations, and specialist evaluation and management services. The last subcategory in this group includes services provided by ophthalmologists, psychiatrists, pathologists, and allergists.

Procedures, the second category, includes major procedures (subdivided into cardiovascular, orthopedic, and other), ambulatory procedures (subdivided into eye and other), and minor procedures (subdivided into endoscopic, oncology procedures, dialysis services, and other). Imaging, the third category, is divided into standard imaging (routine X-rays and nuclear medicine), advanced imaging (computerized tomography [CT] scans and magnetic resonance imaging [MRI]), sonographic imaging, and imaging procedures (largely cardiac catheterization). The remaining three categories are tests (subdivided into laboratory and other), anesthesiology services, and other services.

Of the Berenson and Holahan groupings, three categories and three subcategories were dropped for this analysis. Anesthesiology services were dropped because in some fee schedules payment varies by the duration of the procedure, making pricing difficult. Laboratory tests, other tests, and "other services" were dropped because of the difficulty of identifying equivalent Canadian codes. Oncology services were dropped because they are often included in Canadian global hospital budgets and cannot, therefore, be separately priced. Dialysis services were dropped because of problematic Medicare data on volume. This left 17 subcategories in 3 categories.

Within the procedure and imaging subcategories, we selected the eight CPT codes with the greatest share of Medicare expenditures for each type of service. (These expenditure shares also serve as weights in the index, as noted later.) A CPT code's Medicare expenditure was calculated as its volume in 1989 times its relative value units (RVUs) in the new Medicare fee schedule. A code's expenditure divided by the expenditure for all services yields the code's expenditure share. CPT codes with high volumes are more likely to be represented than codes with low volumes, and CPT codes with high fees (and RVUs) are more likely to be represented than codes with low fees. One might be concerned that our selection procedure is biased toward selecting CPT codes with high Medicare fees (and RVUs). To test this, we replaced Medicare fees with Ontario fees in calculating expenditure shares. Virtually the same CPT codes would be selected under the two methods.

Within the other subcategories (i.e., evaluation and management), we selected CPT codes by group: the 10 codes for office visits, the 6 codes for hospital visits, the 5 codes for emergency room visits, the 3 codes for subsequent nursing facility care visits, the 3 codes for rest home visits for established patients, the 4 codes for eye exams, the 2 codes for psychotherapy, and the 5 codes for office consultations. Both initial and followup visit codes were included (Table 1).

The CPT codes incorporated in this index represent 63 percent of the RVUs in these 17 subcategories. Within each of the three categories, this expenditure share is 83 percent for evaluation and management services, 43 percent for procedures, and 35 percent for imaging

(Table 2). The expenditure share within subcategories ranges from about 90 per cent for several evaluation and management subcategories to about 20 per cent for ambulatory and minor procedures (Table 3). In general, as the number of potential CPTs increases and their diversity grows, the share of RVUs accounted for by the index CPTs tends to fall.

To compare Canadian and Medicare fees, we used an index based on a fixed set of services (i.e., Laspeyres index). This widely used index form is the basis of, for example, the U.S. Consumer Price Index.

We first calculated an index for each type-of-service subcategory. This index is a weighted average of Canadian fees relative to Medicare fees for selected codes in each type subcategory. For cardiovascular procedures, for example, this involved averaging relative fees for eight codes. Each relative fee was weighted by its Medicare expenditure share within its subcategory, the same variable used to select the codes. Our composite index across all 17 subcategories was also a Laspeyres index. This index is the weighted average of each of the individual La-

Table 1
Canadian and Medicare Fees for Selected Current Procedural Terminology (CPT) Codes, by Type-of-Service Subcategories: January 1992

Type of Service ¹	CPT Code	Description	Fee		Canadian-to-Medicare Ratio
			Adjusted Canadian ²	Unadjusted Medicare	
Evaluation and Management Services					
Office Visits	99213	Office visit, established patient	\$25.27	\$31.00	0.82
Hospital Visits	99232	Subsequent hospital care	14.97	44.95	0.33
Emergency Room Services	99283	Emergency room visit	22.02	46.19	0.48
Nursing Home and Home Health	99332	Rest home visit, established patient	14.72	39.06	0.38
Specialty-Specific Evaluation and Management Consultations	92014	Eye examination, established patient	32.74	53.01	0.62
	99243	Office consultation	56.70	80.91	0.70
Procedures					
Cardiovascular Procedures	33512	Coronary artery bypass graft, three grafts	1,129.39	2,225.25	0.51
Orthopedic Procedures	27447	Total knee replacement	626.45	1815.73	0.35
Other Major Procedures	52601	Transurethral resection of prostate	370.43	801.69	0.46
Eye Procedures	66984	Remove cataract, insert lens	439.57	940.57	0.47
Other Ambulatory Procedures	49505	Inguinal hernia	252.70	335.43	0.75
Minor Procedures	17000	Destruction one facial lesion	28.78	35.65	0.81
Endoscopy Procedures	45378	Colonoscopy	156.84	262.89	0.60
Imaging					
Standard Imaging	71020	Chest X-ray, 2 views	6.11	10.54	0.58
Advanced Imaging	70450	Computerized tomography scan, head without contrast material	32.24	42.16	0.76
Sonography	93307	Echocardiography	45.40	54.25	0.84
Imaging Procedure	93547	Left hand catheter, coronary angiography	271.24	434.01	0.62

¹Within each evaluation and management subcategory, the middle level code is shown. Within other subcategories, the code with the largest Medicare expenditure is shown.

²Canadian fees are the average of the fees (weighted by population) of the four largest provinces. Canadian fees have been adjusted for differences in currency (through purchasing power parity), practice expense, global fee periods, and other aspects of the fee structures.

SOURCES: (Ontario Ministry of Health, 1991; Quebec Ministry of Health, 1991; British Columbia Ministry of Health, 1991; British Columbia Medical Association, 1991; Alberta Ministry of Health, 1991; *Federal Register*, 1991).

Table 2
Physician Fee Indexes, by Major Type-of-Service (TOS) Categories and, by Province:
United States and Canada, January 1992

Type of Service ¹	Medicare Share Within TOS ¹ (Percent)	Canadian-to-Medicare-Fee Ratio ²				
		Ontario	Quebec	British Columbia	Alberta	Canada
Evaluation and Management Services	83	0.665	0.483	0.596	0.618	0.595
Procedures	43	0.578	0.415	0.516	0.584	0.528
Imaging	35	0.843	0.511	0.793	0.799	0.729
Overall	63	0.658	0.463	0.594	0.629	0.589

¹Medicare share is the ratio of the expenditures of the codes used in the index to the expenditures of all the codes in the TOS category.

²Canadian fees are the average of the fees (weighted by population) of the four largest provinces. Canadian fees have been adjusted for differences in currency (through purchasing power parity), practice expense, global fee periods, and other aspects of the fee structures.

SOURCES: (Ontario Ministry of Health, 1991; Quebec Ministry of Health, 1991; British Columbia Ministry of Health, 1991; British Columbia Medical Association, 1991; Alberta Ministry of Health, 1991; *Federal Register*, 1991).

Table 3
Physician Fee Indexes, by Type-of-Service (TOS) Subcategories and, by Province:
United States and Canada, January 1992

Type of Service	Share of Medicare Payments for TOS Reflected in Index ¹ (Percent)	Canadian-to-Medicare-Fee Ratio ²				
		Ontario	Quebec	British Columbia	Alberta	Canada
Evaluation and Management Services						
Office Visits	91	0.941	0.570	0.697	0.661	0.762
Hospital Visits	84	0.404	0.385	0.406	0.491	0.408
Emergency Room Services	91	0.305	0.315	0.572	0.374	0.354
Nursing Home and Home Health	63	0.381	0.272	0.414	0.748	0.394
Specialty-Specific Evaluation and Management	52	0.689	0.548	0.708	0.784	0.659
Consultations	94	0.781	0.599	0.814	0.736	0.725
Procedures						
Cardiovascular Procedures	40	0.545	0.399	0.540	0.651	0.512
Orthopedic Procedures	63	0.395	0.338	0.389	0.362	0.373
Other Major Procedures	32	0.582	0.452	0.509	0.545	0.528
Eye Procedures	63	0.477	0.396	0.555	0.521	0.468
Other Ambulatory Procedures	20	0.517	0.432	0.415	0.516	0.542
Minor Procedures	19	0.786	0.414	0.517	0.774	0.633
Endoscopy Procedures	57	0.737	0.465	0.614	0.676	0.630
Imaging						
Standard Imaging	31	0.693	0.441	0.668	0.755	0.619
Advanced Imaging	36	1.046	0.768	1.064	n.a.	0.953
Sonography	31	1.069	0.509	0.895	0.781	0.841
Imaging Procedure	51	0.688	0.374	0.652	0.750	0.594

¹Medicare share is the ratio of the expenditures of the codes used in the index to the expenditures of all the codes in the TOS subcategory.

²Canadian fees are the average of the fees (weighted by population) of the four largest provinces. Canadian fees have been adjusted for differences in currency (through purchasing power parity), practice expense, global fee periods, and other aspects of the fee structures.

SOURCES: (Ontario Ministry of Health, 1991; Quebec Ministry of Health, 1991; British Columbia Ministry of Health, 1991; British Columbia Medical Association, 1991; Alberta Ministry of Health, 1991; *Federal Register*, 1991).

speyres indexes, where the weights are the Medicare expenditure shares for the subcategory.

Creating Comparable Fees

The fees that we analyzed were those in effect in January 1992, obtained from published fee schedules (Ontario Ministry of Health, 1991; Quebec Ministry of Health, 1991; British Columbia Ministry of Health, 1991; British Columbia Medical Association, 1991; Alberta Ministry of Health, 1991; *Federal Register*, 1991). In the case of Medicare, we assumed full implementation of the fee schedule. Medicare fees were treated as the product of the total RVU for the code and the conversion factor of \$31.001 (*Federal Register*, 1991). No geographic adjustment was made. Canadian fees, as they appear in the schedules, do not vary geographically. And the geographic practice cost index of the Medicare fee schedule does not enter the calculation when a national perspective is used. For each code, the Canadian fee was calculated as the mean of the four provincial fees, weighted by their 1990 population (*Canadian Almanac & Directory*, 1992).

Canadian codes comparable to the Medicare codes were identified by the physician member of the analysis team (Katz). Although the coding systems differ, the practice of medicine is very similar in the two countries, making the task of identifying comparable Canadian codes relatively straightforward. Ambiguities typically were resolved through phone conversations with the relevant ministry of health. In the remaining cases, we selected provincial codes that, if anything, made Canadian fees appear high. For instance, Quebec has three codes for

a colonoscopy, depending on whether it reaches the descending, transverse, or ascending colon, whereas CPT has one code (45378), regardless of the distance. We used the Quebec code for a colonoscopy of the ascending colon, the most expensive. Only 2 CPT codes (both in the minor procedure category) out of 126 had to be dropped because of difficulty in identifying comparable codes.

Even after basic medical comparability had been established, several issues regarding comparability in payment remained. Foremost among these related to the period of the global surgical fees. Under the Medicare fee schedule, fees for major surgeries cover visits only 1 day prior to surgery but 90 days following surgery. Provincial schedules usually have longer preoperative periods but shorter postoperative periods: Ontario has a postoperative period of 14 days; Quebec, 0 days (out of the hospital); British Columbia, 42 days; and Alberta, 90 days. Based in part on a survey by the Physician Payment Review Commission (1991b), we judged that Medicare's 90-day postoperative period would capture two more office visits than Ontario, three more visits than Quebec, and one more visit than British Columbia. To make Canadian surgical fees comparable to Medicare fees, we identified the fee for these office visits to general surgeons and added it to the Canadian fees for major surgeries.

For imaging CPT codes, we used fees for the professional component, except for Alberta. For standard imaging and sonography, Alberta publishes only global fees. Therefore, its global fees were adjusted by multiplying them by the ratio of the Medicare professional component to the global fee. Alberta publishes no physician fees for advanced imaging, because

it pays only hospitals for these services. Thus, no comparison can be made.

In the provincial schedules, evaluation and management fees are nominally specialty-based. This relates to a major difference in physicians in the United States and Canada: one-half of Canadian physicians are general practitioners (GPs) (Department of National Health and Welfare, 1988), whereas only 14 percent of U.S. physicians are general practitioners or family practitioners (American Medical Association, 1990). Therefore, Canadian fees for specialists are more relevant than those for GPs because of the predominance of specialists in the United States. In Canadian fee schedules, fees for internists are usually as high as or higher than for other specialists. Therefore, we used the fees of internists, except where another specialty was clearly more relevant (e.g., ophthalmologists for eye exams).

Net Income Equivalence

By how much would Medicare fees drop if Medicare adopted the Canadian fee level, assuming that Medicare recognized the differences in currency and practice expense?

Canadian fees are, of course, expressed in Canadian dollars. These fees could be converted to U.S. dollars using an exchange rate. However, foreign exchange rates are heavily influenced by extraneous factors, such as speculation and interest rate differentials, which cause capital funds to shift among nations. These factors can result in substantial year-to-year changes in exchange rates. In addition, the prices of goods that are traded internationally have a direct impact on exchange rates, whereas the

prices of other goods (e.g., housing) do not.

Hence, cross-national comparisons of health care spending adjust for differences in the value of currencies using the purchasing power parity (Fuchs and Hahn, 1990; Schieber, Poullier, and Greenwald, 1991; Evans, 1988). In 1990, one U.S. dollar had the purchasing power of 1.31 Canadian dollars (Organization for Economic Cooperation and Development, 1992). Suppose that Canadian physicians were paid in U.S. dollars, which they used to pay for practice expenses as well as personal consumption items, such as housing in Canada. They could receive only one U.S. dollar for every 1.31 Canadian dollars they now receive and still afford the same practice expenses and standard of living. Hence, Canadian fees must be divided by 1.31 to be translated into U.S. dollar equivalents.

What is relevant to physician income, however, is not physicians' fees but their fees net of practice expenses. We wished to adjust fees, therefore, so that they represent the same net income per service in the two countries. Canadian physicians have substantially lower malpractice expenses (Coyte, Dewees, and Trebilcock, 1991) than U.S. physicians and lower administrative expenses (Himmelstein and Woolhandler, 1991; U.S. General Accounting Office, 1991). Canadian physicians had expenses that were 38.7 percent of gross income in 1987, for example, the latest year for which such data are available (Department of National Health and Welfare, 1990). The analogous U.S. figure for 1987 is 45.8 percent (American Medical Association, 1988).

In other words, physicians retain as net income 54.2 percent of their revenue in the United States but 61.3 percent of their

revenue in Canada. For the purposes of this adjustment, we assume that practice expenses as a percentage of a fee are the same for all fees. In reality, the share of a fee that is retained as net income varies across services. If net income per service for physicians were equated in the two countries, this would mean that 54.2 percent of U.S. fees would equal 61.3 percent of Canadian fees. Therefore, to make a valid comparison between the two countries, Canadian fees need to be adjusted upward to reflect the higher practice expenses in the United States. This involves dividing Canadian fees by 0.884 (54.2/61.3).

Thus, we divided Canadian fees by 1.31 to adjust for differences in purchasing power and by 0.884 to adjust for practice expenses ($1.31 \times 0.884 = 1.158$).

RESULTS

Table 1 presents Canadian and Medicare fees for selected CPT codes. We use coronary artery bypass graft (CABG) with three grafts to explain the construction underlying the figures in this table. The three-graft CABG has a weight of 0.22 (not shown); that is, it has 22 percent of the Medicare expenditures for the eight codes used for the cardiovascular index. In January 1992, the average fee across the four largest provinces was \$1,278 (not shown). This figure, which is in Canadian dollars, includes postoperative office visits that are covered by the global fee under Medicare. After adjustment for the lower purchasing power of the Canadian dollar and lower practice expenses, the Canadian fee is \$1,129 (U.S. dollars). In contrast, under full implementation of its fee schedule, Medicare will be paying \$2,225 for the same service. In sum, Can-

ada is paying about one-half as much as Medicare for a three-graft CABG (0.51 in the table).

The fee for removal of a cataract and insertion of a lens is worth special mention. In 1988, deeming this fee "overpriced," Medicare lowered the fee for this procedure. The fee was lowered again in 1990 and 1991, and yet again under the Medicare fee schedule in 1992. After this process, Canada is still paying less than one-half as much as Medicare (0.47 in the table).

Table 2 presents the index for all services for each province as well as the index by category. Overall, Canadian fees are 59 percent of Medicare's, adjusting for differences in currency, practice expense, global fee periods, and other aspects of the fee structure. Ontario, British Columbia, and Alberta each have fees that are about 60 percent of Medicare's, whereas Quebec has fees that are less than one-half those of Medicare's. Quebec has the lowest fees within each of the three categories.

Canadian fees are 73 percent of Medicare fees for imaging and 53 percent of Medicare fees for procedures. Canadian fees for evaluation and management services are 60 percent of Medicare fees, approximately at the overall average. The order by type of service is the same for each province. For instance, the ratio of Quebec fees to Medicare fees is highest for imaging (51 percent), lowest for procedures (42 percent), and in the middle for evaluation and management services (48 percent).

Table 3 presents these results by subcategories. Within each category, there is a range of indexes across subcategories. Within evaluation and management services, for example, Canadian fees are

highest for office visits and consultations (76 and 73 percent of Medicare fees, respectively), and lowest for emergency room services and nursing home and home health visits (35 and 39 percent of Medicare fees, respectively). Within procedures, Canadian fees are highest for minor procedures and endoscopy procedures (63 percent of Medicare fees for both categories). Canadian fees for orthopedic procedures are 37 percent of Medicare fees, by far the lowest percentage for a procedure subcategory. Within imaging, fees are highest for advanced imaging (CT scan and MRI) and sonography (95 percent and 84 percent of Medicare fees, respectively). Fees are lowest for standard imaging and imaging procedures (primarily cardiac catheterization) (about 60 percent of Medicare fees for both groups).

DISCUSSION

Overall Fee Levels

Overall, Canadian fees are 59 percent of Medicare fees. Although Canadian fee levels are high enough to attract physicians within Canada (as discussed later), decreasing Medicare fees to Canadian levels might prompt U.S. physicians to refuse to treat Medicare beneficiaries in favor of privately insured patients. The experience of Medicaid illustrates the potential problem for Medicare. Medicaid fees are, on average, 67 percent of Medicare fees (Holahan, Wade, and Gates, 1992), and U.S. private insurance fees are well above (150 percent of) Medicare fees (Physician Payment Review Commission, 1992c). This creates an environment in which access to care for Medicaid beneficiaries is threatened (Physician Payment

Review Commission, 1991a). Thus, Medicare's ability to control increases in fees is constrained by the payment behavior of other payers.

Although fees as low as those in Canada may not be a realistic option for Medicare, they can provide general guidance for broader payment reforms. In particular, Canadian fees suggest that fees well below those currently paid in the United States might be feasible. For example, if the United States moved to a system under which all physician fees were paid according to the same rate schedule (i.e., an all-payer system), it would no longer be clear that fees should reflect those now paid by private insurers. Congressman Rostenkowski has introduced legislation to move toward such an all-payer system for the Nation, and several States have mandated studies of this approach (Physician Payment Review Commission, 1992c). With all payers governed by the same set of fees, the access risks faced by patients covered by a single payer with low fees would be removed. Policymakers might decide to set fees well below the current private market, possibly using Medicare levels as the guide. The question then becomes not whether Medicare beneficiaries would risk reduced access compared with holders of private insurance, but whether lowering U.S. fee levels would shrink the overall supply of physician services to unacceptable levels.

There is really no way to answer this question with certainty. However, despite having much lower fees, Canada has about the same physician supply as the United States: 2.2 physicians per 1,000 population in Canada versus 2.3 in the United States (Schieber, Poullier, and Greenwald, 1991). Indeed, many Canadian analysts and policymakers believe that

Canada has an oversupply of physicians (Barer and Stoddart, 1991). In January 1992, the provincial deputy ministers—the key health policymakers in Canada—decided to cut medical school enrollment (Mackie, 1992). In sum, Canada's supply of physicians does not appear to be inadequate.

Would lower fees save money, or would physician service volume and intensity increase enough to wipe out any savings? The possibility that lower fees might induce this type of response was raised when the Medicare conversion factor was set in late 1991. It was assumed that a 10-percent decrease in fees would be offset by a 5-percent increase in the volume and intensity of services. Even if the volume and intensity of all physician services increased to this extent, lowering the overall levels of physician fees under an all-payer system would still be a promising cost-containment option.

Levels by Type of Service

Here we compare differences in the Canada-Medicare ratio of fees by type of service. Although neither Canadian nor Medicare fees can be taken as a "gold standard," a comparison by type of service can yield insights into fees under both systems.

Fuchs and Hahn (1990) found a substantial difference between the Canada-United States fee ratios for evaluation and management (55 percent) and for procedures (30 percent). These ratios suggest that U.S. fees are 1.8 times higher relative to Canada's for evaluation and management than for procedures. Prior to the introduction of the fee schedule, Medicare's fees for procedures were more generous than their fees for evaluation

and management, in comparison to private insurers (Physician Payment Review Commission, 1992b). This suggests that Medicare fees were even more skewed toward procedures, relative to Canada, than were private insurers' fees. Our data indicate (Table 2) that the new fee schedule has substantially shrunk this difference for Medicare. The Canada-Medicare fee ratio of 60 percent for evaluation and management is 1.13 times higher than the ratio of 53 percent for procedures. The Physician Payment Review Commission (1992a) has suggested changing the calculation of practice expense in such a way that evaluation and management fees would increase further and procedure fees would decrease further. This would probably make the evaluation and management procedure ratios for Medicare and Canada even more similar.

The relative values of physician services in Canada are not resource-based but rather reflect charge-based payments established prior to 1968. Modifications in the relative values have primarily been the responsibility of physician organizations, with varying levels of provincial government oversight. Periodic fee increases have been disproportionately distributed to the services of general practitioners. Thus, the relative value of services provided by general practitioners has increased over time, which has partially corrected perceived historical inequities.

Our results suggest that this political negotiating process between physicians and payers has resulted in a distribution of relative values across cognitive and procedural services similar to that of RBRVS. Canadian physicians have shown some interest in the RBRVS as an improvement over their current fee schedules. However, to the extent that their

concern is about overpaying for procedures relative to evaluation and management (York, 1992), the RBRVS is unlikely to help the provinces, because it still results in more generous payments for procedures than the current Canadian schedules (albeit less so than did the previous Medicare system).

Within evaluation and management services, the relative differences between office and hospital visit fees in the two systems are striking. Relative to Medicare, Canada pays more for office visits than hospital visits, a pattern that holds in each of the four provinces studied. The reason is that the Medicare fee schedule is resource-based as pertains to the work component only, not the overhead costs and malpractice components. When the RBRVS was established, setting relative values for office and hospital visits entailed allocating office expenses between the two activities. The provinces have implicitly allocated those expenses differently than Medicare has, assuming that fewer practice resources are used in hospital than in office visits. The Physician Payment Review Commission (1992d) has proposed a resource-based allocation of practice expenses, which would increase office visit fees and decrease hospital visit fees. This would make the Canada-Medicare ratios more similar.

Still within evaluation and management services, Canadian consultation fees are high relative to Medicare's. Conversely, Canadian fees for visits in emergency rooms, nursing homes, and rest homes are low relative to Medicare's. As in the case of hospital visits, Medicare's high fees for such visits may reflect an overly generous allocation of practice expenses. Medicare may need to revisit this issue.

Within procedures, orthopedic procedures stand out as a case in which the Medicare fee schedule has produced higher fees relative to Canada's than other procedures. Canadian fees for orthopedic procedures are 37 percent of Medicare's, whereas Canada's are 53 percent for procedures in general. Although it is possible that Canadian fees are "too low" to ensure access for orthopedic procedures, this is unlikely for two reasons. First, the provinces have single-payer systems and these fees are for the key services provided by orthopedic surgeons. If these fees were too low, shortages of orthopedic surgeons could develop. In Canada, shortage concerns tend to be related to geography, not specialty. However, shortages by specialty have been identified (Barer and Stoddart, 1991), and orthopedic surgery is not among them. Second, this pattern holds across provinces, reducing the probability that a single province "miscalculated."

Fees for advanced imaging and sonography are high in Canada, relative to Medicare's. Because these high-technology services have diffused more slowly in Canada, their fees have a smaller impact on budgets. Alternatively, Canada may pay relatively more for these services in order to avoid undersupply in light of the constraints already placed on the numbers of machines. The ratios here suggest that Canadian provinces might re-evaluate whether their fees for advanced imaging and sonography are too high, and Medicare, whether their fees are too low.

Limitations and Caveats

We adjusted our comparisons for two general factors: differences in purchasing power and differences in practice ex-

penses. Are there factors that could account for our results other than real fee level differences? One possible objection is that general and/or family practitioners are much more common in Canada and that we are really identifying skill differences between Medicare and Canadian physicians, rather than fee differences. This is not the case, because we took care in matching the codes to take specialty into account. For evaluation and management fees, for example, we matched general internists' fees in the two countries.

Another possible limitation is that, even though we have fees from the four provinces with five-sixths of the Canadian population, these fees are not representative of the other six provinces, which could pay more generously. Canada's Department of National Health and Welfare (1991) has computed fee indexes for the provinces and finds that the excluded provinces all have fee levels below those of Ontario, British Columbia, and Alberta. We estimated the change if these indexes were incorporated into our index and found that the ratio of Canadian fees to Medicare fees would fall very slightly, 0.3 of a percentage point.

Another potential problem in comparing U.S. and Canadian physician fees is the high educational debt of American physicians: Among U.S. physicians with debts for their medical education, the average debt in 1990 was \$46,224 (Hughes, Barker, and Reynolds, 1991). We consider an extreme example to provide a sense of the impact this might have on the fee differential we estimated. Assume that Canadian physicians had no debt and all U.S. physicians (regardless of cohort) had financed this average debt through loans carrying a 10-percent interest rate over a

35-year career. The repayment would amount to about about \$5,000 per year, or about 1.5 percent of current average gross practice revenues (American Medical Association, 1990). Obviously, earlier cohorts of physicians have substantially lower educational costs than are reflected in this example. With the assumption of no differences in rates of service provision, leaving out educational debt costs overstates the fee differential between the two countries by at most 1.5 percent.

Several other caveats are worthy of mention. First, the fee received by the physician may be higher than the Medicare fee schedule amount because of balance billing, which does not exist in Canada. However, in 1992 physicians who chose to balance bill could only charge 14 percent above the fee schedule. If assignment rates stay at 1991 levels, only about 20 percent of Medicare charges would receive this 14-percent add on. Therefore, the total fee that the average physician receives could be only 2 to 3 percent above the Medicare fee schedule. This may cause us to overestimate the Canada-Medicare fee differential modestly—an overestimate that is likely to be reduced over time because balance billing is being increasingly restricted under Medicare.

Second, unlike Medicare, certain hospital-based radiology services in Canada are paid for through global hospital budgets and are not, therefore, reflected in the fee levels. The affected services vary by province: Alberta pays for all radiology services delivered in hospitals through the global budget, Ontario and British Columbia include such services for inpatients but not for outpatients, and Quebec includes services for neither group. Because hospitals pay physicians

directly, hospitals' payment rates are not directly captured by our index. To the extent that those rates are similar to rates paid directly by the provinces, our index will reflect them accurately. There is no a priori reason to expect them to be substantially higher or lower.

CONCLUSION

The ability of the Canadian provinces to keep fees below those in the United States is a reason for Canada's cost advantage. Canadians have not generally resorted to policies such as utilization review that can limit clinical autonomy. Instead, Canadians have limited spending growth, in part, by restraining fees to a far greater extent than has yet appeared possible in the United States.

The multiple-payer system operating in this country makes it difficult for any individual payer to limit fees without running the risk of adversely affecting its subscribers' access. This has forced many U.S. payers to seek controls over volume as the only available means of containing outlays. Many physicians find these volume controls overly intrusive. However, with the charges for each service as high as they are in the United States, payers have a strong incentive to confront the physician community and have turned to volume controls as a way to do it. Comparing Medicare physician fees with Canada's physician fees suggests that there may be another alternative: lowering physician fees in return for maintaining greater physician discretion over treatment decisions. Ultimately, the potential tradeoff between reduced fees (or fee growth) and utilization review policies could become a valuable focus of U.S.

physician-insurer negotiation on an all-payer system.

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